GENERAL AWARENESS

(with Special Reference To Banking)

COMPUTER AWARENESS

RBI / SBI / IBPS / SSC/ RLY

Mr. Manohar Patil

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General Awareness

(with special reference of banking and Computers)

Importance:-

1) Updated Information with Current references.
2) Simple language for all to easy understand.
3) Detail information of all topics.
4) Exam oriented Material.

Mr. Manohar Eknath Patil

Reliable Academy
For
RBI-SBI-IBPS-SSC-RLY

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'General Awareness'

(with special reference of banking and Computers)

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Introduction

Dear Friends,

The Battle of Competitive Examination is like the world war new a days. To stay in the war and conquer over the competitors you should have proper guidance and perfect practice. Presenting the book which is in you hand is the painstaking effort of our Team Reliable. The book cover all the topics with sufficient and quality materials to get success in all the Competitive exam like RBI/SBI/IBPS/ SSC/Railway etc.

We heard that "Practice makes a man Perfect" and I say "Perfect Practice makes Everyone Perfect". - **Manohar Patil**

It is with a sense of great delight that we are presenting to you the study material binded from our team of qualified authors take painstaking efforts to present keeping in view the requirements of our esteemed readers. We are sure that if you read it intelligently and wisely, it will go a long way in equipping you with knowledge to face the grueling battle of the examination and bring you sure success. We make all efforts to include essential topics, as far as possible.

A minute observation of the past and accumulated experiences helps us in shaping our present. The positive and compendious conclusions drawn from the past becomes our pioneer in charting new ways and teaches us to rectify our remedies. Our present is, thus, beautified. Where there is beauty, attraction cannot be negated. Aspirations turn into realities. This is a realistic reflection.

Mr. Manohar Eknath Patil
(Founder)
Reliable Academy

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Key Facts About Bank Exams

1. IBPS PO

I) Nationality / Citizenship:

(i) A candidate must be either -a Citizen of India or

(ii) a subject of Nepal or a subject of Bhutan or a Tibetan Refugee who came over to India before **1st January 1962** with the intention of permanently settling in India or

(iii) a person of Indian origin who has migrated from **Pakistan, Burma, Sri Lanka, East African countries of Kenya, Uganda, the United Republic of Tanzania (formerly Tanganyika and Zanzibar), Zambia, Malawi, Zaire, Ethiopia and Vietnam** with the intention of permanently settling in India, provided that a candidate belonging to categories (ii), (iii), (iv) & (v) above shall be a person in whose favor a certificate of eligibility has been issued by the Government of India.

II) Age Minimum: 20 years Maximum: 30

Sr No	Category	Age Relaxation
1	Scheduled Caste/Scheduled Tribe	5 years
2	Other Backward Classes (Non-Creamy Layer)	3 years
3	Persons With Disabilities	10 years
4	Ex-Servicemen, Commissioned Officers Including Emergency Commissioned Officers (ECOs)/ Short Service Commissioned Officers (SSCOs) who have rendered at least 5 years military service and have been released on completion of assignment (including those whose assignment is due to be completed within one year from the last date of receipt of application) otherwise than by way of dismissal or discharge on account of misconduct or inefficiency or physical disability attributable to military service	5 years
5	Persons ordinarily domiciled in the Kashmir Division of the State of Jammu & Kashmir during the period 01.01.1980 to31.12.1989	5 years
6	Persons affected by 1984 riots	5 years

III).Educational Qualifications

A Degree (Graduation) in any discipline from a University recognized by the Govt. Of India or any equivalent qualification recognized as such by the Central Government. **The candidate must possess valid Mark-sheet / Degree Certificate that he/ she is a graduate on the day he / she registers and indicate the percentage** of marks obtained in Graduation while registering online.

IV).Preliminary Examination

Sr. No.	Name of Tests	No. of Qs	Maximum Marks	Duration
1	English Language	30	30	Composite time 1 Hr
2	Quantitative Aptitude	35	35	
3	Reasoning Ability	35	35	

V). Mains Examination

Sr. No	Name of Tests	No. of Questions	Maximum Marks	Medium of Exam	Time allotted for each test (Separately timed)
1	Reasoning &Computer knowledge	45	60	English &Hindi	40 minutes
2	English Language	35	40	English & Hindi	35 minutes
3	Data analysis &Interpretation	35	60	English & Hindi	45 minutes
4	General Awareness (with special reference to Banking)	40	40	English & Hindi	20 minutes
	TOTAL	155	200	English & Hindi	180 minutes
English Language (Letter writing and Essay)		2	25	English	30 minutes

2 IBPS Clerk

I)**Nationality / Citizenship:**

A candidate must be either –

i. **a Citizen of India** or
ii. a subject of Nepal or
iii. a subject of Bhutan or
iv. a Tibetan Refugee who came over to India **before 1st January 1962** with the intention of permanently settling in India or
v. a person of Indian origin who has migrated **from Pakistan, Burma, Sri Lanka, East African countries of Kenya, Uganda, the United Republic of Tanzania (formerly Tanganyika and Zanzibar), Zambia, Malawi, Zaire, Ethiopia and Vietnam** with the intention of permanently settling in India, provided that a candidate belonging to categories (ii), (iii), (iv) & (v) above shall be a person in whose favor a certificate of eligibility has been issued by the Government of India.

II. **Age**

Minimum: 20 years **Maximum: 28 years**

Relaxation of Upper age limit

Sr No	Category	Age Relaxation
1	Scheduled Caste/Scheduled Tribe	5 years
2	Other Backward Classes (Non-Creamy Layer)	3 years
3	Persons With Disabilities	10 years

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Computer Literacy: Operating and working knowledge in computer systems is mandatory i.e. candidates should have Certificate/Diploma/Degree in computer operations/Language/ should have studied Computer / Information Technology as one of the subjects in the High School/College/Institute.

Proficiency in the Official Language of the State/UT (candidates should know how to read/ write and speak the Official Language of the State/UT) for which vacancies a candidate wishes to apply is preferable. Ex-Servicemen who do not possess the above civil examination qualifications should be matriculate Ex-servicemen who have obtained the Army Special Certificate of Education or corresponding certificate in the **Navy or Air Force after having completed not less than 15 years of service in the Armed Forces of the Union .**

IV. **Preliminary Examination**

Sr.No.	Name of Tests	No. of Qs	Maximum Marks	Duration
1	English Language	30	30	Composite time
2	Quantitative Aptitude	35	35	
3	Reasoning Ability	35	35	

V.**Mains Examination**

Sr. No	Name of Tests	No. of Questions	Max Marks	Medium of Exam	Time allotted for each test (Separately timed)
1	Reasoning	50	60	English &	45 minutes

	&Computer Knowledge			Hindi	
2	English Language	40	40	English & Hindi	35 minutes
3	Quantitative Aptitude	50	50	English & Hindi	45 minutes
4	General Awareness (with special reference to Banking)	50	50	English & Hindi	35 minutes
	Total	190	200		160 minutes

1. Banking and Financial System in India

❖ Banking and Financial System in India :

1] Banking can be defined as the **business activity of accepting and safeguarding money owned by other individuals and entities, and then lending out this money in order to earn a profit.**

2] However, with the passage of time, the activities covered by banking business have widened and now various other services are also offered by banks.

3] The banking services these days include **issuance of debit and credit cards, providing safe custody of valuable items, lockers, ATM services and online transfer of funds across the country / world**.

4] Banking business has done wonders for the world economy. The simple looking method of accepting money deposits from savers and then lending the same money to borrowers, banking activity encourages the flow of money to productive use and investments.

5] This in turn allows the economy to grow. In the absence of banking business, savings would sit idle in our homes, the entrepreneurs would not be in a position to raise the money, ordinary people dreaming for a new car
or house would not be able to purchase cars or houses.

- **What is a bank ?**
  In simple words, **we can say that Bank is a financial institution that undertakes the banking activity** i.e. .it accepts deposits and then lends the same to earn certain profit
- **What is Banking System ?**
  Banking systems can be defined as a **mechanism through which the money supply of the country** is created and controlled.

❖ Currency

- **Introduction :**
  A currency in the most specific use of the word refers **to money in any form when in actual use or circulation, as a medium of exchange, especially circulating paper money**. This use is **synonymous with banknotes, or (sometimes) with banknotes plus coins**, meaning the physical tokens used for money by a government.

- **History**
- **Early currency:**

1] Cowry shells being used as money by an Arab trader.
2]Currency evolved from two basic innovations, both of which had occurred by 2000 BC.
3] Originally money was a form of receipt, representing grain stored in temple granaries in Sumer in ancient Mesopotamia, then Ancient Egypt.
4] In this **first stage of currency, metals were used as symbols** to represent value stored in the form of commodities.
5] This formed the basis of trade in the Fertile Crescent for over 1500 years.
6] By the late **Bronze Age, however, a series of treaties had established safe passage for merchants around the Eastern Mediterranean**, spreading from Minoan Crete and Mycenae in the northwest to Elam and Bahrain in the southeast.
7] It is not known what was used as a currency for these exchanges, but it is thought that ox-hide shaped ingots of copper, produced in Cyprus, may have functioned as a currency.
8] It is thought that the increase in piracy and raiding associated with the Bronze Age collapse, possibly produced by the Peoples of the Sea, brought this trading system to an end.

- **Coinage**

1] These factors led to the metal itself being the store of value: **first silver, then both silver and gold**, and at one point also **bronze**.

2] Now we have copper coins and other non-precious metals as coins. Metals were mined, weighed, and stamped into coins.

3]This was to assure the individual taking the coin that he was getting a certain known weight of precious metal.

4] Coins could be counterfeited, but they also created a new unit of account, which helped lead to banking.

5] **Archimedes' principle provided the next link**: coins could now be easily tested for their fine weight of metal, and thus the value of a coin could be determined, even if it had been shaved, debased or otherwise tampered with (see Numismatics)

- **Paper money**

1] In pre modern **China, the need for credit and for a medium of exchange that was less physically cumbersome than large numbers of copper coins** led to the introduction of paper money, i.e. banknotes.
2] Their introduction was a gradual process which lasted from the late Tang Dynasty (618–907) into the **Song Dynasty (960–1279).**

3] It began as a means for merchants to exchange heavy coinage for receipts of deposit issued as promissory notes by wholesalers' shops.

4] These notes that were valid for temporary use in a small regional territory.

5] In **the 10th century, the Song Dynasty government** began to circulate these notes amongst the traders in its monopolized salt industry.
6] The Song government granted several shops the right to issue banknotes, and in the early **12th century the government finally took over these shopsto produce state-issued currency.**

7] Yet the banknotes issued were still only locally and temporarily valid: it was not until the mid **13th century that a standard and uniform government** issue of paper money became an acceptable nationwide currency.

8] The already widespread methods of woodblock printing and **then Pi Sheng'smovable type printing by the 11th century were the impetus** for the mass production of paper money in premodern China.

- **Banknote era**

1] A banknote **(more commonly known as a bill in the United States and Canada**) is a type of currency, and commonly used as legal tender in many jurisdictions. With coins, banknotes make up the cash form of all money.

2] Banknotes are mostly paper, but Australia's Commonwealth Scientific and Industrial Research Organization developed the **world's first polymer currency in the 1980s that went into circulation on the nation's bicentenary in 1988.**

3] Now used in some 22 countries (over 40 if counting commemorative issues), polymer currency dramatically improves the life span of banknotes and prevents counterfeiting.

❖ Bank Nationalization in India:

1] In India, the Banking Sector has been **dominated by Government or Public Sector Banks (PSBs)** for last 64 years.

2] In 1954 the All India **Rural Credit Survey Committee** submitted its report recommending creation of a strong, integrated, state-sponsored, state-partnered commercial banking institution with an effective machinery of branches spread all over the country.

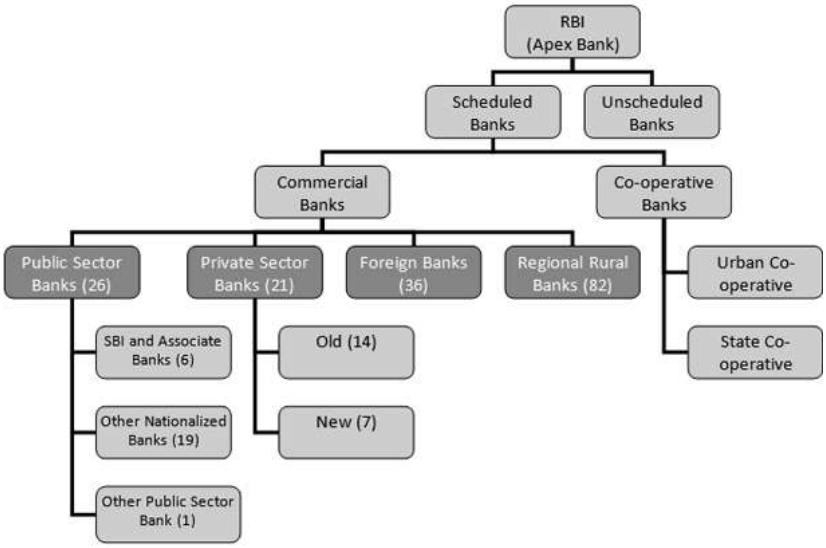
3] The recommendation of this committee led to establishment of first Public Sector Bank in the name of State bank of India on July 01, 1955 by acquiring the substantial part of share capital by Reserve Bank of India, of then Imperial Bank of India.
4] Similarly during 1956-59, as a result of reorganization of princely states, the State Bank of India associate Bank came into fold of Public sector banking.

5] On July 19, 1969, the Govt. promulgated Banking Companies (Acquisition and Transfer of Undertakings) ordinance 1969 to acquire 14 bigger commercial banks with deposits over 50 cores.

6] The main objective behind this bank nationalization was to spread banking infrastructure in rural India and make cheap finance available to Indian farmers.

7] The second phase of bank nationalization took place in **1980** during the prime ministerial tenure **of Indira Gandhi, in which 6 more banks were nationalized with deposits over 200 cores.**

The Banking, non-banking and Financial System in India comprises of the following types of institutions-



- **Commercial Banks**

  There are four types of Commercial Banks in India.

  a) Public Sector Banks
  b) Private Sector Banks
  c) Foreign Sector
  d) Cooperative Banks/Institutions.

  Cooperative Banks/institutions are of three types

  i) Urban Cooperative Banks
  ii) State Cooperative Banks
  iii) Central Cooperative Banks

- **Financial Institutions**

  There are three types of Financial Institutions in India and they are

  a) All-India Financial Institutions (AIFIs)
  b) State Financial Corporation's (SFCs)
  c) State Industrial Development Corporations (SIDCs)

- **Non-Banking Financial Companies (NBFCs)**

  Non-Banking Financial Companies are fast emerging as an important segment of Indian financial system.
  This group performing financial intermediation in many ways.
  The most important part is that these companies raise funds from public directly or indirectly and lend them to the ultimate spenders.

- **Structure of Commercial Banking in India.**

1] Bank is an institution that accepts deposits from the public, mobilizes their savings and keeps the same under its custody, these deposits can be withdrawn by Cheque or ATMs or any other available methods.

2] Banks **lends money** to those who need it and also performs **diverse agency functions and also create credit.**

3]Commercial banks are the institutions that accept **deposits from the people and advances loans.**
4] Commercial banks which are established in accordance with the provision of the **Banking Regulation Act, 1949**.

5]Commercial banks may be a Scheduled banks or Non-Scheduled banks. Scheduled banks is **classified into two big category** based on the ownership of the bank.
I) Public Sector Banks
II) Private Sector banks

Public Sector Banks is again divided into three category and they are
i) Nationalized Banks
ii) State Bank of India and It's Associate Group
iii) Regional Rural Banks.

Private Sector Banks is also classified into three category
i) Old Private Banks
ii) New Private Banks
iii) Foreign Banks

- **Scheduled Banks**

Scheduled Banks in India are those banks which have been included in the Second Schedule of Reserve Bank of India (RBI) Act, 1934. Reserve Bank of India (RBI) in turn includes only those banks in this schedule which satisfy the criteria mentioned on **section 42 (6) (a) of the Reserve Bank of India Act 1934**.

- **Criteria for a Scheduled Banks:**

Scheduled Banks are those banks whose minimum paid up **capital and reserve and amount to 25 lakh**. These bank have to submit details of their activities to the Reserve Bank of India every week.

These banks are listed on the second schedule of the Reserve Bank of India Act 1934- As of May 21, 2014 there are total 90 Scheduled banks in India**. Bharatiya MahilaBank (BMB) on May 21, 2014 included in the second schedule of RBI Act 1934**.

2.Reserve Bank of India (RBI)

- **Introduction:**

1] The Reserve Bank of India (RBI) is India's central banking institution, which controls the monetary policy of the **Indian rupee**.

2] It was established on **1 April 1935 during the British Raj** in accordance with the provisions of the **Reserve Bank of India Act, 1934.**

3] The share capital was divided into shares of 100 each fully paid, which were initially owned entirely by private shareholders.

4] Following India's independence in 1947, the **RBI was nationalized in the year 1949**.

5] The RBI plays an important part in the development strategy of the Government of India. It is a member bank of the Asian Clearing Union.

6] The general superintendence and direction of the RBI is entrusted with the **21-member Central Board of Directors:**
The Governor (currently Dr. Urjit Patel), four Deputy Governors(currently N.S.Vishwanathan, Viral Acharya, BP Kanungo, M.k.jain,) , two Finance Ministry representative, ten government-nominated directors to represent important elements from India's economy, and four directors to represent local boards

7] **Headquartered –Mumbai (first in Kolkata from 1935-1937)**
Local board Headquartered at -Mumbai, Kolkata, Chennai and New Delhi. Each of these local boards consists of five members who represent regional interests, as well as the interests of co-operative and indigenous banks

- **Important points:**
  - Name of Central Bank of India: **Reserve Bank of India (RBI)**
  - Reserve Bank of India Act passed in **1934.**
  - Reserve Bank of India (RBI) established on **1 April 1935.**
  - Reserve Bank of India (RBI) established on the recommendation of **Hilton-Young Commission**.
  - Hilton-Young Commission submitted its report in the year **1926**.
  - Initially RBI was constructed as a **Private Share holders' bank with fully Paid-up capital of Rs5 Cr.**
  - RBI was **nationalize in** the year of **1st January,1949.**
  - RBI is a **statutory body.**
  - RBI is the **sole authority in India to issue Bank notes in India.**

- RBI can issue currency notes as much as the country requires, provided it has to make a security deposit of Rs**. 200 cr, out of which Rs. 115 cr must be in gold and Rs. 85 cr must be FOREX Reserves**.
- Emblem of RBI: **Panther and Palm Tree.**
- Initially the headquarter of RBI **was in Calcutta (Now Kolkata) but in 1937 it was permanently moved to Mumbai**, Maharashtra.
- The Reserve Bank of India has 19 regional offices, most of them in state capitals and 9 Sub-offices
- The Executive head of RBI is known as **Governor**.
- The governor is associated by **Four Deputy Governors**.
- The bank has also two training colleges for its officers, viz. Reserve Bank
- Staff College at Chennai and College of Agricultural Banking at Pune.
- RBI is a member bank of the Asian Clearing Union.
- Chintaman Dwarkanath Deshmukh**(C D Deshmukh) was the governor**of RBI at the Time of nationalization of RBI in 1949.
- C.D.Deshmukh, then Governor of RBI, represented India at the BrettonWoods negotiations in 1944.
- **1st women Deputy Governor of RBI -K.J.Udeshi.**
- RBI prints currency in **15 Languages.**
- RBI is a member of IMF (International Monetary Fund).
- At present there are **total 21 bank in the second schedule** of Reserve Bank of India Act, 1934.

Quantitative Measures and Qualitative Measures

A] Quantitative Measures :

The quantitative measures of credit control are as follows:

Bank Rate Policy

Bank Rate is the rate at which central bank of the country (in India it is RBI) allows finance to commercial banks.

Bank Rate is a tool, which central bank uses for short-term purposes.

Any **upward revision in Bank Rate by central bank is an indication that banks should also increase deposit rates as well as Base Rate / Benchmark Prime Lending Rate**.

Thus any revision in the Bank rate indicates that it is likely that interest rates on your deposits are likely to either go up or go down, and it can also indicate an increase or decrease in your EMI.

What is Bank Rate ? (For Non Bankers) :

This is the rate at which central bank (RBI) lends money to other banks or financial institutions.**If the bank rate goes up, long-term interest rates also tend to move up, and vice-versa.** Thus, it can said that in case bank rate is hiked, in all likelihood banks will hikes their own lending rates to ensure that they continue to make profit.

- **Open Market Operations**

  Open Market Operations refer to the purchase and sale of the Government securities (G-Secs) by RBI from / to market. The objective of Open Market Operations is to adjust the rupee liquidity conditions in the economy on a durable basis. When RBI sells government security in the markets, the banks purchase them. **When the banks purchase Government securities, they have a reduced ability to lend to the industrial houses or other commercial sectors. This reduced surplus cash, contracts the rupee**

liquidity and consequently credit creation / credit supply. When RBI purchases the securities, the commercial banks find them with more surplus cash and this would create more credit in the system. Thus, in the case of excess liquidity, RBI resorts to sale of G-secs to suck out rupee from system. Similarly, when there is a liquidity crunch in the economy, RBI buys securities from the market, thereby releasing liquidity. It's worth note here that the market for government securities is not well developed in India but still OMO plays very important role.

- **Cash Reserve Ratio (CRR)**

  The Reserve Bank of India (Amendment) Bill, 2006 has been enacted and has come into force with its gazette notification. Consequent upon amendment to sub-Section 42(1), the Reserve Bank, having regard to the needs of securing the monetary stability in the country, RBI can prescribe Cash Reserve Ratio (CRR) for scheduled banks without any floor rate or ceiling rate. [Before the enactment of this amendment, in terms of **Section 42(1) of the RBI Act, the Reserve Bank could prescribe CRR for scheduled banks between 3 per cent and 20 per cent of total of their demand and time liabilities].RBI uses CRR either to drain excess liquidity or to release funds needed for the growth of the economy from time to time. Increase in CRR means that banks have less funds available and money is sucked out of circulation.**

  Thus we can say that this serves duel purposes i.e.(a) ensures that a portion of bank deposits is kept with RBI and is totally risk-free, (b) enables RBI to control liquidity in the system, and thereby, inflation by tying the hands of the banks in lending money.

- **Statutory Liquidity Ratio (SLR)**

  Every bank is required to maintain at the close of business every day, a minimum proportion of their Net Demand and Time Liabilities as liquid assets in the form of cash, gold and un-encumbered approved securities. The ratio of liquid assets to demand and time liabilities is known as Statutory Liquidity Ratio (SLR**).RBI is empowered to increase this ratio up to 40%.An increase in SLR also restrict the bank's leverage position to pump more money into the economy.**

- **What is SLR ? (For Non Bankers)**:

  SLR stands for Statutory Liquidity Ratio. This term is used by bankers and indicates the minimum percentage of deposits that **the bank has to maintain in form of gold, cash or other approved securities**. Thus, we can say that it is ratio of cash and some other approved securities to liabilities (deposits) It regulates the credit growth in India.

B]Qualitative Measures

Qualitative measures are used by the RBI for selective purposes. Some of them are

- **Margin requirements**

  This refers to difference between the securities offered and amount borrowed by the banks.

- **Consumer Credit Regulation**

  This refers to issuing rules regarding down payments and maximum maturities of installment credit for purchase of goods. Consumer credit is a debt that a person incurs when purchasing a good or service**. Consumer credit includes purchases obtained with credit cards, lines of credit and some loans. Consumer credit is also known as consumer debt.**

  RBI Guidelines

  RBI issues oral, written statements, appeals, guidelines, warnings etc to the banks.

- **Rationing of credit**

  The RBI controls the Credit granted / allocated by commercial banks.

Credit rationing refers to the situation where lenders limit the supply of additional credit to borrowers who demand funds, even if the latter are willing to pay higher interest rates. **It is an example of market imperfection, or market failure, as the price mechanism fails to bring about equilibrium in the market**.

- **Moral Suasion**

  Psychological means and informal means of selective credit control.
  A moral suasion is a persuasion tactic used by an authority (i.e. Federal Reserve Board) to influence and pressure, but not force, banks into adhering to policy.
  Tactics used are closed-door meetings with bank directors, increased severity of inspections, appeals to community spirit, or vague threats.

- **Direct Action**

  This step is taken by the RBI against banks that don't fulfill conditions and requirements. **RBI may refuse to rediscount their papers or may give excess credits or charge a penal rate of interest over and above the Bank rate, for credit demanded beyond a limit**.

RBI has recently given permission toPayment Banks and Small Finance Banks

- **Payment Banks and Small Finance Banks**

Payment banks

Reserve Bank of India (RBI) released guidelines for Licensing of Payments Banks. These guidelines will allow mobile firms and supermarket chains, among others, to enter the banking arena to cater to individuals and small businesses. **The objectives of payments banks will be to further financial inclusion by providing small savings accounts and payments or remittance services to migrant labor workforce**, low income households, small businesses, other unorganized sector entities and other users.

- **Small Banks**

The Reserve Bank of India issued Guidelines for Licensing of Small Finance Banks in the Private Sector. As per the issued guidelines**, the minimum paid-up equity capital for small finance banks shall be 100 corer rupees**. But the licenses will be granted after the applicants fulfill the necessary 'fit and proper' criteria, among other conditions with a sound track record of professional experience or of running their businesses for at least a period of five years. Those interested, would need to apply before 16 January 2015 for first round of such permits. These norms for payment banks and small finance banks would allow mobile firms and supermarket chains, among others, to enter the banking arena to cater to individuals and small businesses. The move aims at deepening financial inclusion and boost saving habits.

GOING FURTHER AFIELD

While some services offered by payments banks and small finance banks will be similar, there are some key differences. Here is a look at what they will offer.

PAYMENTS BANK	SMALL FINANCE BANK
Can accept deposits, but only up to ₹1 lakh per individual customer	Allowed to take deposits of any amount
Can't lend in any form	Can lend but the focus will be on small lending
Can open small savings accounts	Can finance small business units, small and marginal farmers, micro and small industries and unorganised sector entities
Can provide remittance services	Can provide remittances as well as credit cards
Allowed to issue automated teller machine (ATM) or debit cards	Allowed to issue ATM or debit cards
Not allowed to issue credit cards	Has to ensure that 50% of loan portfolio constitutes advances of up to ₹25 lakh
Can distribute products such as mutual funds, insurance and third-party loans	Can distribute financial products such as mutual funds, insurance and pension

3. State Bank Of India

State Bank of India (SBI) is a multinational banking and financial services company based in India. **It is a government-owned corporation with its headquarters in Mumbai, Maharashtra**. SBI is the largest banking and financial services company in India by assets.

Headquarters : Mumbai, Maharashtra, India
Key person : (Chairman)- Rajnish Kumar
(Assumed office from 7 October 2017)
Preceded by -Arundhati Bhattacharya

- **History**

1]The roots of the State Bank of India lie in the first decade of the 18th century, when the Bank of Calcutta**, later renamed the Bank of Bengal, was established on 2 June 1806.**

2] The Bank of Bengal was one of three Presidency banks, the other two being the Bank of Bombay (incorporated on 15 April 1840) and the Bank of Madras (incorporated on 1 July 1843).

3]All three Presidency banks were incorporated as joint stock companies and were the result of royal charters.

4]These three banks received the exclusive right to issue paper currency till 1861 when, with the Paper Currency Act, the right was taken over by the Government of India.

5]The Presidency banks amalgamated on 27 January 1921, and the re-organized banking entity took as its name Imperial Bank of India.

6] The Imperial Bank of India remained a joint stock company but without Government participation. Pursuant to the provisions of the State Bank of India Act of 1955, the Reserve Bank of India, which is India's central bank, acquired a controlling interest in the Imperial Bank of India.
7] On 1 July 1955, the Imperial Bank of India became the State Bank of India.

8] In 2008, the government of India acquired the Reserve Bank of India's stake in SBI so as to remove any conflict of interest because the RBI is the country's banking regulatory authority.

9] **On October 7, 2013, Arundhati Bhattacharya became the first woman to be appointed Chairperson of the bank.**

- **Important points of SBI**
  - Imperial Bank of India acted as central bank of our country from 1921 to 1935.Imperial Bank of India was nationalized and renamed as "State Bank of India" in 1955.
  - **First Chairman-A. D. Gorwala**.
  - **SBIhas7 Subsidiaries**(SBI Ground)
    They are : State Bank of Hyderabad, Mysore, Indore, Patiala, Saurashtra, Travancore, Bikaner & Jaipur. All these were formed in 1959.
  - The total number of associate banks of SBI currently working in the country is – **Five SBI is the largest commercial bank of India SBI launched a New Scheme "Parvartan" to attract more customers by rendering better services.**
  - SBI has introduced the Tiny- Card with biometric identification to achieve Financial Inclusion.

- Tiny-Card provides easy banking services for under privileged communities.
- **First Bank to introduce Mutual Fund :State Bank of India**
- **SBI Launches Digital banking facilities for its customers.**
- **Tab Banking for Savings A/C** :Opening Savings A/C at Customer's door step using tablet PC provided to the Bank's Sales Staff (who visit the Customer's Home).
- **TAB Banking for Home Loan**: In principle approval for the home loan at customer's door step using tablet PC provided to the Bank's Home Loan Sales Team which will capture on the tablet KYC details.
- **SBI & Associated Banks :**

Name of the Bank Head Office Established Year

1] State Bank of Hyderabad - Hyderabad - 1941
2] State Bank of Mysore -Bangalore - 1913
3] State Bank of Travancore - Trivendram- 1945
4] State Bank of Patiala -Patiyala- 1917
5] State Bank of Jaipur & Bikaner- Jaipur–1963

In 2008 the State Bank of Sourashtra merged with SBI.
In 2010 the above State Bank of Indore also merged with SBI.

In the year 2017, five Subsidiaries of SBI and Bhartiya Mahila Bank – **19th Nov 2013** were Merged with the SBI.

Slogans of SBI :

- **With you all the way**
- **Pure Banking nothing else**
- **The banker to every Indian**
- **The Nation Banks on us**

4.Public and private sector Banks

❖ Public sector Banks

1] Allahabad Bank

- Allahabad Bank is nationalized bank with its headquarters in Kolkata, India.
- It is the oldest joint stock bank in India.
- On 24 April 2014, the bank entered into its 150th year of establishment.
- It was founded in Allahabad in 1865.
- **Usha Ananthasubramanian** (MD & CEO) is the Chairman & Managing Director of the bank.
- Nationalization -1969
- Tagline – **Tradition of trust**
- The bank has a branch in Hong Kong and a representative office in Shenzen

2] Andhra Bank

- Andhra Bank is a medium-sized public sector bank (PSB), with a network of 2000+ branches, 15 extension counters, 38 satellite offices and 1563 automated teller machines (ATMs) as on 30 Nov 2016 .
- Dr. Bhogaraju Pattabhi Sitaramayya founded Andhra Bank in 1923 in Machilipatnam, Andhra Pradesh.
- The bank was registered on 20 November 1923 and commenced business on 28 November 1923
- **Andhra Bank is a pioneer of introducing credit cards in the country in 1981**.
- The Government of India owns 58% of its share capital and is going to increase it to 62.14% by infusing 2 billion (US$34 million) in capital. The state owned Life Insurance Corporation of India holds 10% of the shares. The bank has done a total business of 2230 billion (US$37 billion) for the fiscal year ended 31 March 2016.
- Nationalization **-1980**
- Headquarter – **Hyderabad**
- Key person – **Suresh .N. Patel**
- Tagline **– Much more to do with "you'' in focus**

3] Bank of Baroda

- **Bank of Baroda (BoB) is an Indian state-owned banking and financial services company headquartered in Vadodara**
  (earlier known as Baroda) **in Gujarat, India.**
- It is the second-largest bank in India, after State Bank of India, and offers a range of banking products and financial services to corporate and retail customers through its branches and through its specialized subsidiaries and affiliates.
- BOB was founded by the Maharaja of Baroda sir Sayajirao Gaikwad on 20 july 1908 .
- Nationalization**-1969**
- Corporate Head office – **Bandra-kurla complex in Mumbai**
- Tagline **– India's international bank**
- Key person – **P.S. Jayakumar**
- In 2010, Malaysia awarded a commercial banking license to a locally incorporated bank to be jointly owned by Bank of Baroda, Indian Overseas Bank and Andhra Bank.
- In 2010, BoB also opened a branch in **New Zealand.**

- In 2011, BoB opened an Electronic Banking Service Unit (EBSU) was opened at Hamriya Free Zone, Sharjah (UAE).
- It also opened **four new branches** in existing operations in **Uganda, Kenya (2), and Guyana.**
- BoB closed its representative office in Malaysia in anticipation of the opening of its consortium bank there.
- The Malaysian consortium bank, India International Bank Malaysia (IIBM), finally opened in Kuala Lumpur, which has a large population of Indians.
- BOB owns 40%, Andhra Bank owns 25%, and IOB the remaining 35% of the share capital. IIBM seeks to open five branches within its first year of operations in Malaysia, and intends to grow to 15 branches within the next three years.

4] Bank of India

- BOI is a founder member of SWIFT (society for worldwide inter bank financial telecommunications) which facilitates provision of cost effective financial processing and communication services.
- The Bank completed its first one hundred years of operations on 7 sep2006 .
- Nationalization – 1969
- Establishing year – 1906
- Key person – **Dinabandhu Mohapatra**
- (MD & CEO)Headquarter – Mumbai
- Tagline **– Relationships beyond banking .**
- BOI 1st Indian bank to open branch outside India , i.e. London in 1946
- BOI has become loan of $ 200 million to Air India to finance purchase of Boeing 787 Aircraft
- BOI launched Instant Money Transfer scheme in Mumbai
- **Note – ITM scheme allows customers to withdraw cash without using either debit or credit card**

5] Bank of Maharashtra

- Bank of Maharashtra is a major public sector bank in India
- Government of India holds 85.21% of the total shares. The bank has 15 million customers across the length and breadth of the country served through more than 1825 branches.
- It has largest network of branches by any public sector bank in the state of Maharashtra
- The bank was founded by V.G. Kale and D.K. Sathe
- Establishment year -**1935**
- Headquarter – **Pune**
- Nationalization – 1969
- Key person –**Ravindra Marathe**
- Tagline - **One Family One Bank**

6] BhartiyaMahila Bank

- India's former Prime Minister Manmohan Singh inaugurated B M B on 19th Nov 2013 on the occasion of **94th birth anniversary of Indira Gandhi**.
- In India, only 26% of women have an account with a formal financial institution, compared with 46% of men. That means an account in either a bank, a credit union, a co-operative, post office or a microfinance institution, according to a study by the World Bank. Also, for women, per capita credit is 80 per cent lower than males.

- The bank will also place emphasis on funding for skills developments to help in economic activity. Moreover, the products will be designed in a manner to give a slight concession on loan rates to women
- B M B allows deposits to flow from everyone, but lending will be predominantly for women's.

- First Chairman & managing director of BMB – **Usha Ananthasubramaniam**
- After her resignation this post is vacant at present the key person is **S.M. Swathi** executive director of BMB
- Tagline – **Empowering women empowering India.**
- The bank will also place emphasis on funding for skills developments to help in economic activity. Moreover, the products will be designed in a manner to give a slight concession on loan rates to women

7] Canara Bank

- Canara Bank is an Indian state-owned bank headquartered in Bangalore, Karnataka.
- It was established in 1906, making it one of the oldest banks in the country
- The bank was nationalized in 1969. As of February 2014.
- The bank had a network of 4600 branches and more than 5500 ATMs spread across India.
- The bank also has offices abroad in London, Hong Kong, Moscow, Shanghai, Doha, and Dubai
- Key Person – **Rakesh Sharma**
- Tagline –**Together we can**
- **Ammembal Subbarao Pai founder** of canara Bank
- Canara Bank names cricketer **Shikhar Dhawan** as its Brand ambassador
- **First Indian bank got ISO certification**

8] Central Bank of India –

- Central Bank of India, a government-owned bank, is one of the oldest and largest commercial banks in India.
- **It is Headquarter in Mumbai.**
- It was established by sir Sorabji Pochkhanawala with sir Pherozeshah Mehta as chairman.
- The bank has 4600 branches and 4 extension counters across 27 Indian states and three Union Territories.
- At present, Central Bank of India has overseas office at Nairobi, Hong Kong and a joint venture with Bank of India, Bank of Baroda, and the Zambian government.
- It Claims to have been first commercial Indian bank completely owned and managed by Indians
- Establishment – **1911**
- Nationalization– **1969**
- Key Person – **Rajeev Rishi**
- Tagline – **Build a better life around us**
- **CBI –** first public sector bank to introduce credit card
- **CBI has sold its entire stake in credit information provider CIBIL to TransUnion**
- **International Inc. Central bank had a 5% stake in CIBIL while TransUnion's share is 27.5%.**

9] Corporation Bank

- Corporation Bank is a public sector banking company
- Its headquarter is in Mangalore, India.
- The bank has pan-India presence with 8,000 functional units comprising 2,440 branches, 3,040 ATMs and 4,724 branchless banking units as of 31 March 2016.

- Establishment – 1906
- Nationalization – 1980
- Key Person –**Jai Kumar Garg**
- Tagline –**Prosperity for all**
- **Corporation bank has bagged the award for lending to MSE (Micro &small Enterprises) and to Micro enterprises from the union ministry of micro ,small and medium enterprises (MSME)**

10] Dena Bank

- Dena Bank is one of the earliest banks in India
- **Its headquarter is in Mumbai**.
- Dena Bank was founded on 26 May 1938, by the family of Devkaran Nanjee under the name Devkaran Nanjee Banking Company Ltd.
- It became a Public Limited Company in December 1939 and later the name was changed to Dena Bank Ltd. It has a network of over 1400 branches.
- The logo of Dena Bank depicts Goddess Lakshmi, the Goddess of Wealth, according to Hindu mythology. The 'D' in the logo reflects the dynamism, dedication and the drive towards customer satisfaction.
- Nationalization – 1969
- Key person – **Ramesh S singh**
- Tagline - **Your trusted family bank**

11] IDBI Bank

- **IDBI (Industrial Development Bank of India)** is an Indian financial service company **headquartered in Mumbai,** India.
- RBI has categorized IDBI as an "other public sector bank". It was **established in 1964** by an Act of Parliament to provide credit and other facilities for the development of the fledgling Indian industry.
- It is **currently 10th largest development bank** in the world in terms of reach with 3817ATMs, 1995 branches including one overseas branch at DIFC, Dubai and 1382 centers including two overseas centers at Singapore & Beijing.
- IDBI Bank is on a par with nationalized banks and the SBI Group as far as government ownership is concerned. It is one among the 26 commercial banks owned by the Government of India
- Key Person – **Mahesh Kumar Jain (MD & CEO)**
- Tagline – **Aao sochein bada**
- IDBI Bank has recently announced that it had entered into an agreement with ficci under which it would finance the industry lobby's small business members .

12] Indian Bank

- **Indian Bank is an Indian state-owned financial services company**
- It has 22,000 employees, 2100 branches and is one of the big public sector banks of India.
- It has overseas branches in **Colombo, Jaffna, Sri Lanka, Singapore, and 229 correspondent banks in 69 countries**.
- Since 1969 the Government of India has owned the bank, which celebrated its centenary in 2007.
- Establishment – 1907
- Nationalization - 1969
- Headquarter - Chennai
- Key person – **Kishore kumar Kharat**
- Tagline – **Taking banking technology to common man**
- Indian bank has bagged national award for excellence in

lending micro enterprises for consecutive second year

13] Indian overseas Bank –

- **Indian Overseas Bank (IOB) (BSE: 532388) is a major bank based in Chennai (Madras**), with about 3400 domestic branches, 3 extension counters and six branches overseas as of 31 March 2016.
- Indian Overseas Bank has an ISO certified in-house Information Technology department, which has developed the software that 3257 branches use to provide online banking to customers; the bank has achieved 100% networking status as well as 100% CBS status for its 3350 branches. I
- OB also has a network of about 3300 ATMs all over India and IOB's International VISA Debit Card is accepted at all ATMs belonging to the Cash Tree and NFS networks.
- IOB offers internet Banking (E-See Banking) & Mobile Banking and is one of the banks that the Govt. of India has approved for online payment of taxes.
- The bank's business more than doubled in the last four years.
- Establishment – **1937**
- Nationalization – **1969**
- Key person – **R. Subramania kumar**
- Tagline – **Good people to grow with**
- Indian overseas Bank launched "Connect card ", a new ATM cum Debit card in association with VISA that can be used for e-commerce across five lakh merchant outlets .
- **IOB has become the first bank to commence the sale of Indian Gold coin (IGC) in the domestic market.**

14] Oriental Bank of Commerce –

- Oriental Bank of Commerce is an **India-based bank established in Lahore (then a city of British India, and currently in Pakistan), is one of the public sector banks in India**
- Oriental Bank of Commerce made a beginning under its Founding Father, Late Ra iBahadur Lala Sohan Lal, the first Chairman of the Bank
- Establishment – 1943
- Nationalization – 1980
- Headquarter – New Dehli
- Key person – **Mukesh kumar**
- Tagline – **Where every individual is committed**
- **OBC become the first bank which introduces the e-KYC (electronick now your customer) facility**

15] Punjab and Sind Bank

- **Punjab & Sind Bank (P&SB) is a major Public Sector bank in Northern India and working 100% on CBS platform.**
- The banks government shareholding is 79.62%. Of its 1466 branches and 800 ATM spread throughout India, 623 Branches are in Punjab state.
- The bank's corporate headquarters is in New Delhi. Its net profit is 339 crores and net NPA is 2.14% for the year ending 2012-13.
- The banks net profit for the quarter ending June 2013 is 122 crores. Total business of the bank is 1,42,000 crores. Business per employee is 14 crore& business per branch is 108 crores.
- Establishment – **1908**
- Nationalization–**1969**
- Headquarter – Delhi

- Key person – **S.charan Singh**
- Tagline – **Where service is a way of life.**

16] Punjab National Bank –

- **Punjab National Bank (PNB) is an Indian financial services company based in New Delhi, India. Founded in 1895,**
- The bank has over 6,937 branches and over 10,681 ATMs across 764 cities. It serves over 80 million customers
- Nationalization -1969
- Founded - 1894

- Headquarter – **Delhi**
- Tagline – **The name you can bank upon**
- PNB is the first Indian bank started solely with Indian capital investment
- Founder of PNB is **Dyal singh majithi**
- Key person – **Sunil Mehta**

17] Syndicate Bank

- Syndicate Bank is one of the oldest and major commercial banks of India.
- It was founded by T M APai, Upendra Pai and Vaman Kudva.
- At the time of its establishment, the bank was known as Canara Industrial and Banking Syndicate Limited.
- The bank, along with 13 major commercial banks of India, was nationalized on 19 July 1969, by the Government of India.
- Establishment – 1925
- Nationalization – 1969
- Headquarter –Manipal
- Key person – **Ajay Manavati**
- Tagline **– Your Faithful and friendly financial partner**
- First RRB named PrathamaGrameen Bank was started by syndicate Bank.

18] UCO bank (United Commercial Bank)

- Uco Bank, formerly United Commercial Bank, established in 1943 in Kolkata, is one of the oldest and major commercial banks of India.
- Ghanshyam Das Birla, an eminent Indian industrialist, during the Quit India movement of 1942, had conceived the idea of organising a commercial bank with Indian capital and management, and the United Commercial Bank Limited was incorporated to give shape to that idea.
- The bank was started with Kolkata as its head office with an issued capital of 2 crores and a paid-up capital of 1 crore.
- Founded- **1943**
- Nationalization – **1969**
- Headquarter – **Kolkata**
- Key person – **Ravi Takkar**
- Tagline - **Honours Your Trust**

19] Union Bank of India

- Union Bank of India (UBI) is one of the largest government-owned banks of India (the government owns 60.13% of its share capital).

- It is listed on the Forbes 2000, and has assets of USD 13.45 billion. All the bank's branches have been networked with its 4129 ATMs.
- Its online Telebanking facility are available to all its Core Banking Customers - individual as well as corporate.
- It has representative offices in Abu Dhabi, United Arab Emirates, Beijing, Peoples Republic of China, London, Shanghai, and Sydney, and a branch in Hong Kong.
- Establishment – 1919
- Nationalization–1969
- Headquarter – Mumbai
- Key person – **Rajkiran Rai**
- Tagline – **Good people to bank with**
- Indias first " Talking " Automated Teller Machine (ATM)launched by UBI for visually impaired ,was launched in Ahmedabad.

20] United Bank of India

- United Bank of India (UBI) is a state-owned financial services company headquartered in Kolkata, West Bengal, India.
- Presently the bank has a three-tier organizational setup consisting of its Head office in Kolkata, 36 Regional offices and 2054 branches spread all over India.
- However, its major presence is in eastern India. The bank has three full fledged overseas branches, one each at Kolkata, New Delhi and Mumbai. United Bank of India now aims to expand its international activities
- Establishment – 1950
- Nationalization – 1969
- UBI was the result of merger in 1950 of four Bengali Banks, Comilla Union Bank, Comilla Banking Corporation, Bengal central Bank , Hoogly Bank
- Tagline – **The Bank that begins with "U"**
- Key person –**Pawan .K . Bajaj**

21] Vijaya Bank

- Vijaya Bank is a medium sized Public Sector Bank with presence across India. It is one of the nationalized banks in India.
- Establishment – 1931
- Nationalization – 1980
- Headquarter – Bangalore
- Key person – **R. A. SANKARA NARAYANAN**
- Tagline – **A friend You can bank upon**
- Vijaya Bank was established by shri Attavar Balakrishna Shetty at Mangalore.
- It was established on Vijaya dashami Day , that's why it was named ' Vijaya Bank '.
- The bank became a scheduled bank in 1958. Vijaya Bank steadily grew into a large All India bank, with nine smaller banks merging with it during 1963-68. The bank was nationalized on April 15, 198

Private Sector Banks

1] Axis Bank

- Establishment – 1993 AS UTI BANK – With Effect from 30 jully 2007 UTI Bank changed irts name to AXIS BANK
- Axis Bank limited (formerly UTI Bank) is the third largest private sector bank in India.
- Headquarter – **Mumbai**
- Promoters – Unit trust India, Life Insurance Corporation of India, General Insurance Corporation ltd who collectively hold 34% share .
- Axis bank forayed into Urban Microfinance Segment & will now provide collateral free Credit facilities to low income women groups. The urban micro lending initiative 'Axis sahyog 'was launched .
- **India's first internationally listed Certified Green Bond to finance climate change solutions around the world at London Stock Exchange**
- Axis bank has launched **"Asha Home Loan", a 30 year home loan product for first time home buyers in the lower income segment based on the family income .**
- Axis bank has been featured in Forbes Asia's FAB 50 list of 2014.
- Key person – **shikha sharma**
- Tagline – **Badhti ka nam zindegi.**

2] ICICI Bank –

- Industrial Credit and Investment Corporation of India Bank
- Headquarter – Mumbai
- Establishment – 1994
- Key person –**Chanda kochhar**
- ICICI bank is one of the big four banks in India , along with State Bank of India ,Punjab National Bank & Bank of Baroda .
- In 2000 ICICI bank become the first Indian bank to list on the Newyork Stock Exchange with its five million American depository shares issue generating a demand book 13 times the offer size.
- ICICI is the first bank to provide Mobile ATM
- First bank to Introduce Internet banking
- Largest private sector bank in India.
- **ICICI bank was established in 1994 by the Industrial Credit and Investment Corporation Of India an Indian financial institution which was established in 1955 .ICICI prudential Mutual fund has bagged Moring star India's best fund house award in the debt , equity &malty asset category .**
- ICICI offers cordless cash withdrawal at ATM's .
- ICICI has introduced an equated monthly installment (EMI) option for its customers on debit card purchases .
- Tagline **– Hum haina**

3] Yes Bank

- Established by late Ashok Kapur and RanaKapoor in 2004
- Headquarter – Mumbai
- Key person – **Rana Kapoor**
- Tagline – **Experience Our expertise**
- India's fifth largest private sector lender Yes Bank has received a custodian of securities license from the regulator SEBI to allows the entity to offer custodial services to financial market , participants , including FII & FPI .
- **Axis bank launched an all women operated bank branch "yas Grace " on Cunningham road aimed at offering customized banking solutions to women** .
- Axis bank received the prestigious Green Bond pioneers in the Emerging Marketing India.

4] HDFC Bank

- Housing Development Financing Corporation
- Establishment – 1994
- Headquarter – Mumbai
- Key person – **Aditya Puri**
- Tagline **– We understand your world**
- HDFC bank is the largest bank in India by Market capitalization as of 24th feb 2014
- **HDFC bank has launched mobile Accounts in association with Vodafone's m-paisa**
- HDFC bank is the first bank to **introduce ATM in India in 1987 mumbai**.
- HDFC bank recently launched a product of personal loan called 'SWIFT'
- It has launched premium credit cards exclusively for women.
- HDFC has launched an SME Bank which will provide full-fledge digital banking service to small & medium sector enterprises.
- HDFC ranked among the world's ten biggest & most powerful companies in the consumer financial services sector on a forbs list topped by global major American Express. Ranked 7th HDFC is the only Indian company in top ten in this category.

5] Federal Bank

- It is the fourth largest bank in India in terms of capital.
- Headquarter – Kochi (kerala)
- Establishment – 1945
- Key person **– Shyam Srinivasan**
- Tagline – **Your perfect banking partner**

5.Regional Rural Banks

- **Introduction :**

Regional Rural Banks are the banking organizations being operated in different states of India. They have been created to serve the rural areas with banking and financial services. However, RRB's may have branches set up for urban operations and their area of operation may include urban areas too.

- **Functions :**

The main purpose of RRB's is to mobilize financial resources from rural / semi-urban areas and grant loans and advances mostly to small and marginal farmers, agricultural laborers and rural artisans. The area of operation of RRBs is limited to the area as notified by Government of India covering one or more districts in the State. RRB's also perform a variety of different functions. RRB's perform various functions in following heads. Providing banking facilities to rural and semi-urban areas. Carrying out government operations like disbursement of wages of MGNREGA workers, distribution of pensions etc. Providing Para-Banking facilities like locker facilities, debit and credit cards.

History :

- Regional Rural Banks were established under the provisions of an Ordinance passed on 26 September 1975 and the RRB Act.
  1976 to provide sufficient banking and credit facility for agriculture and other rural sectors.
- These were set up on the **recommendations of The Narasimham Working Group during the tenure of Indira Gandhi's government with a view to include rural areas into economic mainstream since that time about 70% of the Indian Population was of Rural Orientation.**

- The development process of RRBs started on 2 October 1975 with the forming the first RRB, the Prathama Bank.
- Also on **2 October 1976 five regional rural banks were set up on with a total authorized capital of Rs. 100 corer** ($ 10 Million) which later augmented to 500 corer ($ 50 Million).
- There were five commercial banks, Punjab National Bank, State Bank of India, Syndicate Bank, United Bank of India and United Commercial Bank, which sponsored the regional rural banks**.**
- Earlier Reserve Bank of India had laid down ceilings on the rate of interest to be charged by these RRBs.
- However from August 1996 the RRBs have been granted freedom to fix rates of interest, which is usually in the range of 14-18% for advances.

- **Recapitalization of Regional Rural Banks (RRBs) :**
- Subsequent to review of the financial status of RRBs by the Union Finance Minister in August, 2009, it was felt that a large number of RRBs had a low Capital to Risk weighted Assets Ratio (CRAR).
- **A committee was there-fore constituted in September, 2009 under the Chairmanship of K C Chakrabarty, Deputy Governor, RBI to analyze the financials of the RRBs and to suggest measures including re-capitalization to bring the CRAR of RRBs to at least 9% in a sustainable manner by 2012.**
- The Committee submitted its report in May, 2010.

- **The following points were recommended by the committee:**
- RRBs to have CRAR of at least 7% as on 31 March 2011 and at least 9% from 31 March 2012 onwards.
- Re capitalization requirement of Rs. 2,200.00 corer for 40 of the 82 RRBs.This amount is to be released in' two installments in 2010-11 and 2011-12.The remaining 42 RRBs will not require any capital and will be able to maintain CRAR of at least 9% ifs on **31 st March 2012 and thereafter on their own.**
- A fund of Rs. 100 crore to be set up for training and capacity building of the RRB staff.
- The Government of India recently approved the recapitalization of Regional Rural Banks (RRBs) to improve their Capital to Risk Weighted
  Assets Ratio CRAR) in the following manner: Share of Central Government i.e. Rs.1, 100 crore will be released as per provisions made by the Department of Expenditure in 2010-11 and 2011-12.However, release of Government of India share will be contingent on proportionate release of State Government and Sponsor Bank share.
- A capacity building fund with a corpus of Rs.100 crore to be set up by Central Government with NABARD for training and capacity building of the RRB staff in the institution of NABARD and other reputed institutions.
- The functioning of the Fund will be periodically reviewed by the Central Government. An Action Plan will be prepared by NABARD in this regard and sent to Government for approval. Additional amount of Rs. 700 corer as contingency fund to meet the requirement of the weak RRBs, particularly those in the North Eastern. and Eastern Region, the necessary provision will be made in the Budget as and when the need arises.

6. Co-operative Banks

- **Introduction** :

A co-operative bank is a financial entity which belongs to its members, who are at the same time the owners and the customers of their bank. Co-operative banks are often created by persons belonging to the same local or professional community or sharing a common interest**. Co-operative banks generally provide their members with a wide range of banking and financial services (loans, deposits, banking accounts etc.).Co-operative banks differ from stockholder banks by their organization, their goals, their values and their governance.** In most countries, they are supervised and controlled by banking authorities and have to respect prudential banking regulations, which put them at a level playing field with stockholder banks.

- **The co-operative banking structure in India is divided into following main 5categories :**

1] Primary Urban Co-operative Banks :

- ✓ Primary Cooperative Banks, popularly known as Urban Cooperative Banks (UCBs) are registered as cooperative societies under the provisions of, either **the State Cooperative Societies Actof the State concerned or the Multi State Cooperative Societies Act, 2002.**
- ✓ The term Urban Co-operative Banks (UCBs), though not formally defined, refers to primary cooperative banks located in urban and semi-urban areas. These banks, till 1996, were allowed to lend money only for non-agricultural purposes. This distinction does not hold today. These banks were traditionally centered on communities, localities work place groups.
- ✓ They essentially lent to small borrowers and businesses. Today, their scope of operations has widened considerably.
- ✓ The origins of the urban cooperative banking movement in India can be traced to the close of nineteenth century when, inspired by the success of the experiments related to the cooperative movement in
  Britain and the cooperative credit movement in Germany such societies were set up in India.
- ✓ Cooperative societies are based on the principles of cooperation, - mutual help, democratic decision making and open membership. Cooperatives represented a new and alternative approach to organization as against proprietary firms, partnership firms and joint stock companies which represent the dominant form of commercial organization

2] Primary Agriculture Credit Societies :

- ✓ The Primary Co-operative Credit Society is an association of borrowers and non-borrowers residing in a particular locality.
- ✓ **The funds of the society are derived from the share capital and deposits of members and loans from central co-operative banks.**
- ✓ The borrowing powers of the members as well as of the society are fixed.
- ✓ The loans are given to members for the purchase of cattle, fodder, fertilizers, pesticides, implements, etc.

3] District Central Co-operative Banks :

- ✓ These are the federations of primary credit societies in a district and are of two types – those having a membership of primary societies only and those having a membership of societies as well as individuals.

- ✓ **The funds of the bank consists of share capital, deposits, loans and overdrafts from state co-operative banks and joint stocks.**
- ✓ These banks finance member societies within the limits of the borrowing capacity of societies.
- ✓ They also conduct all the business of a joint stock bank.

4] State Co-operative Banks

- ✓ The state co-operative bank is a federation of central co-operative bank and acts as a watchdog of the co-operative banking structure in the state
- ✓ **Its funds are obtained from share capital, deposits, loans and overdrafts from the Reserve Bank of India.**
- ✓ The state co-operative banks lend money to central co-operative banks and primary societies and not directly to farmers.

5] Land Development Banks :

- ✓ The land development banks are organized in 3 tiers namely, state, central and primary level and they meet the long term credit requirements of the farmers for developmental purposes.
- ✓ **The state land development bank overseas the primary land development banks situated in the districts and tehsils in the state.**
- ✓ **They are governed both by the state government and Reserve Bank of India.**
- ✓ Recently, the supervision of land development banks has been assumed by National Bank for Agriculture and Rural Development (NABARD).
- ✓ The sources of funds for these banks are the debentures subscribed by both central and state government.
- ✓ These banks do not accept deposits from the general public.

7. Foreign Banks

Foreign Banks :

A foreign bank is a bank with head office outside the country in which it is located. Major foreign banks in India are:

1] ABN-AMRO Bank :

- The history of ABN Amro Bank dates back to the year 1924, when King Williem – I issued a Royal Decree declaring the establishment of the **Nederlandsche Handel-Maatschappij (Netherlands Trading Society, NTS).**
- The NTS had been established with an aim to promote the trade between the Netherlands and the Dutch East Indies.

2] Abu Dhabi Commercial Bank :

- Abu Dhabi Commercial Bank (ADCB) is one of the most prominent nationalized banks of the United Arab Emirates (UAE).

- **Three different banks viz. the Khalij Commercial Bank, the Emirates Commercial Bank and the Federal Commercial Bank merged in the month of July 1985**, leading to the incorporation of the Abu Dhabi Commercial Bank.

3] Citibank :

Citibank is one of the largest banks in the U.S., and is a part of the financial services company Citigroup. **Citibank had been founded in the year 1812. Initially its name was City Bank of New York,** which was later changed to First National City Bank of New York.

4] Deutsche Bank :

Deutsche Bank, headquartered at Frankfurt in Germany, ranks among the global leaders in corporate banking and securities, transaction banking, asset management, and private wealth management**. It is one the world's leading international financial service providers with roughly EURO 2.2 trillion in assets and approximately 80,000 employee.**

5] HSBC Bank :

HSBC Bank is a subsidiary of HSBC Holdings plc, a London based banking giant which, according to the Forbes magazine, is the **largest banking group in the world**, and the 6th largest company in the world as of April 2009.

6]Standard Chartered Bank

Standard Chartered Bank is a London based bank, currently operational within over 70 nations with more than 1,700 branches and 73,000 strong workforce as of April 2009.**Although the bank is located in Britain, still a huge chunk of its revenues originate from the continents of Asia, Africa and Middle East.**

7].Barclays GRCB :

Barclays GRCB India is led by **Samir Bhatia as its Managing Director**. In a short period of just two and a half years, Barclays GRCB India has placed itself amongst the most respected foreign banks in the country that is serving more than 830,000 clients.

8. Development Institution In India

1] NABARD

NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT

- **National Bank for Agriculture and Rural Development (NABARD) is an apex development bank in India.**
- The Committee to Review Arrangements for Institutional Credit for Agriculture and Rural Development (CRAFICARD) under the Chairmanship of Shri B. Sivaraman, conceived and recommended the establishment of the National Bank for Agriculture and Rural Development (NABARD).
- The Committee to Review Arrangements for Institutional Credit for Agriculture and Rural Development (CRAFICARD) **was set up by the Reserve Bank of India (RBI).**
- **NABARD was established on 12 July 1982 by a special act by the parliament.**
- The main objective behind the set up of NABARD was to **uplift rural India by increasing the credit flow for elevation of agriculture & rural non-farm sector.**
- Government of India **holds 99% stake, in NABARD and currently 1% is held by the RBI.**
- Initially, the RBI held 72.5 per cent of equity in NABARD but in October, 2012 the Reserve Bank of India (RBI) has divested 71.5 per cent stake amounting to Rs 1,430 corer in National Bank for Agriculture and Rural Development (NABARD) in favor of the government.
- **NABARD replaced the Agricultural Credit Department (ACD) and Rural Planning and Credit Cell (RPCC) of Reserve Bank of India, and Agricultural Refinance and Development Corporation (ARDC).**

- **Important Points to Remember about NABARD:**

- ✓ **NABARD Completed its 30 year in 12 July, 2012.**
- ✓ **NABARD announced Rural Innovation award to celebrate it's 30th foundation day.**
- ✓ **Headquarters of NABARD is situated in Mumbai, Maharashtra, India.**
- ✓ The Present Chairman of NABARD is Dr. Harsh Kumar Bhanwala.
- ✓ NABARD is the “Micro Finance Regulatory Authority”.

2] SEBI –Securities and Exchange Board of India

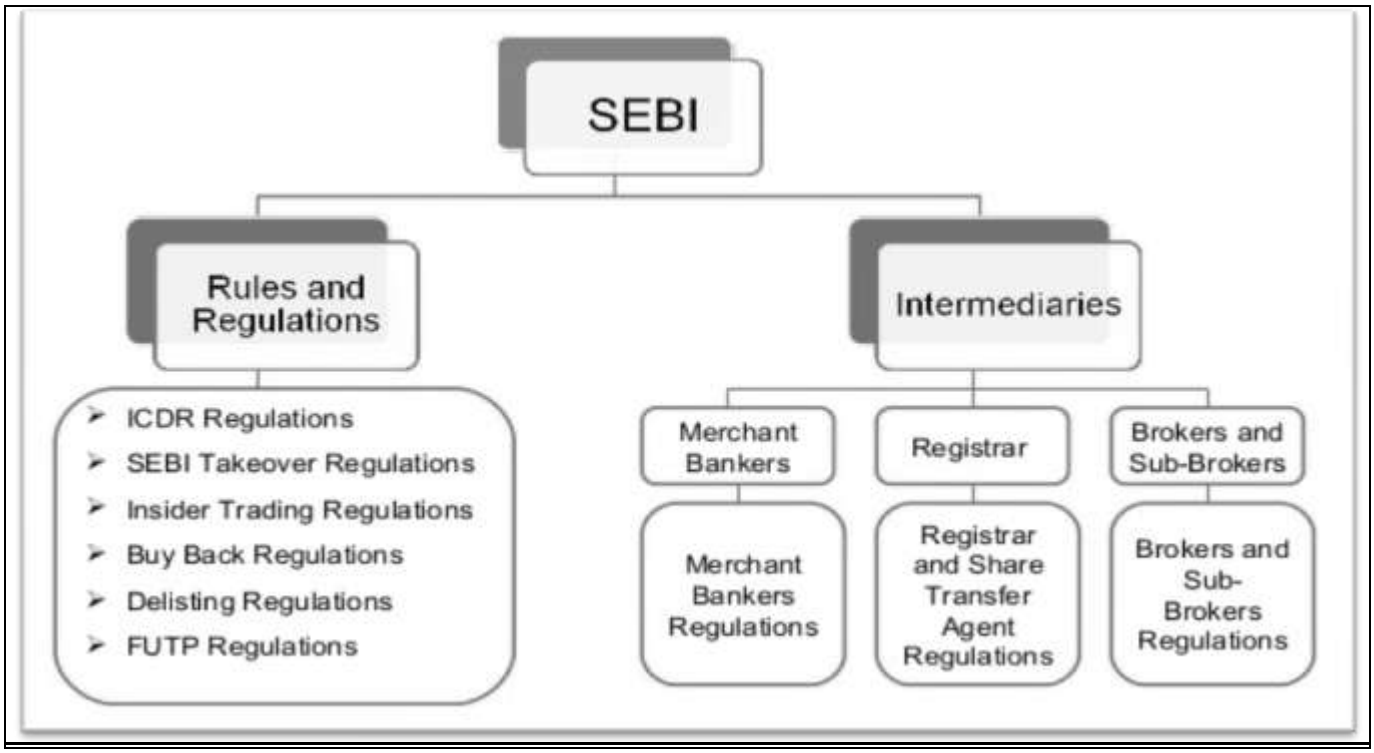
- Securities and Exchange Board of India (SEBI) was established by Government of India through an executive resolution in the year 1988.
- SEBI was subsequently upgraded as a fully autonomous body in 1992 with the passing of the Securities and Exchange Board of India Act (SEBI Act) on 30th January 1992.
- In the year 1995, the SEBI was given additional statutory power by the Government of India through an amendment to the securities and Exchange Board of India Act 1992.

Important Points:

- The headquarter of SEBI is located in the business district of **Bandra-Kurla complex in Mumbai.**
- The Chairman of SEBI Upendra Kumar Sinha (UK Sinha) The Whole Time Member of SEBI- **Prashant Saran**
- The first chairman of SEBI was – **Dr. S. A. Dave**
- SEBI deals with – the issuers of securities, the investors and the market intermediaries.

Basic Objective of SEBI –

- To Promote the interests of investors in securities
- To promote the development of Securities Market
- To regulate the securities market
- Capital market Regulator



3] Export –Import Bank of India (EXIM bank)

- Export-Import Bank of India or EXIM Bank of India is the premier export finance institution of India.
- EXIM Bank was set up in 1982 under the Export-Import Bank of India Act 1981.
- The main objective behind the formation of EXIM bank is to enhance countries exports from India and to integrate the country's foreign trade and investment with the overall economic growth.

Important Points about EXIM Bank:

- Export-Import Bank of India was established on 1982.
- Export-Import Bank of India was set up under the Export-Import Bank of India Act 1981.
- **Headquarters of EXIM Bank is at Mumbai, India**.
- Chairman & MD of EXIM Bank is Yaduvendra Mathur

4] National Housing Bank :

- The National Housing Bank (NHB) is a state owned bank.
- National Housing Bank is a Regulation authority in India.

- National Housing Bank was established on July 8, 1988.
- NHB was established under section 6 of the **National Housing Bank act 1987.**
- **The headquarter of NHB is in New Delhi**.
- The National Housing Bank is owned by the Reserve Bank of India.
- NHB was established to promote private real estate acquisition in India

5] Industrial Finance Corporation Of India (IFCI)

- In 1947, at the of Independence, there was a significant demand for new capital but the Indian Capital Market was relatively under-developed.
- Merchant bankers and underwriting firms were almost nonexistence and commercial banks were not equipped to provide long term industrial finance in any significant manner.
- The Industrial Finance Corporation of India (IFCI) was established on July 1, 1948.
- **IFCI was the first Development Financial Institution (DFI) in India**. IFCI was established to cater to the long-term finance needs of the industrial sector.
- Until the establishment of ICICI and IDBI, The IFCI remained solely responsible for implementation of the government's industrial policy.
- Some of the sector that benefited from IFCI include– **Textiles, paper, sugar, hotels, hospitals, iron and steel, fertilizers, basic chemicals, cement, power generation etc.**

6] Small Industries Development Bank of India (SIDBI)

- Small Industries Development Bank of India **(SIDBI) was established on April 2, 1990.**
- The Small Industries Development Bank of India Act passed in 1989. SIDBI was incorporated initially as a wholly owned subsidiary of Industrial Development Bank of India.
- **Now SIDBI is owned by several state-owned banks, insurance companies and financial institutions**.

- SIDBI is an independent financial institution aimed to aid the growth and development of micro, small and medium-scale enterprises in India.
- It is an apex body and nodal agency for formulating, coordination and monitoring the policies and program for promotion and development of small scale industries.
- SIDBI is in the list of top 30 Development Banks of the World in the latest ranking of The Banker, London.

7] Non – Banking Financial Companies (NBFC)

- Non-Banking Financial Companies (NBFCs) are fast emerging as an important segment of Indian Financial System.
- It is an heterogeneous group of institutions other than commercial and co-operative banks performing financial intermediation in a variety of ways, like accepting deposits, making loans and advances, leasing, hire purchases etc.
- NBFCs raise funds from the public directly or indirectly and lend them to the ultimate spenders.
- They advances loans to the various wholesale and retail traders, small-scale industries and self-employed persons.
- Thus they have broadened and diversified the range of products and services offered by a financial sector.

Difference between Banks and NBFCs

	Banks	NBFCs
1. Definition	Banking is acceptance of deposits withdrawable by cheque or on demand	NBFCs are companies carrying financial business. NBFCs cannot accept demand deposits
2. Licensing requirements	Licensing requirements are quite stringent.	It is quite easy to form an NBFC. Acquisition of NBFCs is procedurally regulated but not approval required
3. Major limitations	No non-banking activities can be carried	Cannot provide checking facilities
4. Foreign investment	Upto 74% allowed to private sector banks	Upto 100% allowed

8] IRDA

- **Insurance Regulatory and Development Authority (IRDA) is an autonomous apex statutory body** which regulates and develops the insurance industry in India in 1999..
- It was constituted by a Parliament of India act called Insurance Regulatory and Development Authority Act, 1999 and duly passed by the Government of India.
- The agency operates from **its headquarters at Hyderabad, Telangana where it shifted from Delhi in 2001**.
- IRDA batted for a hike in the foreign direct investment (FDI) limit to 49 per cent in the insurance sector from the first while 26 per cent.
- The **FDI limit in insurance sector was raised to 49% in July 2013.**
- **Chairman of IRDA : Subhash Chandra Khuntia**

9] National Development Council (NDC) :

- The National Development Council (NDC) or the Rashtriya Vikas Parishad is the apex body for decision making and deliberations on development matters in India, presided over by the Prime Minister.
- It was set up on **6 August 1952** to strengthen and mobilize the effort and resources of the nation in support of the Plan, to promote common economic policies in all vital spheres, and to ensure the balanced and rapid development of all parts of the country.
- The Council comprises the Prime Minister, the Union Cabinet Ministers, Chief Ministers of all States or their substitutes, representatives of the Union Territories and the members of the Commissions.
- It is an extra-constitutional and non-statutory body. Its status is advisory to Planning Commission but not binding.

Objectives :

To strengthen and mobilize the effort and resources of the nation in support of the Plan. To promote common economic policies in all vital spheres and to ensure the balanced and rapid development of all parts of the country.

Functions :

- To prescribe guidelines for the formulation of the National Plan, including the assessment of resources for the Plan.
- To consider the National Plan as formulated by the Planning Commission.
- To consider important questions of social and economic policy affecting national development and to review the working of the Plan from time to time and to recommend such measures as are necessary for achieving the aims and targets set out in the National Plan.

Composition :

- The National Development Council is presided over by the Prime Minister of India and includes all Union Ministers, Chief Ministers of all the States and Administrators of Union Territories and Members of the Planning Commission.
- Ministers of State with independent charge are also invited to the deliberations of the Council.

10] Industrial Investment Bank of India

- The Industrial Investment Bank of India is a **100% government of India-owned financial investment institution.**
- It was established in **1971 by resolution of the Parliament of India u/s 617 of the Companies Act.**
- It was said to be a **brainchild to be of Pranab Mukherjee**, then finance minister.
- The bank was **headquartered at Kolkata and has presence in New Delhi, Mumbai, Chennai, Bengaluru, Ahmedabad and Guwahati.**
- The Industrial Reconstruction Corporation of India Ltd., set up in 1971 for rehabilitation of sick industrial companies, was reconstituted as Industrial Reconstruction Bank of India in 1985 under the IRBI Act, 1984.
- With a view to converting the institution into a full-fledged development financial institution, **IRBI was incorporated under the Companies Act 1956, as Industrial Investment Bank of India Ltd. (IIBI) in March 1997.**
- IIBI offered a wide range of products and services, including term loan assistance for project finance, short duration non-project asset-backed financing, working capital/other short-term loans to companies, equity subscription, asset credit, equipment finance and investments in capital market and money market instruments.

11] Life Insurance Corporation of India (LIC) :

- **Life Insurance Corporation of India (LIC) is an Indian state-owned insurance group and investment company headquartered in Mumbai**.
- It is the largest insurance company in India with an estimated asset value of INR1560481.84 corer (US$260 billion).As of 2013 it had total life fund of Rs.1433103.14 corer with total value of policies sold of 367.82 lakh that year.

- The company was founded in 1956 when the Parliament of India passed the Life Insurance of India Act that nationalized the private insurance industry in India.
- Over 245 insurance companies and provident societies were merged to create the state owned Life Insurance Corporation.
- Chairman : **Shri V.K Sharma** LIC has re-launched its 'Jeevan Anand' plan , a participating non linked plan which offers an attractive combination of protection & saving.**7 zonal offices of LIC :Mumbai, Delhi, Bhopal ,Chennai, Hyderabad , Kanpur & Kolkata**.

12] General Insurance Corporation of India (GIC)

- The entire general insurance business in India was nationalized by the Government of India (GOI) through the **General Insurance Business (Nationalization) Act (GIBNA) of 1972.**
- 55 Indian insurance companies and 52 other general insurance operations of other companies were nationalized through the act.
- **The General Insurance Corporation of India (GIC) was formed in pursuance of Section 9(1) of GIBNA.**
- It was incorporated on 22 November 1972 under the Companies Act, 1956 as a private company limited by shares.
- British rule introduced GIC in 1950 .Tritan General Insurance Company ltd was established at Culcutta. **Headquarter** – Mumbai
- Alice Vaidyan has been appointed as chairman & Managing Director of GIC. She will hold office till July 31, 2019.
- GIC is the **14th largest reinsurer globally and is presently the only reinsurance company in India**

9. NSE and BSE

National Stock Exchange :

National Stock Exchange of India or in short NSE happens to be **India's largest Stock Exchange and World's third largest stock exchange in terms of transactions.**

It is located in Mumbai and was incorporated in **November 1992** as a tax-paying company.

It was in April 1993 that NSE was recognized as stock exchange under the Securities Contract Act 1956.

Objectives :

- The main objective behind NSE is to establish trading facility nationwide for all types of securities.
- It also ensures equal access to all investors in the country through the process of an appropriate telecommunication network.
- **NSE was able to achieve its objectives within a very short span of time. NSE has national reach to major market segments like equity or capital markets, futures and options or derivatives market, wholesale debt market, mutual funds, initial public offerings and so on.**
- There is also a concept of day trading which suits well for short term investments. But there are investors who think that this type of trading is quite risky.

Bombay Stock Exchange:

- **The Bombay Stock Exchange Limited (formerly, The Stock Exchange, Mumbai; popularly called The Bombay Stock Exchange, or BSE) is located at Dalal Street, Mumbai.**
- **Established in 1875, it is the oldest stock exchange in Asia.**
- There are around 3,500 Indian companies listed with the stock exchange, and has a significant trading volume.
- As of July 2005, the market capitalization of the BSE was about Rs. 20 trillion (US $ 466 billion).
- **The BSE SENSEX (SENSitive indEX), also called the BSE 30**, is a widely used market index in India and Asia.
- As of 2005, it is among the 5 biggest stock exchanges in the world in terms of transactions volume.
- Along with the NSE, the companies listed on the BSE have a combined market capitalization of US$ 125.5 billion.

History

- An informal group of **22 stockbrokers began trading under a banyan tree opposite the Town Hall of Bombay from the mid-1850s, each investing a (then) princely amount of Rupee 1.**
- This banyan tree still stands in the Horniman Circle Park, Mumbai.
- The informal group of stockbrokers organized themselves as The Native Share and Stockbrokers Association which, in 1875, was formally organized as the Bombay Stock Exchange (BSE).
- In January 1899, the stock exchange moved into the Brokers' Hall after it was inaugurated by James M Maclean.
- After the First World War, the BSE was shifted to an old building near the Town Hall.
- In 1928, the plot of land on which the BSE building now stands (at the intersection of Dalal Street, Bombay Samachar Marg and Hammam Street in downtown Mumbai) was acquired, and a building was constructed and occupied in 1930.
- Premchand Roychand was a leading stockbroker of that time, and he assisted in setting out traditions, conventions, and procedures for the trading of stocks at Bombay Stock Exchange and they are still being followed. Several stock broking firms in Mumbai were family run enterprises, and were named after the heads of the family.
- The following is the list of some of the initial members of the exchange, and who are still running their respective business.

BSC Sensex:

The BSE SENSEX (also known as the BSE 30) is a value-weighted index composed of 30 scrip's, with the base April 1979 = 100.

The set of companies which make up the index has been changed only a few times in the last 20 years. These companies account for around one-fifth of the market capitalization of the BSE.

10. Financial Markets

Financial Markets means a market place which allows certain entities and / or people to borrow and lend money, or trade (i.e. buy or sell) in certain assets like equities, bonds, commodities, currencies or derivatives etc. at a low transaction cost and at transparent pricing. Thus, financial markets are a wide term and it encompasses various markets.

A financial market is a broad term describing any marketplace where buyers and sellers participate in the trade of assets such as equities, bonds, currencies and derivatives.

Financial markets are typically defined by having transparent pricing, basic regulations on trading, costs and fees, and market forces determining the prices of securities that trade.

Financial markets can be found in nearly every nation in the world. Some are very small, with only a few participants, while others - like the **New York Stock Exchange (NYSE) and the forex markets - trade trillions of dollars daily**

Types of Financial Market

1] Capital Markets:

- **A capital market is one in which individuals and institutions trade financial securities.** Organizations and institutions in the public and private sectors also often sell securities on the capital markets in order to raise funds. Thus, this type of market is composed of both the primary and secondary markets.
- Any government or corporation requires capital (funds) to finance its operations and to engage in its own long-term investments. **To do this, a company raises money through the sale of securities - stocks and bonds in the company's name.** These are bought and sold in the capital markets.

2] Stock Markets :

- **Stock markets allow investors to buy and sell shares in publicly traded companies.** They are one of the most vital areas of a market economy as they provide companies with access to capital and investors with a slice of ownership in the company and the potential of gains based on the company's future performance.

- This market can be split into two main sections: **the primary market and the secondary market. The primary market is where new issues are first offered, with any subsequent trading going on in the secondary market.**

3] Bond Markets :

- **A bond is a debt investment in which an investor loans money to an entity (corporate or governmental), which borrows the funds for a defined period of time at a fixed interest rate.** Bonds are used by companies, municipalities, states and U.S. and foreign governments to finance a variety of projects and activities.
- Bonds can be bought and sold by investors on credit markets around the world. This market is alternatively referred to as the debt, credit or fixed-income market. It is much larger in nominal terms that the world's stock markets.
- The main categories of bonds are corporate bonds, municipal bonds, and U.S. Treasury bonds, notes and bills, which are collectively referred to as simply "Treasuries."

4] Money Market:

- **The money market is a segment of the financial market in which financial instruments with high liquidity and very short maturities are traded.**
- The money market is used by participants as a means for borrowing and lending in the short term, from several days to just under a year.
- Money market securities consist of negotiable certificates of deposit (CDs), banker's acceptances, U.S. Treasury bills, commercial paper, municipal notes, euro, dollars, federal funds and repurchase agreements (repos).Money market investments are also called cash investments because of their short maturities.
- The money market is used by a wide array of participants, from a company raising money by selling commercial paper into the market to an investor purchasing CDs as a safe place to park money in the short term.
- The money market is typically seen as a safe place to put money due the highly liquid nature of the securities and short maturities. Because they are extremely conservative, money market securities offer significantly lower returns than most other securities.
- However, there are risks in the money market that any investor needs to be aware of, including the risk of default on securities such as commercial paper.

5] Cash Spot Market :

- Investing in the cash or "spot" market is highly sophisticated, with opportunities for both big losses and big gains. In the cash market, goods are sold for cash and are delivered immediately. By the same token, contracts bought and sold on the spot market are immediately effective. Prices are settled in cash "on the spot" at current market prices. This is notably different from other markets, in which trades are determined at forward prices. The cash market is complex and delicate, and generally not suitable for inexperienced traders.
- The cash markets tend to be dominated by so-called institutional market players such as hedge funds, limited partnerships and corporate investors.
- The very nature of the products traded requires access to far-reaching, detailed information and a high level of macroeconomic analysis and trading skills.

6] Derivatives Markets:

- **The derivative is named so for a reason: its value is derived from its underlying asset or assets .A derivative is a contract, but in this case the contract price is determined by the market price of the core asset. If that sounds complicated, it's because it is.**

- The derivatives market adds yet another layer of complexity and is therefore not ideal for inexperienced traders looking to speculate. However, it can be used quite effectively as part of a risk management program.(Examples of common derivatives are forwards, futures, options, swaps and contracts-for-difference (CFDs)
- Not only are these instruments complex but so too are the strategies deployed by this market's participants. There are also many derivatives, structured products and collateralized obligations available, mainly in the over-the-counter (non-exchange) market, that professional investors, institutions and hedge fund managers use to varying degrees but that play an insignificant role in private investing.

7] Forex and the Interbank Market :

- **The interbank market is the financial system and trading of currencies among banks and financial institutions, excluding retail investors and smaller trading parties**. While some interbank trading is performed by banks on behalf of large customers, most interbank trading takes place from the banks' own accounts.
- The forex market is where currencies are traded. The forex market is the largest, most liquid market in the world with an average traded value that exceeds $1.9 trillion per day and includes all of the currencies in the world.
- **The forex is the largest market in the world in terms of the total cash value traded, and any person, firm or country may participate in this market.**
- There is no central marketplace for currency exchange; trade is conducted over the counter.
- The forex market is open 24 hours a day, five days a week and currencies are traded worldwide among the major financial centers of London, New York, Tokyo, Zürich, Frankfurt, Hong Kong, Singapore, Paris and Sydney. Until recently, forex trading in the currency market had largely been the domain of large financial institutions, corporations, central banks, hedge funds and extremely wealthy individuals.
- **The emergence of the internet has changed all of this, and now it is possible for average investors to buy and sell currencies easily with the click of a mouse through online brokerage accounts.**

Primary Market V/S Secondary Market :

- **A primary market issues new securities on an exchange. Companies, governments and other groups obtain financing through debt or equity based securities.**
- Primary markets, also known as "new issue markets," are facilitated by underwriting groups, which consist of investment banks that will set a beginning price range for a given security and then oversee its sale directly to investors.
- The primary markets are where investors have their first chance to participate in a new security issuance. The issuing company or group receives cash proceeds from the sale, which is then used to fund operations or expand the business
- **The secondary market is where investors purchase securities or assets from other investors, rather than from issuing companies themselves.**
- The Securities and Exchange Commission (SEC) registers securities prior to their primary issuance, then they start trading in the secondary market on the New York Stock Exchange, Nasdaq or other venue where the securities have been accepted for listing and trading (To learn more about the primary and secondary market, read Markets Demystified.)
- The secondary market is where the bulk of exchange trading occurs each day. Primary markets can see increased volatility over secondary markets because it is difficult to accurately gauge investor demand for a new security until several days of trading have occurred. In the primary market, prices are often set beforehand, whereas in the secondary market only basic forces like supply and demand determine the price of the security.

Primary Market vs. Secondary Market

Features	Primary Market	secondary Market
1. Issue of securities	Deals only with new issue of securities. Issues are considered fresh or new provided such issues are made for the first time either by the existing co. or by the new co.	Deals in existing securities
2. Location	No fixed geographical location needed.	Needs a fixed place to house the secondary market activities , viz., trading.
3. Transfer of securities	Securities are created & transferred from corporates to investors for the first time.	Securities are transferred from one investor to another through stock exchange mechanism.
4. Entry	All Cos. can enter NIM and make fresh issue of securities.	For the securities to enter the portal of stock exchanges for the purpose of trading listing is mandatory.
5. Administration	Has no tangible form of administrative set up.	Has a definite form of administrative set-up that facilitates trading in securities.
6. Regulation	Subject to regulations mostly from outside company– SEBI, Stock Exchanges, Cos Act ,etc.	Subject to regulation both from within & outside the stock exchange framework.
7. Aim	Creating LT investments for borrowing.	Providing liquidity through marketability of those instruments.
8. Price movement	Stock price movement in secondary market influences the pricing of issues.	Both macro & micro factors influence the stock price movement.
9. Depth	Depends on number and the volume of issue.	Depth depends upon the activities of the primary market as it brings into the fore more corporate entities and more instruments to raise funds.

11. Negotiable Instruments

Negotiable Instruments:

- There are certain documents used for payment in business transactions and are Transferred freely from one person to another. Such documents are called negotiable Instruments like **cheque, bank draft, bill of exchange, promissory notes etc**.
- Thus we can say negotiable Instruments are a transferable document where negotiable means transferable and Instrument means document. According to **section 13 of the negotiable Instruments act 1881**.
- A negotiable Instrument means promissory note bill of exchange or cheque payable either to order or to bearer

Features of a Negotiable Instrument :

- **It is a written document. A negotiable Instrument payable to bearer is transferable merely by delivery whereas a Negotiable Instrument payable to order is transferable by endorsement and delivery. The holder of a Negotiable Instrument can sue upon it in his own name.**
- Its works in the same manner as money and like money it may also be transferred from one person to another. The Transferor does not need to give notice to any person at the time of transferring the Instrument. It is the simplest and most convenient mode of assignment of a debt.
- The title to the Instrument received by a bonafide transferee is not affected by defect in the title of the transferor, According to the negotiable Instruments act 1881 there are just three types of Negotiable Instruments example promissory note, bill of exchange and cheque.
- However many other documents have also been recognized as negotiable instruments on the basis of custom and usage like treasury bills, share warrant etc. They posses the features of Negotiability.

Promissory Note:

- A promissory note is an Instrument in writing containing an **unconditional undertaking signed by the maker to pay a certain sum of money to or to the other of a certain person**. This type of a document is called a promissory note.

Features of Promissory Note

- A promissory note is unconditional. It is always in writing a verbal promise to pay a specified sum of money is not a promissory note.
- **It is made and signed by the debtor. A promissory note is made as payable in the Currency of the country.**
- **A promissory note drawn for a specified duration should be adequately stamped According to its value.** A promissory note should be drawn for the payment of a specified sum.

Bill of Exchange:

A bill of exchange is an Instrument in writing, unconditional order signed by the maker directing a certain person to pay a certain sum of money only to or to the other of a certain person or to the bearer of the Instrument.

Features Of Bill Of Exchange

- **A bill must be in writing, duly signed by its drawer accepted by its drawee and properly stamped as per Indian stamp act**.
- It must contain an order to pay words like please pay rs.5000 on demand and oblige are not used.
- The order must be unconditional. The order must be to pay money and money alone. The sum payable mentioned must be certain or capable of being made certain. The parties to bill must be certain.

Cheque:

- A cheque is a bill of exchange drawn on a specified banker and not expressed to be payable otherwise than on demand.
- It is an unconditional order in writing be drawn by a customer on his bank. Requesting the specifying bank to pay on demand a certain sum of money to a person named in the cheque or to the bearer or to the order of a stated person.

A cheque being a bill of exchange must possess the following requirements.

- ✓ **A cheque must be drawn upon a specified banker**
- ✓ **A cheque must be payable on demand.**
- ✓ **A cheque must be signed by the drawer.**
- ✓ **A cheque must be an unconditional order to pay a certain amount of money.**
- ✓ **A cheque be dated.**

Basically there are three parties to a cheque:

1] Drower:

A Drawer is a person who has an account in the bank and who draws a cheque for making payment .He is the customer or account holder

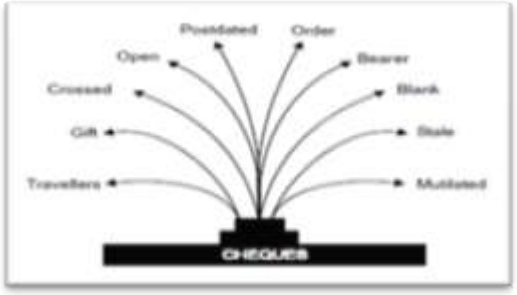
2] Drawee:

A drawee is the person on whom the cheque is drawn. He is liable to pay the amount. In case of a cheque, the drawee happens to be the banker on whom the cheque is drawn , he is also called paying banker.

3] Payee:

A payee is the person to whom the amount stated in the cheque is payable. It may be either drawer himself (self cheque) or only other third party states in the cheque.

Types of cheque:



1] Open cheque: A cheque is called open when it is possible to get cash over the counter at the bank.

2] Crossed Cheque: Since open cheque is subject to risk of theft it is dangerous to issue such cheques. This risk can be avoided by issuing other types of cheque called crossed cheque.

3] Bearer cheque : A cheque which is Payable to any person who presents it for payment at the bank counter is called bearer cheque.

4] Order cheque: An order cheque is one which is payable to a particular person. In such a cheque the word bearer may be cut out or cancelled and the word order may be written. The payee can transfer an order cheque to someone else by singing his or her name on the back of it.

5] Blank cheque : A cheque on which the drawer puts his signature and leaves all other columns blank is called a blank cheque

6] Stale cheque: The cheque which is more than three months old is stale cheque.

7] Multilated cheque : If a cheque is torn into two or more pieces, it is termed as multilated cheque.

8] Post dated cheque : If a cheque bears a date later than the date of issue ,it is termed as post dated cheque .

9] Gift cheque : Gift cheques are sued for offering presentations on occasions like birthdays, weddings and such other situations. It is available in various denominations.

10] Travellers cheque:It is an instrument issued by a bank for remittance of money from one place to another .

Quasi Negotiable Instruments:

Quasi Negotiable Instruments are those Instruments which can be transferred by endorsement and delivery but the transferee does not get a better title that of the transferor. Therefore they cannot be classified as negotiable Instruments and hence the negotiable Instruments act is not applicable to them.

12. NPA and SARFAESI ACT

Non-performing asset (NPA) :

- A Non-performing asset (NPA) is defined as a **credit facility in respect of which the interest and/or installment of principal has remained 'past due' for a specified period of time.** Non-performing assets are one of the talking points of banks in their performance reports. Almost all banks in India is suffering from the problem of NPA. Here we have discussed the concept of Non-performing Assets.
- An Assets, including a leased asset, become an NPA when it ceases to generate income for the bank. An NPA is a loan or an advance where. The Interest and/or Installment of principal remain overdue for a period of more than ninety days in respect of a term loan, An account remains 'out of order' as indicated in the article below, in respect of an overdraft/cash credit (OD/CC).A bill remains overdue for a period of more than ninety days, in the case of bills purchased and discounted.
- An installment of the principal or the interest thereon remains overdue for one crop season for long duration crops. Banks should classify an account as an NPA only if the interest charged during any quarter is not serviced fully within ninety days from the end of the quarter.

Out of Order status:

- An account is **treated as 'out of order'**, **if the outstanding balance remains continuously in excess of the sanctioned limit/drawing power**.
- In cases, where the outstanding balance in the operating account is less than the sanctioned limit/ drawing power, but there are not credit continuously for ninety days as on the date of balance sheet or credits are not enough to cover the interest debited during the same period, these accounts should be treated as 'out of order'.

Categories of NPAs:

- Banks are required to classify non-performing assets into the following three categories based on the period for which the asset has remained non-performing and reliability of the dues. Substandard Assets – An
  assets which remained a NPA for a period less than or equal to twelve months (With Effect from March 31,2005).
- **Doubtful Assets -An assets would be classified as doubtful assets if it has remained as Substandard Assets for more than twelve months (With Effect from March 31, 2005).**
- **Loss Assets –A loss assets is one, where the bank of internal or external auditors or the RBI inspection has identified the loss but the amount has not been written off wholly.**
- In other words, such little value that it's continuance as a bankable asset is not warranted although there may be some salvage or recovery value.

SARFAESI ACT 2002 :

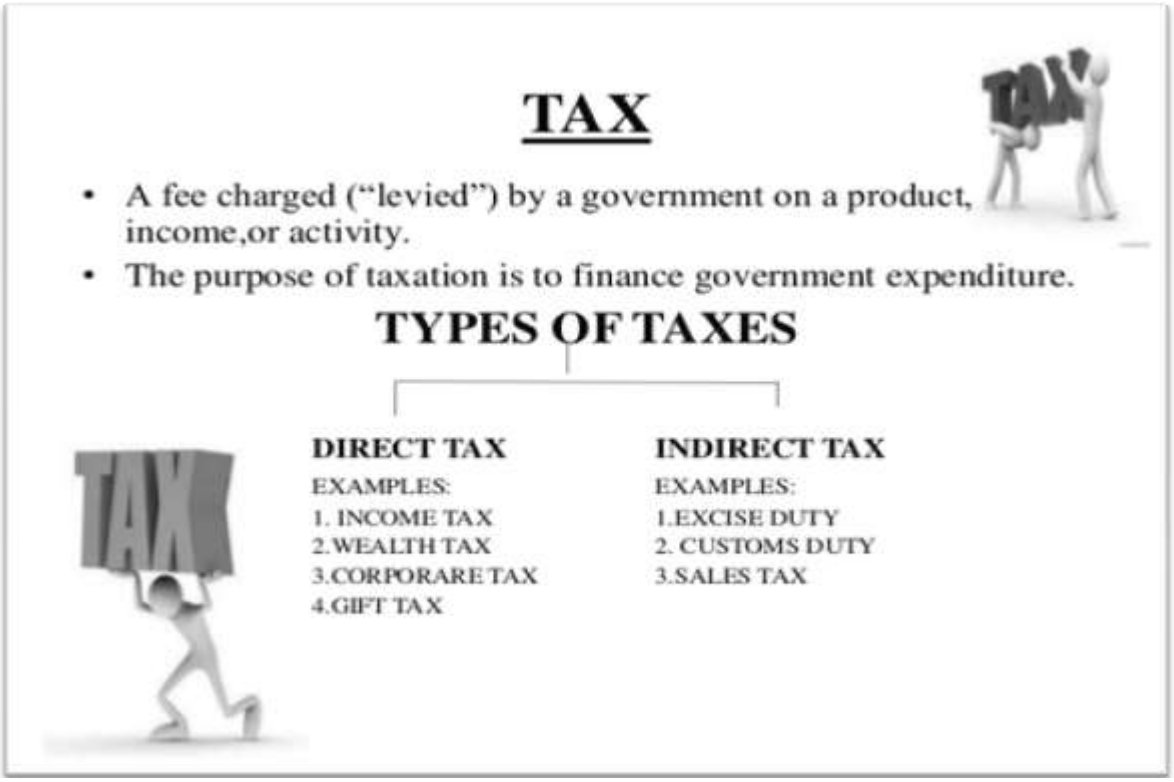
- The full form of SARFAESI Act as we know is **Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002**.
- Banks utilize this act as an effective tool for bad loans (NPA) recovery. It is possible where non-performing assets are backed by securities charged to the Bank by way of hypothecation or mortgage or assignment.

How it works ?

- The SARFAESI Act, 2002 gives powers of "**seize and desist**" to banks.
  Banks can give a notice in writing to the defaulting borrower requiring it to discharge its liabilities within 60 days.
- If the borrower fails to comply with the notice, the Bank may take recourse to one or more of the following measures.
  - ✓ Take possession of the security for the loan Sale or lease or assign the right over the security Manage the same or appoint any person to manage the same.
  - ✓ The SARFAESI Act also provides for the establishment of Asset Reconstruction Companies (ARCs) regulated by RBI to acquire assets from banks and financial institutions.
  - ✓ **The Act provides for sale of financial assets by banks and financial institutions to asset reconstruction companies (ARCs).**RBI has issued guidelines to banks on the process to be followed for sales of financial assets to ARCs

13. Direct and Indirect Taxes

Direct and Indirect Taxes:



- **Direct tax**

Direct tax is a kind of charge, which is imposed directly on the taxpayer and paid directly to the government by the persons (juristic or natural) on whom it is imposed. A direct tax is one that cannot be shifted by the taxpayer to someone else. The some important direct taxes imposed in India are as under.

1] Income Tax

- Income Tax Act, 1961 imposes tax on the income of the individuals or Hindu undivided families or firms or co-operative societies (other tan companies) and trusts (identified as bodies of individuals associations of persons) or every artificial juridical person.
- The inclusion of a particular income in the total incomes of a person for income-tax in India is based on his residential status.

There are three residential status, viz.,

(i) Resident & Ordinarily Residents (Residents)
(ii) **Resident but not Ordinarily Residents and**
(iii) **Non Residents.**

There are several steps involved in determining the residential status of a person. All residents are taxable for all their income, including income outside India. Non residents are taxable only for the income received in India or Income accrued in India. Not ordinarily residents are taxable in relation to income received in India or income accrued in India and income from business or profession controlled from India.

2] Corporation Tax:

- The companies and business organizations in India are taxed on the income from their worldwide transactions under the provision of Income Tax Act, 1961.
- **A corporation is deemed to be resident in India if it is incorporated in India or if it's control and management is situated entirely in India**.
- In case of nonresident corporations, tax is levied on the income which is earned from their business transactions in India or any other Indian sources depending on bilateral agreement of that country.

3] Property Tax:

- Property tax or 'house tax' is a local tax on buildings, along with appurtenant land, and imposed on owners. The tax power is vested in the states and it is delegated by law to the local bodies, specifying the valuation method, rate band, and collection procedures.
- **The tax base is the annual ratable value (ARV) or area-based rating. Owner-occupied and other properties not producing rent are assessed on cost and then converted into ARV by applying a percentage of cost, usually six percent**.
- Vacant land is generally exempted from the assessment. The properties lying under control of Central are exempted from the taxation. Instead a 'service charge' is permissible under executive order. Properties of foreign missions also enjoy tax exemption without an insistence for reciprocity.

4] Inheritance (Estate) Tax :

- An inheritance tax (also known as an estate tax or death duty) is a tax which arises on the death of an individual.
- It is a tax on the estate, or total value of the money and property, of a person who has died. India enforced estate duty from 1953 to 1985. Estate Duty Act, 1953 came into existence w.e.f. 15th October, 1953.
- Estate Duty on agricultural land was discontinued under the Estate Duty (Amendment) Act, 1984.
- The levy of Estate Duty in respect of property (other than agricultural land) passing on death occurring on or after 16th March, 1985, has also been abolished under the Estate Duty (Amendment) Act, 1985.

5] Gift Tax

- **Gift tax in India is regulated by the Gift Tax Act which was constituted on 1st April, 1958.It came into effect in all parts of the country except Jammu and Kashmir.**
- **As per the Gift Act 1958, all gifts in excess of Rs. 25,000, in the form of cash, draft, check or others, received from one who doesn't have blood relations with the recipient, were taxable**.
- However, with effect from 1st October, 1998, gift tax got demolished and all the gifts made on or after the date were free from tax. But in 2004, the act was again revived partially.
- A new provision was introduced in the Income Tax Act 1961 under section 56 (2).According to it, the gifts received by any individual or Hindu Undivided Family (HUF) in excess of Rs. 50,000 in a year would be taxable.

6]Securities Transaction Tax (STT)

- **STT is a tax being levied on all transactions done on the stock exchanges.**
- STT is applicable on purchase or sale of equity shares, derivatives, equity oriented funds and equity oriented Mutual Funds.
- **Current STT on purchase or sell of an equity share is 0.075%.**
- A person becomes investor after payment of STT at the time of selling securities (shares).Selling the shares after 12 months comes under long term capital gains and one need not have to pay any tax on that gain.
- In the case of selling the shares before 12 months, one has to pay short term capital gains @10% flat on the gain.

- **However, for a trader, all his gains will be treated as trading (Business) and he has to pay tax as per tax sables.**
- **In this case the transaction tax paid by him can be claimed back/adjusted in tax to be paid**.

• Indirect Tax

An indirect tax is a tax collected by an intermediary (such as a retail store) from the person who bears the ultimate economic burden of the tax (such as the customer). **An indirect tax is one that can be shifted by the taxpayer to someone else. An indirect tax may increase the price of a good so that consumers are actually paying the tax by paying more for the products.** The some important indirect taxes imposed in India are as under.

1] Customs Duty

The Customs Act was formulated in 1962 to prevent illegal imports and exports of goods. Besides, all imports are sought to be subject to a duty with a view to affording protection to indigenous industries as well as to keep the imports to the minimum in the interests of securing the exchange rate of Indian currency.

Duties of customs are levied on goods imported or exported from India at the rate specified under the customs Tariff Act, 1975 as amended from time to time or any other law for the time being in force. Under the custom laws, the various types of duties are leviable.

(1) Basic Duty: This duty is levied on imported goods under the Customs Act, 1962.

(2) Additional Duty (Countervailing Duty) (CVD): This is levied under section 3 (1)of the Custom Tariff Act and is equal to excise duty levied on a like product manufactured or produced in India.If a like product is not manufactured or produced in India, the excise duty that would be leviable on that product had it been manufactured or produced in India is the duty payable.

If the product is leviable at different rates, the highest rate among those rates is the rate applicable .Such duty is leviable on the value of goods plus basic custom duty payable. Additional Duty to compensate duty on inputs used by Indian manufacturers: This is levied under section of the Customs Act.

(3) Anti-dumping Duty: Sometimes, foreign sellers abroad may export into India goods at prices below the amounts charged by them in their domestic markets in order to capture Indian markets to the detriment of Indian industry. This is known as dumping. In order to prevent dumping, the Central Government may levy additional duty equal to the margin of dumping on such articles. There are however certain restrictions on imposing dumping duties in case of countries which are signatories to the GATT or on countries given "Most Favored Nation Status" under agreement.

(4)Protective Duty: If the Tariff Commission set up by law recommends that in order to protect the interests of Indian industry, the Central Government may levy protective antidumping duties at the rate recommended on specified goods.

2] GST

GST stands for "Goods and Services Tax", and is proposed to be a comprehensive indirect tax levy on manufacture, sale and consumption of goods as well as services at the national level. **It will replace all indirect taxes levied on goods and services by the Indian Central and State governments.** The Constitution Amendment Bill for Goods and Services Tax (GST) in the Parliament (Rajya Sabha on 3 August 2016 and Lok Sabha on 8 August 2016), the Government of India seems committed to **replace all the indirect taxes levied on goods and services by the Centre and States and implement GST by April 2017**.

As a next step, the Bill will need to be ratified by more than 50 percent state legislatures, before being put for the President's assent. With GST, it is anticipated that the tax base will be comprehensive, as virtually all goods and services will be taxable, with minimum exemptions.

GST the game changer:

GST will be a game changing reform for Indian economy by developing a common Indian market and reducing the cascading effect of tax on the cost of goods and services. **It will impact the Tax Structure, Tax Incidence, Tax Computation, Tax Payment, Compliance, Credit Utilization and Reporting leading to a complete overhaul of the current indirect tax system.**

GST will have a far reaching impact on almost all the aspects of the business operations in the country, for instance, pricing of products and services, supply chain optimization, IT, accounting, and tax compliance systems.

Tax Structure before GST

- Before the implementation of GST, taxation laws between the Centre and states were clearly demarcated. There were no overlaps between the fiscal powers, whatsoever. The Centre would levy tax on goods manufacture, except alcohol for consumption, narcotics, opium, etc.
- The states had the power to charge tax on the sale of goods.
- The Centre would levy the Central Sales Tax that was collected by the originating states.
- The Centre was also levying service tax on all types of services.
- Additionally, the Centre was charging and collecting additional duties of customs on goods that were imported into or exported from India. This tax was levied in addition to the Basic Customs Duty. This additional duty of customs is referred to as Countervailing Duty (CVD) and Special Additional Duty (SAD) and it counter balances excise duties, state VAT, sales tax, and other such taxes.

Constitution (One Hundred and First) Amendment Act, 2016

In order to address prevalent issues in taxation, the Constitution 122nd Amendment Bill was put forth in the 16th Lok Sabha on 19 Dec 2014.

- The Bill suggests levy of GST on all goods and services, except alcohol that humans consume.
- The tax is levied as Dual GST by the Centre and states/union territories. The component levied by the Centre is Central Tax - CGST, while that levied by the state is State Tax - SGST. The tax levied by union territories is Union Territory Tax - UTGST.
- The Centre would levy the GST on inter-state trade or imports of services and goods. This tax is referred to as Integrated Tax - IGST.
- The Central Government will also levy excise duty on tobacco products, in addition to GST.
- The tax on five petroleum products, i.e., high speed diesel, crude, petrol, natural gas, and Aviation Turbine Fuel (ATF) will be outlined later after a decision is made by the GST Council.

September 2016: A Goods and Services Tax Council (GSTC) was created by the union finance minister, revenue minister, and ministers of state to take decisions on GST rates, thresholds, taxes to be subsumed, exemptions, and other features of the taxation system. The state finance ministers mentioned that the EC would be a platform for states where there would be discussions of their regional issues. The GST Council is a separate entity that would oversee the implementation of the GST system.

Decisions taken by GST Council

Some of the major decisions taken by the GSTC so far are:

- There would be four tax rates under the GST regime, i.e., 5%, 12%, 18%, and 28%. Some goods and services were also classified as exempt from tax.
- A cess above the peak rate of 28% would be levied on certain sin and luxury goods.
- The administrative control over 90% of taxpayers with turnover less than Rs.1.5 crore would be with the State tax administration. 10% of control would be with the Central tax administration.
- Administrative control over taxpayers having turnover above Rs.1.5 crore would be equally divided between the State and Centre tax administration.

Goods and Services Tax Network

Goods and Services Tax Network (GSTN) was set up as a private company in 2013 by the Government under Section 25 of the Companies Act, 1956. GSTN is expected to offer the front-end services of registration, payment, and returns to taxpayers. It would also develop back-end technical modules that will be utilised by 25 states that have opted in.

GSTN has also identified 34 IT and financial technology companies and tagged them as GST Suvidha Providers (GSPs). These organisations will develop applications that will be used by taxpayers when they interact with GSTN.

Key features of the GST regime

The GST system is characterized by the following features:

- GST is applicable on the “supply” of services or goods as opposed to the earlier concept of taxation on goods manufacture, sale of goods, or service provision.
- GST is a destination-based tax structure unlike the origin-based structure that existed previously.
- CGST, IGST, and SGST/UTGST are levied at rates that would be mutually agreed upon by the states and Centre.
- GST will replace the central taxes mentioned below:
  - Duties of Excise (medicinal and toilet needs)
  - Central Excise Duty
  - Additional Duties of Excise (Goods of Special Importance)
  - Additional Duties of Customs (CVD)
  - Service Tax
  - Special Additional Duty of Customs(SAD)
  - Additional Duties of Excise (Textiles and Textile Products)
  - Cesses and surcharges
- GST will subsume the following state taxes:
  - Central Sales Tax
  - Entry Tax
  - State VAT

- Luxury Tax
- Purchase Tax
- Entertainment Tax, except that levied by local entities
- Taxes on lotteries and gambling
- Taxes on advertisements
- State cesses and surcharges

- Taxpayers with annual turnover of Rs.20 lakh is exempt from GST. For special category states, this cut-off is Rs.10 lakh. An option of compounding is available to small-scale taxpayers with annual turnover of Rs.50 lakh or below. The choice of threshold exemption and the compounding scheme are optional.

Benefits of GST Implementation

Key benefits of the GST announcement are detailed below:

I. As mentioned above, the GST system will create a common national market that boosts foreign investment.
II. The cascading effect of taxation will be mitigated.
III. There will be uniformity in laws, rates of tax, and procedures across states.
IV. The GST regime is expected to boost manufacturing activities and exports. This would, in turn, generate more employment and lead to the growth of the economy.
V. Indian products would be more competitive in the international markets.
VI. The GST system is likely to improve the overall investment climate in India.
VII. Uniformity in the rates of SGST and IGST will reduce tax evasion to a large extent.
VIII. The average sales burden experienced by companies is expected to come down, thereby increasing consumption and boosting subsequent production of goods.
IX. GST is a simpler system of taxation with smaller number of exemptions.
X. There are automated and simplified methods for processes such as registration, refunds, returns, tax payments, etc.
XI. All interactions will be handled by the common GSTN website.
XII. The input tax credit process will be more accurate and transparent, as electronic matching will be performed.
XIII. The final price of most goods will be lower when taxation is at the new GST rates. There will also be a seamless input tax credit flow between the manufacturer, retailer, and supplier of service.
XIV. A huge segment of small-scale retailers may be either exempt from tax or may benefit from low tax rates based on the compounding scheme. Consumers will further benefit if purchases are made from these small retailers.

Major taxes being presently levied in the supply chain of goods and services by State/Central Government

S.No.	Taxes	Taxable Event	Nature of Tax
1.	State VAT	Sale of Goods within the State	State Tax
2.	Excise Duty	Manufacturing of Goods	Central Tax
3.	Central Sales tax	Sale of Goods between two States	State Tax
4.	Additional Customs Duty	Import of Goods	Central Tax
5.	Special Additional Duty	Import of Goods	Central Tax
6.	Entry Tax	Entry of Goods in to Local Area	State Tax
7.	Service Tax	Provision of Service	Central Tax
8.	Entertainment Tax	Provision of Entertainment	State Tax
9.	Luxury Tax	Provision of Luxury	State Tax

Types Of GST

1. **Central Goods & Service Tax (CGST)**

As per the Central Goods & Services Tax Act 2016, CGST is the centralized part of GST that subsumes the present central taxations and levies- Central Sales Tax, Central Excise Duty, Services Tax, Excise Duty under Medical & Toiletries Preparation Act, Additional Excise Duties Countervailing Duty (CVD), Additional Custom Duty and other centralized taxations.

CGST is applicable on the supply of goods and services of standard services and commodities which can be amended periodically by a specialized body under the central government. The revenue collected under CGST belongs to the central government. The input tax is given to the state governments which they can utilize only against the payment of CGST.

2. State Goods & Services Tax (SGST)

SGST is an important part of GST. It stands for State Goods & Services Tax as per the 2016 GST bill. Various taxations and levies under the state authority are subsumed by SGST as one uniform taxation. It includes the amalgamation of State Sales Tax, Luxury Tax, Entertainment Tax, Levies on Lottery, Entry Tax, Octroi and other taxations related to the movement of commodities and services under state authority through one uniform taxation- SGST.

Revenue collected under SGST belongs to the State Government. However, the mainstream framework of the state governing body will be supervised by the central government. Each state will be having their own State Authority to collect SGST.

3. Integrated Goods & Services Tax (IGST)

GST focuses on the concept of one tax, one nation. IGST stands for Integrated Goods and Services Tax which is charged on the supply of commodities and services from one state to another state. For example, if the supply of goods and services occurs between Gujarat and Maharashtra, IGST will be applicable.

Under Article 269A of the Indian Constitution, the inter-state trade and commerce activities that involve the movement of commodities and services shall be levied with an integrated tax (IGST) under the GST regime. The Government of India will collect the revenue under IGST. Further changes can be made by the Goods and Services Tax Council of India.

4. Union Territory Goods & Services Tax (UTGST)

As we have already learned about CGST and SGST which are intra-state taxations and IGST which is inter-state, the union territories in India are accounted under a specialized taxation called Union Territory Goods and Services Tax as per the GST regime 2016. It will subsume the various taxations, levies and duties with one uniform taxation in Union Territories as well.

Delhi (India's Capital Territory), Chandigarh, Dadra & Nagar Haveli, Andaman & Nicobar Islands, Daman & Diu, Lakshadweep and Puducherry are the prominent union territories in India. UTGST will account for all the taxations under these union territories in India. The parliament is looking forward to implement a separate act to impose and supervise GST in Union Territories under the name of UTGST act. The bill will be presented in respective union territories for further changes in the implementation of GST.

14. Banking Terms

1] Banking Ombudsman

Banking Ombudsman is a quasi-judicial authority functioning under India's Banking Ombudsman Scheme 2006, and the authority was created pursuant to a decision made by the Government of India to enable resolution of complaints of customers of banks relating to certain services rendered by the banks.

The Banking Ombudsman is a senior official appointed by the Reserve Bank of India to redress customer complaints against deficiency in certain banking services. As on date, fifteen Banking Ombudsmen have been appointed with their offices located mostly in state capitals. The addresses and contact details of the Banking Ombudsman offices have been provided in the annex.

PROCEDURE

One can file a complaint with the Banking Ombudsman simply by writing on a plain paper. One can also file it online or by sending an email to the Banking Ombudsman. There is a form along with details of the scheme in our website. However, it is not necessary to use this format. **The complaint should have the name and address of the complainant, the name and address of the branch or office of the bank against which the complaint is made, facts giving rise to the complaint supported by documents.** The Banking Ombudsman may award compensation not exceeding Rs 1lakh to the complainant only in the case of complaints relating to credit card operations for mental agony and harassment.

The Banking Ombudsman will take into account the loss of the complainants time, expenses incurred by the complainant, harassment and mental anguish suffered by the complainant while passing such award.

2] Know Your Customer

Know your customer (KYC) is the process of a business verifying the identity of its clients. The term is also used to refer to the bank regulation which governs these activities.

KYC controls typically include the following:

Collection and analysis of basic identity information Name matching against lists of known parties Determination of the customer's risk in terms of propensity to commit money laundering, terrorist finance, or identity theft Creation of an expectation of a customer's transactional behavior Monitoring of a customer's transactions against expected behavior and recorded profile as well as that of the customer's peers.

3] White Label ATM

White Label ATM or White Label Automated Teller Machines or WLAs in India will be owned and operated by Non-Bank entities. From such White Label ATM customer from any bank will be able to withdraw money, but will need to pay a fee for the services. Traditionally, Automated Teller Machines (ATMs) have respective bank's logo. So just by looking, this is SBI's ATM, this is ICICI's ATM and so on, But **White label ATM doesn't have such Bank logo, hence called White label ATMs.**

RBI has given license / permission to non-bank entities to open such ATMs.Any non-bank entity with a minimum net worth of Rs.100 crore, can apply for white label ATMs. (not just NBFC, any non-bank entity can apply.)

Late 80s: first ATM in India;
2012: RBI issues guideline for White label;
2013: RBI gives license/permission.
Tata Communications Payment Solutions Limited =the first company to get RBI's permission to open White label ATMs.
They started their chain under brand name **"Indicash".**
Other White label= Muthoot Finance, Srei Infra., Vakrangee Software, Prizm Payments, AGS. More than 15 companies given such permission.

4] RTGS and NEFT

RTGS : The full form of RTGS is "**Real Time Gross Settlement**". RTGS can be defined as "the continuous (real-time) settlement of funds transfers individually on an order by order basis (without netting)"

NEFT

The full form of NEFT is "**National Electronic Funds Transfer"**. The NEFT is a nationwide payment system facilitating one-to-one funds transfer. Under this system, individuals, firms and corporates can electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country participating in the system.

5] Types of Deposits

- **Current Account**

Current Accounts are basically meant for businessmen and are never used for the purpose of investment or savings. **These deposits are the most liquid deposits and there are no limits for number of transactions or the amount of transactions in a day.** Most of the current account is opened in the names of firm / company accounts. Cheque book facility is provided and the account holder can deposit all types of the cheques and drafts in their name or endorsed in their favour by third parties. No interest is paid by banks on these accounts. On the other hand, banks charges certain service charges, on such accounts.

- **Saving Accounts :**

These deposits accounts are one of the most popular deposits for individual accounts. **These accounts not only provide cheque facility but also have lot of flexibility for deposits and withdrawal of funds from the account.**

Most of the banks have rules for the maximum number of withdrawals in a period and the maximum amount of withdrawal, but hardly any bank enforces these. However, banks have every right to enforce such restrictions if it is felt that the account is being misused as a current account. Till 24/10/2011, **the interest on Saving Bank Accounts was regulated by RBI and it was fixed at 4.00% on daily balance basis.** However, wef 25th October, 2011, RBI has deregulated Saving Fund account interest rates and now banks are free to decide the same within certain conditions imposed by RBI. Under directions of RBI, now banks are also required to open no frill accounts (this term is used for accounts which do not have any minimum balance requirements).Although Public Sector Banks still pay only 4% rate of interest, some private banks like Kotak Bank and Yes Bank pay between 6% and 7% on such deposits. From the FY 2012-13, interest earned upto Rs 10,000 in a financial year on Saving Bank accounts is exempted from tax.

- **Recurring Deposit Account :**

These are popularly known as RD accounts and are special kind of Term Deposits and are suitable for people who do not have lump sum amount of savings, but are ready to save a small amount every month. Normally, such deposits earn interest on the amount already deposited (through monthly installments) at the same rates as are applicable for Fixed Deposits / Term Deposits. Under these type of deposits, the person has to usually deposit a fixed amount of money every month (usually a minimum of Rs,100/- p.m.).Any default in payment within the month attracts a small penalty. However, some Banks besides offering a fixed installment RD, have also introduced a flexible / variable RD. Under these flexible RDs the person is allowed to deposit even higher amount of installments, with an upper limit fixed for the same e.g.10 times of the minimum amount agreed upon. These accounts can be funded by giving Standing Instructions by which bank withdraws a fixed amount on a fixed date of the month from the saving bank of the customer (as per his mandate), and the same is credited to RD account. Recurring Deposit accounts are normally allowed for maturities ranging from 6 months to 120 months. A Pass book is usually issued wherein the person canget the entries for all the deposits made by him / her and the interest earned. Banks also indicate the maturity value of the RD assuming that the monthly installments will be paid regularly on due dates. In case installment is delayed, the interest payable in the account will be reduced and some nominal penalty charged for default in regular payments. Premature withdrawal of accumulated amount permitted is usually allowed (however, penalty may be imposed for early withdrawals).These accounts can be opened in single or joint names. Nomination facility is also available.

- **Fixed Deposits**

All Banks in India (including SBI, PNB, BoB, BoI, Canara Bank, ICICI Bank, Yes Bank etc.) offer fixed deposits schemes with a wide range of tenures for periods from 7 days to 10 years. These are also popularly known as FD accounts. However, in some other countries these are known as "Term Deposits" or even called "Bond".

The term "fixed" in Fixed Deposits (FD) denotes the period of maturity or tenor.

Therefore, the depositors are supposed to continue such Fixed Deposits for the length of time for which the depositor decides to keep the money with the bank.

However, in case of need, the depositor can ask for closing (or breaking) the fixed deposit prematurely by paying a penalty (usually of 1%, but some banks either charge less or no penalty) (Some banks introduced variable interest fixed deposits. The rate of interest on such deposits keeps on varying with the prevalent market rates i.e. it will go up if market interest rates goes and it will come down if the market rates fall. However, such type of fixed deposits have not been popular till date).The rate of interest for Fixed Deposits differs from bank to bank (unlike earlier when the same were regulated by RBI and all banks used to have the same interest rate structure. The present trends indicate that private sector and foreign banks offer higher rate of interest.

6] Financial Inclusion:

Financial inclusion or inclusive financing is the delivery of financial services at affordable costs to sections of disadvantaged and low-income segments

of society, in contrast to financial exclusion where those services are not available or affordable **In India, RBI has initiated several measures to achieve greater financial inclusion, such as facilitating no-frills accounts and GCCs for small deposits and credit.**

Some of these steps are

- **Opening of no-frills accounts:**

Basic banking no-frills account is with nil or very low minimum balance as well as charges that make such accounts accessible to vast sections of the population. Banks have been advised to provide small overdrafts in such accounts.

- **Relaxation on know-your-customer (KYC) norms:**
  KYC requirements for opening bank accounts were relaxed for small accounts in August 2005, thereby simplifying procedures by stipulating that introduction by an account holder who has been subjected to the full KYC drill would suffice for opening such accounts. The banks were also permitted to take any evidence as to the identity and address of the customer to their satisfaction. It has now been further relaxed to include the letters issued by the Unique Identification Authority of India containing details of name, address and Aadhaar number.

- **Engaging business correspondents (BCs) :**
  In January 2006, RBI permitted banks to engage business facilitators (BFs) and BCs as intermediaries for providing financial and banking services. The BC model allows banks to provide doorstep delivery of services, especially cash in-cash out transactions, thus addressing the last-mile problem. The list of eligible individuals and entities that can be engaged as BCs is being widened from time to time. With effect from September 2010, for-profit companies have also been allowed to be engaged as BCs .India map of Financial Inclusion by MIX provides more insights on this.

- **Use of technology:**
  Recognizing that technology has the potential to address the issues of outreach and credit delivery in rural and remote areas in a viable manner, banks have been advised to make effective use of information and communications technology (ICT), to provide doorstep banking services through the BC model where the accounts can be operated by even illiterate customers by using biometrics, thus ensuring the security of transactions and enhancing confidence in the banking system.

- **Adoption of EBT:**
  Banks have been advised to implement EBT by leveraging ICT-based banking through BCs to transfer social benefits electronically to the bank account of the beneficiary and deliver government benefits to the doorstep of the beneficiary, thus reducing dependence on cash and lowering transaction costs

- **GCC:**
  With a view to helping the poor and the disadvantaged with access to easy credit, banks have been asked to consider introduction of a general purpose credit card facility up to `25,000 at their rural and semi-urban branches. **The objective of the scheme is to provide hassle-free credit to banks'**

customers based on the assessment of cash flow without insistence on security, purpose or end use of the credit. This is in the nature of revolving credit entitling the holder to withdraw up to the limit sanctioned.

- **Opening of branches in unbanked rural centers:**
  To further step up the opening of branches in rural areas so as to improve banking penetration and financial inclusion rapidly, the need for the opening of more bricks and mortar branches, besides the use of BCs, was felt. Accordingly, banks have been mandated in the April monetary policy statement to allocate at least 25% of the total number of branches to be opened during a year to unbanked rural centers.

7] Money Laundering

The process of creating the appearance that large amounts of money obtained from serious crimes, such as drug trafficking or terrorist activity, originated from a legitimate source. Money obtained from certain crimes, such as extortion, insider trading, drug trafficking, illegal gambling and tax evasion is "dirty". It needs to be cleaned to appear to have derived from non-criminal activities so that banks and other financial institutions will deal with it without suspicion.

Originally, the term applied to real money but now money laundering applies to the proceeds of crime that are laundered using a variety of monetary instruments including securities, digital currencies such as bit coin, credit cards, and traditional currency.

Money can be laundered by many methods, which vary in complexity and sophistication. In 2002, the Parliament of India passed an act called the Prevention of Money Laundering Act, 2002.The main objectives of this act are to prevent money-laundering as well as to provide for confiscation of property either derived from or involved in, money-laundering.

Section 12 (1) describes the obligations that banks, other financial institutions, and intermediaries have to maintain records that detail the nature and value of transactions, whether such transactions comprise a single transaction or a series of connected transactions, and where these transactions take place within a month. Furnish information on transactions referred to in clause (a) to the Director within the time prescribed, including records of the identity of all its clients

Section 12 (2) prescribes that the records referred to in sub-section (1) as mentioned above, must be maintained for ten years after the transactions finished**.**

It is handled by the Indian Income Tax Department. The provisions of the Act are frequently reviewed and various amendments have been passed from time to time.

The recent activity in money laundering in India is through political parties, corporate companies and the shares market. It is investigated by the Enforcement Directorate and Indian Income Tax Department. Bank accountants must record all transactions over Rs. 10 Lakhs. Bank accountants must maintain this records for 10 years. Banks also must make cash transaction reports (CTRs) and suspicious transaction reports over RS. 10 Lakhs within 7 days of doubt. They must submit the report to the enforcement directorate and income tax department.

8] Current Account Deficit (CAD)

A current account deficit is when a country's government, businesses and individuals import more goods, services and capital than they export.

That's because the current account measures trade, as well as international income, direct transfers of capital, and investment income made on assets, according to the Bureau of Economic Analysis. When those within the country rely on foreigners for the capital to invest and spend, that creates a current account deficit. Depending on why the country is running the deficit, it could be a positive sign of growth, or it could be a negative sign that the country is a credit risk.

9] ASBA :

ASBA (Applications Supported by Blocked Amount) is a process developed by the India's Stock Market Regulator SEBI for applying to IPO. In ASBA, an IPO applicant's account doesn't get debited until shares are allotted to them.

Advantages of applying through ASBA facility:

✓ **No need for cheque payment:**

The investor need not pay the application money through a cheque.

He has to submit the ASBA which accompanies an authorization to block the amount in the bank account - to the extent of the application money.

✓ **Refunds don't arise:**

The investor does not have to bother about refund, as in ASBA only that much money - to the extent required for allotment of securities - is taken from the bank account, only when his application is selected for allotment after the basis of allotment is finalized.

✓ **Interest ensured**:

The investor continues to earn interest on the application money as it remains in the bank account, which is not the case in other modes of payment.

✓ **Simple form**:

The application form is simpler. The investor deals with a known intermediary - his own bank**.**

An investor who is eligible for ASBA has the option of making an application through the ASBA, or through the existing facility of applying with a cheque.

10] Sensex and Nifty

The Sensex is an "index".

What is an index?

An index is basically an indicator. It gives you a general idea about whether most of the stocks have gone up or most of the stocks have gone down.

The Sensex is an indicator of all the major companies of the BSE. The Nifty is an indicator of all the major companies of the NSE. If the Sensex goes up, it means that the prices of the stocks of most of the major companies on the BSE have gone up. If the Sensex goes down, this tells you that the stock price of most of the major stocks on the BSE has gone down. Just like the Sensex represents the top stocks of the BSE, the Nifty represents the top stocks of the NSE.

11] Merchant Banking

Merchant Banking is a combination of Banking and consultancy services. It provides consultancy to its clients for financial, marketing
managerial and legal matters.

Consultancy means to provide advice, guidance and service for a fee. It helps a businessman to start a business. It helps to raise (collect) finance. It helps to expand and modernize the business. It helps in restructuring of a business. It helps to revive sick business units. It also helps companies to register, buy and sell shares at the stock exchange.

The functions of merchant banking are listed as follows

1) Raising Finance for Clients
2) Broker in Stock Exchange
3) Project Management.

4) Advice on Expansion and Modernization
5) Managing Public Issue of Companies
6) Handling Government Consent for Industrial
7) Special Assistance to Small Companies and Entrepreneurs.
8) Services to Public Sector Units
9) Revival of Sick Industrial
10) Portfolio Management
11) Corporate Restructuring
12) Money Market Operation
13) Leasing

12] Bank Rate

Bank Rate is the rate at which central bank of the country (in India it isRBI) allows finance to commercial banks. **Bank Rate is a tool, which central bank uses for short-term purposes. Any upward revision in Bank Rate by central bank is an indication that banks should also increase deposit rates as well as Base Rate / Benchmark Prime Lending Rate**.

Thus any revision in the Bank rate indicates that it is likely that interest rates on your deposits are likely to either go up or go down, and it can also indicate an increase or decrease in your EM.

13] CRR

CRR means **Cash Reserve Ratio**. Banks in India are required to hold a certain proportion of their deposits in the form of cash. However, actually Banks don't hold these as cash with themselves, but **deposit such case with Reserve Bank of India (RBI) / currency chests, which is considered as equivalent to holding cash with RBI.** This minimum ratio (that is the part of the total deposits to be held as cash) is stipulated by the RBI and is known as the CRR or Cash Reserve Ratio.

Thus, When a bank's deposits increase by Rs100, and if the cash reserve ratio is 6%, the banks will have to hold additional Rs 6 with RBI and Bank will be able to use only Rs 94 for investments and lending / credit purpose. Therefore, higher the ratio (i.e. CRR), the lower is the amount that banks will be able to use for lending and investment. This power of RBI to reduce the lendable amount by increasing the CRR, makes it an instrument in the hands of a central bank through which it can control the amount that banks lend. Thus**, it is a tool used by RBI to control liquidity in the banking system**

14] SLR

Every bank is required to maintain at the close of business every day, a minimum proportion of their Net Demand and Time Liabilities as liquid assets in the form of cash, gold and un-encumbered approved securities. The ratio of liquid assets to demand and time liabilities is known as Statutory Liquidity Ratio (SLR).RBI is empowered to increase this ratio up to 40%. An increase in SLR also restrict the bank's leverage position to pump more money into the economy. Thus, we can say that it is ratio of cash and some other approved securities to liabilities (deposits) It regulates the credit growth in India

15] Repo rate and Reverse Repo rate

Repo Rate :

Repo (Repurchase) rate is the rate at which the RBI lends shot-term money to the banks against securities. When the repo rate increases borrowing from RBI becomes more expensive. Therefore, we can say that in case, RBI wants to make it more expensive for the banks to borrow money, it increases the repo rate; similarly, if it wants to make it cheaper for banks to borrow money, it reduces the repo rate.

Reverse Repo rate :

Reverse Repo rate is the rate at which banks park their short-term excess liquidity with the RBI. The banks use this tool when they feel that they are stuck with excess funds and are not able to invest anywhere for reasonable returns. **An increase in the reverse repo rate means that the RBI is ready to borrow money from the banks at a higher rate of interest**. As a result, banks would prefer to keep more and more surplus funds with RBI.

16] Inflation

In economics inflation means, a rise in general level of prices of goods and services in a economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Thus, inflation results in loss of value of money. Another popular way of looking at inflation is "too much money chasing too few goods". The last definition attributes the cause of inflation to monetary growth relative to the output availability of goods and services in the economy. In case the price of say only one commodity rise sharply but prices of other commodities falls, it will not be termed as inflation. Similarly, in case due to rumors if the price of a commodity rises during the day itself, it will not be termed as inflation

DIFFERENT TYPES OF INFLATION:

- **DEMAND - PULL INFLATION**

  In this type of inflation prices increase results from an excess of demand over supply for the economy as a whole. **Demand inflation occurs when supply cannot expand any more to meet demand**; that is, when critical production factors are being fully utilized, also called Demand inflation.

- **COST - PUSH INFLATION**

  This type of inflation occurs **when general price levels rise owing to rising input costs**. In general, there are three factors that could contribute to Cost-Push inflation: rising wages, increases in corporate taxes, and imported inflation

17] Deflation

Deflation is the opposite of inflation**. Deflation refers to situation, where there is decline in general price levels**. Thus, **deflation occurs when the inflation rate falls below 0% (or it is negative inflation rate)**.Deflation increases the real value of money and allows one to buy more goods with the same amount of money over time. Deflation can occur owing to reduction in the supply of money or credit.

Deflation can also occur due to direct contractions in spending, either in the form of a reduction in government spending, personal spending or investment spending. Deflation has often had the side effect of increasing unemployment in an economy, since the process often leads to a lower level of demand in the economy

18] Stagflation

Stagflation refers to economic condition where economic growth is very slow or stagnant and prices are rising. The term stagflation was coined by British politician Iain Macleod, who used the phrase in his speech to parliament in 1965, when he said: “We now have the worst of both worlds not just inflation on the one side or stagnation on the other. We have a sort of 'stagflation' situation.” The side effects of stagflation are increase in unemployment- accompanied by a rise in prices, or inflation. **Stagflation occurs when the economy isn't growing but prices are going up**. At international level, this

happened during mid-1970s, when world oil prices rose dramatically, fuelling sharp inflation in developed countries

19] Hyperinflation :

Hyperinflation is a situation where the price increases are too sharp. **Hyperinflation often occurs when there is a large increase in the money supply, which is not supported by growth in Gross Domestic Product (GDP).** Such a situation results in an imbalance in the supply and demand for the money. In this remains unchecked; it results into sharp increase in prices and depreciation of the domestic currency.

20] Cheque Truncation System :

The full form of **CTS is Cheque Truncation System.** RBI has decided to launch this system and all banks across India are required to follow RBI guidelines in this regard. **As per RBI guidelines, now all banks have to issue Cheques conforming to the CTS 2010 standards with uniform features. Under the CTS system, the physical movement of cheques between banks will be eliminated.**

At present , when you issue a cheque to someone, he has deposit the cheque in his bank to get credit. Then this cheque moves physically from his bank to your bank which involves a lot of time and risk. Now under CTS, instead of physical movement of the cheque, an electronic image of the cheque will be transmitted to the drawee branch / bank. The presenting bank will retains the physical cheque.

Along with the electronic image, certain key relevant information is also transmitted, such as date of presentation, presenting bank details, data on the MICR band. The new process is being adopted to reduce the scope of frauds as the new standardized cheques will have number of security features. The system will also help in speed clearance of cheques and thus customers will be able to get faster credit to their accounts. This will happen as there will be no physical movement of the cheques and hence time is saved and risk of loss of cheques in transit are totally eliminated.

21] Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is the market value of all final goods and services produced within a country in a given period of time. GDP is the basic measure of the country's economic performance over a given period. **Gross Domestic Product (GDP) is the broadest quantitative measure of a nation's total economic activity. More specifically, GDP represents the monetary value of all goods and services produced** within a nation's geographic borders over a specified period of time.

22] Talking ATM

The specially designed Automated Teller Machine (ATM) which can be operated independently by a visually impaired person, known as 'Talking ATM'.A Talking ATM is a type of automated teller machine (ATM) that provides audible instructions so that persons who cannot read an ATM screen can independently use the machine.

All audible information is delivered privately through a standard headphone jack on the face of the machine or as separately attached telephone handset. Information is delivered to the customer either through pre-recorded sound files or via text-to-speech synthesis. In India, **Reserve Bank of India (RBI) has directed all commercial banks that all new ATMs installed after July 1, 2014 should be as talking ATMs with Braille keypads and Banks should lay down a road map for converting all existing ATMs as talking ATMs with Braille keypads.**

23]Prime Lending Rate (PLR)

The term originally indicates the rate of interest at which a bank lends to favored customers, i.e. those with high credibility, though this is no longer always the case. Some variable interest rates may be expressed as a percentage above or below prime rate.

24] Sub Prime Rate

In India when money is lent below the PLR is known as Sub Prime Rate whereas in USA when money is lent at rate above the PLR is known as Sub Prime rate.

25] Global Depository Receipts (GDR)

It is a dollar denominated instrument, an easy way of raising funds from foreign countries. It is a mechanism that allows foreign investor to invest in Indian Companies. Represents a certain number of equity shares on Indian companies.

GDRs are issued by depository usually American Banks & Indian shares are held by custodian in India (like ICICI).Traded in stock exchanges in Europe or in US or bot

26] Vostro Account

When a foreign Bank is opened in the India with Indian Currency is known as Vostro account e.g. Standard Chartered Bank in India.

27] SWAPS

It is a transaction where the bank purchases or sells the foreign currency simultaneously, for different maturities, say purchases of spot and sale of forward or vice versa. Swap contracts obligate 2 parties to swap or exchange certain specified intervals. Swaps are not the instruments for raising funds rather they allow better management of existing funds.

28]Marginal Standing Facility (MSF)

Marginal Standing Facility (MSF) is the rate at which scheduled banks could borrow funds overnight from the Reserve Bank of India (RBI) against approved government securities. **The basic difference between Repo and MSF scheme is that in MSF banks can use the securities under SLR to get loans from RBI and hence MSF rate is 1% more than repo rate.**

29] Bank Overdraft :

An overdraft occurs when money is withdrawn from a bank account and the available balance goes below zero. In this situation the account is said to be "overdrawn". **If there is a prior agreement with the account provider for an overdraft, and the amount overdrawn is within the authorized overdraft limit, then interest is normally charged at the agreed rate**. If the negative balance exceeds the agreed terms, then additional fees may be charged and higher interest rates may apply.

30] SWIFT

The **Society for Worldwide Interbank Financial Telecommunication (SWIFT)** provides a network that enables financial institutions worldwide to send and receive information about financial transactions in a secure, standardized and reliable environment. Swift also sells software and services to financial institutions, much of it for use on the **SWIFT Net Network, and ISO 9362. Business Identifier Codes (BICs) are popularly known as "SWIFT codes**". The chairman of SWIFT is Yawar Shah, and its CEO is Gottfried Leibbrandt, originally from the Netherlands.

31] Mortgage :

Mortgage loan, also referred to as a mortgage, is used by purchasers of real property to raise money to buy the property to be purchased or by existing property owners to raise funds for any purpose. **The loan is "secured" on the borrower's property. This means that a legal mechanism is put in place**

which allows the lender to take possession and sell the secured property ("foreclosure" or "repossession") to pay off the loan in the event that the borrower defaults on the loan or otherwise fails to abide by its terms.

32] Debit Card :

An electronic card issued by a bank which allows bank clients access to their account to withdraw cash or pay for goods and services. **This removes the need for bank clients to go to the bank to remove cash from their account as they can now just go to an ATM or pay electronically at merchant locations**. This type of card, as a form of payment, also removes the need for checks as the debit card immediately transfers money from the client's account to the business account.

33] Credit Card :

A credit card is a payment card issued to users as a system of payment.

It allows the cardholder to pay for goods and services based on the holder's promise to pay for them. The issuer of the card creates a revolving account and grants a line of credit to the consumer (or the user) from which the user can borrow money for payment to a merchant or as a cash advance to the user.

34]Self Helped Groups(SHG):

A self-help group (SHG) is a village-based financial intermediary usually composed of 10–20 local women or men. A mixed group is generally not preferred. Most self-help groups are located in India, though SHGs can also be found in other countries, especially in South Asia and Southeast Asia. Members make small regular savings contributions over a few months until there is enough capital in the group to begin lending. Funds may then be lent back to the members or to others in the village for any purpose. In India, many SHG's are 'linked' to banks for the delivery of micro-credit.

Structure :

A self-help group may be registered or unregistered. It typically comprises a group of micro entrepreneurs having homogeneous social and economic backgrounds, all voluntarily coming together to save regular small sums of money, mutually agreeing to contribute to a common fund and to meet their emergency needs on the basis of mutual help. **They pool their resources to become financially stable, taking loans from the money collected by that group and by making everybody in that group self-employed**. The group members use collective wisdom and peer pressure to ensure proper end-use of credit and timely repayment. This system eliminates the need for collateral and is closely related to that of solidarity lending, widely used by micro finance institutions. To make the book-keeping simple enough to be handled by the members, flat interest rates are used for most loan calculations.

Goals :

Self-help groups are started by non-governmental organizations (NGOs) that generally have broad anti-poverty agendas. **Self-help groups are seen as instruments for a variety of goals including empowering women, developing leadership abilities among poor people, increasing school enrollments, and improving nutrition and the use of birth control**. Financial intermediation is generally seen more as an entry point to these other goals, rather than as a primary objective. This can hinder their development as sources of village capital, as well as their efforts to aggregate locally controlled pools of capital through federation, as was historically accomplished by credit unions.

Advantages of financing through SHG :

An economically poor individual gains strength as part of a group. Besides, financing through SHGs reduces transaction costs for both lenders and borrowers. While lenders have to handle only a single SHG account instead of a large number of small-sized individual accounts, borrowers as part of an SHG cut down expenses on travel (to & from the branch and other places) for completing paper work and on the loss of workdays in canvassing for loans.

35]Poverty :

A state or condition in which a person or community lacks the financial resources and essentials to enjoy a minimum standard of life and well-being that's considered acceptable in society.

36] Gross National Product (GNP) :

Gross national product (**GNP**) is the market value of all the products and services produced in one year by labor and property supplied by the citizens of a country. Unlike Gross Domestic Product(GDP), which defines production based on the geographical location of production, GNP allocates production based on ownership.

GNP does not distinguish between qualitative improvements in the state of the technical arts (e.g., increasing computer processing speeds), and **quantitative increases in goods** (e.g., number of computers produced), and considers both to be forms of "**economic growth**"

37] CAG :

The **Comptroller and Auditor General (CAG) of India is an authority, established by the Constitution of India under Chapter V**, who audits all receipts and expenditure of the Government of India and the state governments, including those of bodies and authorities substantially financed by the government. The CAG is also the external auditor of Government-owned corporations and conducts supplementary audit of government companies, i.e., any non-banking/ non-insurance company in which the state and **Union governments have an equity share of at least 51 per cent or subsidiary companies of existing government companies.** The reports of the CAG are taken into consideration by the Public Accounts Committees, which are special committees in the Parliament of India and the state legislatures .The CAG is also the head of the Indian Audit and Accounts Department, the affairs of which are managed by officers of Indian Audit and Accounts Service, and has over 58,000 employees across the country. The CAG is mentioned in the **Constitution of India under Article 148 – 151**.The CAG is ranked 9th and enjoys the same status as a judge of Supreme Court of India in Indian order of precedence. **The current CAG of India is Shashi Kant Sharma, who was appointed on 23 May 2013. He is the 12th CAG of India.**

15. Finance Commission

The **Finance Commission** came into existence in **1951.** It was established under **Article 280** of the Indian Constitution by the President of India. It was formed to define the financial relations between the center and the state.

13th Finance commission Report:

- The share of states in the net proceeds of the shareable Central taxes should be 32%.
- This is 1.5% higher than the recommendation of12th Finance Commission.
- Revenue deficit to be progressively reduced and eliminated, followed by revenue surplus by 2013-14.
- Fiscal deficit to be reduced to 3% of the GDP by 2014-15.
- A target of 68% of GDP for the combined debt of centre and states.
- The Medium Term Fiscal Plan(MTFP)should be reformed and made the statement of commitment rather than a statement of intent.
- FRBM Act need to be amended to mention the nature of shocks which shall require targets relaxation.
- Both center and states should conclude 'Grand Bargain' to implement the model Goods and Services Act (GST).
- To incentivize the states, the commission recommended a sanction of the grant of Rs 50000 crore.
  - Initiatives to reduce the number of Central Sponsored Schemes (CSS)and to restore the predominance of formula based plan grants.
  - States need to address the problem of losses in the power sector in time bound manner.

14thFinance Commission

The government announced the constitution of the 14th Finance Commission under the **chairmanship of former RBI Governor Y. V. Reddy**.

The five-member panel is to submit its report by October 31, 2014.

Apart from its recommendations on the sharing of tax proceeds between the Centre and the States which **will apply for a five-year period beginning April 1, 2015**, the Commission has been asked to suggest steps for pricing of public utilities such as electricity and water in an independent manner and also look into issues like disinvestment, GST compensation, sale of non-priority PSUs and subsidies**.**

Highlights of the 14th Finance Commission's recommendations

- **Devolution to states:** States' share in net proceeds from tax collections be **42% — a huge jump from 32% recommend by the 13th Finance Commission**, and the largest change ever in the percentage of devolution

- **Big jump in tax share:** Compared with 2014-15, the total devolution to states in 2015-16 will increase by over 45%

- **Resource transfer:** Tax devolution be the primary route resource transfer to states

- **NITI connect:** The govt. has accepted the recommendations in view of the spirit of the National Institution for Transforming India (NITI)

- **Grants:** Should be distributed to states for local bodies on the basis of the 2011 population data; the grants be divided into **two broad categories on the basis of rural and urban population** — constituting gram panchayats, and constituting municipal bodies

- **Types of grants:** A basic grant and a performance grant — the ratio of basic to performance grant be **90:10, with respect to panchayats; and 80:20 in the case of municipalities**

- **Total grants**: Rs 2,87,436 crore for a five-year period from April 1, 2015, to March 31, 2020; of this, Rs 2,00,292.20 crore to be given to panchayats and Rs 87,143.80 crore to municipalities

- **Grant transfers:** For 2015-16, transfers will be to the tune of Rs 29,988 crore

- **Disaster relief:** The percentage share of states to continue as before and follow the current mechanism — to the tune of Rs 55,097 crore. **After implementation of GST, disaster relief will be given according to the recommendations of the Finance Commission**

- **Post-devolution revenue deficit grants:** A total of Rs 1,94,821crore on account of expenditure requirements of states, tax devolution and revenue mobilization capacity of the states. These will be given to 11 states
- **Delinking of schemes:** Eight centrally sponsored schemes (CSSes) will be delinked from support from the Centre; various CSSes will now see a change in sharing pattern, with states sharing a higher fiscal responsibility
- **Cooperative federalism:** There are recommendations on cooperative federalism, GST, fiscal consolidation road map, pricing of public utilities and PSUs, too.

16. NITI Aayog

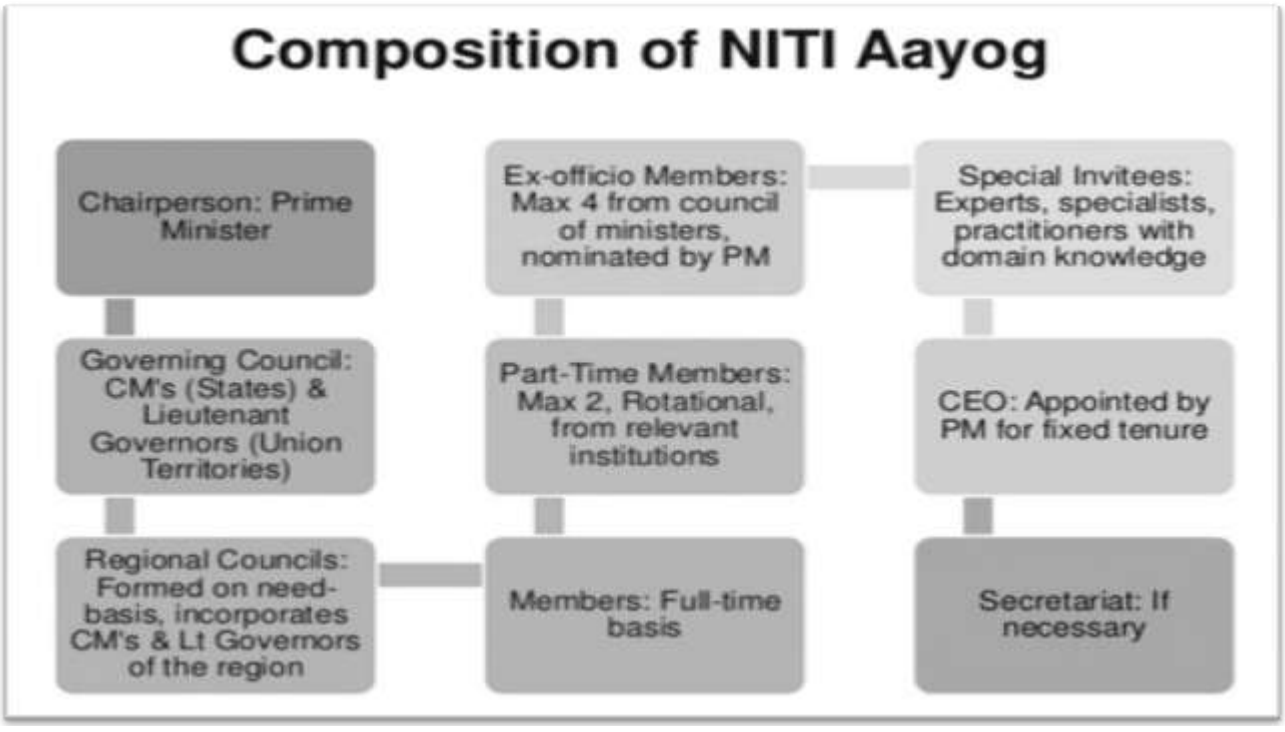
NITI Aayog' or the National Institution for Transforming India is a Government of India policy **think-tank established by the Narendra Modi government to replace the Planning Commission**.

History :

On May 29, 2014, the Independent Evaluation Office submitted an assessment report to Prime Minister Narendra Modi with the recommendation to replace the Planning Commission with a "**control commission**".

- On August 13, 2014, the Union Cabinet scrapped the Planning Commission, to be replaced with a diluted version of the **National Development and Reform Commission (NDRC) of India.**
- On January 1, 2015 a Cabinet resolution was passed to replace the Planning Commission with the newly formed **NITI Aayog (National Institution for Transforming India)**.
- **The first meeting of NITI Aayog was chaired by Narendra Modi on February 8, 2015**.
- Finance Minister Arun Jaitley made the following observation on the necessity of creating NITI Aayog, "The 65-year-old Planning Commission had become a redundant organization.
- It was relevant in a command economy structure, but not any longer. India is a diversified country and its states are in various phases of economic
- development along with their own strengths and weaknesses.
- In this context, a 'one size fits all' approach to economic planning is obsolete.
- It cannot make India competitive in today's global economy."

Members :



Prime Minister Of India as the Chairperson.

A Governing Council composed of Chief Ministers of all the States and Union territories with Legislatures and lieutenant governors of other Union Territories.

Regional Councils composed of Chief Ministers of States and Lt. Governors of Union Territories in the region to address specific issues and contingencies impacting more than one state or a region.

Full-time organizational framework composed of a Vice-Chairperson, three full-time members, two part-time members (from leading universities, research organizations and other relevant institutions in an ex-officio capacity), four ex-officio members of the Union Council of Ministers, a Chief Executive Officer (with the rank of Secretary to the Government of India) who looks after administration, and a secretariat.

Experts and specialists in various fields.

- **Prime Minister Narendra Modi as the Chairperson**,
  the committee consists of:
- **Vice Chair person**: Arvind Panagariya
- **Ex-Official Members**: Rajnath singh, Arun Jaitley, Suresh Prabhu and Radha Mohan Singh
- **Special Invitees**: Nitin Gadkari, Smrit iZubin Irani and Thawar Chand Gehlot
- **Full-time Members**: Bibek Debroy (Economist), V. K. Saraswat
- (former DRDO Chief) and Ramesh Chand (Agriculture Expert)
- **Chief Executive Officer**: Amitabh Kant
- **Governing Council**: All Chief Ministers and Lieutenant Governors of States and Union Territories.

17. Summits

1] BRICS (Brazil, Russia, India, China and South Africa) Summits

- **6th BRICS Summit 2014** – Fortaleza, Brazil
- **7th BRICS Summit 2015** – UFA, Russia
- **8th BRICS Summit 2016** – Benaulim, Goa, India
- **9th BRICS Summit 2017 -** xiamen, china
- **10th BRICS Summit 2018 -** johnnesberg, south africa

2] G-7 Annual Summits

- Earlier it was G8, Now *Russia* has been temporarily suspended. So it was renamed as G7.
- **Established on** - 1975
- Group of Seven Countries – France, Germany, Italy, Japan, United Kingdom, United States of America, Canada.
- **Recently Held and Upcoming G7 Summits**
  - **40th G8 Summit 2014** – Brussels, Belgium
  - **41st G8 Summit 2015** – Schloss Elmau, Germany
  - **42nd G8 Summit 2016** – Shima, Japan
  - **43rd G8 Summit 2017** – Italy
  - **44th G8 Summit 2018** – Canada
  - **45th G8 Summit 2019** – France
  - **46th G8 Summit 2020** - United States
  - **47th G8 Summit 2021** - United Kingdom

3] G-20 Summits

- **Headquarters** - Cancún, Mexico
- **Establishment** - 20 August 2003
- **Chairperson** - Mauricio Macri
- **Total Member Countries** - 20 (*Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, United Kingdom United States and European Union*)
- **Recently held and Upcoming G-20 Summits and Venues**
- **9th G 20 Meeting 2014** – Brisbane, Australia
- **10th G 20 Meeting 2015** – Antalya, Turkey
- **11th G 20 Meeting 2016** – Hangzhou, China
- **12th G 20 Meeting 2017** – Germany
- **13th G 20 Meeting 2018** – Argentina, Buenos Aires

4] SAARC Summits

- **SAARC** - **S**outh **A**sian **A**ssociation for **R**egional **C**ooperation
- These summits have generally taken place approximately every eighteen months.
- **Headquarters** – Kathmandu, Nepal
- **Formation** - 16 January, 1987
- **First holder** - Abul Ahsan

- **Secretary General**– Arjun Bahadur Thapa
- **Countries (8)** – Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
- **Recently Held and upcoming SAARC Summits**
    - **18th SAARC Summit 2014** – Kathmandu, Nepal
    - **19th SAARC Summit 2016** – Islamabad, Pakistan (cancelled)

5] ASEAN Summits

- **ASEAN** - **A**ssociation of **S**outh **E**ast **A**sian **N**ation
- **Headquarters** - Jakarta, Indonesia
- **Establishment** - 8 August 1967
- **Total Countries** – 10 (Brunei, Cambodia, Indonesia, Laos, Malaysia, Burma (Myanmar), Philippines, Singapore, Thailand, Vietnam

- **Secretary General** – Le Luong Minh (Vietnam)
- **Chairman** - Philippines Rodrigo Duterte
- **Recently held and Upcoming ASEAN Summits**
- **The First ASEAN summit** was held February 1976 in Bali, Indonesia.
- **24th ASEAN Summit 2014 (May) –** Nay Pyi Taw, Myanmar
- **25th ASEAN Summit 2014 (November)** – Nay Pyi Taw, Myanmar
- **26th ASEAN Summit 2015 (April)** – Langkawi, Malaysia
- **27th ASEAN Summit 2015 (November)** – Manila, Philippines
- **28th ASEAN Summit 2016 (April)** – Vientiane – Laos
- **29th ASEAN Summit 2016 (November)** -Vientiane- Laos
- **30th ASEAN Summit 2017 (April)** - Philippines,Metro Manila
- **31st ASEAN Summit 2017 (November)** – Philippine, Clark, Freeport Zone
- **32nd ASEAN Summit 2018 (April)** - Singapore
- **33rd ASEAN Summit 2018 (November)** – Singapore

6]East Asia Summit (EAS)

- **Establishment** - 1991 by Malaysian Prime Minister Mahathir Mohamad.
- **Countries** : Australia, Brunei, Cambodia, China, India, Indonesia, Japan, Laos, Malaysia, Myanmar, New Zealand, Philippines, Russia, Singapore, South Korea, Thailand, United States, Vietnam
- The East Asia Summit (EAS) is a forum held annually.
- EAS meetings are held after annual ASEAN leaders' meetings.
- The first summit was held in Kuala Lumpur, Malaysia on 14 December 2005.
- **Recently held EAST Asia Summits**
- **The first summit** was held in Kuala Lumpur, Malaysia on 14 December 2005.
- **9th East Asia Summit 2014** – Nay Pyi Taw, Myanmar
- **10th East Asia Summit 2015** – Kuala Lumpur .Malaysia
- **11th East Asia Summit 2016** – Vientiane, Laos
- **12th East Asia Summit 2017** – Philippines
- **13th East Asia Summit 2018** - Singapore

7] IBSA Dialogue Forum

IBSA Dialogue Forum (India, Brazil, South Africa) is an international tripartite grouping for promoting international cooperation these countries

- **5 th IBSA Summit 2011-Pretoria, South Africa**

- **6 th IBSA Summit 2013-New Delhi, India**
- **7 th IBSA Summit 2015-Brazil**
- **8th IBSA Summit 2017** : India (New Delhi)

8] APEC Summits

- **Headquarters** – Singapore
- **Establishment** - 1989
- **Total Countries** – 21 countries *(Australia, Canada, Brunei, Chile, china, Taiwan, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mexico, New Zealand, Peru, Philippines, Russia, Singapore, Thailand, United States, Vietnam)*.
- **Executive Director** – Alan Bollard

- **29th APEC Summit 2017 –** Vietnam, Danang
- **30th APEC Summit 2018** - Papua, New Guinea Port Mores
- **31st APEC Summit 2019** - Chile
- **32nd APEC Summit 2020** - Malaysia
- **33rd APEC Summit 2021** - New Zealand
- **34th APEC Summit 2022** – Thailand
- **35th APEC Summit 2023** - Mexico
- **36th APEC Summit 2024** - Brunei
- **37th APEC Summit 2025** - Republic of Korea

9] OPEC – Organization of petroleum Exporting Countries

The **Organization of the Petroleum Exporting Countries (OPEC)** is a permanent, intergovernmental Organization, created at the Baghdad Conference on September 10–14, 1960, **by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela.**

- **5th OPEC International Seminar 2012 :Vienna, Austria**
- **6th OPEC International Seminar 2015:Vienna, Austria**
- **7th OPEC International Seminar 2018** : Vienna, Austria (20−21 June 2018)

10] NAM Summits NAM- Non- aligned Movement

- **NAM** – Non Alighed Movement membership countries (120 + 2) Two nations namely Azerbaijan Republic and Fiji
- **Recently held and upcoming NAM Summits**
- **17th NAM Summit 2015** – Caracas, Venezulea
- **18th NAM Summit 2019** - Azerbaijan

11] Nuclear Security Summit:

- **2nd Summit 2012:Seoul (South Korea)**
- **3rd Summit 2014:Netherlands**
- **4th Summit 2016:United States**

12] NATOSummit :

- **NATO** - **N**orth **A**tlantic **T**reaty **O**rganization
- **Head Office** : Brussels, Belgium
- **Members** : 28
- **Secretary General** : Jens Stoltenberg
- **Recently held and upcoming NATO Summits**
  - **NATO Summit 2014** : Wales (Britain), UK
  - **NATO Summit 2016** : Poland
  - **NATO Summit 2017** : Belgium (25th May)
  - **NATO Summit 2018** : Belgium (11th-12th July)

13] BIMSTEC Summit:

Bay of Bengal Initiative for Multi sectoral Technical and Economic Cooperation(BIMSTEC).

BIMSTEC includes 7 countries :

Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan and Nepal aims to create cooperation in multiple sectors including trade, investment and energy.

- **3rd BIMSTEC summit 2014:Nay Pyi Taw (Myanmar)**
- **4thBIMSTEC summit will be held in Nepal.**

14] Asian Development Bank (ADB) Annual Meetings

- **Annual meeting of the board of governors of the Asian Development Bank (ADB) held every year.**
- **Recently held and Upcoming ADB Annual Meetings**
  - **47th ADB Annual Meeting 2014** : Astana, Kazakhstan
  - **48th ADB Annual Meeting 2015** : Baku, Azerbaijan
  - **49th ADB Annual Meeting 2016** : Frankfurt, Germany
  - **50th ADB Annual Meeting 2017** : Yokohama, Japan
  - **51st ADB Annual Meeting 2018** : ADB Headquarters, Manila
  - **52nd ADB Annual Meeting 2019** : Nadi, Fiji

15] SCO Meetings : (SCO – Shanghai Cooperation Organization)

- **SCO Meeting 2011 –Astana, Kazakhstan**
- **SCO Meeting 2012 –Beijing, China**
- **SCO Meeting 2013 –Kyrgyzstan**
- **SCO Meeting 2014 –Tajikistan**
- **SCO Meeting 2015 –Russia**
- **SCO Meeting 2016 –Uzbekistan**
- **SCO Meeting 2017 –Kazakhstan**
- **SCO Meeting 2018 –China**

16]WTO – World Trade Organization

- **8thWTO Ministerial Conferences 2011 –Geneva, Switzerland**
- **9thWTO Ministerial Conferences 2013 --Bali, Indonesia**
- **11TH WTO Ministerial Conferences 2017 – Argentina**

18. Highlights of Union Budget

- **Introduction:**

The Union Finance Minister Arun Jaitley on February 1, 2018 presented the Union Budget 2018 in the parliament. In the independent India, this will be the 88th budget and the fifth of the Modi Government.

This year's budget session is crucial as it comes after government's two big financial decisions - demonetisation and the implementation of Goods and Services Tax. It will be also NDA government's last full budget presentation before next year's Lok Sabha elections.

The Budget 2018 has identified various sectors including agriclutre, infrastructure, financial, public services, etc as key drivers of the economy. Accordingly, Arun Jailtley announced following initiatives:

Agriculture

• This year's Budget will focus on generating higher income for farmers and higher prices for their produce.
• For better price realisation, farmers need to make decisions based on prices likely to be available in the market.
• Minimum Support Price shall be increased by 1.5 times.
• More than 86 per cent farmers are small and marginal, they will be strengthened through government initiatives like MNREGAS with corpus of Rs 2000 crore.
• Organic farming will be encouraged and women self help groups will be encouraged for organic farming
• Allocation of Rs 1400 crore for Food processing, doubled from last year's budget which allocated Rs 715 crore.
• Operation Green will be launched for agriculture with corpus of Rs 500 crore.
• Rs 1290 crore allocated for restructured bamboo production mission.
• Setting up of Fishery and Aquaculture fund and Animal Husbandary fund with total corpus of Rs 10000 crore

Underprivileged

• Ujjwala Yojana, the free LPG connection scheme will be expanded to eight crore women.
• The Saubhagya Yojana will be another focus for the government.
• Free power connections to 4 crore homes.
• A dedicated affordable housing fund will be set up this year.
• Loans to self-help groups will increase to Rs 75000 crore.

• Allocation of Rs 5750 crore to National Livelihood Mission and Rs 2600 crore to the groundwater irrigation scheme.

Education Sector

• Budget 2018 proposes to treat education holistically without segmentation from pre-nursery to Class 12.
• An integrated B-Ed programme will be initiated for teachers.
• Gradual progress from blackboard to digital board.
• Revitalising of Infrastructure and Systems of Education (RISE) will be launched by 2019.
• Setting up of two new full-fledged schools of planning and architecture.
• 18 new schools of planning and architecture will be set up in the IITs and NITs.
• Prime Minister's fellowship programme will be launched to subsidise research.

Health Sector

• National Health Protection Scheme will be launched to cover 10 crore poor and vulnerable families. Under this, up to Rs 5 lakh will be provided to each family per year in secondary and tertiary care institutions. This scheme will have 50 crore beneficiaries.
• This scheme will generate lakhs of jobs, particularly for women.
• Tuberculosis claims more lives every year than any other disease. The government will provide Rs 600 crore as nutritional support to all TB patients.
• 24 new government medical colleges will be set up by upgrading existing district hospitals in the country. At least one medical college will be there for three parliamentary constituencies.

MSME sector

• Mass formalization of MSME sector is happening after demonetization and GST. Online loan sanctioning facility will be refurbished to speed up the complete process by banks.
• Rs 3 lakh crore is allocated as target for the Mudra Yojana for the year 2018-19. Additonal measures will be taken to boost the growth of venture capital funds and angel investors.
• The government will contribute 12 per cent of wages of new employees for all sectors.
• Woman's contribution to the Provident Fund will be reduced to 8 per cent from now onwards for the first 3 years of her employment with no reduction in employer's contribution.
• Allocation of Rs 7148 crore for the textile sector.

Infrastructure and Transport

• Rs 1. 48 lakh crore have been allocated for the Indian Railways for the year 2018-19.
• 18000 km of railway line will be doubled to eliminate capacity constraints.
• Government will work on Eastern and Western dedicated freight corridor and will give special attention to the maintenance of track infrastructure.
• Budget will also encompass the increase in the use of technology, fog safe train protection and warning system.
• Redevelopment of 600 major railway stations will be taken up.
• All railways stations with more than 25000 footfalls will have escalators.
• An institute is under its way at Vadodara to train manpower for high-speed railway projects.
• UDAN scheme will now connect 56 unserved airports and 31 unserved helipads in the country.
• Airport Authority of India has 124 airports in total. The airport capacity will now be enhanced to handle more than one billion trips every year.

Financial Sector

• NITI Aayog will establish a National Programme to direct government's efforts in the area of Artificial Intelligence towards national development.

• The government will explore use of blockchain technology proactively to boost digital economy. However, the government will not consider cryptocurrency as legal tender.

• Enterprises will now have to own their unique IDs.

• System of toll payments by cash will be digitized.

• The Union Commerce Ministry will develop a National Logistics Portal as a single window program to boost the logistics sector.

• Recapitalisation: The Union government will recapitalise public sector banks to help them lend an additional Rs 5 lakh crore.

• Unit Trust of India, Oriental Insurance and National Insurance will be merged and then listed.

Taxation Reforms

• The total expenditure of the Union government will be Rs 21.57 lakh crore. The projected fiscal deficit of the FY 2018-19 is 3.3 per cent of the GDP.

• In previous years, the growth rate of direct taxes have been significant. Till January 2018, growth rate of 18.7 per cent was recorded. Over 85 lakh new taxpayers filed their returns.

• The number of effective taxpayers increased from 6.47 lakh crore to 8.27 lakh crore in the previous financial year.

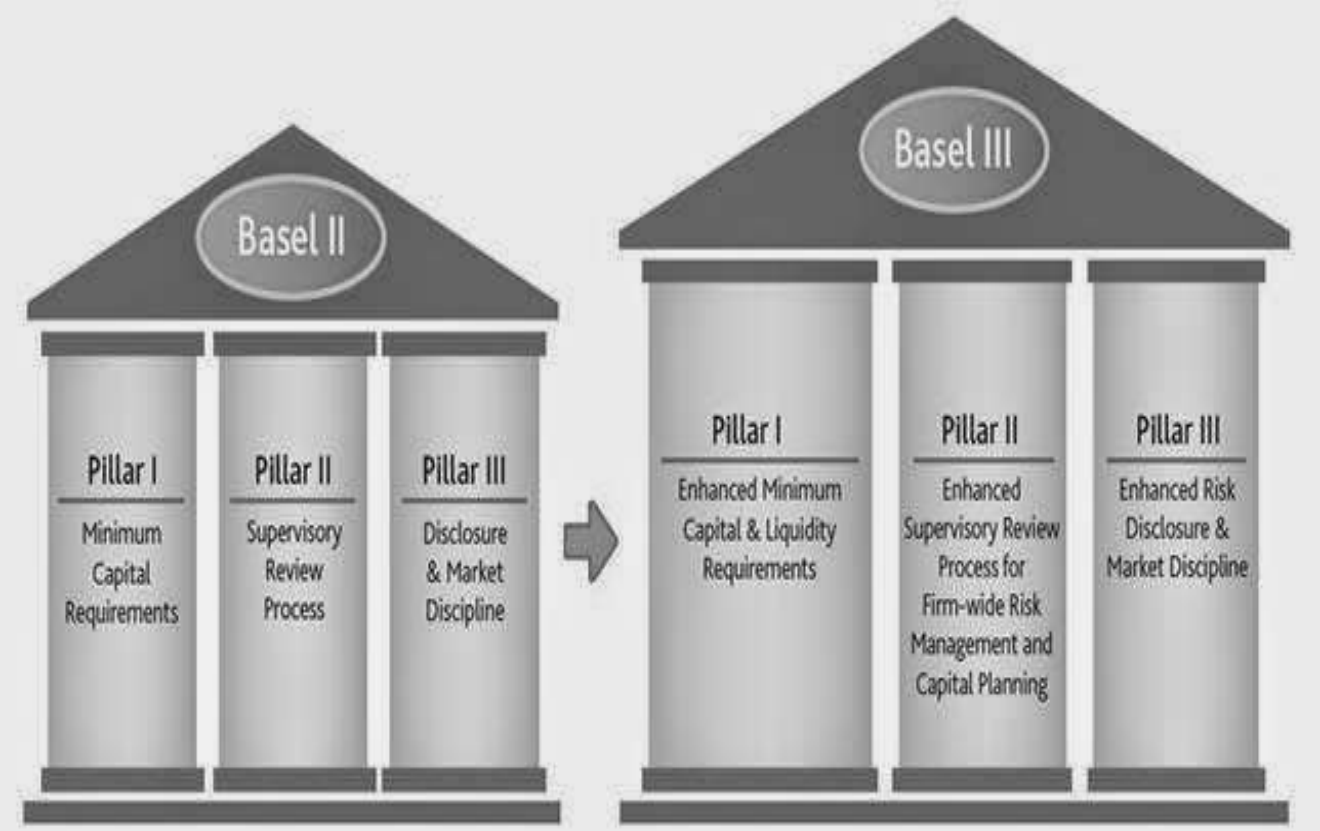
• The excess revenue from personal income tax is Rs 90000 crore.

• 100 per cent tax deduction to farmer-producer companies having Rs 100 crore turnover.

• Corporate tax will be reduced to 25 per cent for companies having turnover of up to Rs 250 crore.

• Long term capital gains tax of 10 per cent will be levied for amounts exceeding Rs 1 lakh.

19. Basel Norms



- **Introduction:**

  In the recent few days we have heard a lot that government is been infusing lot of money in the public sector banks….. To understand why??? We have to first understand that what BASEL ACCORD **or** BASEL NORMS is all about.

  Basel is a city in Switzerland which is also the headquarters of Bureau of International Settlement (BIS).

  BIS fosters co-operation among central banks with a common goal of financial stability and common standards of banking regulations.

- **Objective:**

  The set of agreement by the BCBS(BASEL COMMITTEE ON BANKING SUPERVISION), which mainly focuses on risks to banks and the financial system are called Basel accord.

  The purpose of the accord is to ensure that financial institutions have enough capital on account to meet obligations and absorb unexpected losses.

  India has accepted Basel accords for the banking system.

  Up till now BASEL ACCORD has given us **three BASEL NORMS** which are BASEL 1,2 and 3 but before coming to that we have to understand following terms-

  CAR/CRAR- Capital Adequacy Ratio/ Capital to Risk Weighted Asset Ratio
  RWA- Risk Weighted Assets
  Formulae for CAR=Total Capital/RWA*100
  Now here, Total Capital= Tier1+ Tier2 capital
  Tier 1 - The Tier-I Capital is the core capital

For example - Paid up Capital, Statutory Reserves, Other disclosed free reserves, Capital Reserves which represent surplus arising out of the sale proceeds of the assets, other intangible assets are belongs from the category of Tier1 capital.

Tier 2 -Tier-II capital can be said to be subordinate capitals.
For example - Undisclosed reserves, Revaluation Reserves, General Provisions and loss reserves , Hybrid debt capital instruments such as bonds, Long term unsecured loans, Debt Capital Instruments etc are belongs from the category of Tier2 capital.

- **Risk weighted assets**:-
  RWA means assets with different risk profiles; it means that we all know that is much larger risk in personal loans in comparison to the housing loan, so with different types of loans the risk percentage on these loans also varies.

1) **BASEL-1**
   In 1988,The Basel Committee on Banking Supervision (BCBS) introduced capital measurement system called Basel capital accord, also called as Basel 1.It focused almost entirely on credit risk, It defined capital and structure of risk weights for banks. The minimum capital requirement was fixed at 8% of risk weighted assets (RWA).**India adopted Basel 1 guidelines in 1999.**
2) **BASEL-2**
   In 2004, Basel II guidelines were published by BCBS, which were considered to be the refined and reformed versions of Basel I accord.
   The guidelines were based on three parameters which are as follows-
   Banks should maintain a minimum capital adequacy requirement of 8% of risk assets. Banks were needed to develop and use better risk management techniques in monitoring and managing all the three types of risks that is credit and increased disclosure requirements.
   The three types of risk are- operational risk, market risk, capital risk.
   Banks need to mandatory disclose their risk exposure, etc to the central bank. Basel II norms in India and overseas are yet to be fully implemented.
3) **BASEL-3**
   In 2010, Basel III guidelines were released. These guidelines were introduced in response to the financial crisis of 2008.
   In 2008, **Lehman Brothers collapsed in September 2008**, the need for a fundamental strengthening of the Basel II framework had become apparent.
   Basel III norms aim at making most banking activities such as their trading book activities more capital-intensive.
   The guidelines aim to promote a more resilient banking system by focusing on four vital banking parameters viz. capital, leverage, funding and liquidity.Presently Indian banking system follows Basel II norms.
   The Reserve Bank of India has extended the timeline for **full implementation of the Basel III capital regulations by a year to March 31, 2019.**

IMPORTANT POINTS REGARDING TO THE IMPLEMENTATION OF BASEL-3:

- Government of India is scaling disinvesting their holdings in PSBs to 52 per cent.
- Government will soon infuse Rs 6,990 crore in nine public sector banks including SBI, Bank of Baroda (BoB), Punjab National Bank (PNB) for enhancing their capital and meeting global risk norms.
- **This is the first tranche of capital infusion for which the government had allocated Rs 11,200 crore in the Budget for 2014-15.**
- The government has infused Rs 58,600 crore between 2011 to 2014 in the state-owned banks.
- **Finance Minister Arun Jaitley in the Budget speech had said that "to be in line with Basel-III norms there is a requirement to infuse Rs 2,40,000crore as equity by 2018 in our banks**.
- To meet this huge capital requirement we need to raise additional resources to fulfill this obligation.

20. Important Committees

1. **Ajay Shankar Committee :** To review functioning of PPP Cell
2. **Prof. NR Madhava Menon Panel :** Reported guidelines for regulating expenditure and content of advertisement in govt. adds
3. **H DevarajCommitee :** Reported most deemed university
4. **H R Khan Panel :** To evaluate unclaimed PPF and Post Office Savings
5. **V VDaga Committee :** To conduct forensic audit of NSEL
6. **Sivarama krishnan committee :** Submit Report to build the capital city for Andhra Pradesh
7. **Ramanujam committee :** To avoid obsolete laws
8. **BimalJalan :** To head the Expenditure Management Commission
9. **Hari Gautam Committee :** To review the status of UGC
10. **Justice SB Sinha** (One Member Commission):To Probe 2006 Meerut Fire Tragedy
11. **Suresh Prabhu Committee:** To review gas pricing formula
12. **R S Sharma Expert Committee :** To review the Company (Cost Records and Cost Audits) Rules 2014
13. **Justice MB Shah :** On Black Money
14. **Deepak Mohanty Committee :** Data and Information Management in the RBI
15. **Arvind Mayaram Committee :** To clear definition to the FDI and FII
16. **Nachiket Mor Committee :** To permit NBFC's to work as Business correspondence
17. **P J Nayak Committee :** Governance of Boards of Bank in India
18. **Bibek Debroy** : for Restructuring the railway
19. **Justice CS Dharmadhikari Committee:** recommended complete ban on dance bars in hotels and restaurants.
20. **Pratyush Sinha :** To assess compensation for coal blocks.
21. **Jairam Ramesh :** On sustainable development
22. **T.K. Vishwanathan committee:** To provide Bankruptcy code for small and medium enterprises (SMEs).

23. **K.V. Kamath panel:** to examine the financial architecture for Micro, Small and Medium Enterprises (MSME) sector.

24. **Gopalakrishna Committee:** on Capacity Building in Banks and non-Banks

25. **G N Bajpai Committee:** Guidelines for national pension system (NPS) schemes in private sector.

26. **Scientist Raghunath Anant Mashelkar panel:** To recommend best technologies for Prime Minister Narendra Modi's "Swachh Bharat" national sanitation campaign.

27. **T S R Subramanian Committee:** To review five key green laws concerning protection and conservation of environment, forest, wildlife, water and air among others.

28. **Tandon Committee:** Follow Up Of Bank Credit

29. **DR Gadgil Committee:** Agricultural Finance

30. **Godwala Committee:** Rural Finance

31. **ML Dantwala Committee:** Regional Rural Banks

32. **SS Nadkarni Committee:** Trading In Public Sector Banks

33. **Venketaiya Committee:** Review Of Rural Financing System

34. **Bhide Committee:**Coordination Between Commercial Banks And SFC's

35. **AK Bhuchar Committee:** Coordination Between Term Lending Institutions And Commercial Banks.

36. **R. Jilani:** Inspection System in Banks

37. **Goiporia Committee:** Customer Service In Banks

38. **LC Gupta Committee:** Financial Derivatives

39. **James Raj Committee:** Functioning Of Public Sector Banks

40. **Vipin Malik Committee:** Consolidated Accounting By Banks

41. **A Ghosh Committee:** Frauds & Malpractices In Bank

42. **BD Thakar Committee:** Job Criteria In Bank Loans (Approach)

43. **A K Khandelwal:** HR Issues of Public Sector Banks

44. **R.H. Khan:** Harmonization of the Role of Financial Institution in Banks

45. **Rajamannar Committee:** Changes In Banking Laws, Bouncing Of Cheques Etc.
46. **Usha Thorat Panel:** Financial Inclusion

47. Chatalier Committee: Finance To Small Scale Industry

48. K Madhav Das Committee: Urban Cooperative Banks

49. R S Saria Committee: Agricultural Finance And Cooperative Society

50. SS Kohli Committee: Rationalization Of Staff Strength In Bank

51. J.V. Shetty: Consortium Lending by Banks

52. I.T. Vaz: Norms for Working Capital Finance by Banks

53. Y.V. Reddy: Financial Aggregate System

54. Rakesh Mohan: Small Savings: Tax and Interest Rates

55. M Damodaran: Customer Service in Banks

56. Pillai Committee: Pay Scales Of Bank Officers

57. Rangrajan Committee: Computerization Of Banking Industry

58. Cook Committee
(On Behalf Of BIS – Under Basel Committee): Capital Adequacy Of Banks

59. Pendarkar Committee: Review The System Of Inspection Of Commercial, RRB And Urban Cooperative Banks

60. Dave Committee: Mutual Funds (Functioning

21. Important Terms in Economy

1) **Balance of trade**: the part of a nation's balance of payments(difference between foreign entities with domestic entities) that deals with merchandise (or visible) imports or exports.
2) **Bank assurance:** Selling of insurance products through banks. It also refers as cross selling of insurance products.
3) **Camels:** It is a supervisory rating system. It refers to **Capital adequacy, Assets, Management Capability, Earnings appraisal, Liquidity** (also called asset liability management) and **Sensitivity** (sensitivity to market risk, especially interest rate risk).
4) **CGT** (Capital gain tax): It is a direct tax that will be levied on sales and purchases of capital assets such as Shares, stakes, even costlier items which won't have depreciation such as monuments, paintings.
5) **Cheque Clearing:** This is the process of getting the money from the cheque-writer's account into the cheque receiver's account.
6) **CIBIL:** CIBIL refers to Credit Information Bureau India Limited was first established by SBI and HDFC. It deals with both commercial and consumer segments. It maintains the record of the borrowers by its members.
7) **Clearing Bank:** This is a bank that can clear funds between banks. For general purposes, this is any institution which we know of as a bank or as a provider of banking services. For general purposes, this is any institution which we know of as a bank or as a provider of banking services.
8) **Core Banking Solution:** The branches of a bank are connected to central host, where online multiple delivery channels like **ATM, ABB, Debit Card, Mobile Banking etc under one roof**.
9) **Credit Rating:** This is the rating which an individual (or company)gets from the credit industry. This is obtained by the individual's credit history, the details of which are available from specialist organizations like **CRISIL** in India.
10) **Credit-Worthiness:** This is the judgment of an organization which is assessing whether or not to take a particular individual on as a customer. **An individual might be considered credit worthy by one organization but not by another**. Much depends on whether an organization is involved with high risk customers or not.
11) **Crop Loans:** Bank provide crop loans to the farmers for their seasonal operations (Kharif, Rabi) of agriculture **like to purchase seeds, fertilizers.**
12) **Cross Selling:** Cross selling refers to selling of multiple products to the existing customers such as **insurance, mutual funds etc**
(to the banking customers).
13) **Current Accounts:** These accounts are maintained by **the corporate clients** that may be operated any number of times in a day. There is maintenance charge for the current accounts for which the holders enjoy facilities of **easy handling, overdraft facility** etc.

14) **Demand Deposit: A demand deposit is the one which can be withdrawn at any time, without any notice or penalty**; e.g. money deposited in a checking account or savings account in a bank.

15) **DTC** (**Direct tax code**): This is a provision that can replace age old Income tax act 1961.Since this act have loop holes (such as IT dept. Will have no jurisdiction over the fraud happened outside India even Indian company purchased or shares of Indian company sold), so by this code Govt. Will have power to curtail the menace of tax avoidance, and **AAR (Authority for advanced ruling is a body by govt. Can act independently over these issues and grant permission for MNC's that their 'transfer of shares',' absorption/amalgamation' is legitimate or not.**

16) **EMI**(Emulated Monthly Installment) : An equal amount repaid with the principal and interest amount of a loan on every month.

17) **Endorsement:** When the maker of the holder of the negotiable instruments sign on the back of the cheque to "**Pay certain person**". It means transfer from one person to another person.

18) **Equity**: **Equity is a one financial instrument by which company invite the public to invest their money in the company and investor can become a partner of the company**. Generally, when the company have insufficient money to expand its business it comes with equity shares. Angel investors are the persons who will give financial help to a novice company to develop leaps and bounds.

19) **FCNR Accounts: Foreign Currency Non-Resident Accounts** are the ones that are maintained by the NRIs in foreign currencies like USD, DM and GBP etc. The account is a term deposit with interest rates linked to the international rates of interest of the respective currencies.

20) **Fiscal policy**: Fiscal policy defines the use of government spending and revenue collection to influence the economy.

21) **Fiscal consolidation:** It is the process at which the govt. Undertake austerity measures to put restrictions on its economy such as de licensing of industries, disinvestment from stack etc. Our India is following under RBI, a perfect measure by **FRBM** act (**fiscal responsibility and budget ary management act**) **2003**.

22) **Floating Rate of Interest :**It refers to the movement i.e., interest rate on a period basis due to outside conditions of the market

23) **Foreign Direct Investment (FDI):** Investment of foreign assets directly into a domestic company's structures, equipment, and organizations. It does not include foreign investment into the stock market.

24) **GAAR (General anti avoidance rules): These are the provisions by which govt. Can restrict tax avoidance (some MNC's deliberately avoid tax by doing transactions in tax heavens such as Mauritius, Luxembourg** (Where Sahantha biotech fraud happened), Cayman Islands (where Vodafone fraud happened). Govt. India wants to plan these rules from 2016.

25) **Internet Banking:** Online banking (or internet banking) allows customers to conduct financial transactions on a secure website operated by the bank. **Banks are using internet as a channel to deliver their service to their customers is referred to internet banking.**

26) **Kisan Credit Card:** Kissan Credit card is issued by the bank to farmers to meet their cultivation needs and inputs, for a **period of three years**

27) **Letter of Credit:** The buyer of goods request his bank to give guarantee that the payment for the goods will be paid to the seller. IN such case the bank issues LC.

28) **Loan:** A loan is a type of debt. In a loan, the borrower initially receives or borrows an amount of money, called the principal, from the lender, and is obligated to pay back or repay an equal amount of money to the lender at a later time. **There are different kinds of loans such as the house loan, auto loan etc.**

29) **Mergers in Banking:** Mergers refers to combination of two or more banking companies into a single one. Further, it shall continue on a single name.

30) **Mobile Banking:** Operating banking services on his / her mobile screens like checking his bank account balances / fund transfers etc, is referred mobile banking.

31) **Monetary Policy:** The RBI issues monetary policy annually to control money supply in the economy and flow of credit by banks to control inflation. **CRR, SLR, BANK Rate are the tools of monetary policy** (recent monetary policy statement was released on 30th September 2014). Next will be on 2nd December 2014.

32) **Monetary policy**: It is the process by which the central bank or monetary authority of a country controls **(i) the supply of money, (ii) availability of money, and (iii) cost of money or rate of interest.**

33) **Monetized debt:** The govt. Can restore the original situation before economic crisis period by offering subsidies and royalties and different incentives to increase the total quality production of the country in stipulated time, US govt. Did it in 2010-11.

34) **Moratorium:** When the repayment of a loan starts after certain period of its disbursement, that period is called moratorium.

35) **NO-Frill Account:** An account opened with Zero balance and where the transaction amount is limited to certain limit is called No-Frill Accounts. Generally these are opened for Students.

36) **NRE Accounts: Non-Resident External Accounts** are the ones in which NRIs remit money in any permitted foreign currency and the remittance is converted to Indian rupees for credit to NRE accounts. **The accounts can be in the form of Current, Saving, FDs, recurring deposits. The interest rates and other terms of these accounts are as per the RBI directives.**

37) **Overdraft: This is when a person has a minus figure in their account**. It can be authorized (agreed to in advance or retrospect) or unauthorized (where the bank has not agreed to the overdraft either because the account holder represents too great a risk to lend to in this way or because the account holder has not asked for an overdraft facility).

38) **Participatory note:** It is the economic instrument at which the FII's not enlisted with the prime regulator of a country and use this tool to lift the money by means of forward trading/pricing and crate financial chaos in a particular country and SEBI of our India amended to stop this nonsense.

39) **Plastic Money:** The payment system in mode of credit and other cards like debit card etc refers to plastic money.

40) **Point of sale (POS) System:** It allows payment to be made at point of sales by the way of electronic fund transfer.

41) **Prime Lending Rate:** It is the rate at which commercial banks give loan to its prime customers.

42) **Quantitative easing:** This is the process at which govt. Can ease the money flow in to the system by buying the toxic assets of banks, this was happened in USA in past recession period by the chairman of the then Fed reserve "Ben Bernanke".

43) **Recurring Deposits:** These are also called **cumulative deposits** and in recurring deposit accounts, a certain amounts of savings are required to be compulsory deposited at specific intervals for a specified period.

44) **Security for Loans:** Where large loans are required the lending institution often needs to have a guarantee that the loan will be paid back. This takes the form of a large item of capital outlay (typically a house) which is owned or partly owned and the amount owned is at least equivalent to the loan required.

45) **Single Window System:** Single window counters will enable the customers to get services at a single counter.

46) **Subprime crisis:** The banks which have obligation to facilitate money flow may get struck their revenue assets with insolvents and become toxic assets, the process is called subprime crisis.

47) **ime Deposit:** Time deposit is a money deposit at a banking institution that cannot be withdrawn for a certain "term" or period of time. When the term is over it can be withdrawn or it can be held for another term**. Institution that cannot be withdrawn for a certain "term" or period of time. When the term is over it can be withdrawn or it can be held for another term**.

48) **Transfer pricing:** This is one tactic played by some fraudulent MNC's which will have some suitcase companies in tax heavens and purchase the share value of some reputed companies in a country by its intermediary in that country so that pricing of transferred shares will not have exact value.

49) **UNCITRAL: United nations commission on International trade Lawis**an UN body looks after the peaceful trade among countries without any legal problems and is denoted as the appellate authority for legal violation of continental rules in trade and commerce.

50) **WIPO: World intellectual property organization** is a body looks after the issues of protection of Intellectual property rights of a country of owner of patent, Marrakesh treaty for 'Blind rights' is associated with this organization

22. Traditional Banking GK

- **Reserve Bank of India (RBI**)was established in**1935** and **Nationalized in 1949.**
- **Savings Account system** in India was started **by Presidency Bank, in 1833.**
- **Cheque system** was first introduced by **Bengal Bank** which was established in 1784.
- The **National Payments Corporation of India (NPCI)** launches **India's first rural bank ATM card** with a regional rural bank in Varanasi.
- First bank established in India: **Bank of Hindustan in 1770.**
- Second Bank : **General Bank of India, 1786**
- The **Imperial Bank of India (IBI)** was the oldest and the largest commercial bank of the Indian subcontinent. It was created in Jan 1921 by amalgamation of three presidency banks, those are,

✓ Bank of Bengal
✓ Bank of Bombay
✓ Bank of Madras
✓ After **nationalization in 1955**, the **Imperial Bank of India was named as State Bank of India (SBI)**
✓ **State Bank of India merged with three banks** namely **Bank of Bengal, Bank of Bombay and Bank of Madras** in **1921** to form the Imperial Bank of India which was converted as State Bank of India.

- First Bank to introduce Savings Account in India: **Presidency Bank 1833**

- **Bank :**

  Bank is an institution which attracts deposits from the public and lends the money to the needy persons at various interest rates.
  Under **Banking Regulation Act 1949**, controls Banking Activities in India.

- First Bank to introduce Mutual Fund : **State Bank of India**
- First Bank to introduce Credit Card in India : **Central Bank of India**
- **Credit cards** are known as **Plastic Money**
- Open market operations are carried out by **RBI**
- Capital Market Regulator is **SEBI**
- Largest Commercial Bank in India **– State Bank of India**
- **The International Bank for Reconstruction and Development**(**IBRD**) is known as – **World Bank**
- India's First Financial Archive has been set up at **– Kolkata**
- CRR, SLR, Repo Rate, Reverse Repo Rate are decided by **RBI**
- **Savings banks interest rates, fixed deposit interest rates, Loan Rates** etc are decided by **Individual Banks.**
- Largest Private Sector Bank in India – **ICICI**
- The RBI Central Board consists of **One Governor** and not more than **Four Deputy Governors** (Appointed / Nominated for a period of Four years).
- Present(24th)Governor – **Urjit Patel**
- The **first headquarter** of RBI is **Calcutta**(1935)
- **Present Headquarter** of RBI – **Mumbai** (1937 to present)
- RBI has **29 Regional Offices** in India
- The Financial year of the RBI starts on **1st July** and ends on **30th June**

- **Printing of Currency Notes and Securities :**

✓ **Currency paper** is imported from **Dubai**
✓ Paper for currency and securities process at **Hoshangabad (MP)**
✓ **OVI (Optical Variable Ink)** is used for printing currency which is imported from Switzerland.
✓ Currency denomination is printed in **15 Languages.**
✓ **Currency Notes Press,** Nasik Road – Denomination of 1, 2, 5, 10, 50,100
✓ Bank Notes Press, **Dewas (MP)**: 20, 50, 100, 500, 1000
✓ Modernized Currency notes Press : at **Mysore, Salboni (West Bengal)**
✓ Minting of Coins : **Mumbai, Kolkata, Hyderabad, Noida (UP)**
✓ **Indian Security Press, Nasik Road** : Printing of Postal Stamps, Postal Material, Judicial, Non-Judicial Stamps, Cheques, Bonds, NSCs, Indira Vikas Patra, Kisan Vikas Patra, Securities of States and PSUs.
✓ **Security Printing Press Hyderabad (1982)** : Printing of Court Fee Stamps, Commemorative Stamps, Kisan Vikas Patra, NSS Certificates
✓ **"1 Rupee"** note is signed by Finance Secretary, Ministry of Finance and other denominations are Signed by the Governor, RBI
✓ **RBI** authorized to print **Rs. 2 to Rs. 1000** denomination.
✓ **Parliament** photo is printed on **Rs. 50 note**
✓ **Dhandi Satyagraha** picture is on**Rs. 500** denomination.
✓ "**Rupee**" **symbol**is designed by **Uday Kumar, Tamil Nadu.**
✓ The symbol adopted for the **Indian Rupee** is **Devanagari Script.**
✓ **Plastic Currency** issued first by **Australia**.
✓ **India** is planning to issue plastic currency in **Rs. 10 denomination**

- **<u>IFSC (Indian Financial System Code) :</u>**

✓ Indian Financial System Code is an **alphanumeric code** that uniquely identifies a bank branch participating in **NEFT system.**
✓ This is a**11 digit** code with the first **4 alpha** characters representing the bank, the **5thcharacter** is **0 (zero)** and the **last 6 characters** representing the bank branch.
✓ **IFSC** is used by the **NEFT system** to identify the originating /destination banks / branches and also to route the messages approximately to the concerned banks / branches.
✓ For Ex : **SBIN0015986**
✓ First 4 characters **SBIN–** refers to **State Bank of India**
✓ **0** is a **control number**
✓ Last six characters (**015986**) represents the **SBI branch** Jail Road, Hari Nagar, New Delhi.

- **<u>MICR</u>**:

✓ Stands for **Magnetic Ink Character Recognition**.
✓ MICR code is a **numeric code** which uniquely identifies a bank branch participating in the **ECS Credit Scheme**.
✓ MICR code consists of **9digits.E.g.400229128**
✓ **First 3 digits** represent the **city (400)**
✓ **Next 3 digits** represent the **bank (229)**
✓ **Last 3 digits** represent the branch **(128BASIC SAVING**

- **<u>BANK DEPOSIT ACCOUNT (BSBDA)</u>**:

✓ Under the guidelines issued on10th August 2012 by **RBI**, any individual, including poor or those from weaker section of the society, can open zero balance account in any bank
✓ **BSBDA** guidelines are applicable to "all scheduled commercial banks in India, including foreign banks having branches in India"

- ✓ **PAN Card** as of May 2010, the Income Tax Department in India has made it mandatory for all Indians to have a **PAN card (Permanent Account Number),** irrespective of their tax filing status.

- **Indian Origin Banks Nationalization**

- ✓ On **19th July 1969**Central Government (Indira Gandhi) nationalized **14** Indian origin banks and on 15th April 1980 again nationalized other 6 Indian origin banks.
- ✓ Note: **In 1993, the New Bank of India merged with Punjab National Bank due to the incurring losses.**
- ✓ RBI Permits 4 Non-bank entities to set up white label ATMs
- ✓ The Reserve Bank has issued "Certificate of Authorization" to four non-bank entities :
- **Tata Communications Payment Solutions**
- **Muthoot Finance**
- **Prizm Payment Services and**
- **Vakrangee Ltd,**

to set up White Label ATMs (WLAs) in the country.

Note: Most of the ATMs belong to banks, but the cash dispensing machines which are owned and operated by non-banking companies are called White Label ATMs.

- ✓ RBI permits **SREI** to roll out White Label ATMs: **Srei Infrastructure Finance** is planning to start roll out its White Lable ATMs (WLAs)between July and September starting with a pilot of 200 Tier III towns in Uttar Pradesh and Bihar.
- ✓ New bank license period – **18 months*(SBI PO 2014)***
- ✓ New bank licenses paid up capital – **500 Cr*(SBI PO 2014)***
- ✓ Asian games after which country withdrawal India ready to conduct **Vietnam*(SBI PO 2014)***

- **Indian Banks' Association (IBA)**

- ✓ IBA was formed for development ,coordination & Strengthening of Indian Banking
- ✓ Established on: **26th September 1946.**
- ✓ IBA's Chairman :**Rajiv Rishi (CBI)**
- ✓ **IBA's Deputy Chairmen: - Arundhati Bhattachary (SBI)**
- **Arun Tiwari (UBI) Chanda Kochhar (ICICI)**

- **IBPS -Institute of Banking Personnel Selection**

- ✓ The **Institute of Banking Personnel Selection (IBPS)**is an autonomous agency in India, which started its operation in **1975** as **Personnel Selection Services (PSS).** In **1984, IBPS** became an independent entity at the behalf of **Reserve Bank of India (RBI) and public sector banks.**
- ✓ The First Chairman of its Governing Board was **Dr. Manmohan Singh**, the **Governor of RBI(at that time)**

- **Micro Finance :**

- ✓ Micro Finance represents an economic activity to promote employment and growth through the support of micro-entrepreneurs and small businesses, of the low-income household, by extending various financial services, such as **Loans, Savings, Money Transfer, Insurance Services etc.**
- ✓ The Father of Micro Finance :**Md. Yunis Khan (Bangladesh),**
  Y. H. Malegam is the chairman of the committee constituted by **RBI** to study issues and concerns in the **Micro Finance Institutions.**

- **NASSCOM:**

✓ The **National Association of Software and Services Companies**
The Indian Chamber of Commerce is a consortium that serves as an interface to the Indian Software industry and Indian BPO industry.

✓ NASSCOM **President R. Chandrasekhar**.(Former telecom Secretary)

✓ **It was established On 1 March 1988.** NASSCOM is a Non-Profit Organization.

✓ **Headquarters**: **New Delhi**, India with Regional Offices in the cities of **Mumbai, Chennai, Hyderabad, Bangalore, Pune and Kolkata.**

- **ASSOCHAM :**

✓ The **Associated Chambers of Commerce and Industry of India**

✓ ASSOCHAM President :**Sunil Kanoria**

✓ The Association's Head Office is located in **New Delhi, India**

✓ Regional Offices are located in the cities of Ahmedabad, Bangalore and Kolkata.

✓ ASSOCHAM Covers following sector

I. Trade (National & International)
II. Industry (Domestic &International)
III. Professionals (eg. CA's , Lawyers , Consultants)

23. Taglines Of Banks

Name of Banks	Taglines
Allahabad Bank	A tradition of trust
Andhra Bank	Much more to do With YOU in focus
Bank of Baroda	India's International Bank
Bank of India	Relationships beyond Banking
Bank of Maharashtra	One Family One Bank
Bank of Rajasthan	Together we Prosper
Canara Bank	It's easy to change for those who you
	love, Together we Can
Central Bank of India	Build A Better Life Around Us
Corporation Bank	Prosperity for all
Dena Bank	Trusted Family Bank
Federal Bank	Your Perfect Banking Partner
HDFC	We Understand Your World
HSBC	Worlds's Local Bank
ICICI Bank	"Khayaal Aapka"
IDBI Bank	Banking for all; "Aao Sochein Bada"
Indian Bank	Taking Banking Technology to Common
	Man' Your Tech-friendly bank
Indian Overseas Bank	Good People to grow with
J & K Bank	Serving to Empower
Karur Vysya Bank	Smart way to Bank
Lakshmi Vilas Bank	The Changing Face of Prosperity
Max New York Life Insurance	Your Partner for Life; "Karo Zyaada Ka iraada"
Oriental Bank of Commerce	Where every individual is committed
Punjab National Bank	The Name you can Bank Upon
State Bank of India	The Nation banks on us; Pure banking
	Nothing Else; With you all the way
State Bank of Hyderabad	You can always bank on us
State Bank of Mysore	Working for a better tomorrow
State Bank of Patiala	Blending Modernity with Tradition
State Bank of Travancore	A Long Tradition of Trust
South Indian Bank	Experience Next Generation Banking
Syndicate Bank	Your Faithful And Friendly Financial Partner
The Economic Times	Knowledge is Power
UCO Bank	Honors Your Trust
Union Bank of India	Good people to bank with
United Bank of India	The Bank that Begins with "U"
Vijaya Bank	A Friend You can Bank Upon
Yes Bank	Experience our expertise

24. Banking and Financial Abbreviations

- **ACF - Auto-Correlation Function**
- **AD - Authorized Dealer**
- **ADB - Asian Development Bank**
- **ADR - American Depository Receipt**
- **AFS - Annual Financial Statement**
- **AGM - Annual General Meeting**
- **AIRCSC - All India Rural Credit Survey Committee**
- **AO - Additive Outliers**
- **AR - Auto Regression**
- **ARIMA - Auto-Regressive Integrated Moving Average**
- **AFS - Available For Sale**
- **ATM - Asynchronous Transfer Mode**
- **ATM - Automated Teller Machine**
- **BIS - Bank for International Settlements**
- **BoP - Balance of Payments**
- **BPM5 - Balance of Payments Manual, 5thedition**
- **BPSD - Balance of Payments Division, DESACS, RBI**
- **BSCS - Basel Committee on Banking Supervision**
- **BSR - Basic Statistical Return**
- **CAD - Capital Account Deficit**
- **CAG - Controller and Auditor General of India**
- **CBS - Consolidated Banking Statistics**
- **CC - Cash Credit**
- **CD - Certificate of Deposit**
- **CDRatio - Credit Deposit Ratio**
- **CDBS - Committee of Direction on Banking Statistics**
- **CF - Company Finance**
- **CFRA - Combined Finance and Revenue Accounts**
- **CGRA - Currency and Gold Revaluation Account**
- **CP - Commercial Paper**
- **CPI - Consumer Price Index**
- **CPI-IW - Consumer Price Index for Industrial Workers**
- **CR - Capital Receipts**
- **CRAR - Capital to Risk Weighted Asset Ratio**
- **CRR - Cash Reserve Ratio**
- **CSIR - Council of Scientific and Industrial Research**
- **CRR - Cash Reserve Ratio**
- **CSIR - Council of Scientific and Industrial Research**
- **CSO - Central Statistical Organization**
- **CVC - Central Vigilance Commission**
- **DAP - Development Action Plan**
- **DBOD - Department of Banking Operations and Development**
- **DBS - Department of Banking Supervision, RBI**
- **DCB - Demand Collection and Balance**

- DCCB - District Central Cooperative Bank
- DCM - Department of Currency Management, RBI
- DDS - Data Dissemination Standards
- DEIO - Department of External Investments and Operations
- DGBA - Department of Government and Bank Accounts, RBI
- DI - Direct Investment
- DICGC - Deposit Insurance and Credit Guarantee Corporation of India
- DID - Discharge of Internal Debt
- DMA - Departmentalized Ministries Account
- DRI - Differential Rate of Interest Scheme
- DSBB - Dissemination Standards Bulletin Board
- DVP - Delivery versus Payment
- ECB - External Commercial Borrowing
- ECB - European Central Bank
- ECGC - Export Credit and Guarantee Corporation
- ECS - Electronic Clearing Scheme
- EDMU - External Debt Management Unit
- EEA - Exchange Equalization Account
- EEC - European Economic Community
- EEFC - Exchange Earners Foreign Currency
- EFR - Exchange Fluctuation Reserve
- EPF - Employees Provident Fund
- EUR - Euro
- EXIMBank - Export Import Bank of India
- FCA - Foreign Currency Assets
- FCCB - Foreign Currency Convertible Bond
- FCNR(B) - Foreign Currency Non-resident (Banks)
- FCNRA - Foreign Currency Non-resident Account
- FCNRD - Foreign Currency Non-Repatriable Deposit
- FDI - Foreign Direct Investment
- FEMA - Foreign Exchange Management Act
- FI - Financial Institution
- FICCI - Federation of Indian Chambers of Commerce and Industry
- FII - Foreign Institutional Investor
- FIMMDA - Fixed Income Money Market and Derivatives Association of India
- FISIM - Financial Intermediation Services Indirectly Measured
- FLAS - Foreign Liabilities and Assets Survey
- FOF - Flow Of Funds
- FPI - Foreign Portfolio Investment
- FRA - Forward Rate Agreement
- FII - Foreign Institutional Investor
- FIMMDA - Fixed Income Money Market and Derivatives Association of India
- FISIM - Financial Intermediation Services Indirectly

Measured

- **FLAS - Foreign Liabilities and Assets Survey**
- **FOF - Flow Of Funds**
- **FPI - Foreign Portfolio Investment**
- **FRA - Forward Rate Agreement**
- **FRBM - Fiscal Responsibility and Budget Management Act**
- **FRN - Floating Rate Note**
- **FSS - Farmers' Service Societies**
- **FWG - First Working Group on Money supply Manual on Financial and Banking Statistics**
- **GDP - Gross Domestic Product**
- **GDR - Global Depository Receipt**
- **GFD - Gross Fiscal Deficit**
- **GFS - Government Finance Statistics**
- **GIC - General Insurance Corporation**
- **GLS - Generalized Least Squares**
- **GNIE - Government Not Included Elsewhere**
- **GoI - Government of India**
- **GPD - Gross Primary Deficit**
- **G-Sec - Government Securities**
- **HDFC - Housing Development Finance Corporation**
- **HFT - Held For Trading**
- **HICP - Harmonized Index of Consumer Prices**
- **HO - Head Office**
- **HUDCO - Housing & Urban Development Corporation**
- **IBRD - International Bank for Reconstruction and Development**
- **IBS - International Banking Statistics**
- **ICAR - Indian Council of Agricultural Research**
- **ICICI - Industrial Credit and Investment Corporation of India**
- **ICMR - Indian Council of Medical Research**
- **IDB - India Development Bonds**
- **IDBI - Industrial Development Bank of India**
- **IDD - Industrial Development Department**
- **IFAD - International Fund for Agricultural Development**
- **IFC - International Finance Corporation**
- **IFC(W) - International Finance Corporation (Washington)**
- **IFCI - Industrial Finance Corporation of India**
- **IFR - Investment Fluctuation Reserve Account**
- **IFS - International Financial Statistics**
- **IIBI - Industrial Investment Bank of India**
- **MSS - Market Stabilization Scheme**
- **MT - Mail Transfer**
- **MTM - Mark-To-Market**
- **NABARD - National Bank for Agriculture and Rural Development**
- **NAC(LTO) - National Agricultural Credit (Long Term Operation)**
- **NBC - Non-Banking Companies**

- **NBFC - Non Banking Financial Companies**
- **NEC - Not Elsewhere Classified**
- **NEER - Nominal Effective Exchange Rate**
- **NFA - Non-Foreign Exchange Assets**
- **NFD - Net Fiscal Deficit**
- **NGO - Non-Governmental Organization**
- **NHB - National Housing Bank**
- **NIC - National Industrial Classification**
- **NIF - Note Issuance Facility**
- **NNMLNet - Non-Monetary Liabilities**
- **NPA - Non-Performing Assets**
- **NPD - Net Primary Deficit**
- **NPRB - Net Primary Revenue Balance**
- **NPV - Net Present Value**
- **NR(E)RA - Non-Resident (External) Rupee Account**
- **NRRA - Non-Resident (Non-Repairable) Rupee Account**
- **NRE - Non-Resident External**
- **NRG - Non-Resident Government**
- **NRI - Non-Resident Indian**
- **NSC - National Statistical Commission**
- **NSSF - National Small Savings Fund**
- **ODA - Official Development Assistance**
- **OECD - Organization for Economic Cooperation and Development**
- **OECO - Organization for Economic Cooperation**
- **OFI - Other Financial Institutions**
- **OLTAS - Online Tax Accounting System**
- **OMO - Open Market Operations**
- **OSCB - Other Indian Scheduled Commercial Bank**
- **PACF - Partial Auto-Correlation Function**
- **PACS - Primary Agriculture Credit Societies**
- **PCARDB - Primary Cooperative Agriculture and Rural Development Bank**
- **PD - Primary Deficit**
- **PDAI - Primary Dealers Association of India**
- **PDO - Public Debt Office**
- **PDs - Primary Dealers**
- **PES - Public Enterprises Survey**
- **PF - Provident Fund**
- **PIO - Persons of Indian Origin**
- **PMJDY - Pradhan Mantri Jan-Dhan Yojana**
- **PNB - Punjab National bank**
- **PRB - Primary Revenue Balance**
- **PSE - Public Sector Enterprises**
- **PUC - Paid Up Capital**
- **QRR - Quick Review Report**
- **RBI - Reserve Bank of India**

- **RD - Revenue Deficit**
- **RDBMS - Relational Database Management System**
- **RE - Revenue Expenditure**
- **REC - Rural Electrification Corporation**
- **REER - Real Effective Exchange Rate**
- **RFC - Residents Foreign Currency**
- **RIB - Resurgent India Bonds**
- **RIDF - Rural Infrastructure Development Fund**
- **RLA - Recoveries of Loans & Advances**
- **RLC - Repayment of Loans to Centre**
- **RMB - Renminbi (Chinese)**
- **RNBC - Residuary Non-Banking Companies**
- **RO - Regional Office**
- **RoCs - Registrars of Companies**
- **RPA - Rupee Payment Area**
- **RPCD - Rural Planning and Credit Department, RBI**
- **RRB - Regional Rural Bank**
- **RTP - Reserve Tranche Position**
- **RUF - Revolving Underwriting Facility**
- **RWA - Risk Weighted Asset**
- **SAM - Social Accounting Matrix**
- **SAS - Statistical Analysis System**
- **SBI - State Bank of India**
- **SC - Schedule Caste**
- **SCARDB - State Cooperative Agriculture and Rural Development Bank**
- **SCB - State Cooperative Bank**
- **SCB - Scheduled Commercial Bank**
- **SCS - Size Class Strata**
- **SDDS - Special Data Dissemination Standards**
- **SDR - Special Drawing Right**
- **SEBI - Securities and Exchange Board of India**
- **SEBs - State Electricity Boards**
- **SFC - State Financial Corporation**
- **SGL - Subsidiary General Ledger Abbreviations**
- **SGSY - Swarna jayanthi Gram Swa rrojgar Yojana**
- **SHGs - Self-Help Groups**
- **SIDBI - Small Industries Development Bank of India**
- **SIDC - State Industrial Development Corporation**
- **SJSRY - Swarna Jayanti Shahari Rojgar Yojana**
- **SLRS - Scheme for Liberation & Rehabilitation of Scavengers**
- **SMG - Standing Monitoring Group**
- **SNA - System of National Accounts**
- **SRWTO - Small road & Water Transport Operators**
- **SSI - Small-Scale Industries**
- **SSSBEs - Small Scale Service & Business Enterprises**

- **ST - Schedule Tribe**
- **SWG - Second Working Group on Money Supply**
- **TBs - Treasury Bills**
- **TC - Temporary Change**
- **TT - Telegraphic Transfer**
- **UBB - Uniform Balance Book**
- **UBD - Urban Banks Department**
- **UCB - Urban Cooperative Bank**
- **UCN - Uniform Code Number**
- **US - United States**
- **USD - US Dollars**
- **UTI - Unit Trust of India**
- **VC - Venture Capital**
- **WGMS - Working Group on Money Supply: Analytics And Methodology of Compilation**
- **WPI - Wholesale Price Index**
- **WSS - Weekly Statistical Supplement**

25. Credit Rating

Name Agency	Service	Established	Headquarter
MoodysInvester Service	Bond Market	1909	New York, USA City
Standard and Poor	Financial Services	1860	New York, USA City
Fitch Rating	Finance Services	1913	New Yark City, USA & London, UK
Credit Rating Information Service of India Ltd. (CRISIL)	Research Risk and Policy Advisory	1987	Mumbai, India
Investment Information and Credit Rating Agency of India (ICRA)	Credit Rating and Financial Consulting	1991	Gurgaon, India
Credit Information Bureau India Ltd. (CIBIL)	Research Risk and Policy Advisory	2000	Mumbai, India
CARE	Credit Rating, Risk	1993	Sion (East) Mumbai, India
SMERA (FORmsme's)	Research Risk &Policy Advisory	2005	Mumbai, India
BricWork India	Research Risk& Advisory	2007	Banglore, India

26.Important Organizations and Headquarters

1] UNO

UN had its origin in August, 1944 at Dumbarton Oaks Conference where the representatives of USA, UK, USSR and China met to form an association for the maintenance of international peace and security. Finally, on June 26, 1945, the charter of the United Nations was signed in a conference called at "San Francisco", which included the representatives of 51 states. The charter then came into force **on 24 October, 1945; thus 24 October has been celebrated as the UN day.**

Headquarter, Flag, Languages:

- United Nation's Headquarter is situated in Manhattan Island of **New York and the European office at Geneva.**
- **The Flag of the UNO was adopted in October 1947**.
- The flag includes white UN emblem (two bent olive branches, open at the top and between them is the world map) on a light blue background. the flag was adopted by the UNO in October, 1947.
- Official Language of UNO are **French, Chinese, English, Russian, Arabic and Spanish. While the working languages are only French and English.**
- **Secretary General : Ban Ki Moon**

The main objectives of UNO are:

- To maintain international peace and security.
- To develop spirit of co-operation and friendly relations among the nations.
- To promote **respect for human rights, dignity and freedom**.
- To solve international problems of social, economic, agricultural and humanitarian character.
- social advancement of all people.

2] International Monetary Fund (IMF)

Headquarter – Washington, D.C.

The IMF came into existence in December 1945, as one among the Bretton Wood twins when the first 29 countries signed its Articles of Agreement. **The International Monetary Fund (IMF) is an international organization** that oversees the global financial system by observing exchange rates and balance of payments .An unwritten rule establishes that the IMF's managing director must be non-Italian European and that the president of the World Bank must be from the United States. IMF describes itself as "an organization of 185 countries, Montenegro being the 185th as of January 18th, 2007.

3] World Bank Group

Headquarter –Washington, D.C.

The World Bank Group is a group of five international organizations responsible for providing finance and advice to countries for the purposes of economic development and eliminating poverty. The Bank came into formal existence on **27 December, 1945** following international ratification of the Bretton Woods agreements, it approved its first loan to France for postwar reconstruction.

The World Bank Group consists of:

1. **The International Bank for Reconstruction and Development (IBRD)**, established in 1945, which provides debt financing on the basis of sovereign guarantees;
2. **The International Finance Corporation (IFC)**, established in 1956, which provides various forms of financing without sovereign guarantees, primarily to the private sector;
3. **The International Development Association (IDA)**, established in 1960, which provides concessional financing (interest-free loans or grants), usually with sovereign guarantees;
4. **The Multilateral Investment Guarantee Agency (MIGA)**, established in 1988, which provides insurance against certain types of risk, including political risk, primarily to the private sector
5. **The International Centre for Settlement of Investment Disputes (ICSID)**, established in 1966, which works with governments to reduce investment risk.

4] Food and Agriculture Organization (FAO)

HQ–Rome, Italy.

The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger.

FAO was **founded on 16 October 1945, in Quebec City, Canada**.
In 1951 its headquarters were moved from Washington, D.C., United States, to Rome, Italy.

As of 17 November 2007, it had 191 members (plus one member organization, the European Community and one associate member, the Faroe Islands).

5] International Labor Organization (ILO)

HQ-Geneva, Switzerland.

The International Labor Organization (ILO) is a specialized agency of the United Nations that deals with labor issues. Founded in 1919, it was formed through the negotiations of the Treaty of Versailles, and was initially an agency of the League of Nations. The ILO hosts the International Labor Conference in Geneva every year in June. The organization received the Nobel Peace Prize in 1969**. Its secretariat is known as the International Labor Office. It's a tripartite intergovernmental body of governments, employers and workers.**

6] United Nations Educational, Scientific and Cultural Organization (UNESCO)

HQ-Paris, France.

UNESCO (United Nations Educational, Scientific and Cultural Organization) is a specialized agency of the United Nations established **in 1945.**
Its stated purpose is to contribute to peace and security by promoting international collaboration through

education, science, and culture in order to further universal respect for justice, the rule of law, and the human rights and fundamental freedoms proclaimed in the UN Charter.
As of **October 2007, UNESCO had 193 member states and 6 associate members.**

7] International Civil Aviation Organization (ICAO)

HQ–Montreal, Canada.

The International Civil Aviation Organization (ICAO), an agency of the United Nations set up in 1944, codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.
The ICAO defines the protocols for air accident investigation, followed by transport safety authorities in countries signatory to the Convention on International Civil Aviation, commonly known as the Chicago Convention.

8] World Health Organization (WHO)

HQ-Geneva, Switzerland.

The World Health Organization (WHO) is a specialized agency of the United Nations that acts as a coordinating authority on international public health. **Established on 7 April 1948, the agency inherited the mandate and resources of its predecessor, the Health Organization, which had been an agency of the League of Nations** WHO complies the widely followed International Classification of Diseases (ICD).

9] International Atomic Energy Agency (IAEA)

HQ-Vienna, Austria.

The International Atomic Energy Agency (IAEA) was established as an autonomous organization **on July 29, 1957.**It seeks to promote the peaceful use of nuclear energy and to inhibit its use for military purposes. United States President Dwight D.Eisenhower envisioned, in his "Atoms for Peace" speech before the UN General Assembly in 1953, the creation of this international body to control and develop the use of atomic energy.

10] International Telecommunication Union (ITU)

HQ– Geneva, Switzerland.

The International Telecommunication Union (ITU) is an international organization established to standardize and regulate international radio and telecommunications. **It was founded as the International Telegraph Union in Paris in May 17, 1865, and is today the World's oldest international organization**. Its main tasks include standardization, allocation of the radio spectrum, and organizing interconnection arrangements between different countries to allow international phone calls.

11]Universal Postal Union (UPU)

HQ–Berne, Switzerland

The Universal Postal Union (UPU) is an international organization that coordinates postal policies between member nations, and hence the worldwide postal system.

Each member country agrees to the same set of terms for conducting international postal duties. It is the second oldest, international organization (after the ITU). It was created in 1874, under the name "General Postal Union", as a result of the Treaty of Berne signed on 9 October 1874.In 1878, the name was changed to "Universal Postal Union".

12]International Maritime Organization (IMO)

HQ–London, U.K

The International Maritime Organization (IMO), formerly known as the Inter-Governmental Maritime Consultative Organization (IMCO), was established in 1948, through the United Nations to coordinate international maritime safety and related practices. However the IMO did not enter into full force until 1958.The IMO promotes cooperation among government and the shipping industry to improve maritime safety and to prevent marine pollution.

13] World Meteorological Organization (WMO)

HQ–Geneva, Switzerland.

The World Meteorological Organization (WMO) is a specialized agency of the United Nations It is the UN system's authoritative voice on the state and behavior of the Earth's atmosphere, its interaction with the oceans, and the climate produces or the resulting distribution of water resources. It originated from the International Meteorological Organization (IMO), which was founded in 1873. Established in 1950, WMO became the specialized agency of the United Nations for meteorology (weather and climate), operational hydrology and related geophysical sciences. **The WMO helped create the Intergovernmental Panel on Climate Change (IPCC). It is also directly responsible for the creation of the Global Atmosphere Watch (GAW).**

14]Organization for the Prohibition of Chemical Weapons (OPCW)

HQ–The Hague, Netherlands.

The Organization for the Prohibition of Chemical Weapons (OPCW) is an international agency. **Its mission is to promote membership of the Chemical Weapons Convention treaty** which entered into force in 1997 and mandated the elimination of "the scourge of chemical weapons forever and to verify the destruction of the declared chemical weapons stockpiles within stipulated deadlines".

15]United Nations Children's Fund (UNICEF)

HQ–New York City, USA

The United Nations Children's Fund (UNICEF) was created on December 11, 1946. In 1953, **its name was shortened from United Nations International Children's Emergency Fund**. UNICEF provides long-term humanitarian and developmental assistance to children and mothers in developing countries. UNICEF was awarded the Nobel Peace Prize in 1965.

16] United Nations Conference on Trade and Development (UNCTAD)

HQ–Geneva, Switzerland.

The United Nations Conference on Trade and Development (UNCTAD) was established in **1963** as a permanent intergovernmental body, UNCTAD is the principal organ of the United Nations General Assembly dealing with trade, investment and development issues.**UNCTAD has 191 member States.**

17]United Nations Environment Program (UNEP)

HQ–Gigiri, Nairobi, Kenya.

It was founded as a result of the United Nations Conference on the Human Environment in 1973.**The World Meteorological Organization and the UNEP established the Intergovernmental Panel on Climate Change (IPCC**) in 1988.UNEP is also one of several implementing agencies for the Global Environment Facility (GEF).

The year 2007 has been declared as International Year of the Dolphin by the United Nations and UNEP.

18] United Nations Development Program (UNDP)

HQ–New York City, USA.

The United Nations Development Program (UNDP), the United Nations' global development network, is the largest multilateral source of development assistance in the world. **The UNDP is an executive board within the United Nations Economic and Social Council**.The UNDP Administrator is the third highest ranking member of the United Nations after the United Nations Secretary-General and Deputy Secretary-General.

UNDP publishes an annual Human Development Report to measure and analyze developmental progress.

19] United Nations High Commissioner for Refugees (UNHCR)

HQ–Geneva, Switzerland.

The United Nations High Commissioner for Refugees (UNHCR) (established December 14, 1950) protects and supports refugees at the request of a government or the United Nations and assists in their return or resettlement. **UNHCR was awarded the Nobel Peace Prize in 1954 and 1981.**UNHCR presently has major missions in Lebanon, South Sudan, Chad/Darfur, Iraq, Afghanistan as well as Kenya to assist and provide services to IDPs and refugees.

20] United Nations Industrial Development Organization (UNIDO)

HQ–Vienna, Austria.

The United Nations Industrial Development Organization (UNIDCO), is a specialized agency in the United Nations system. **UNIDO was established as a UN program in 1966 and became a specialized agency of the United Nations in 1985**

21] United Nations Population Fund (UNFPA)

HQ–New York, USA.

The United Nations Fund for Population Activities was started in 1969 and renamed the United Nations Population Fund (UNFPA) in 1987.

The United Nations Population Fund is the world's largest international source of funding for population and reproductive health programs.

22] World Intellectual Property Organization (WIPO)

HQ–Geneva, Switzerland.

The World Intellectual Property Organization (WIPO) is one of the specialized agencies of the United Nations. **WIPO was created in 1967 with the stated purpose of encouraging creative activity and promoting the protection of intellectual property throughout the world**. WIPO currently has 184 member states and administers 23 international treaties. Vatican City and almost all UN members are member of the WIPO. The predecessor to WIPIO was the BIRPI (French acronym for United International Bureau for the Protection of Intellectual Property), which had been set up in 1893 to administer the Berne Convention for the Protection of Library and Artistic Works and the Paris Convention for the Protection of Industrial Property.

WIPO was formally created by the Convention Establishing the World Intellectual Property Organization (signed at Stockholm on July 14, 1967 and as amended on September 28, 1979).

23] World Trade Organization (WTO)

HQ–Geneva, Switzerland.

The World Trade Organization (WTO) is an international organization that establishes rules for international trade through consensus among its member states.It also resolves disputes between the members, which are all signatories to its set of trade agreements. Uruguay Round of General Agreement on Tariffs and Trade (GATT), negotiations culminating in the Marrakesh Agreement that established the WTO.**There are 151 member states in the organization, the latest to join being Tonga on July 27, 2007.**

Since its inception in 1995, the WTO has been a major focus for protests by civil society groups in many countries.

24] World Economic Forum (WEF)

HQ:- Cologny, Switzerland

The World Economic Forum (WEF) is a Geneva-based foundation whose annual meeting of top business leaders, national political leaders (presidents, prime ministers and others), and selected intellectuals and journalists is usually held in Davos, Switzerland. There are also regional meetings throughout the year**.It was founded in 1971** by Klaws M. Schwab, a business professor in Switzerland.

25] Asian Development Bank (ADB)

HQ–Manila, Philippines.

The Asian Development Bank (ADB) is a regional development bank established in 1966 to promote economic and social development in Asian and Pacific countries through loans and technical assistance.

It is a multilateral development financial institution owned by 66 members, 47 from the region and 19 from other parts of the globe.

ADB's vision is a region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their citizens. **The highest policy-making body of the bank is the Board of Governors composed of one representative from each member state. The Board of Governors also elect the bank's President who is the chairperson of the Board of Directors and manages ADB**. Traditionally, and because Japan is one of the largest shareholders of the bank, the President has always been Japanese.

26] UN Democracy Fund (UNDEF)

The UN Democracy Fund will be a voluntary fund housed in the **UN Fund for International Partnerships (UNFIP**), but with its own Executive Head who will report to an Advisory Board of Member States on substantive matters. In order to ensure transparency and accountability, a dedicated support office will arrange for monitoring, evaluation and auditing of the program. The idea for the Fund was first articulated by President Bush in a speech before the UN General Assembly last fall and has been embraced by the 141 nations that attended the third ministerial meeting of the Community of Democracies in Santiago, Chile in April 2005.

27] Association of Southeast Asian Nations (ASEAN)

HQ–Jakarta, Indonesia.

The Association of Southeast Asian Nations (ASEAN) is a geopolitical and economic organization of 10 countries, located in Southeast Asia.

ASEAN was established on 8 August, 1967 in Bangkok by the five original Member Countries namely–Indonesia, Malaysia, Philippines, Singapore, and Thailand. Brunei Darussalam joined on 8 January 1984, Vietnam on 28 July 1995, Lao PDR and Myanmar on 23 July 1997, and Cambodia on 30 April 1999.

28] European Union (EU):-

HQ–Brussels, Belgium.

The European Union (EU) is a supranational and intergovernmental union of 27 democratic member states in Europe. It was established under that name by the Treaty on European Union (Maastricht Treaty) signed on February 7, 1992 in Maastricht, Netherlands. The Union has a single market consisting of a customs union, a currency called the euro (adopted by 13 member states), a Common Agricultural Policy, a common trade policy and a Common Fisheries Policy.

The Schengen Agreement abolished passport control and customs checks for most member states within EU's internal borders, creating, to some extent, a single area of free movement for EU citizens to live, travel, work and invest. A Common Foreign and Security Policy, and the Police and Judicial Co-operation in criminal matters have been initiated. Important EU institutions and bodies include the European Commission, the Council of the European Union, the European Council, the European Central Bank, the European Court of Justice, and the European Parliament which is directly elected by EU citizens once every five years.

29] South Asian Association for Regional Cooperation (SAARC)

HQ–Kathmandu, Nepal.

South Asian Association for Regional Cooperation (SAARC) is the largest regional organization in the world by population, covering approximately 1.5billion people. SAARC is an economic and political organization of eight countries in Southern Asia. **The organization was established on December 8, 1985 by India, Pakistan, Bangladesh, Sri Lanka, Nepal, Maldives and Bhutan. Afghanistan became a member (eighth) on April 3, 2007.** It declared 2006–2015 as the SAARC decade of poverty alleviation'. It was agreed in principle to the desire of China and Japan to become SAARC observers. The Islamic Republic of Iran is the only country in Southern Asia that is not a part of SAARC. In April 2006, the United States of America and South Korea made formal requests to be granted observer status. The European Union has also indicated interest in being given observer status, and made a formal request for the same to the SAARC Council of Ministers meeting in July 2006.On August 2nd, 2006 Foreign ministers of **SAARC countries agreed in principle to grant observer status to the US, South Korea and the European Union**.

30] Group of 77 (G-77)

HQ–New York, USA

The Group of 77 at the United Nations is a loose coalition of developing nations, designed to promote its members' collectives, economic and interest to create an enhanced joint negotiating capacity in the United Nations. **There were 77 founding members of the organization, but the organization has since expanded to 130 member countries. It is modeled on the Group of 7, which now contains 8 countries.** The group was founded on June 15, 1964 by the "Joint Declaration of the Seventy Seven Countries" issued at the United Nations Conference on Trade and Development (UNCTAD).

31] North American Free Trade Area (NAFTA)

HQ :- Mexico City (Mexico)

The North American Free Trade Area is the trade bloc created by the North American free Trade Agreement (NAFTA) and its **two supplements, the North American Agreement on Environmental Cooperation (NAAEC) and the North American Agreement on Labor Cooperation (NAALC)** whose members are Canada, Mexico and the United States. It came into effect on 1 January 1994.It is the world's largest free trade area.

32]Organization for Economic Co-operation and Development (OECD)

HQ–Paris, France.

The Organization for Economic Co-operation and Development (OCED) is an international organization of those developed countries that accept the principles of representative democracy and a free market economy.
It originated in 1948 as the Organization for European Economic Co-operation (OEEC) to help administer the Marshal Plan for the reconstruction of Europe after World War II.
Later its membership was extended to non-European states, and in 1961 it was reformed into the Organization for Economic Co-operation and Development. **There are currently thirty full members; of these, 24 are described as high-income countries by the World Bank.**

33] Organization of Petroleum Exporting Countries (OPEC)

HQ–Vienna, Austria.

The Organization of the Petroleum Exporting Countries (OPEC) is a permanent, intergovernmental Organization, created at the Baghdad Conference on September 10-14, 1960, by **Iran, Iraq, Kuwait, Saudi Arabia and Venezuela.** The five Founding Members were later joined by nine other Members Indonesia's membership currently under review as Indonesia is no longer considered by OPEC as a net oil exporter. Former Members are Gabon (full member from 1975 to 1995) and Ecuador (full member from 1963 to 1993).

However Ecuador has expressed interest in rejoining. OPEC's **official language is English, although the official language of a majority of OPEC member-states is Arabic, as seven current members are Arab states**.

Only one member nation (Nigeria) has English as an official language. From 1976-2006 OPEC gained on new member nations. In November 2006, the Angolan Government announced its intention to apply for membership and subsequently joined on 1st January 2007.Sudan has also expressed intent for joining. **Russia, though a net exporter of oil, has failed to gain membership into the grouping**.

34] Asia-Pacific Economic Cooperation (APEC)

HQ–Singapore.

The Asia-Pacific Economic Cooperation (APEC) is an economic forum for a group of Pacific Rim countries to discuss matters on regional economy, cooperation, trade and investment. The current membership of APEC consists of 21 members, which includes most countries with a coasting on the Pacific Ocean. **The last countries to have joined APEC, during its sixth leader's summit in Kualalumpur, November 1998 were Peru, Russia and Vietnam.**

35] North Atlantic Treaty Organization (NATO)

HQ–Brussels, Belgium.

The North Atlantic Treaty Organization (NATO) also called the North Atlantic Alliance, the Atlantic Alliance, the Western Alliance, is a military alliance established by the signing of the North Atlantic Treaty on 4 April 1949.TThe Treaty of Brussels, signed on 17 March 1948 by Belgium, the Netherlands, Luxembourg, France and the United Kingdom is considered the precursor to the NATO agreement. The 2006 NATO summit was held in Riga, Latvia, which had joined the Atlantic Alliance two years earlier.

It is the first NATO summit in a former COMECON country. Membership went on expanding with the accession of seven more European countries to NATO–**Estonia, Latvia and Lithuania and also Slovenia, Slovakia, Bulgaria, and Romania thereby taking the membership to 26.These 7 countries joined NATO on 29 march 2004.**

36] G8

The G8, otherwise known as the Group of Eight, is an assembly of world leaders who meet annually to discuss global issues. Each year, the G8 holds a Leaders' Summit, in which Heads of State and Government of member countries meet to discuss and attempt to reconcile global issues.

Although the G8 is best known for its annual summits, it works throughout the year to tackle important contemporary topics such as the economy and climate change. The G8 discusses and creates global policies. However, adherence to these policies is not obligatory, and other countries can decide whether or not to obey. **The G8 is made up of heads of government from Canada, France, Germany, Italy, Japan, the Russian Federation, the United Kingdom and the United States.**

37] G20 :

The **Group of Twenty** is a group of finance ministers and central bank governors from 20 major economies.

The members, shown highlighted on the map at right, include 19 individual countries—**Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russian Federation, Saudi Arabia, South Africa, Turkey, United Kingdom, United States—and the European Union (EU), with Spain participating as a "permanent guest",** and further short-term guests named annually by the group's rotating chairperson.

The EU is represented by the President of the European Council and by the European Central Bank.

27. Important Days

- **JANUARY**
- January 1 - Global Family Day
- January 4 - World Brail Day
- January 9 - NRI Day
- January 10 - World Laughter Day
- January 10 - World Hindi Day
- January 12 - National Youth Day
- January 15 - Army Day
- January 24 - National Girl Child Day
- January 25 - National Voters Day , National Tourism Day
- January 26 - India's Republic Day, - International Customs Day
- January 28 - Data Protection Day
- January 30 - Martyrs Day; - World Leprosy Eradication Day

- **FEBRUARY**
- February 2 - World Wetlands Day
- February 4 - World Cancer Day
- February 12 - Darwin Day
- February 13 - World Radio day
- February 20 - World Day of Social Justice
- February 21 - International Mother Language Day
- February 22 - World Scout Day
- February 24 - Central Excise Day
- February 28 - National Science Day

- **MARCH**
- March 8 - International Women's Day
- March 15 - World Consumer Rights Day
- March 16 - National Vaccination Day
- March 18 - Ordnance Factories Day
- March 20 - World Sparrow Day
- March 21 - World Forestry Day
- March 22 - World Water Day
- March 24 - World TB Day
- March 27 - World Drama Day

- **APRIL**
- April 2 - World Autism Awareness Day
- April 5 - International Day for Mine Awareness,
- April 5 - National Maritime Day
- April 7 - World Health Day
- April 17 - World Haemophilia Day
- April 18 - World Heritage Day
- April 21 - Secretaries Day
- April 21 - National Civil Services Day
- April 22 - Earth Day
- April 23 - World Book and Copyright Day
- April 25 - World Malaria Day
- April 26 - World Intellectual Property Day
- April 29 - International Dance Day

- **MAY**
- May 1 - International Labour Day
- May 1st Tuesday - World Asthma Day
- May 3 - Press Freedom Day
- May 4 - Coal Miners' Day
- May 8 - World Red Cross Day
- May 9 - World Thalassaemia Day
- May 11 - National Technology Day
- May 12 - World Hypertension Day
- May 12 - International Nurses Day
- May 14 - World Migratory day
- May 15 - International Day of the Family
- May 17 - World Tele communication Day
- May 18 - International Museum Day
- May 21 - Anti-Terrorism day (Rajiv Gandhi dead)
- May 22 - International Day for Biological Diversity

- May 24 - Common wealth Day
- May 28 - World Hunger Day
- May 31 - Anti-tobacco Day

- **JUNE**
- June 4 - International Day of Innocent Children Victims of Aggression
- June 5 - World Environment Day
- June 8 - World Ocean Day
- June 12 - World Day against Child Labour
- June 14 - World Blood Donor Day
- June 15 - World Elder Abuse Awareness Day
- June 17 - World Day to Combat Desertification And Drought
- June 20 - World Refugee Day
- June 21 - World Music Day
- June 23 - International Olympic Day
- June 23 - UN Public Service Day
- June 26 - International Day against Drug Abuse and Illicit Trafficking
- June 27 - International Diabetes Day

- **JULY**
- July 1 - Doctor's Day
- July 6 - World Zoonoses Day
- July 11 - World Population Day
- July 12 - Malala Day
- July 18 - Nelson Mandela International Day
- July 30 - International Day of Friendship

- **AUGUST**
- August 6 - Hiroshima Day, Organ Donation Day
- August 7 - Forgiveness Day
- August 8 - World Senior Citizen Day
- August 9 - Nagasaki Day
- August 12 - International Youth Day
- August 15 - Indian Independence Day
- August 18 - International Day of the World Indigenous Peoples
- August 19 - Photography Day, World Humanitarian Day
- August 20 - Rajiv Gandhi Sadbhavana Divas
- August 29 - National Sports Day

- **SEPTEMBER**
- September2 - Coconut Day
- September 5 - Teachers Day , International day of charity
- September8 - International Literacy Day (UNESCO)
- September 14 - Hindi Diwas, World First Aid Day
- September 15 - Engineer Day
- September 16 - World Ozone Day
- September 21 - Alzheimer Day
- September 21 - Day for Peace and Non-violence (UN)
- September 22 - Welfare of cancer patients (Rose Day)
- September 25 - Social Justice Day
- September 26 - Day of the Deaf
- September 27 - World Tourism Day
- September 28 - World Rabies Day
- September 29 - World Heart Day

- **OCTOBER**
- October 1 - International Day for the Elderly
- October 2 - Gandhi Jayanthi
- October 3 - World Habitat Day
- October 4 - World Animal Welfare Day
- October 8 - Indian Air Force Day
- October 9 - World Post Office Day
- October 10 - National Post Day
- October 11 - International Day of the Girl Child
- October 13 - UN International Day for Natural Disaster Reduction
- October 14 - World Standards Day
- October 15 - World White Cane Day
- October 15 - International Day of Rural women
- October 16 - World Food Day
- October 17 - The International Day for the Eradication of Poverty
- October 20 - World Statistics Day
- October 24 - World Development Information Day
- October 24 - World Polio Day, UN Day
- October 28 - International Animation Day
- October 30 - World Thrift Day

- **NOVEMBER**
- November 5 - World Radiography Day
- November 9 - Legal Services Day

- November 12 - World Pneumonia Day
- November 12 - Public Service Broadcasting Day
- November 14 - Children Day
- November 14 - World Diabetes Day
- November 16 - International Day for Tolerance
- November 17 - National Journalism Day
- November 19 - Citizens Day
- November 19 - World Toilet Day
- November 19 - National Integration Day
- November 20 - Africa Industrialization Day
- November 21 - World Television Day
- November 21 - World Fisheries day
- November 25 - International Day for Elimination of Violence against Women
- November 26 - Constitution Day
- November29 - International Day of Solidarity with Palestinian People

DECEMBER

- December 1 - World AIDS Day
- December 2 - World Computer Literacy Day
- December 3 - World Day of the Handicapped
- December 4 - Indian Navy Day
- December 5 - International Volunteer Day
- December 7 - Armed Forces Flag Day
- December 7 - International Civil Aviation Day
- December 10 - Human Rights Day
- December 10 - International Children Day of Broadcasting
- December 14 - World Energy Day
- December 18 - Minorities Rights Day
- December 22 - National Mathematics
- December 23 - Farmer's Day
- December 25 - Good Governance Day

28. Capital Currency

S.N	Countries	Capitals	Currencies
1.	Australia	Canberra	Australian Dollar
2.	Afghanistan	Kabul	Afghani
3.	Algeria	Algiers	Dinar
4.	Argentina	Buenos Aires	Peso
5.	Austria	Vienna	Euro
6.	Bangladesh	Dhaka	Taka
7.	Belgium	City of Brussels	Euro
8.	Brazil	Brasilia	Real
9.	Canada	Ottawa	Canadian Dollar
10.	China	Beijing	Yuan
11.	Cuba	Havana	Cuban Peso
12.	Cambodia	Phnom Penh	Cambodian Riel
13.	Cyprus	Nicosia	Euro
14.	Denmark	Copenhagen	Krone
15.	Egypt	Cairo	Egyptian Pound
16.	Ethiopia	Addis Ababa	Ethiopian Birr
17.	Estonia	Tallinn	Kroon
18.	Ecuador	Quito	United States Dollar
19.	France, Finland	Paris, Helsinki	Euro
20.	Fiji	Suva	Fijian Dollar
21.	Germany, Greece	Berlin, Athens	Euro
22.	Ghana	Accra	Ghana Cedi
23.	Guernsey	Saint Peter Port	Guernsey Pound
24.	Gambia	Banjul	Gambian dalasi
25.	India	New Delhi	Indian Rupee
26.	Indonesia	Jakarta	Indonesian Rupiah
27.	Iran	Tehran	Rial
28.	Iraq	Baghdad	Iraqi Diner

S.N	Countries	Capitals	Currencies
29.	Ireland, Italy	Dublin, Rome	Euro
30.	Israel	Jerusalem	Israeli new shekel
31.	Iceland	Reykjavik	Icelandic Krona
32.	Japan	Tokyo	Japanese Yen
33.	Jamaica	Kingston	Jamaican Dollar
34.	Jordan	Amman	Jordanian dinar
35.	Kenya	Nairobi	Kenyan Shilling
36.	Kuwait	Kuwait City	Kuwaiti Dinar
37.	Korea	Seoul	South Korean Won
38.	Malaysia	Kuala Lumpur	Malaysian Ringgit
39.	Mexico	Mexico City	Mexican Peso
40.	Malta	Valletta	Maltese lira
41.	Nigeria	Abuja	Nigerian Naira
42.	Namibia	Windhoek	Namibian Dollar
43.	Pakistan	Islamabad	Pakistani Rupee
44.	Peru	Lima	Nuevo Sol
45.	Portugal	Lisbon	Euro
46.	Russia	Moscow	Russian Ruble
47.	Romania	Bucharest	Romanian Leu
48.	Sweden	Stockholm	Swedish Krona
49.	Switzerland	Bern	Swiss Franc
50.	Sri Lanka	Sri Jayewardenepura	Sri Lankan Rupee
51.	Spain	Madrid	Euro
52.	Taiwan	Taipei	New Taiwan Dollar
53.	Turkey	Ankara	Turkish Lira
54.	United Kingdom	London	Pound
55.	United States	Washington, D.C.	United States Dollar
56.	Taiwan	Taipei	New Taiwan Dollar
57.	Uruguay	Montevideo	Uruguayan Dollar
58.	Venezuela	Caracas	Venezuelan Bolivar
59.	Yugoslavia	Belgrade	Yugoslav Dinar
60.	Zimbabwe	Harare	Zimbabwean dollar
61.	Zambia	Lusaka	Zambian Kwacha
62.	Jamaica	Kingston	Jamaican Dollar

29. States and Capitals

S.N	States	Capital
1.	Andhra Pradesh	Amravathi [Hyderabad initially]
2.	Arunachal Pradesh	Itanagar
3.	Assam	Dispur
4.	Bihar	Patna
5.	Chhattisgarh	Raipur
6.	Goa	Panaji
7.	Gujarat	Gandhinagar
8.	Haryana	Chandigarh (shared with Punjab)
9.	Himachal Pradesh	Shimla
10	Jammu & Kashmir	Srinagar (Summer) Jammu (Winter)
11.	Jharkhand	Ranchi
12.	Karnataka	Bangalore
13	Kerala	Thiruvananthapuram
14.	Madhya Pradesh	Bhopal
15.	Maharashtra	Mumbai
16.	Manipur	Imphal
17.	Meghalaya	Shillong
18.	Mizoram	Aizawl
19.	Nagaland	Kohima
20.	Odisha (Orissa)	Bhubaneshwar
21.	Punjab	Chandigarh (shared with Haryana)
22.	Rajasthan	Jaipur
23.	Sikkim	Gangtok
24.	Tamil Nadu	Chennai
25.	Telangana (from June 2, 2014)	Hyderabad
26.	Tripura	Agartala
27.	Uttar Pradesh	Lucknow
28.	Uttarakhand	Dehradun
29.	West Bengal	Kolkata

- **Union Territories**

Sr. No	Union Territories	Capital
1.	Andaman and Nicobar Islands	Port Blair
2.	Chandigarh	Chandigarh
3.	Dadra and Nagar Haveli	Silvassa
4.	Daman and Diu	Daman
5.	Lakshadweep	Kavaratti
6.	Delhi – National Capital Territory	Delhi
7.	Puducherry (Pondicherry)	Pondicherry

30. Airports in India

AIRPORTS IN INDIA- PART 1		
S.no	Name of the Airport	City
Maharashtra		
1.	Chhatrapati Shivaji International Airport	Mumbai
2.	Dr. Babasaheb Ambedkar International Airport	Nagpur
Karnataka		
1.	Kamapagowada (Bengaluru) International Airport	Bengaluru
2.	Mangalore Airport	Mangalore
UTTAR PRADESH		
1.	Lal Bahadur Shastri International Airport	Varanasi
2.	Choudhary Charan Singh International Airport	Lucknow
3.	Amausi Airport	Lucknow
WEST BENGAL		
1.	Subhash Chandra Bose Airport (DumDum Airport)	Kolkata
2.	Bagdogra Airport	Siliguri
TAMIL NADU		
1.	Chennai International Airport	Chennai
2.	Tiruchirapalli International Airport	Tiruchirapalli
3.	Anna (Meenambkam) International Airport	Chennai
KERALA		
1.	Trivendram International Airport	Thiruvananthpuram
2.	Calicut International Airport	Kozhikode(Kerala)
3.	Aranmula International Airport	Pathanamthitta
GUJARAT		
1.	Sardar Vallabh bhai Patel International Airport	Ahmedabad

AIRPORTS IN INDIA- PART 2			
S.no	Name of the Airport	City	State/UT
1.	Indira Gandhi International Airport	Delhi	New Delhi
2.	Guru Ramdasji (Rajasansi) International Airport	Amritsar	Punjab
3.	Devi Ahiyabai Holkar International Airport	Indore	MP
4.	Veer Savarkar International Airport	Port Blair	A&N
5.	Rajeev Gandhi International Airport	Hyderabad	Telangana
6.	Lokpriya Gopinath Bordoloi International Airport	Guwahati	Assam
7.	Loknayak Jai Prakash Narayan International Airport	Patna	Bihar
8.	Goa International Airport	Goa	Goa
9.	Raja Bhoj International Airport	Bhopal	MP
10.	Gaya Airport	Gaya	Bihar
11.	Tulihal Airport	Imphal	Manipur
12.	Shillong Airport	Shillong	Meghalaya
13.	Birsa Munda Airport	Ranchi	Jharkhand
14.	Agatti Aerodrome	Agatti	Lakshadweep
15.	Dabolim Airport	-	Goa
16.	Swami Vivekananda Airport	Raipur	Chhattisgarh
17.	Jolly Grant Airport	Dehradun	Uttrakhand
18.	Dimapur Airport	Dimapur	Nagaland
19.	Patnaik Airport	Bhubaneswar	Odisha
20.	Pakyong Airport	Gangtok	Sikkim
21.	Lengpui Airport	Aizawl	Mizoram

31. Banking Apps

Banking Apps -

Banking Apps and Schemes	Name of the Bank
BOUTIQUE FINANCING SCHEME	SBI
EFOREX	SBI
E-KYC	SBI
First home grown INDEX "COMPOSITE INDEX"	SBI
Twitter Handle account	SBI
TAB BANKING FACILITY	SBI
State Bank Freedom App	SBI
Fedbook Selfie App(India's first mobile app for bank account opening)	federal bank
Video conferencing	Indusuld & federal bank
Digital Banking "POCKET"	ICICI
Student Travel Card	ICICI
I-Mobile app for windows phone	ICICI
M-Pesa	ICICI+Vodafone
Branch on Wheel	ICICI Bank in Odisha
Tap and pay	ICICI
Digital Village Project in Akodara Village of Gujarat	ICICI
Transparent credit card "in association with American Express	ICICI
EMI ON DEBIT CARD	ICICI
Kisan card	AXIS Bank
Asha Home loan	AXIS Bank
Airtel money	AXIS BANK+AIRTEL
Chillar	Hdfc Bank
DDA Housing Scheme 2014	Hdfc Bank
Instant Money Transfer – IMT	Bank of India
Facebook-basedFUNDS transfer platform "KayPay"	Kotak Mahindra Bank
M-Wallet	Canara Bank
Maha Millionaire", "Maha Lakhpati"	Bank of Maharashtra
China's first online Banking "webank"	Tancet Holdings
India's first credit card exclusively for GOLF LOVERS	RBL Bank

32. Important Dams In India

Dam	River	State
SardarSarover Dam	Narmada	Gujarat
Srisailam Dam	Krishna	Telangna/Andhra Pradesh
RanjitSagar Dam	Ravi	Punjab
Koteshwar Dam	Bhagirathi	Uttarakhand
Gandhi Sagar Dam	Chambal	Madhya Pradesh
Omkareshwar Dam	Narmada	Madhya Pradesh
Mullaperiyar Dam	Periyar	Kerala (idukki district)
Baglihar Dam	Chenab	Jammu & Kashmir
NagarjunaSagar Dam	Krishna	Telangna/Andhra Pradesh
Salal Dam	Chenab	Jammu & Kashmir
Koyna Dam	Koyna	Maharashtra
Rihand Dam	Rihand	Uttar Pradesh
Ukai Dam	Tapi	Gujarat
Indira Sagar Dam	Narmada	Madhya Pradesh
Uri Dam	Jhelum	Jammu & Kashmir (Baramula district)
Tehri Dam	Bhagirathi	Uttarakhand
Bhakra Dam	Sutlej	Himachal Pradesh
Idukki arch Dam	Periyar	Kerala
Lakhwar Dam	Yamuna	Uttarakhand
Mettur Dam	Kaveri	Tamil Nadu
Hirakud Dam	Mahanadi	Odisha
JawaharSagar Dam	Chambal	Rajasthan
RanaPratapSagar Dam	Chambal	Rajasthan

33. States and Their Folk Dances

States and their Folk Dances-

Jharkhand	Chhanu, Sarahul, Jat-Jatin, Karma, Danga, Bidesia, Sohrai.
Uttarakhand	Gadhwali, Kumayuni, Kajari, Jhora, Raslila, Chappeli.
Andra Pradesh	Kuchipudi (Classical), Ghantamardala, (Ottam Thedal, Mohiniattam, Kummi, Siddhi, Madhuri, Chhadi.
Chhattisgarh	Goudi, Karma, Jhumar, Dagla, Pali, Tapali, Navrani, Diwari, Mundari.
Arunachal Pradesh	Mask dance (Mukhauta Nritya), War dance.
Himachal Pradesh	Jhora, Jhali, Chharhi, Dhaman, Chhapeli, Mahasu, Nati, Dangi, Chamba, Thali, Jhainta, Daf, Stick dance etc.
Goa	Mandi, Jhagor, Khol, Dakni etc.
Assam	Bihu, Bichhua, Natpuja, Maharas, Kaligopal, Bagurumba, Naga dance, Khel Gopal, Tabal Chongli, Canoe, Jhumura Hobjanai etc.
West Bengal	Kathi, Gambhira, Dhali, Jatra, Baul, Marasia, Mahal, Keertan etc.
Kerala	Kathakali (Classical), Ottam Thulal, Mohini-attam, Kaikottikali, Tappatikali, Kali Auttam.
Meghalaya	Laho, Baala etc.
Manipur	Manipuri (Classical), Rakhal, Nat Rash, Maha Rash, Raukhat etc.
Nagaland	Chong, Khaiva, Lim, Nuralim etc.
Orissa	Odissi (Classical), Savari, Ghumara, Painka, Munari, Chhau, Chadya Dandanata etc.
Maharashtra	Lavani, Nakata, Koli, Lezim, Gafa, Dahikala Dasavtar or Bohada, Tamasha, Mauni, Powara, Gouricha etc.
Karnataka	Yakshagan, huttar, Suggi, Kunitha, Karga, Lambi
Gujarat	Garba, Dandiya Ras, Tippani Juriun, Bhavai.
Punjab	Bhagra, Giddha, Daff, Dhaman etc.
Rajasthan	Ghumar, Chakri, Ganagor, Jhulan Leela, Jhuma, Suisini, Ghapal, Panihari, Ginad etc.
Mizoram	Khanatm, Pakhupila, Cherokan etc.
Jammu & Kashmir	Rauf, Hikat, Mandjas, kud Dandi nach, Damali.
Tamil Nadu	Bharatnatyam, Kumi, Kolattam, Kavadi,
Uttar Pradesh	Nautanki, Raslila, Kajri, Jhora, Chappeli, Jaita.
Bihar	Jata-Jatin, Bakho-Bakhain, Panwariya, Sama-Chakwa, Bidesia, Jatra etc.
Haryana	Jhumar, Phag Dance, Daph, Dhamal, Loor, Gugga, Khor, Gagor etc.

34. Name of the Bird Sanctuary

Name of the State	Name of the Bird Sanctuary
Andhra Pradesh	Atapaka Bird Sanctuary Nelapattu Bird Sanctuary Pulicat Lake Bird Sanctuary Sri Peninsula Narasimha Wildlife Sanctuary Uppalapadu Bird Sanctuary
Assam	Bordoibam Beelmukh Birds' Sanctuary Deepor beel bird sanctuary Panidihing bird sanctuary
Bihar	Nagi Dam Bird Sanctuary Nakti Dam Bird SanctuaryBhimband Wildlife Sanctuary
Delhi	Najafgarh drain bird sanctuary
Goa	Salim Ali Bird Sanctuary
Gujarat	Gaga Wildlife Sanctuary Khijadiya Bird Sanctuary Kutch Bustard Sanctuary Nal Sarovar Bird Sanctuary Porbandar Bird Sanctuary Thol Lake
Haryana	Bhindawas Wildlife Sanctuary Khaparwas Wildlife Sanctuary
Himachal Pradesh	Gamgul
Karnataka	Attiveri Bird Sanctuary Bankapura Peacock Sanctuary Bonal Bird Sanctuary Gudavi Bird Sanctuary Kaggaladu Bird Sanctuary Magadi Bird Sanctuary Mandagadde Bird Sanctuary Puttenahalli Lake (Yelahanka) Ranganathittu Bird Sanctuary
Kerala	Kadalundi Bird Sanctuary Kumarakom Bird Sanctuary

	Mangalavanam Bird Sanctuary Pathiramanal Kerala Pakshipathalam Bird Sanctuary Thattekad Bird Sanctuary
Maharashtra	Mayani Bird Sanctuary Great Indian Bustard Sanctuary
Mizoram	Lengteng Wildlife Sanctuary
Odisha	Chilika Lake
Punjab	Harike bird sanctuary
Rajasthan	Keoladeo National Park Khichan Bird Sanctuary Tal Chhapar Sanctuary
Tamil Nadu	Chitrangudi Bird Sanctuary Kanjirankulam Bird Sanctuary Koonthankulam Bird Sanctuary Suchindram Theroor Birds Sanctuary Udayamarthandapuram Bird Sanctuary Vedanthangal Bird Sanctuary Vellode Birds Sanctuary Vettangudi Bird Sanctuary
Uttar Pradesh	Bakhira Sanctuary Lakh Bahosi Sanctuary Nawabganj Bird Sanctuary Okhla Sanctuary Patna Bird Sanctuary Saman Sanctuary Samaspur Sanctuary Sandi Bird SanctuaryThasrana Bird Sanctuary
West Bengal	Chintamoni Kar Bird Sanctuary Raiganj Wildlife Sanctuary

35. List of Tiger Reserves

Name of the State	Name of the Tiger Reserve
Assam	Kaziranga Tiger Reserve Manas Tiger Reserve Nameri Tiger Reserve Orang Tiger Reserve
Arunachal Pradesh	Namdapha Tiger Reserve Pakhui Tiger Reserve
Andhra Pradesh	Nagarjunsagar-Srisailam Tiger Reserve
Bihar	Valmiki National Park
Chhattisgarh	Achanakmar Tiger Reserve Indravati Tiger Reserves Udanti & Sitanadi Tiger Reserve
Jharkhand	Palamau Tiger Reserve
Karnataka	Bandipur Tiger Reserve Nagarhole Tiger Reserve Bhadra Tiger Reserve Anshi Dandeli Tiger Reserve
Kerala	Periyar Tiger Reserve Parambikulam Tiger Reserve
Madhya Pradesh	Bandhavgarh Tiger Reserve Satpura Tiger Reserve Kanha Tiger Reserve Panna Tiger Reserve Pench Tiger Reserve Sanjay-Dubri Tiger Reserve
Maharashtra	Melghat Tiger Reserve Pench Tiger Reserve Tadoba Andhari Tiger Project Sahyadri Tiger reserve Nagzira-Navegaon Tiger Reserve Bor Tiger Reserve
Mizoram	Dampa Tiger Reserve

Odisha	Satkosia Tiger Reserve Simlipal Tiger Reserve
Rajasthan	Mukundara Hills Tiger Reserve Ranthambore Tiger Reserve Sariska Tiger Reserve
Tamil Nadu	Anamalai Tiger Reserve Kalakkad Mundanthurai Tiger Reserve Mudumalai Tiger Reserve Sathyamangalam Tiger Reserve
Telangana	Kawal Tiger Reserve Nagarjunsagar-Srisailam Tiger Reserve
Uttar Pradesh	Dudhwa Tiger Reserve Pilibhit Tiger Reserve
Uttarakhand	Jim Corbett Tiger Reserve Rajaji National Park
West Bengal	Buxa Tiger Reserve Sunderbans Tiger Reserve

36. BANKING REFORMS ACT

1. Negotiable Instrument Act–**1881**
2. The Bankers'Books Evidence Act–**1891**
3. The ReserveBank of India Act–**1934**
4. The Industrial Finance Corporation of India Act–**1948**
5. The Banking Companies (Legal Practitioner Clients' Accounts) Act–**1949**
6. The Industrial Disputes (Banking and Insurance Companies) Act–**1949**
7. The Banking Regulation(Companies) Rules–**1949**
8. The Banking Regulation Act–**1949**
9. The State Financial Corporations Act–**1951**
10. The Reserve Bank of India (Amendment and Misc. Provisions) Act–**1953**
11. The Industrial Disputes (Banking Companies) Decision Act–**1955**
12. The State Bank of India Act–**1955**
13. The State Bank of India (Subsidiary Banks) Act-**1959**
14. The Subsidiary Banks General Regulation–**1959**
15. The Deposit Insurance and Credit Guarantee Corporation Act–**1961(DICGC)**
16. The Banking Companies (Acquisition and Transfer of Undertakings) Act–**1970**
17. The Regional Rural Banks Act–**1976**
18. The Banking Companies (Acquisition and Transfer of Undertakings) Act–**1980**
19. The Export-Import Bank of India Act–**1981**
20. The National Bank for Agriculture and Rural Development Act–**1981**

21. Chit Fund Act–**1982**
22. Sick Industrial Companies (Special Provisions)Act–**1985**
23. The National Housing Bank Act–**1987**
24. SIDBI Act–**1989**
25. The Special Court (trial of Offences relating to Transactions in Securities) Act–**1992**
26. The Industrial Finance Corporation (Transfer of Undertakings and Repeal) Act–**1993**
27. Industrial Reconstruction Bank (Transfer of Undertaking & Appeal) Act–**1997**
28. The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act–**(SARFASI-2002)**
29. Industrial Development Bank (Transfer of Undertaking & Repeal) Act–**2003**
30. Credit Information Companies (Rules & Regulation) Act–**2005**
31. The Industrial Finance Corporation of India Act–**1948**
32. The Banking Companies (Legal Practitioner Clients' Accounts) Act–**1949**
33. The Industrial Disputes (Banking and Insurance Companies) Act–**1949**
34. The State Financial Corporations Act–**1951**
35. The Reserve Bank of India (Amendment and Misc. Provisions) Act–**1953**
36. The Industrial Disputes (Banking Companies) Decision Act–**1955**
37. The State Bank of India Act–**1955**
38. The State Bank of India (Subsidiary Banks) Act-**1959**
39. The Subsidiary Banks General Regulation–**1959**
40. The Deposit Insurance and Credit Guarantee Corporation Act–**1961**
41. The National Bank for Agriculture and Rural Development Act–**1981**
42. Chit Fund Act–**1982**
43. Shipping Development Fund Committee (Abolition)Act–**1985**
44. Sick Industrial Companies (Special Provisions)Act–**1985**
45. The National Housing Bank Act–**1987**
46. The Special Court (trial of Offences relating to Transactions in Securities) Act–**1992**
47. The Industrial Finance Corporation (Transfer of Undertakings and Repeal) Act–**1993**
48. Industrial Reconstruction Bank (Transfer of Undertaking & Appeal) Act–**1997**
49. SIDBI General Regulations, **1990**
50. Banking Regulation (Companies) Rules **1949**
51. The Nationalised Banks (Management and Misc. Provisions)Scheme,**1970**
52. NABARD General Regulations **1982**
53. Banking Companies (Period of Preservation of Records) Rules, **1985**
54. Banking Companies (Regulation)Rules,**1985**
55. NABARD Bonds Regulations — **1988**
56. The Banking Ombudsman Scheme, **2006**
57. Factoring Act Rules, **2011**
58. SARFAESI (Central registry) Rules,**2011**
59. Banker's Books Evidence Act, **1891**
60. Banking Regulation Act, **1949**
61. Banking Companies (Legal Practitioners' Clients' Account) Act, **1949**
62. Banking Regulation (Companies) Rules, **1949**
63. Banking Companies (Acquisition and Transfer of Undertaking) Act, **1969**
64. Debts Recovery Appellate Tribunal (Procedure) Rules,**1994**
65. Foreign Contribution (Regulation) Act, **1976**
66. Foreign Exchange Management Act, **1999**
67. Indian Partnership Act, **1932**
68. Indian Stamp Act, **1899**

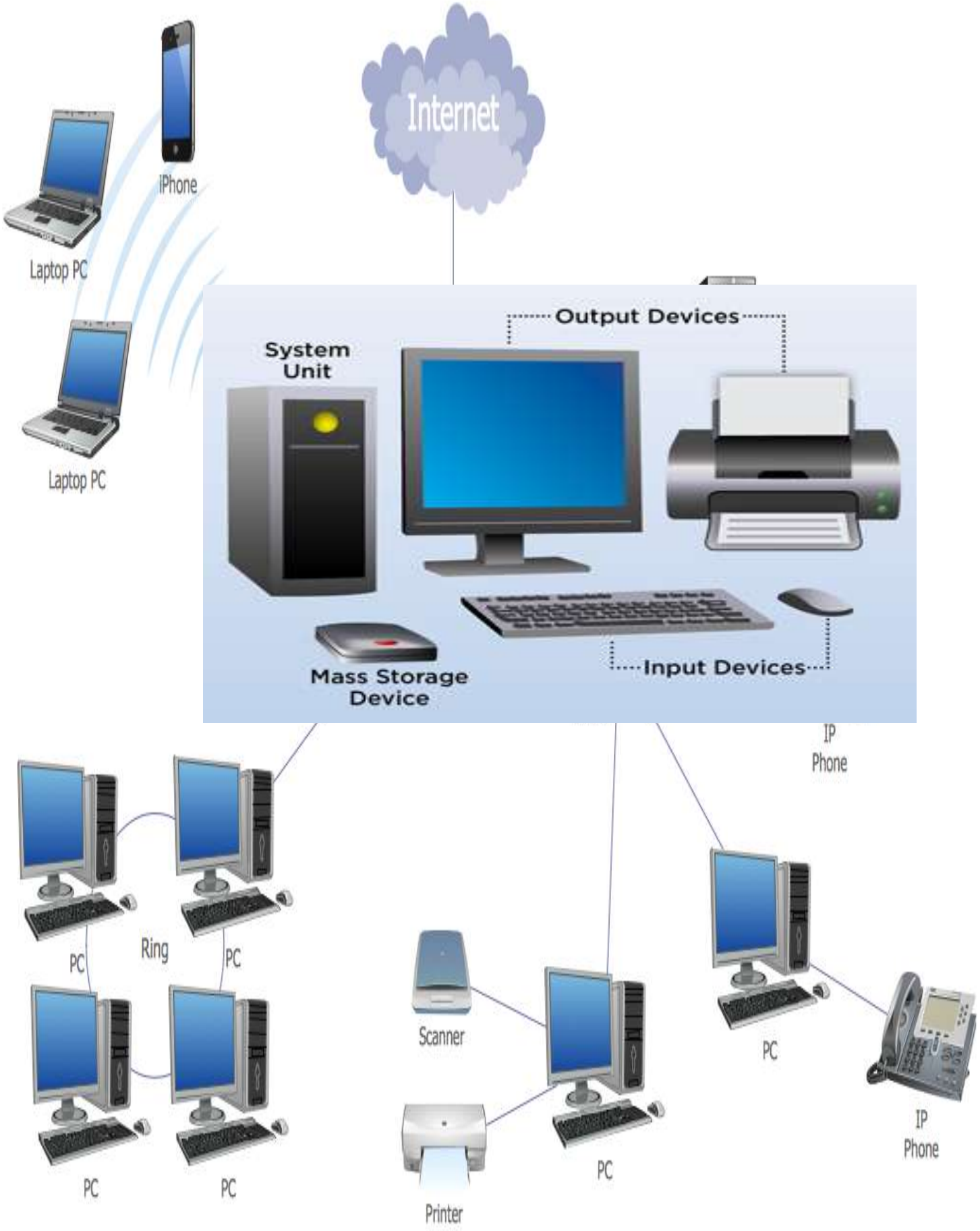
69. Indian Trusts Act, **1882**
70. Limitation Act, **1963**
71. Recovery of Debts due to Banks and Financial Institutions Act,**1993**
72. Reserve Bank of India Act — **1934**

Negotiable Instruments Act, 1881

- Section 4 – Promissory note
- Section 5 – Bill of exchange
- Section 6 – Cheque
- Section 13 – Negotiable Instruments
- Section 123 – Cheque Crossed Generally
- Section 124, 126 – Cheque crossed specially
- Section 130 – Cheque bearing Not Negotiable
- Section 118 – Presumptions as to Negotiable Instruments

Reserve Bank of India Act, 1934

- Section 17 – Defines Business of RBI
- Section 18 – Deals with Emergency loans to Banks
- Section 22 – only RBI has the exclusive rights to issue currency notes in India.
- Section 24 – maximum denomination a note can be Rs. 10,000.
- section 26 – Describes the legal tender character of Indian bank notes.
- Section 28 – Allows the RBI to form rules regarding the exchange of damaged and imperfect notes.
- Section 31 – In India only the RBI or the central government can issue and accept promissory notes that are payable on demand.
- Section 42(1) – Every scheduled bank must have an average daily balance with the RBI


Internet
iPhone
Laptop PC
Laptop PC
Output Devices
System Unit
Mass Storage Device
Input Devices
IP Phone
PC
Ring
PC
PC
PC
Scanner
PC
Printer
PC
IP Phone

INDEX

1. COMPUTER INTRODUCTION AND ARCHITECTURE

1.1 Introduction To Computer :-

A computer is an electronic machine that accepts data from the user, processes the data by performing calculations and operations on it and generates the desired output as a result. The term computer is derived from the Latin word 'computerae' which means 'to compute'.

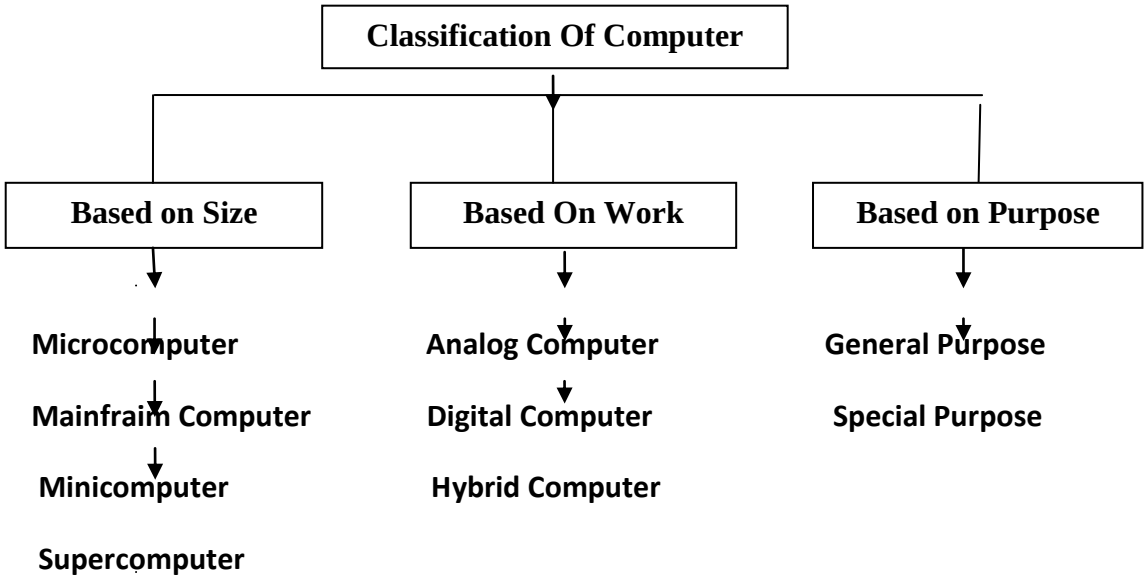
- **computer is** the combination of **Hardware** and **Software** which converts data into information.
- Computer operates on set of instructions only, they cannot think as human being.

1.2 Functioning of a Computer System :-

Computer used to perform four basic functions

1. **Input** information or data that is entered into a computer is called input. It sends data and instructions to the Central Processing Unit (CPU).
2. **Processing** It is the sequence of actions taken on data to convert it into information which is meaningful to the user. It can be calculations, comparisons or decisions taken by the computer.
3. **Output** It makes processed data available to the user.
4. **Storage** It stores data and programs permanently.

1.3 Classification of Computer:-



- **Based On Size :-**

1. Microcomputer :-

- Microcomputers are the **least powerful**, yet the most widely used and fastest growing type of computers and are also called **portable computers.**
- Microcomputer consists of three basic categories of physical equipment **i.e. system unit, input/output and memory.**

- **SOME TYPES OF MICROCOMPUTER ARE :-**

- **Desktop Computer or Personal Computer (PC) :**
  These are small, relatively inexpensive computers. These are based on the microprocessor technology (Integrated Circuit).

- **Notebook :**
  Notebook computers, also known as **ultrabook or laptop**, are portable lightweight and fit into most briefcases.
  They include rechargeable battery, so these can work anywhere.
  Laptops were developed by Alan Kay.

- **Handheld Computers or Palmtops :**
  These are the smallest and **are designed to fit into the palm**. So, these are also known as **Palmtop/PDA.**
  They are practical for certain functions such as phone books and calendars. **They use the pen for input instead of keyboard.**

- **Tablet Computer :**
  They have key features of the notebook computer, but it can **accept input from a pen instead of the keyboard or mouse.**

- **Smart Phones :**
  Smart phones are cellular phones **that function both as as phone and as a small PC**. They may use a pen or may have a small keyboard. They can be connected to the internet wirelessly.
  Apple, Blackberry, Nokia are some manufactures of smart phones.

2. Mainframe Computer :-

- Mainframe computers are those having large internal memory storage and comprehensive range of software
- Mainframe computer serves as a backbone for the entire business world. It is considered as the heart of a network of computers or terminals that allows a large number of people to work at the same time.
- **Mainframe computers are IBM-370, IBM-S/390, UNIVAC-1110.**

3. **Minicomputer**

- Minicomputers are **smaller in size, faster, cost lower than mainframe computers**. Initially, the minicomputer was designed to carry out some specific tasks, like engineering and Computer Aided Design (CAD) calculations. But now, they are being used as central computer which is called as server.
- **Mini computers are IBM-17, DECPD-11, HP-9000, etc.**

4. **Supercomputer :-**

- Supercomputers are the **fastest and the most expensive machines**. **They have high processing speed compared to other computers. The speed of supercomputers are measured in FLOPS (Floating Point Operations Per Second).**
- Supercomputers are used for highly calculation intensive tasks, such as weather foresting, nuclear research, military agencies and scientific research laboratories.
- **Supercomputers are most powerful, large in size and memory, compared to all other computers.**

- **BASED ON WORKING OF SYSTEM :-**

1. **Analog Computer :-**
   Analog computers are the **job-oriented computers**. They carry out arithmetic and logical operations by manipulating and processing of data. e.g., speed meters, seismograph, etc.

2. **Digital Computer :-**
   Digital computers work **by calculating the binary digits**. A digital computer, not only performs mathematical problems, but also combines the bytes to produce desired graphics, sounds**, e.g. desktop (PC).**

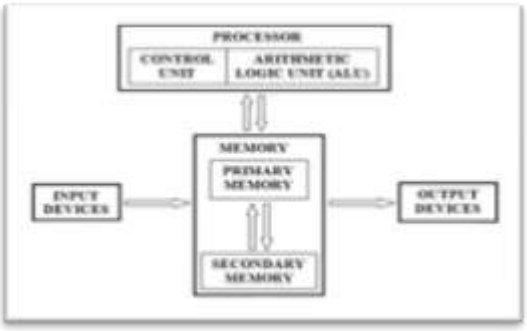
3. **Hybrid Computer :-**
   Hybrid computers are **the combination of analog and digital computers**. Machines used in hospitals like ECG and DIALYSIS are the commonly used hybrid computers.

- **BASED ON PURPOSE :-**

1. **General Purpose Computer :-**
   General purpose computers are those computers, which are used **to solve variety of problems by changing the program or instructions**.
   e.g., to make small database calculations, accounting, etc.

2. **Special Purpose Computer :-**
   Special purpose computers are those computers which are used to **solve a single and dedicated type of problem.**
   e.g., automatic aircraft landing, multimedia computer, etc.

1.4 Computer Architecture :-



- **In computer science, computer architecture is a set of disciplines that describes the part of computer system and their relations.**
- **Computer architecture deals with the functional behavior of a computer system as viewed by a programmer.**
- **It can also be described as the logical structure of the system unit that housed electronic components. The computer architecture forms the back bone for building successful computer systems**.

- **COMPONENTS OF COMPUTER :-** computer consists of **three main components**

1. **Input Unit :-**
   The computer **accepts coded information through input unit by the user**. It is a device that is used to give required information to the computer.
   e.g., keyboard, mouse, etc.

2. **Output Unit :-**
   The output unit **sends the processed results to the user**, It is mainly to display the desired result to the user as per input instruction, **e.g., video monitor, printer and plotter, etc.**

3. **Central Processing Unit (CPU) :-**
   - ✓ The central processing unit **consists of set of registers, arithmetic and control circuits, which together interpret and execute instruction is assembly language.**
   - ✓ Central Processing Unit (CPU) is often called the brain of computer.
   - ✓ The CPU is fabricated as a single Integrated Circuit (IC) chip and is also known as Microprocessor.
   - ✓ A CPU controls all the internal and external devices and performs arithmetic and logic operations.
   - ✓ **The CPU consists of three main subsystems. Arithmetic Logic Unit (ALU), Control Unit (CU) and registers.**

- **The Primary functions of the CPU are**
  1. **The CPU transfers instructions and input data from main memory to registers** i.e., internal memory.
  2. **The CPU executes the instructions in the stored sequence**.
  3. When necessary, CPU transfers output data from registers to main memory.
  4. **Arithmetic Logic Unit (ALU) :-**
     - The arithmetic logic unit **contains the electronic circuitry that executes all arithmetic and logical operations on the available data.**
     - It is used to **perform all arithmetic calculations (addition, sub traction, multiplication and division) and logical calculation (<,>=,AND, OR, etc.)**
     - Logical unit performs comparison of numbers, letters and special characters. ALU uses registers to hold the data that is being processed.

5. Registers :-

- **Registers are special purpose and high speed temporary memory units.**
- Registers are not referenced by their address, but are directly accessed and manipulated by the CPU during execution,
- Essentially, they hold the information that the CPU is currently working on. **Registers store data, instructions, address and intermediare results of processing.** The number and sizes of registers vary from processor to processor.

6. Control Unit (CU) :-

- **Control unit coordinates with the input and output devices of a comput**er.
- It directs the computer to carry out stored program instructions by communicating with the ALU and the registers.
- It organizes the processing of data and instructions.
- To maintain the proper sequence of processing data, the control unit uses clock inputs.
- The basic function of control unit is to fetch the instruction stored in the main memory, identify the operations and the devices involved in it and accordingly generate control signals.

7. Memory Unit :-

Memory is that part of the computer**, which holds data and instructions**. Memory is an integral component of the CPU. The memory unit consists of **primary memory** and **secondary memory**.

a. PRIMARY MEMORY :-

- Primary memory or main memory of the computer **is used to store the data and instructions during execution of the instructions.**
- The primary memory is of two types;
  Random Access Memory (RAM) and Read Only Memory (ROM).

- **Random Access Memory (RAM)**
  It directly provides the required information to the processor, **RAM is a volatile memory**. It provides temporary storage for data and instructions.

RAM is classified into two categories :-

1. Static Random Access Memory **(SRAM)**
2. Dynamic Random Access Memory **(DRAM)**
3. Synchronous dynamic random-access memory **(SDRAM)**
4. Video Random Access Memory **(VRAM)**

- **Read Only Memory (ROM)** :-
  It is used for storing standard processing programs that permanently reside in the computer. Generally, designers program ROM chips at the time of manufacturing circuits, **ROM is a non-volatile memory. It can only be read not written.**

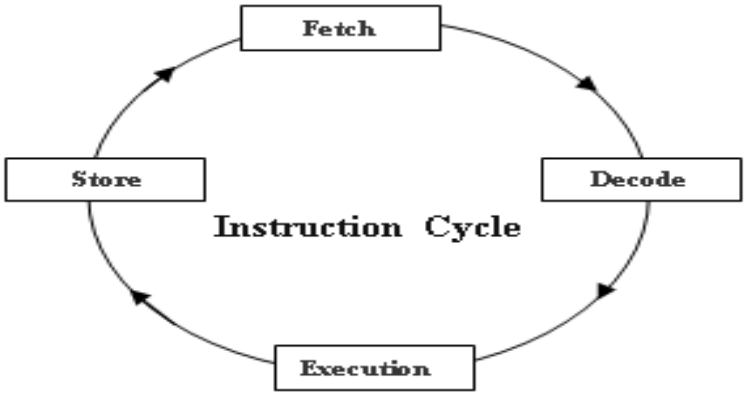
ROM is classified into three categories :-

1. Programmable ROM **(PROM)**
2. Erasable Programmable ROM **(EPROM)**
3. Electrically |Erasable Programmable ROM **(EEPROM)**

b. SECONDARY MEMORY :-

Secondary memory, also known as **secondary storage or auxiliary memory**, **is used for storing data and instructions permanentlye.g., hard disks, CDs, DVDs, etc.**

1.5 Instruction Cycle :-



- The instruction cycle represents the sequence of events that takes place as an instruction is read from memory and executed.
- A simple instruction cycle consists of the following steps
  - ✓ **Fetching the instruction** from the memory.
  - ✓ **Decoding the instruction** for operation.
  - ✓ **Executing** the instruction.
  - ✓ **Storing** in memory

1.6 Instructions Format :-

- Computer understands instructions only in terms of **0s and 1s**, **which is called the machine language.**
- program is a set of instructions that describe the steps to be performed for carrying out a computational task.
- **The processor must have two inputs; instructions and data.**
- The instructions tell the processor what actions are needed to be performed on the data.
- **An instruction is divided into two parts; operation (op-code) and operand**.
- The **op-code represents action** that the processor must execute and the **operand defines the parameters of the action and depends on the operation.**

❖ FEATURES OF COMPUTER :-

The key features of computer are

- **Speed :** The computer **can process data very fast at the rate of millions of instructions per second**.
- **Accuracy :** Computers **provide a high degree of accuracy**. They respond to the user as per the input instructions.
- **Storage Capacity :** Computers **are capable to store huge amount of data which depends on the capacity of hard disk**.
- **Versatility :** Computers **can do different types of work simultaneously**. **They can perform multiple tasks at a same time.**
- **Plug and Play :** Computers has the **ability to automatically configure a new hardware and software component.**
- **Diligency :** Unlike **human beings, a computer is free from monotony, tiredness, lack of concentration** etc and can work for hours without creating any errors.

- **Secrecy : Leakage of information is reduced by creating login system with password protection e.g., ATM counter, E-mail etc.**

1.7 Applications of Computer :-

- **Education :** Computers have proved to be excellent teachers. Educational institutes are using computers in many ways like **tele-education, virtual classroom, online classes, etc**

- **Science :** Scientists have long been users of it. A new advanture among scientists is the idea of a collaborator, **an internet based collaborative laboratory, in which researches all over the world can work easily together even at a distance**.

- **Industry :** Computers are used here to control manufacturing system and continuous running of the machinery. **Parameters like temperature, pressure, volume are monitored and controlled by computers, Robotics, developed with the help of computers plays a very crucial role here**.

- **Recreation and Entertainment :** Our entertainment and pleasure-tie have also been affected by computerization.

- **Government :** Various departments of the **Government use computer for their planning, control and law enforcement activities.**

- **Health :** Computer plays a very crucial role in this area. Activities like **scanning, X-ray, tele-medicine, patient monitoring, patient records, diagnosis, etc** are performed with the help of computers..

- **Banks :** Computers can be used in the banks **to keep the records of customer's accounts**.

- **Military Personal :** They also make use of computers for their crucial tasks like **determining the weather, computing the trajectories of missiles, etc.**

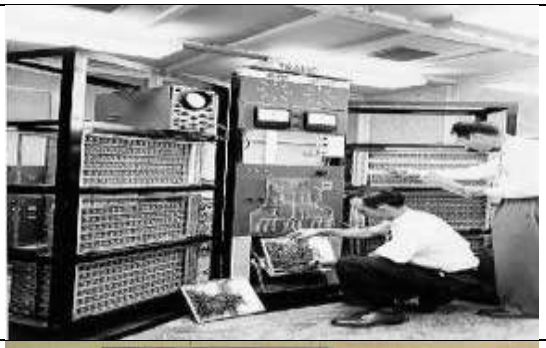
- **Business :** Using a wide range of business software a company's marketing division can produce sales forecasts and devise new strategies.

- **E-Commerce :** Traditionally, commerce is seen as the **exchange or buying and selling of goods and services**, which involves exchange of money and sometimes transportation of goods. Electronic commerce that takes place between businesses is referred to as business-to-business or B2B.

- **Publication :** Computers have made publication process an easy one. Without computers, the different parts of a publication-text, illustrations and graphics-must e created individually, then cut out and pasted down to form a page layout.

1.8 Generation Of Computer :-

Generation	1	2	3	4	5
Duration	1945-1956	1956-1963	1964-1971	1971-Present	P-Beyond
Memory Device	**Vacuum Tubes or Valves**	**Silicon Transistor**	**IC(Integrated circuits)**	Silicon Chip **VLSI or Microprocessor**	**Bio-Chips**
Features	• used vacuum tubes as electronic circuit • magnetic drum for primary storage • mercury delay lined for memory • punch-card used as secondary storage • machine level programming used • operating speed was used in terms of millisecond	• magnet core memory used as internal storage • magnet tapes used as secondary storage • little bit faster I/O devices • high level language used as programming • processing speed measured in microsecond	• semi conductor memory used as primary storage • magnetic discs were used as secondary storage • massive use of high level language • processing speed increased to nanosecond and even faster	• massive use of magnetic and optical storage devices with capacity more than 100 GB • advancement in software and high level language • use of 4th generation language(4GL) • operation speed increased beyond picoseconds and MIPS (Millions of Instructions Per Second)	• AI will make computer Intelligent and knowledge based • very high speed, PROLOG (programming language)
Example	**Mark-I, UNIVAC, ENIAC**	**IMB 1401, ICL 2950/10**	**IBM 360 series, UNIVAC 9000**	**IBM PC, Pentium PC, Apple/Macintosh**	

First Generation Computers	
Second Generation Computers	
Third Generation Computers	

Fourth Generation Computers	
Fifth Generation Computers	

2. INPUT AND OUTPUT DEVICES

- **A computer interacts with the external environment via the Input-Output (I/O) devices attached to it.**
- **Input device is used for providing data and instructions to the computer. After processing the input data, computer provides output to the user via the output devices.**
- **The I/O devices that are attached, externally to the computer machine are also called peripheral devices.**

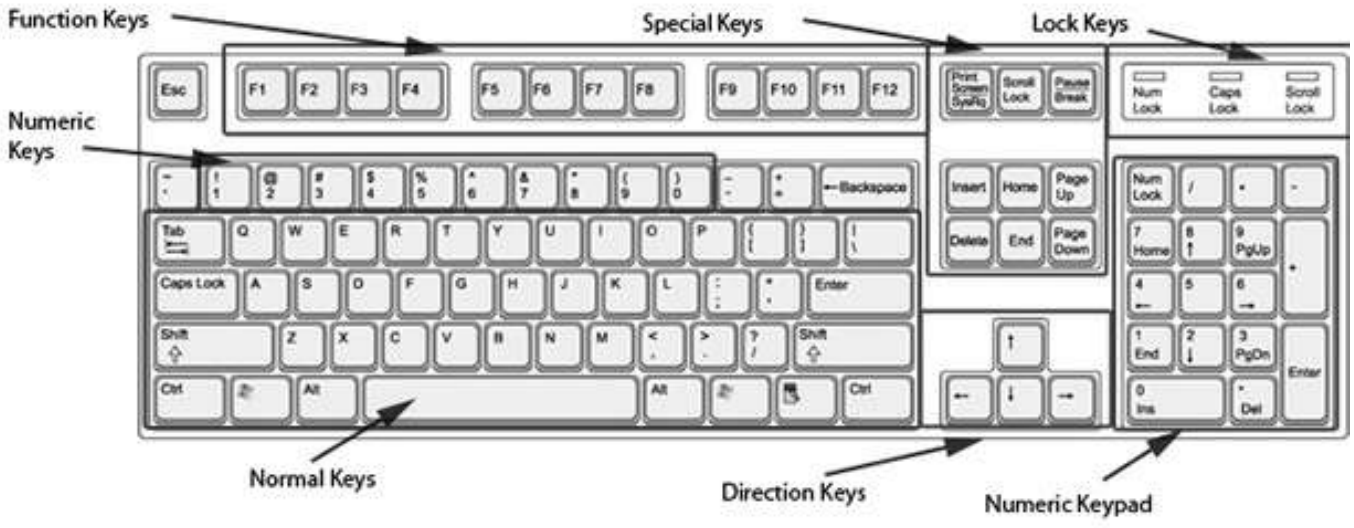
2.1 Input Devices :-

- Input device can be defined as **an electro mechanical device that allows the user to feed data into the computer** for analysis and storage and to give commands to the computer.
- The **data is entered into the main-memory through the input devices**. The accept instructions form the user and convert the accepts instructions into the machine language.

SOME OF THE COMMONLY USED INPUT DEVICES ARE DESCRIBED BELOW :-

2.1.1 Keyboard :-

- A keyboard is one of the most common input device.
- The **user can type text and command using this keyboard. Keyboard is used to enter data or information, which may be in numeric form or alphabets form, in a computer system.**
- When key is pressed, keyboard interacts with a keyboard controller and keyboard buffer. Keyboard controller stores the code of pressed key in keyboard buffer.
- There are different types of keyboard such as QWERTY, DVORAK and AZERTY.



TYPES OF KEYS ON KEYBOARD :-

1. **Alphanumeric keys** include the letter keys **(A, B, C, ……..Z) AND number keys (0, 1, 2, 3, ……., 9).**
2. **Numeric keys** are located at the **right hand side of the keyboard**. They consist of digits and mathematical operators.

3. **Function keys are the programmable keys i.e., the programs can assign some specific actions. They are numbered from (F1, F2, F3, ……., F12).**
4. **Cursor control keys include four directional (left or right up or down) arrow keys that are arranged in a inverted T formation between the alphanumeric and numeric keypad.**

- Home It is used to return the cursor to the beginning of the line or the beginning of a document.
- End it moves the cursor to the end of the line.
- Page Up When it is pressed, the page view will be moved up one page and cursor goes to the back page.
- Page Down When it is pressed, the page view will be moved down one page and cursor goes to the next page.

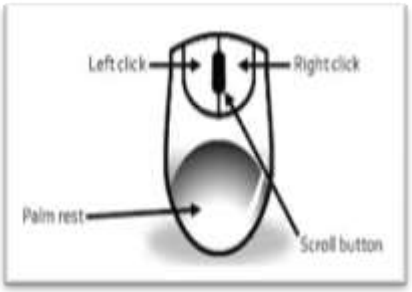
5. **Other Keys A keyboard contains some other keys such as :-**

- **Control Key (Ctrl)** It performs a special operation with the combination of other keys.
- **Enter** It is used to finish an entry and begin the new entry in a document.
- Shift Some keys on the keyboard like numeric keys have a symbol printed on their upper portion. Shift key is used to print these symbols. **There are two shift keys on a keyboard**.
- **Escape (Esc) it allows a user to cancel or abort operations**, which are executing at present. It opens start menu with the combination of Ctrl Key.
- **Back Space it is used to erase anything typed.**
- **Delete it is used to erase information from the computer's memory** and characters on the screen.
- **Caps Lock it is used to type the alphabet in capital letters.** It enables or disables all the letters from being typed in capital letters. When this key is enable, the alphabet would be in capital letters and when it is disabled, the alphabet would be in small letters.
- **Num Lock It is used to enable and disable the numeric keypad**.
- **Window Key It is used to open the start button**.
- **Spacebar Key It provides a space between two words**. It is the longest key on the keyboard.
- Tab Key it is used to move the cursor over to the right to a pre-set point. In word document, tab is used to indent a paragraph.

2.1.2 Pointing Devices :-

- **A pointing device is used to communicate with the computer by pointing to the locations on the monitor**.
- Movements of the pointing device are echoed on the screen by movements of the pointer**. Some commonly used pointing devices are mouse, track ball, joystick, light pen, touch screen etc.**

1) Mouse :-



- Mouse is a small handheld device **having two or three buttons on its upper side and also has a small wheel between the buttons**.
- It is a pointing device which provides a means to input data and commands in graphic form by selecting through moving an arrow called pointer on monitor.

- There are four actions of mouse

✓ Click It selects an item on the screen.
✓ Double Click It is used to open a document or program.
✓ Right Click Itg displays a list of commands on the screen. Right clicking is used to access the properties of selected object.

- ✓ Drag and Drop It is used to move an item on the screen.

2) Trackball :-

- Trackball is another **pointing device which is an alternative to a mouse.**
- It is also used to **control cursor movements and the actions on a computer screen.**
- **It is generally built in laptop**, since there is no space for the mouse to move on the laptop.
- It is used on **CAD, CAM workstations and sometimes seen on computerized special purpose workstations such as radar consoles in an air-traffic control room and sonar equipment on a ship or submarine.**

3) Joystick :-

- **It is a device that moves in all directions and controls the movement of the cursorJoysticks are used in flight simulators, CAD/CAM system etc**.
- A joystick is similar to a mouse except that the movement of cursor on screen stops working as soon as user stop moving the mouse. But with a joystick, the pointer continues moving in the previously pointing direction.

4) Light Pen :-

- **Light pen is a handheld elctro-optical pointing device, which is used for making drawings, graphics and for menu selection**.
- The pen contains a photocell in a small tube. It senses the light from the screen when it becomes closer and generates a pulse.
- **It is used especially in Personal Digital Assistants (PDA). It is very useful in identifying a specific location on the screen.** However, it does not provide any information when it held over a blank part of the screen.

5) Touchscreen :-

- **Touchscreen is an input device that accepts input when the user places a fingertip on the computer screen**.
- Touch screens have an infrared beam that cris-cross the surface of screen. The ability to interact directly with a display typically indicates the presence of a touch screen.
- Touch screen generally used in applications like ATM, hospitals, airline reservation, supermarkets and so on.

2.1.3 Bar Code Reader :-

- **It is an input device used for reading printed bar codes** (Universal Product Code) available on product to be sold. A bar code reader emits a beam of light which reflects off the bar code image.
- **A light sensitive detector in the barcode reader identifies the bar code**

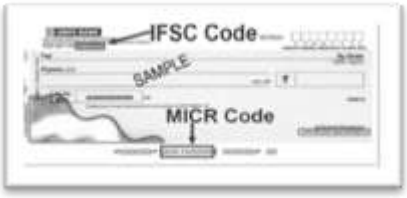
image by recognizing special bars at both the ends of the image.

- **Once code is identified it is converted into a numeric code. A perfect example of a barcode reader, use in a super market where barcode scanner reads the price of a product.**
- Software like Wasp, Barcode Pro are used for scanning and printing barcodes.
- A barcode is a machine readable representation of information in the form of stripes of dark and light ink.

2.1.4 Optical Mark Reader (OMR) :-

- **OMR is the process of detecting the presence of intended marked responses. OMR is mainly used to detect marks on a paper**. It uses a beam of light that is reflected on the paper with marks, to capture presence and absence of data (marks).
- The OMR reader interprets the pattern of marks into a data record and sends this to the computer for storage, analysis and reporting.
- **OMR is widely used to read answer of objective type tests, voting applications and other evaluation studies.**

2.1.5 Magnetic Ink Character Recognition (MICR) :-



- **MICR reads the characters by examining their shapes in a matrix from and the information is then passed on to the computer. The characters are printed using a special ink, which contains iron particles that can be magnetised.**

It is generally used in banks to process the cheques for recognizing the magnetic encoding numbers printed at the bottom of a cheque.

2.1.6 Optical Character Reader (OCR) :-

- **OCR is a technique for the scanning of a printed page, translating it and then using the OCR software to recognize the image as ASCII text that is editable**.
- It translates the array of dots into text that the computer can interpret as words and letters. OCR is widely used technique for acquiring the textual data from image.
- **It is used in many applications such as telephone bills, electricity bills, insurance premium, etc.**
- It uses letters or special characters that are especially shaped to be easy for the machines to read. The normal speed of OCR is 1500 to 3000 characters per second.

2.1.7 Smart Card Reader :-

- **Smart card reader is device which is used to access the microprocessor of a smart card**.
- There are **two kinds of smart cards; Memory cards and Microprocessor cards.** Memory cards are the cards which contain only non-volatile memory storage components and some specific

security logic. Microprocessor cards contain volatile memory and microprocessor components.

- **The card is made-up of plastic generally PVC. Smart cards are used in large companies and organizations for stronger security authentication.**

2.1.8 Biometric Sensor :-

- **Biometric sensor is a device which recognizes physical or behavioural traits of the individual. Biometric sensors are mainly used for the security purpose and for marking attendance of employees/students in organizations/institutions.**
- As biometric sensors are working with accuracy so these are widely used in security purpose also.

2.1.9 Scanner :-

- **Scanner is used to convert the data and image on paper into the digital form**.
- It is an optical input device and uses light as an input source to convert an image into an electronic form that can be stored on the computer.
- **Scanners can be used for storing the documents in their original form that can be modified and manipulated later on.**

2.1.10 Microphone (Mic) :-

- **We can send input to the computer through a special manual input device called microphone or mic. A mic converts the received sound into computer's format, which is called Digitized Sound or digital Audio.**
- To convert a voice into digital form, you need an additional hardware known as Sound Card. Sound is used more often in multimedia. Where we can make our presentations more attractive using recorded narration, music or sound effects.
- A microphone can be attached to a computer to record sound.

2.2. Output Devices :-

- **An output device is any piece of computer hardware equipment used to communicate the results of data processing carried out by an information processing to the outside world.**
- The output may be viewed on a computer monitor, heard through speakers, printed on printers, etc

➢ **SOME EXAMPLES OF OUTPUT DEVICES ARE AS FALLOWS :-**

2.2.1 Monitor :-

- Monitor is also known by **Visual Display Unit (VDU)**. The monitor is provided along with the computer to view the display result.
- A monitor is of two kinds; **monochrome display monitor and colour display monitor**.
- A monochrome display uses only one colour to display text and colour display monitor can display 256 colours at a time.
- An image on the monitor is created by a configuration of dots, also known as pixels.

The clarity of image depends on three factors :-

(i) **Resolution of Screen :** Resolution refers to **the number of pixels in horizontal and vertical direction.** The resolution of monitor is higher when the pixels are closer together.

(ii) **Dot Pitch :** It refers to the **diagonal distance between two coloured pixels**. The smaller the dot pitch, the better the resolution.

(iii) **Refresh Rate : It is the number by which per second. The higher the refresh rate, the more solid the image looks on the screen**.

TYPE OF MONITORS ARE :-

1. **Cathode Ray Tube (CRT) :-**

It is a typical rectangular shaped monitor that you see on a desktop computer. The CRT works in a same way as a television. It works by moving an electron beam back and forth across the back of the screen. A screen covered with a fine layer of phosphorescent elements, called phosphores.

2. **LCD (Liquid Crystal Display) :-**

These screens **are used in laptops and notebook sized PCs.** A special type of liquid is sandwiched between two plates. It is a thin, flat and light weight screen made up of any number of color or monochrome pixels arranged in front of a light source.

3. **LED (Light Emitted Diode) :-**

LED is an electronic device that emits light when electrical current is passed through it. LEDs usually produces red light, but today's LEDs can produce RGB (Red, Green and Blue) light, and white light as well.

4. **3-D Monitors :-**

3-D Monitor is a television that conveys depth perception to the viewer. 3-D describes and image that provides the perception of length. When 3-D images are made interactive then user feel involved with the scene and this experience is called virtual reality.

2.2.2 Printers :-

A printer prints information and data from the computer onto a paper. It can print documents is color as well as in black and white. The quality of a printer is determined by the clarity of a print. Printers are divided into two basic categories; impact and non-impact printers.

The speed of a printer is measured in Characters Per Second (CPS), Lines Per Minute (LPM) and Pages Per Minute (PPM). The faster the printing, the more expensive the printer.

Printer resolution is a numerical measure of print quality that is measured in Dots per Inch (DPI).

- **IMPACT PRINTERS :-**

This type of printer strikes **paper and ribbon together to form a character, like a typewriter**. **Impact printer can print a character or an entire line at a time**. They uses pins or hammers that pressed an inked ribbon against the paper. They are less expensive, fast and can make multiple copies with multipart paper.

There are three types of impact printer

1. **Dot Matrix :**

It forms characters using rows of pins which impact the ribbon on top of the paper therefore also called pin printers. Dot matrix printers print one character at a time. It prints characters and images as a pattern of dots. These printers are slow, noisy and are not commonly used for personal computers anymore**. Many dot matrix printers are bi-directional, that is they can print the characters from either direction, i.e., left or right.**

2. **Daisy Wheel :**

In daisy wheel printers, characters are fully formed on the petals, like typewriter keys. Daisy wheel printers produce high resolution output and are more reliable than dot matrix.

3. **Line Printer :**

It is a high-speed printer capable of printing an entire line of text at once instead of one or more characters at a time. These are impact shaped character printers which print one line at a time. Print quality of line printer is not high.

4. **Drum Printer :**

An old line printer technology that uses formed character images around a cylindrical drum as its printing mechanism. When the desired character for the selected position rotated around the hammer line, the hammer hit the paper from behind and pushed it into the ribbon and onto the character.

- **NON-IMPACT PRINTERS :-**

A non-impact printer use electronic chemicals and ink-jet technologies. They do not hit or impact a ribbon to print. It can produce high quality graphics and often a wide variety of fonts than impact printers.

There are following types of non-impact printer

1. **Inkjet Printer :** An inkjet printer is a printer that places extremely small droplets of ink onto paper to create an image. It sprays ink onto paper to form characters. It prints high quality text and graphics.
2. **Thermal Printer :** It uses **heat on chemically treated paper to form characters**. Fax machines that use rolls of paper are also of thermal printer's type. It is relatively slow, expensive and requires special paper.

3. **Laser Printer : A laser printer provides the highest quality text and images for personal computer**. They can print in different fonts that is, type styles and sizes. **Laser printer uses laser beam on to photo-sensitive surface for printing. The laser printer can print 5-24 pages fo text per minute and their resolution ranges from 400 to 1200 dpi. It prints high quality graphics. It is more expensive than impact printers.**

4. **Electromagnetic Printer : Electrographic or electro-photographic printers are very fast printers and they fall under the category of page printers.**
   They can produce documents at a speed of over 20000 lines per minute i.e., more than 250 pages per minute. The electrographic technology have developed from the paper copier technology

5. **Electrostatic Printer : Electrostatic printers are generally used for large format printing.** They are favored by large printing shops because of their ability to print fast, making low cost.

2.2.3 Plotter :-

A plotter is an output device that uses a pen, pencil, marker or other writing tool for making vector graphics. A plotter is a special kind of output channel, like a printer, that produces images on paper. They are mainly used to produce large drawings or images such as construction plans, blueprints for mechanical objects, AUTOCAD, CAD/CAM etc.
Plotters usually come in two designs

1. **Flat Bed Plotter :** These plotters are of small size to be kept on table with restriction of paper size.
2. **Drum Plotter :** These plotters are of big size using rolls of paper of unlimited length.

2.2.4 Speaker :-

It is an output device that receives sound in the form of electric current. It needs a sound card connected to a CPU, that generates sound via a card. These are used for listening music, for being audible in seminars during presentations, etc. Computer speakers are the speakers which are attached internally or externally to computer system.

2.2.5 Headphones :-

Headphones are a pair of small loudspeakers or less commonly a single speaker, held close to a user's ears and connected to a signal source such as an audio amplifier, radio, CD player to portable media player. They are also known as stereo phones, headsets or cans.

2.2.6 Projector :-

It is an output device, which is used to project information from a computer onto a large screen, so it can be viewed by a large group of people simultaneously. Projectors are widely used for classroom training or conference holes with a large audience. It provides a temporary output display.
There are mainly two types of projection :-

1. **LCD Projector :** It contains three separate LCD glass panels, one each for **red, green and blue components** of the image signal being fed into the projector.
2. **DLP Projector :** It stands for digital light processing. It uses a chip that has thousands of tiny mirrors, each representing a single pixel. It is widely used to handle video images.

The refresh rote of monitor is measured in Hertz (Hz).

2.3 INPUT/ OUTPUT (I/O) PORTS :-

The peripheral devices can be connected to computer in several ways. **Input /Output ports are the external interfaces that are used to connect input and output devices like printer, modem and joystick to computer.** The I/O devices are connected to the computer via the serial and parallel ports, Universal Serial Bus (USB), fire wire ports, etc.

1. **Parallel Port :-**
   A parallel port is interface for **connecting eight of more data wires**. **The data flows through the eight wires simultaneously**. **They can transmit eight bits of data in parallel. As result, parallel ports provide high speed data transmission**. Parallel port is used to connect printer to the computer.

2. **Serial Port :-**
   A serial port transmits one bit of data through a single wire. Since, data is transmitted serially as single bits. Serial ports provide slow speed data transmission. Serial port is used to connect external modems, plotters, barcode reader, etc.

3. **Universal Serial Bus (USB) :-**
   It is a common and popular external port available with computers. Normally, two to four USB ports are provided on a PC. USB also has the plug and play feature, which allows devices ready to be run. A single USB port can support connection of upto 127 devices.

4. **Fire wire :-**
   It is used to connect audio and video multimedia devices like video camera. It is an expensive technology used for large data movement. Hard disk drive and new DVD drives connect through fire wire. **It has data transfer rate of up to 400 MB/sec.**

3 . COMPUTER MEMORY AND DATA REPRESENTATION

3.1 Computer Memory :-

The computer memory is one of the important elements in a computer system. It stores data and instructions required during the processing of data and output results. Storage may be required for a limited period of time, instantly or for an extended period of time. Computer memory refers to the electronic holding place for instructions and data where the processor can read quickly.

3.1.1 Parameters of Memory :-

The following terms are most commonly used for identifying comparative behavior of various memory devices and technologies.

Storage Capacity : It is representative of the size of the memory. The capacity of internal memory and main memory can be expressed in terms of number of words or bytes.

Access modes : A memory is comprised of various memory locations. The information from these memory locations can be accessed randomly. Sequentially and directly.

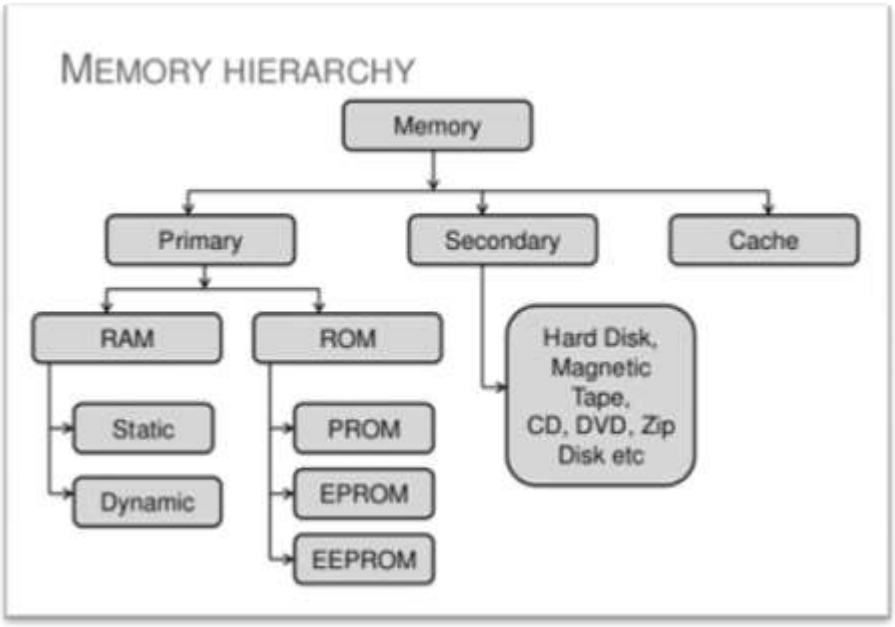
Access Time : The access time is the time required between the desired modes for a read or write operation till the data is made available or written at the desired location.

Physical Characteristics : In this respect, the devices can be categorized into four main categories electronic, magnetic mechanical and optical.

Permanence of Storage : Its permanence is high for future use in magnetic materials.

3.1.2 Types of Memory :-

1. **Primary memory or Main memory**
2. **Secondary memory or Auxiliary memory**



A) Primary Memory (Main Memory) :-

The memory unit that communicates directly with the CPU is called main memory. The primary memory allows the computer to store data for immediate manipulation and to keep track of what is currently being processed. It is volatile in nature, it means that when the power is turned off, the contents of the primary memory are lost forever.

PRIMARY MEMORY FURTHER CLASSIFIED IN TWO CATEGORIES :-

1. **Random Access Memory (RAM) :-**
   It is also known as read/write memory,that allows CPU to read as well as write data and instructions into it. **RAM is used for the temporary storage of input data, output data and intermediate results**. RAM is a microchip implemented using semiconductors.

(i) **Dynamic RAM (DRAM) :**

- It is **made up of memory cells** where each cell is composed of one capacitor and one transistor.
- **DRAM must be refreshed continually to store information**.
- **The refresh operations occurs automatically thousands of times per second**. DRAM is slower, less-expensive and occupies less space on the computer's motherboard.

(ii) **Static RAM (SRAM) :**

- **It retains the data as long as power is provided to the memory chip.**
- It needs not be 'refreshed' periodically.
- **SRAM uses multiple transistors for each memory cell. It does not use capacitor. SRAM is often used as cache memory due to its high speed**. SRAM is more expensive than DRAM.

2. **Read Only Memory (ROM) :-**
   It is also known as non-valuable memory or permanent storage. It does not lose its content when the power is switched off. **ROM has only read capability, no write capability**. ROM can have data and instructions written to it only one time. Once a ROM chip is programmed at the time of manufacturing, it cannot be reprogrammed or rewritten.

THERE ARE THREE CATEGORIES OF ROM :-

i) Programmable ROM (PROM) :

- It is also non-volatile in nature. Once a PROM has been programmed, it contents can never be changed. It is a one-time programmable device.
- PROMs are manufactured blank and can be programmed at buffer, final test or in system.

- These types of memories are found in video game consoles, mobile phones, implantable medical devices and high definition multimedia interfaces.
- PROM was invented by Wen Tsing Chow in 1956.

ii) Erasable Programmable ROM (EPROM) :

- It is similar to PROM, but it can be erased by exposure to strong ultraviolet light, then rewritten. So, it is also known as Ultraviolet Erasable Programmable ROM (UVEPROM).
- EPROM was invented by Dov Frohman of Intel in 1971.

iii) Electrically Erasable Programmable ROM (EEPROM) :

- **It is similar to EPROM, but it can be erased electrically, then rewritten electrically and the burning process is reversible by exposure to electric pulses.**

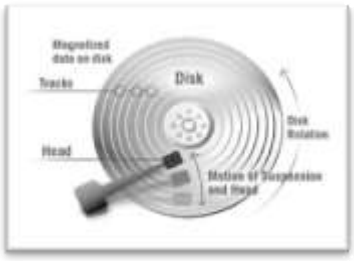
B) Secondary Memory (Auxiliary Memory/Storage Devices) :-

- **The secondary memory stores much larger amounts of data in information for extended periods of time.**
- **Data in secondary memory cannot be processed directly by the CPU, it must first be copied into primary storage i.e., RAM.**
- **Secondary storage is used to store data and programs when they are not being processed.**
- **It is also non-volatile in nature. Due to this, the data remain in the secondary storage as long as it is not oevewritten or deleted by the user. It is a permanent storage i.e., device.**

SECONDARY MEMORY DEVICES INCLUDE :-

Magnetic Disks	**:**	**Hard Disk Drive,**	**Floppy Disk,**	**Memory Stick**
Optical Disks	**:**	**CD,**	**DVD,**	**Blue-ray Disk**
Solid State Disks	**:**	**Pen/Flash Drive**		

Hard Disk Drive (HDD) : -



- **It is a non-volatile, random access digital data storage device**.
- It is a data storage device used for storing and retrieving digital information using rotating disk (platters) coated with magnetic material.
- **All programs of a computer are installed in hard disk. It consists of a spindle that hold non-magnetic flat circular disks, called platters**

Floppy Disk :-

- **It is used to store data but it can store small amount of data and it is slower to access than hard disks.**
- **It is round in shape and a thin plastic disk coated with iron oxide. Data is retrieved or recorded on the surface of the disk through a slot on the envelope. Floppy disks is removable from the drive**.

- **Floppy disk in available in three sizes;**
  8 inch, $5\frac{1}{4}$ inch and $3\frac{1}{2}$ inch.
  $5\frac{1}{4}$ inch floppy disk has a capacity of 1.2 MB.
  $3\frac{1}{4}$ inch floppy disk has a capacity of 1.44 MB.

Compact Disk (CD) :-

It is the most popular and the least expensive type of optical disk. **A CD is capable of being used as a data storage device along with storing of digital audio. The files are stored on this particular contiguous sectors.**
CDs are categorized into three main types

1. **CD-ROM (Compact Disk-Read Only Memory) :-**
   It is designed to store computer data in the form of text and graphics, as well as hi-fi stereo sound. It is capable of storing large amounts of data-up to 1GB, although the most common storage capacity is 700 MB. Data is recorded permanently on the surface of the optical disk through the use of laser. The recorded content cannot be changed or erased by users. It is also called WORM (Write once read Many) disk.
2. **CD-R (Compact Disk - Recordable) :**
   Data can be written on these disks only once. The data once stored in these disks cannot be erased.
3. **CD-RW (Compact Disk - Rewritable) :**
   It is an erasable disk. CD-RW is used to write data multiple times on a disk by the use of format feature.

Digital Video Disk (DVD) :-

- DVD is also known as Super Density Disk (SD). **A DVD is an optical disk storage media manufactured by Philips, Sony, Toshiba and Panasonic in 1995.**
- DVDs offer higher storage capacity than Compact disks while having the same dimensions.
- **Depending upon the disk type, DVD can store several Gigabytes of data (4.7 GB – 17.08 GB).**
- DVDs are primarily used to store music or 6 movies and can be played back on your television or the computer too. They are not rewritable media.

- **DVDs come in three varieties :-**
  1. DVD-ROM (Digital Video Disk-Read Only Memory)
  2. DVD-R (DVD-Recordable)
  3. DVD-RW (DVD-Rewritable)

Pen/Thumb Drive :-

- **Pen drive is also known as flash drive**. **A flash drive is a data storage device that consists of flash drive is a data storage device that consists of flash memory (key memory) with a portable USB (Universal Serial Bus) interface.**
- USB flash drives are typically removable, rewritable and much smaller than a floppy disk. A USB flash drive is same as the size of thumb that plugs into a USB port on the computer.
- **Today, flash drives are available in various storage capacities at 256 MB. 512 MB, 1 GB, 4 GB, 16 GB upto 64 GB. They are widely used as an easy and small medium to transfer and store the information from their computer.**

RAM	ROM
Volatile	Non-Volatile
Both Read and Write	Only Read
Data is Temporary	Data is Permanent
Faster While Programming	Slower
High Cost	Low Cost
Larger in Size	Smaller in Size

3.1.3 Memory Measurement :-

When you use a RAM, ROM, Floppy disk or hard disk, the data is measured using some unit. In computer terminology, they are called Nibble, Bit, Byte, Kilobyte, Megabyte, Gigabyte, etc.

- **Bit** -It stands for a Binary Digit. Which is either 0 or 1.
- **Byte (B) -** A byte is approximately one character (letter 'a' number '1'. Symbol '?' etc.). Also a group of 8 bits is called a byte.
- **Nibble** - 4 bits make one nibble.
- **Kilobyte (KB)** - in memory, **a group of 1024 bytes is called a Kilobyte**.
- **Megabyte (MB)-** in memory, a **group of 1024 kilobytes is called a Megabyte**. It is sometimes used, less precisely. **To mean 1 million bytes or 1000 KB**.
- **Gigabyte (GB)** - In memory, a **group of 1024 megabytes is called a Gigabyte** it is sometimes used, less precisely, to mean 1 billion bytes or 1000 MB.
  Now, a number of companies manufacture memory chips in terms of Megabyte such as MB, 128 MB, 256 MB, 1.2 GB etc.
- **Terabyte (TB) -** A terabyte, **exactly 2^{40} bytes (2^{10} GB), is approximately a trillion (10^{12}) bytes**.
- **Petabyte (PB**)- **One petabyte of information equal to 1000 terabytes or 10^{15} bytes**.
- **Exabyte (EB) -** One Exabyte of information equal to **1000 petabytes or 10^{18} bytes**.
- **Zettabyte (ZB)** - **One zettabyte of information equals to 1000 exabytes or 10^{21}**

- ✓ **Bit** is smallest memory measurement unit
- ✓ **Geop Byte** is the highest memory measurement

1 Bit	**= Binary Digit**
8 Bits	**=1 Byte = 2 Nibble**
1024 Bytes	**=1 KB (Kilo Byte)**
1024 KB	**=1 MB (Mega Byte)**
1024 MB	**=1 GB (Giga Byte)**
1024 GB	**=1 TB (Tera Byte)**
1024 TB	**= 1 PB (1 Peta Byte)**
1024 PB	**=1 EB (Exa Byte)**
1024 EB	**=1 ZB (Zetta Byte)**
1024 ZB	**=1 YB (Yotta Byte)**

1024 YB =1 (Bronto Byte)
1024Bronto Byte = 1 (Geop Byte)

3.2 Data Representation :-

- As we know that computer understands the binary language (0s and 1s) for the data representation. All kinds of data, i.e., alphabets, numbers, symbols, sound data or video are represented in terms of 0s and 1s.
- There are two basic types of data, which are stored and processed by computers, namely characters and numbers.
- The characters include letters and special symbols while numbers include digits from 0 to 9.

3.2.1 Number System :-

A number system defines a set of values that is used to represent quantity. Digital computers internally use the binary number system to represent data and perform arithmetic calculations.

❖ **TYPES OF NUMBER SYSTEM :-** The number systems generally used by a computer are as follows :-

1. **Binary Number System :-**
   The binary number system is very efficient for computers, but not for humans. It contains two unique digits 0s and 1s. It is also known as **Base 2** system.
2. **Decimal Number System :-**
   It consists of ten digits form 0 to 9. These digits can be used to represent any numeric value. It is also known as **Base 10** system or positional number system.
3. **Octal Number System :-**
   It consists of 8 digits from 0 to 7. It is also known as **Base 8** system. Each position of the octal number represents a successive power of eight.
4. **Hexadecimal Number System :-**
   It provides us with a shorthand method of working with binary numbers. There are 16 unique digits available in this system. These are **0 to 9 and A to F**, Where A denotes 10, B denotes 11 …… F denotes 15. It is also known as **Base 16** system or simply Hex. So, each position of the hexadecimal number represents a successive **power of 16**.

3.2.2 Conversion between the Number Systems :-

Different types of conversion between the number system are discussed below.

- **Decimal to Binary :-**

Step 1 : Divide the given number by 2.
Step 2 : Note the quotient and remainder. Remainder should be 0 or 1.
Step 3 : If quotient ≠ 0, then divide the quotient by 2 and again back to step 2. If quotient = 0, then stop the process.
Step 4 : First remainder is called as Least Significant Bit (LSB) and last remainder is called as Most Significant Bit (MSB).
Step 5 : Arrange all remainders from MSB to LSB.

Example $(37)_{10} \rightarrow (?)_2$

		Reminder	
2	37	1 →	LSB
2	18	0	
2	9	1	

2	8	0	
2	4	0	
2	2	0 →	MSB

$(37)_{10}$ → $(101000)_2$

- **Binary to Decimal :-**

  Step 1 Multiply the all binary digits by powers of 2.

  Step 2 The power for integral part will be positive and for fractional part will be negative.

  Step 3 Add the all multiplying digit

  Example : $(1101.10)_2$ → $(?)_{10}$

  $(1101.10)_2$ $= 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 + 1 \times 2^{-1} + 0 \times 2^{-2}$

  $= 8 + 4 + 0 + 1 + 0.5 + 0 = 13.5$

  Then, $(1101.10)_2 \rightarrow (13.5)_{10}$

- **Binary to Octal :-**

  Step 1 : Make the group of three bits from right to left.

  Step 2 : Now, convert each group to decimal number.

  Example : $(110110100)_2$ → $(?)_8$

  110 110 100

  6 6 4

Then, **$(110110100)_2 \rightarrow (664)_8$**

- **Octal to Binary :-**

  Convert every digit of the number from octal to binary in the group of three bits.

  Example : $(1034.5)_8 \rightarrow (?)_2$

  1 0 3 4 5

  001 000 011 100 101

  Then**, $(1034.5)_8 \rightarrow (001000011100.101)_2$**

- **Binary to Hexadecimal :-**

  Step 1 Start making the group of four bits each from right to left from the given binary number.

  Step 2 Now, each group will be converted to decimal number.

  Example : $(1111010111101)_2$ → $(?)_{16}$

  0011 1101 0111 1011

  3 13 7 11

  Then, **$(11110101111011)_2 \rightarrow (3D7\ B)_{16}$**

- **Hexadecimal to Binary :-**

  For this type of conversion, convert each hexadecimal digit to 4 bit binary equivalent.

  Example : $(BA81)_{16}$ → $(?)_2$

  B A 8 1

  1011 1010 1000 0001

  Then**, $(BA81)_{16} \rightarrow (101110101000001)_2$**

- **Decimal to Octal :-**

  Step 1 : Divide the given number by 8.

  Step 2 : Note the quotient and remainder. Digits of remainder will be 0 to 7.

  Step 3 : If quotient ≠ 0, then again divide the quotient by 8 and go back to step 2.

  Step 4 : If quotient = 0, then stop the process.

Step 5 : Write each remainder from left to right starting from MSD.

Example : $(98647)_{10} \rightarrow (?)_8$

8	97647	7 LSD
8	12205	5
8	1525	5
8	190	6
8	23	7
8	2	2 MSD
	0	

Then, $(98647)_{10} \rightarrow (276557)_8$

- **Octal to Decimal :-**

Step 1 : Multiply each digit of octal number with power of 8.
Step 2 : These powers should be positive for integral part and negative for fractional part.
Step 3 : Add the all multiplying digits.

Example : $(327.4)_8 \rightarrow (?)_{10}$

$(327.4)_8 = 3 \times 8^2 + 2 \times 8^1 + 7 \times 8^0 + 4 \times 8^{-1}$
$= 3 \times 64 + 2 \times 8 + 7 \times 1 + \frac{4}{8}$
$= 192 + 16 + 7 + 0.5 = 215.5$

Then, $(327.4)_8 \rightarrow (215.5)_{10}$

- **Decimal to Hexadecimal :-**

Step 1 Dividen the given number by 16.
Step 2 Note the quotient and remainder. Digits of remainder will be 0 to 9 or A to F.
Step 3 If quotient ≠ 0, then again divide the quotient by 16 and go back to step 2.
Step 4 If quotient = 0, less than 16, then stop the process.
Step 5 Write each remainder from left to right starting from MSD.

Example : $(929987)_{10} \rightarrow (?)_{16}$

16	929987	3	LSD
16	58124	12→C	
16	3632	0	
16	227	3	
16	14	14→E	MSD

Then, $(929987)_{10} \rightarrow (E\ 30\ C\ 3)_{16}$

- **Hexadecimal to Decimal :-**

Step 1 : Multiply each digit of hexadecimal number with power of 16.
Step 2 : These power should be positive for integral part and negative for fractional part.
Step 3 : Add the all multiplying digits.

Example : $(BC9.8)_{16} \rightarrow (?)_{10}$

$(BC9.8)_{16} = B \times 16^2 + C \times 16^1 + 9 \times 16^0 + 8 \times 16^{-1}$
$= 11 \times 256 + 12 \times 16 + 9 \times 1 + \frac{8}{16}$
$= 2816 + 192 + 9 + 0.5 = 3017.5$

Then, $(BC9.8)_{16} \rightarrow (3017.5)_{10}$

- **Octal to Hexadecimal :-**

Step 1 : Convert the each digit of Octal number to binary number.
Step 2 : Again, convert each binary digit to hexadecimal number.

Example : $(7632)_8 \rightarrow (?)_{16}$

	7	6	3	2
Now,	111	110	011	010

$(7632)_8 \rightarrow (111\ 110\ 011\ 010)_2$

1111	1001	1010
15	9	10
F		A

Then, $(7632)_8 \rightarrow (F9A)_{16}$

- **Hexadecimal to Octal :-**

Step 1 : Convert the each digit of hexadecimal number to binary number.
Step 2 : Again, convert each binary digit to octal number.

Example : $(AC2D)_{16} \rightarrow (?)_8$

	A	C	2	D		
	1010	1100	0010	1101		
Now,	$(AC2D)_{16} \rightarrow (1010\ 1100\ 0010\ 1101)_2$					
	001	010	110	000	101	101
	1	2	6	0	5	5

Then, $(AC2D)_{16} \rightarrow (126055)_8$

3.2.3 Computer Codes :-

- ✓ In computer, any characters like alphabet, digit or any special character is represented by collection of **'1' and '0' in a unique coded pattern**. For computers, the code is made up of fixed size groups of binary positions.
- ✓ The binary coding schemes that are most commonly used are as follows

- **Binary Coded Decimal (BCD) :-**
  Binary coded decimal is a number system where four bits are used to represent each decimal digits. BCD is a method of using binary digits to represent the decimal digits (0-9).
  In BCD system, there is no limit on size of a number.

- **American Standard Code for Information Interchange (ASCII) :-**
  ASCII characters are represented by seven bits. There are standard character codes used to store data so that it may be used by other software programs.
  The **standard ASCII codes defines 128 character codes (from 0 to 127**).
  Basically, ASCII codes codes are of two types-ASCII-7 and ASCII-8.
  ASCII-7, is a 7- bit standard ASCII code. It allows $2^7 = 128$ unique symbols.
  ASCII-8, is a extended version of ASCII-7. It is an **8 – bit code, allows $2^8 = 256$ unique symbols** or character.

- **Extended Binary Coded Decimal Interchange Code (EBCDIC)/ Byte Code :-**
  In EBCDIC, characters are represented by eight bits. These codes store information which is readable by other computers.
  It allows **$2^8 = 256$ combinations** of bits

4. Data Base Management Systems (DBMS)

Introduction :-

Computer topics, starting with, what most you (the non-engineering ones), consider as a difficult topic – DBMS.
Only because it sounds so serious and technical doesn't actually mean it's a tough topic to understand. Trust me, when I first read the chapter, every thing sounded Greek and Latin* to me, so, I re-read it couple of more times and I forgot what had been so difficult!
So, what is DBMS? It is Data Base Management System. Off course!
I'm sure all you know the full form, but have you really ever given a thought to the words that make up the full form – 'cause that is where the entire secret lies in understanding the core of this chapter!

Data – is any input which has been processed. It can be in numeric, alphabetic or alphanumeric form. Try to imagine data as physical files…the kind of dusty files found in government offices.

This processed data (or dusty files) needs to be stored and kept somewhere, so that when we need them we can easily retrieve it.

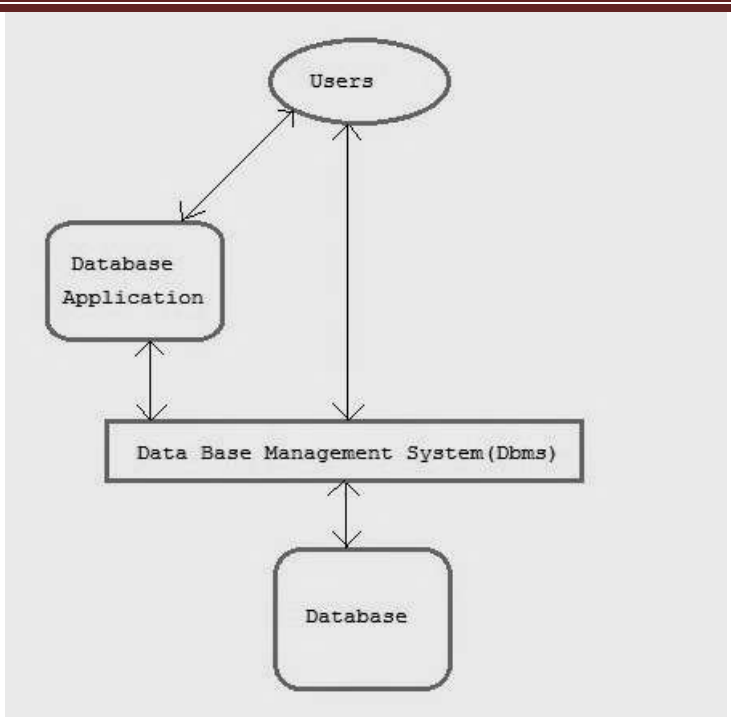
But where do we keep it? How do we keep it?

Don't worry; the computer experts have solved your problem by creating the 'database'.

Database – is simply a 'place' where all the data are collected and stored in an organized manner.

Think of it as a collection of many steel racks, like the ones found in old government offices! All the files/data are kept according to their serial numbers/file/folder names (or any other identification style), and stored in the racks/database.

Management system – In government officers, there are peons who are responsible for keeping the files in the right place, bringing required files to the senior officers, putting it back again after updating the files etc., this is nothing but the system of file management in the office.
Similarly, in computer's database, it's 'management system' is doing the work of the peon; bring the required files, putting back in the right place, etc. but more efficiently than a peon and faster too!!
I really do hope some vapour-ish ideas are forming in your head about DBMS!
Thus, putting down all our ideas in definition form – DBMS is a software,
(i) which helps a user in creating a collection of records and information and storing them on the computer in a systematic way (database),
(ii) it also helps in organizing, sorting and retrieval of the records/information from the database, when required by the user, to help the user in decision making (management system).



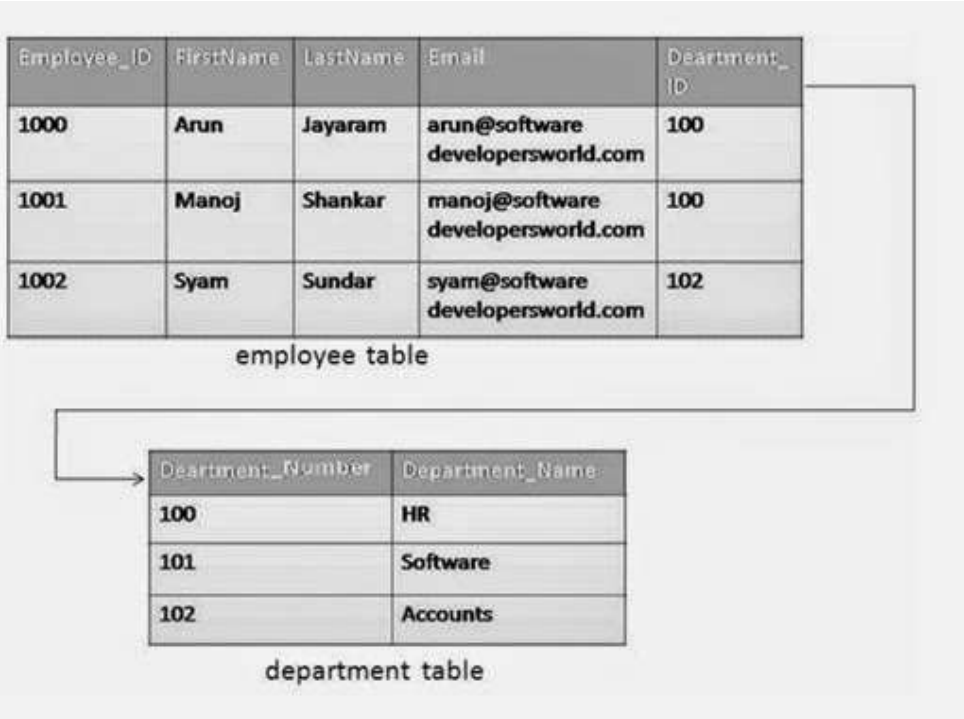
Benefits of DBMS:-

1. Faster storage and retrieval time
2. Accessing data is easy and fast
3. Data integrity(credibility of the data) and security. In govt. offices, anyone can pick up any file! But DBMS requires password authorization to access important files.
4. Backups and recovery are possible only in digital world, hence today physical files are becoming extinct.

Points to remember in DBMS

1. In DBMS data are stored in relational model, using **tables** with rows and columns (remember the steel racks!).
2. There are two types of Data Manipulation Languages (DML), Structured Query Language (SQL) and Data Definition Language (DDL).
3. DML are computer languages also known as **query language**, it is used for accessing and working on the data.
   In other words, DML (SQL and DDL), are like the languages people use, Hindi or English, in an office to give orders to the peon!
4. **Data redundancy** – which means there are no duplications of data. No multiple files of the same kind.
5. **Data dictionary** – is like a normal dictionary, but containing **metadata**.
6. **Metadata** – contains information about all the data in the DBMS.
7. **The Keys** – Primary key is used to identify a particular or specific record (file). It is unique to a particular file.
   Foreign Key makes a connection between a component (field) in one table with a component identified by a primary key.
8. **Relational database** – is the kind of database model, where there are logical connections between the various files, which are kept in tables.
   For example: In the given diagram, the information is stored in tables (with rows and columns), in this particular case in two relational tables.
   Every column has a **Field name** (employee ID, first name, last name, e-mail ID, Department ID and Department name).
   The relation between the two tables is created by the field 'Department ID', which connects the

Employees name/ID/e-mail to a particular Department like HR or software or accounts.
This is relational database, where a relation is made between items of the database.



Employee_ID	FirstName	LastName	Email	Department_ ID
1000	Arun	Jayaram	arun@software developersworld.com	100
1001	Manoj	Shankar	manoj@software developersworld.com	100
1002	Syam	Sundar	syam@software developersworld.com	102

employee table

Department_Number	Department_Name
100	HR
101	Software
102	Accounts

department table

Definition:-
A Database Management Systems (DBMS) is a computer program designed to manage a database, a large set of structured data, and run operations on the data requested by numerous users.
Typical examples of DBMS are -: Accounting, human resources and customer support systems.

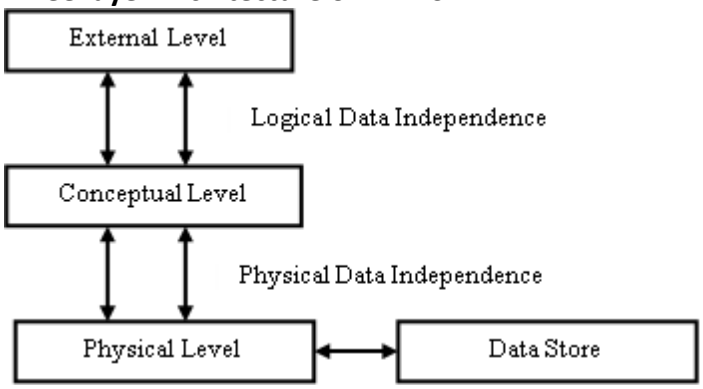
What is Database ?
Database is a organized collection of data, Which can be easily accessed, managed and updated.
Example:- Dictionary, telephone directory

Types of Database :-
1. Distributed Database
2. Centralized Database

Distributed Database :-
A distributed database is a database in which portions of the database are stored in multiple physical locations and processing is distributed among multiple database nodes.

Centralized Database :-
A centralized distributed database management system (DBMS) integrates the data logically so it can be managed as if it were all stored in the same location. The DBMS synchronizes all the data periodically and ensures that updates and deletes performed on the data at one location will be automatically reflected in the data stored elsewhere.

Three layer Architecture of DBMS :-



From the above figure we classify that level of Data Abstraction in DBMS **Data Store:-**
Also known as physical storage and here we can store data.

Three Layers of Architecture are :-
1. Physical Level
2. Conceptual level
At the interrelationship among those database and hides
3. External level

Physical Level:-
It is the lowest layer of abstraction. It describes how data is stored in detail.

Conceptual Level:-
It is the level of abstraction and describes what data is stored and what relationship among data is. conceptual level, each such record is described by a type of definition and the record types. Database administrators work at this level of abstr action.

External level :
It is the highest level of data abstraction and is defines by user. It describes part of entire
the details of external level.

Users in Database
1. Naive User-:
Naive users are unsophisticated users who interact with the system by using permanent application programs (e.g. automated teller machine).
These naïve users are nothing to do technically, they just need to follow environment.

2. Application Programmers :-
Application programmers are computer professionals interacting with the system through DML calls embedded in a program written in a host language (e.g. C, PL/1, Pascal): These programs are called Application Programs. In simple terms we can say that, one who develops applications (or) UI (User Interface) to work upon database falls in this category.

3. Specialized User-s :
Specialized users are sophisticated users writing special database application programs. These may be CADD systems, knowledge-based and expert systems, complex data systems (audio/video), etc.

4. Database Administrator-s :

Database Administrators are those who are responsible for maintaining and structuring the database. These database administrators may be single person or group of people.

Access control and recovery management are responsibilities of database administrators.

Structure of DBMS

1. DDL Compiler:-

Data Definition statements are responsible for creation and deletion of database.

When the user inserts, deletes, updates or retrieves the record from the database, he will be sending request which he understands by pressing some buttons. But for the database to work/understand the request, it should be broken down to object code. This is done by this compiler.

Data definition language of SQL (Structured Query Language) is CREATE, DELETE, MANIPULATE.

2. Disk manager :-

Disk manager is a small piece of code present on the host computer (client system) and responsible for inputoutput (I/O) operations.

3. Data Files :-

Data files are part of database, where they are stored (A portion).

4. Access control :-

Permission for GRANT & REVOKE commands are done by access control.

5. Data dictionary :-

A collection of information is said data dictionary.

eg: Meta data, database, relation and entities.

6. Query processor :-

The role of query processor is to convert the query into data manger readable form.

User Query ⟹ **Readable form**

Types of DBMS

1. Hierarchical DBMS :

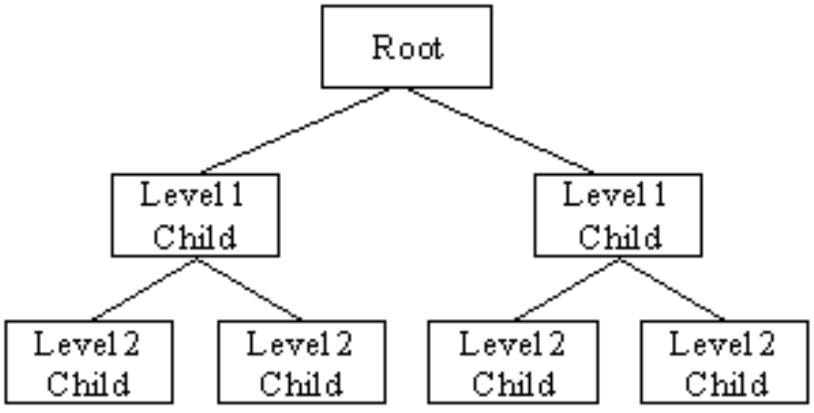
In this hierarchical model

(a) it has tree like structure.

(b) A parent can have n - number of children

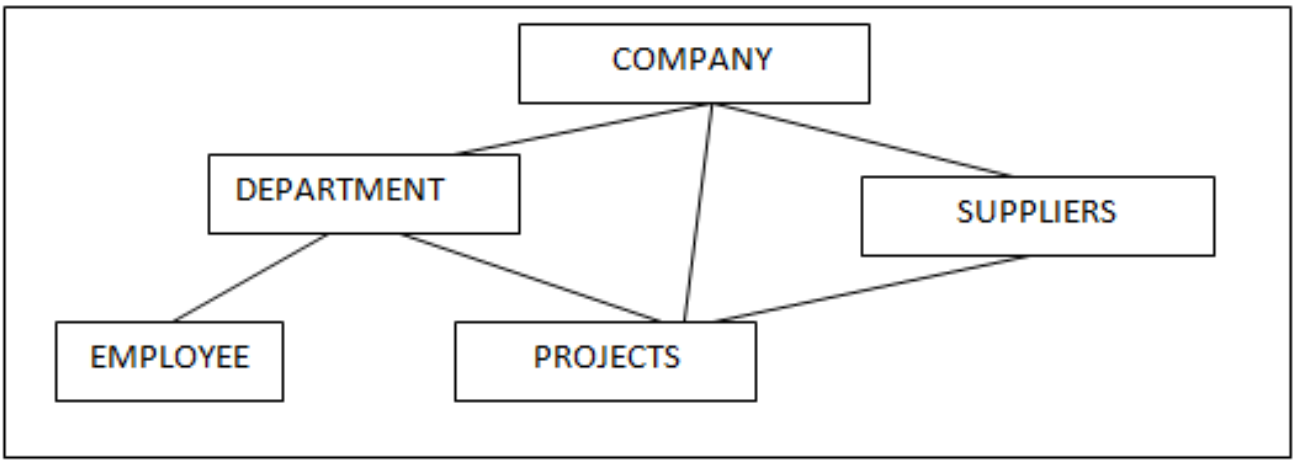
(c) and children should have only one parent

(d) it follows one-one relationship.



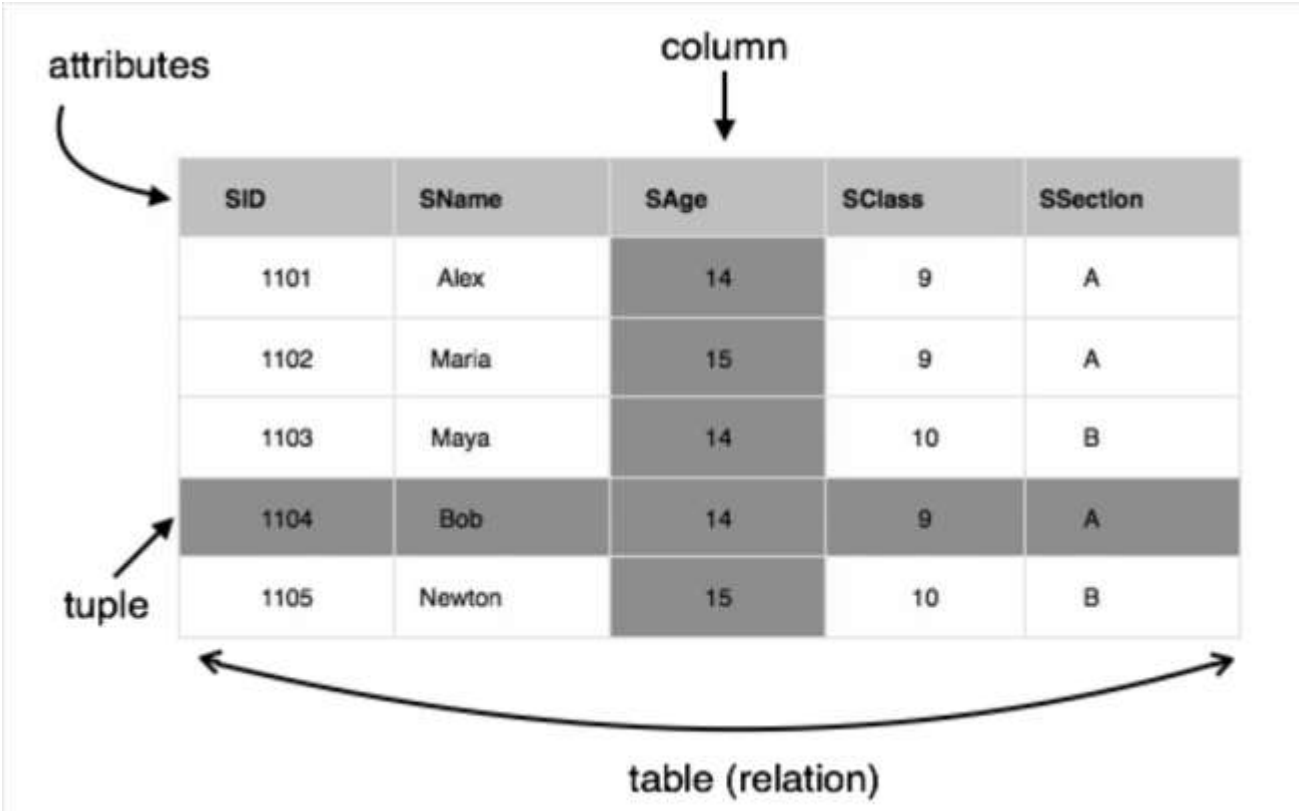
2. Network DBMS (NDBMS):

(a) This NDBMS has multiple owners.
(b) Parent can have many children
(c) children can also have more than one parent.
(d) It follows many-many relationship.



3. Relational DBMS (RDBMS) :

(a) RDBMS is in the form of rows and columns.
(b) combination of rows and columns is generally called as table but in RDBMS we call it as Relation.
(c) Data organized in two dimensional tables called Relation.
(d) A row is known as tuple and a column is know as attribute.



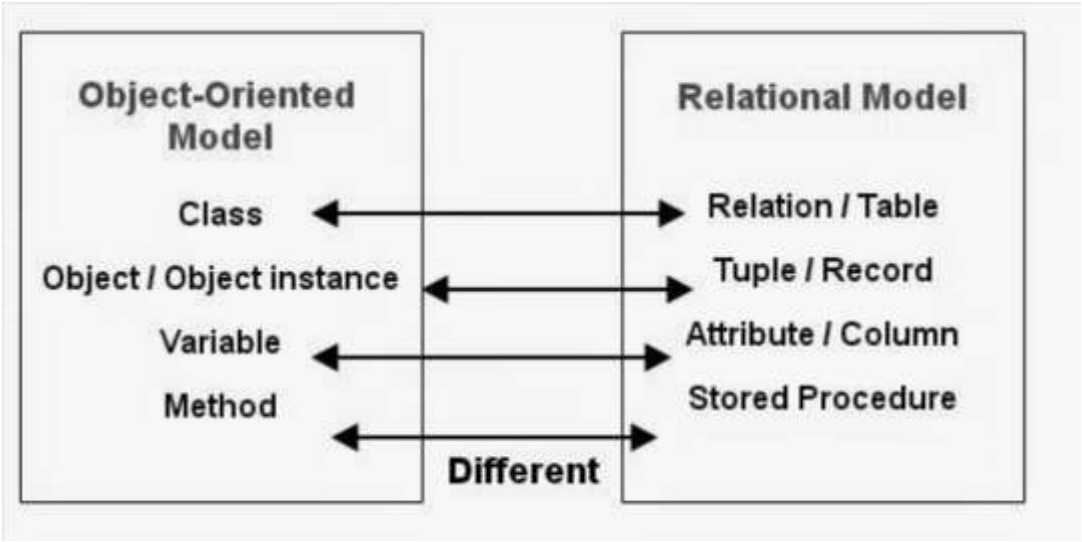
SID	SName	SAge	SClass	SSection
1101	Alex	14	9	A
1102	Maria	15	9	A
1103	Maya	14	10	B
1104	Bob	14	9	A
1105	Newton	15	10	B

4.Object oriented DBMS :

(a) It is similar as RDBMS but differs as shown in table.

(b) Object oriented DBMS combines database with object oriented programming(oops)

(c) Information are in form of objects.



Difference between DBMS & RDBMS

DBMS	RDBMS
1. DBMS store data as file	1.RDBMS stores data in tabular form
2. Data generally stored in hierarchical form Or navigational form.	2. In RDBMS, tables have an primary key and the data values are stored inform of tables.
3. Normalization is not present in DBMS	3. Normalization is present in RDBMS
4. DBMS doesn't apply any security with regards to data manipulation.	4. RDBMS defines integrity constraints for purpose of ACID properties.
5. XML, file systems	5. My SQL ,Sql server, ORACLE.

Few Basic Definitions:

1. XML:

XML stands for eXtensible Markup Language.

XML was designed to store and transport data.

XML was designed to be both human- and machine-readable.

2. File systems:

A file system is the methods and data structures that an operating system uses to keep track of files on a disk or partition; that is, the way the files are organized on the disk. The word is also used to refer to a partition or disk that is used to store the files or the type of the file system.

File system allows accessing various data.

3. My SQL:

MySQL is an open source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQLas the relational database management system and PHP as the object-oriented scripting language.

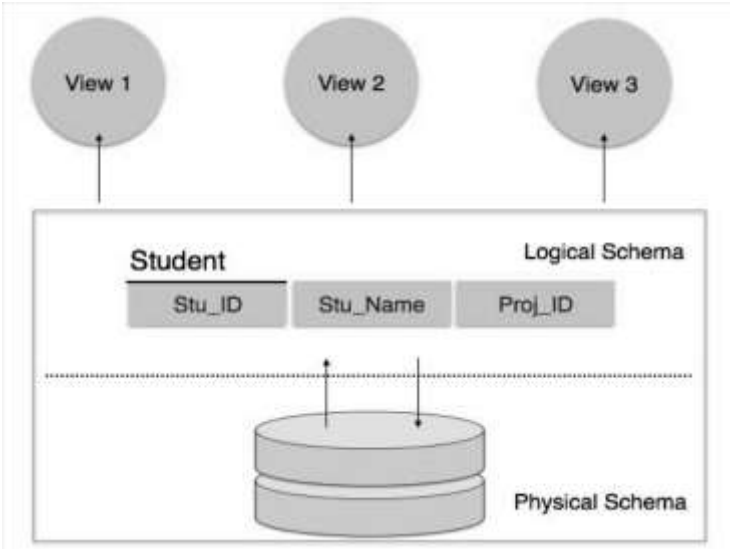
4. SQL server :

SQL server is Microsoft's relational database management system (RDBMS). It is a full-featured database primarily designed to compete against competitors Oracle Database (DB) and MySQL.

5. Database schema:

A database schema is the skeleton structure that represents the logical view of entire database.In simple terms we say that logical view of database is called schema.

Types:



1. Physical database schema:

This schema pertains to the actual storage of data and its form of storage like files, indices, etc. It defines how the data will be stored in a secondary storage.

2. Logical database schema:

This schema defines all the logical constraints that need to be applied on the data stored. It defines tables, views, and integrity constraints.

Instance:

At particular moment, if a data is been stored then it is said to be instance.

TYPES OF KEYS

1. Candidate key :

A candidate key is a column, or set of columns, in a table that can uniquely identify any database record without referring to any other data.

Minimum set of attributes used to uniquely different records of the table is candidate key.

For example: The best way to define candidate keys is with an example. For example, a bank‘s database is being designed. To uniquely define each customer‘s account, a combination of the customer‘s birth date and a sequential number for each of his or her accounts can be used. So, Mr. Andrew Smith‘s checking account can be numbered 120344-1, and his savings account 120344-2. A candidate key has just been created.

2. Primary key:

Each table may have one or more candidate keys, but one candidate key is unique, and it is called the primary key. This is usually the best among the candidate keys to use for identification.

3. Composite key:

When a key is composed of more than one column, it is known as a composite key.

Composite key consists two or more attributes that uniquely identify entity occurrence.

4. Foreign key :

A foreign key is a field (or collection of fields) in one table that uniquely identifies a row of another table or the same table. In simpler words, the foreign key is defined in a second table, but it refers to the primary key or a unique key in the first table. For example, a table called Employee has a primary key called employee_id. Another table called Employee Details has a foreign key which references employee_id in order to uniquely identify the relationship between both tables.

5. Super key :

A super key is a combination of columns that uniquely identifies any row within a relational database management system (RDBMS) table. A candidate key is a closely related concept where the super key is reduced to the minimum number of columns required to uniquely identify each row.

6. Alternate key :

If any table have more than one candidate key, then after choosing primary key from those candidate key, rest of candidate keys are known as an alternate key of that table. Like here we can take a very simple example to understand the concept of alternate key.

Suppose we have a table named Employee which has two columns EmpID and EmpMail, both have not null attributes and unique value. So both columns are treated as candidate key. Now we make EmpID as a primary key to that table then EmpMail is known as alternate key.

7. Natural key:

A natural key (also known as business key) is type of unique key, found in relational model database design that is formed of attributes that already exist in real world. It is used in business-related columns.

In other words, a natural key is a candidate key that has a logical relationship to the attributes within that row. A natural key is sometimes called domain key.

Natural key is a unique key that cannot be repeated in any of the dataset.

Example: Finger prints, DNA, mobile number, these can‘t be ever be in any other data set.

8. Prime attributes :

The attributes which are part of candidate key are known as Prime attributes.

SQL (Structured Query Language)

Structured Query Language (SQL) is a widely-used programming language for working with relational databases. SQL is specially designed programming language to regulate and manage the data stored in relational databases (RDBMS).

Sub division in SQL :

1. DDL (Data Definition Language): Defines structure of Database
2. DML (Data Manipulation Language): Data is been entered
3. DCL (Data Control Language): Data is been controlled
4. DQL (Data Query Language): Data is been retrieved/fetched
5. TCL (Transaction Control Language): About transactions

Data Definition Language (DDL)

The commands of DDL are :-

1. Create:A commonly used CREATE command is the CREATE TABLE command.
2. Alter: The ALTER statement modifies an existing database object.
3. Drop: The DROP statement destroys an existing database, table, index, or view.
4. Rename:T he RENAME statement is used to rename a database table.
5. Truncate:T he TRUNCATE statement is used to delete all data from a table. It's much faster than DELETE.

Data Manipulation Language:

The commands of DML are:

1. SELECT: retrieve data from the database.
2. INSERT: insert data into a table.
3. UPDATE: update existing data within table.
4. DELETE: delete all records in the table,
5. MERGE: UPSERT operations (insert or update)
6. CALL: call a SQL or java program
7. LOCKTABLE: control concurrency

Data Control Language:

DCL used to control privilege in database.
To perform any operation in database, such as creating tables, sequences (or) views.

The commands of DCL are:

1. Grant: to allow specified users to perform specified tasks.
2. Revoke: to cancel previously granted or denied permissions.

Data Query Language :

It is the component of SQL statement that allows getting data from the database.

The command of DQL is:

1. Select : retrieve data from database.

Transaction Control Language:

Transaction Control Language (TCL) commands are used to manage transactions in database. These are used to manage the changes made by DML statements. It also allows statements to be grouped together into logical transactions.

The commands of TCL are:

1. Commit: permanently save any transaction into database.
2. Rollback: restores the database to its last committed state.
3. Save point: temporarily save any transaction into database.

ACID Properties in DBMS

A transaction is a single logical unit of work which accesses and possibly modifies the contents of a database. Transactions access data using read and write operations.
In order to maintain consistency in a database, before and after transaction, certain properties are followed. These are called **ACID** properties.

A- Atomicity
C- Consistency
I- Isolation
D- Durability

1. Atomicity:

This update to the database is called a transaction and it either commits or aborts. This means that only a fragment of the update cannot be placed into the database, should a problem occur with either the hardware or the software involved.

Features to consider for atomicity:

- a transaction is a unit of operation - either all the transaction's actions are completed or none are
- atomicity is maintained in the presence of deadlocks
- atomicity is maintained in the presence of database software failures
- atomicity is maintained in the presence of application software failures
- atomicity is maintained in the presence of CPU failures
- atomicity is maintained in the presence of disk failures
- atomicity can be turned off at the system level
- atomicity can be turned off at the session level
-

2. Consistency:

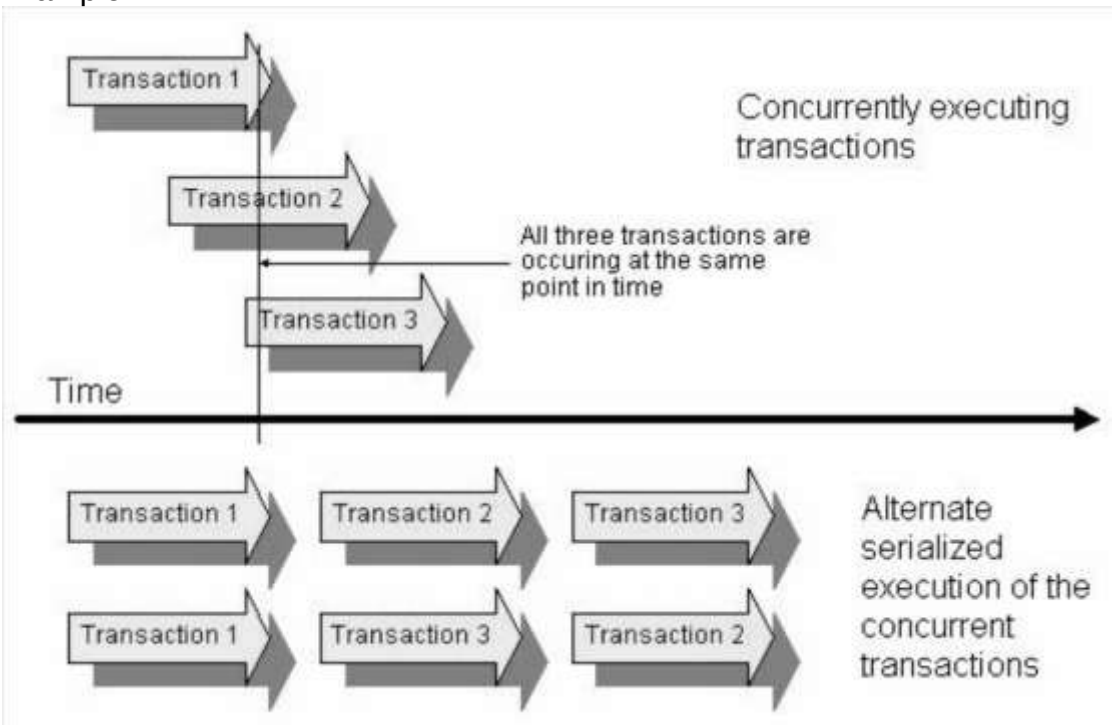
Consistency is the ACID property that ensures that any changes to values in an instance are consistent with changes to other values in the same instance. A consistency constraint is a predicate on data which serves as a precondition, post-condition, and transformation condition on any transaction.

3. Isolation :

The isolation portion of the ACID Properties is needed when there are concurrent transactions. Concurrent transactions are transactions that occur at the same time, such as shared multiple users accessing shared objects.

This situation is illustrated at the top of the figure as activities occurring over time. The safeguards used by a DBMS to prevent conflicts between concurrent transactions are a concept referred to as isolation.

Example:



An important concept to understanding isolation through transactions is serializability. Transactions are serializable

when the effect on the database is the same whether the transactions are executed in serial order or in an interleaved fashion. As you can see at the top of the figure, Transacti ons 1 through Transaction 3 are executing

concurrently over time. The effect on the DBMS is that the transactions may execute in serial order based on
consistency and isolation requirements. If you look at the bottom of the figure, you can see several ways in which
these transactions may execute. It is important to note that a serialized execution does not imply the first transactions will automatically be the ones that will terminate before other transactions in the serial order.
Degrees of Isolation:

- degree 0 - a transaction does not overwrite data updated by another user or process ("dirty data") of other transactions
- degree 1 - degree 0 plus a transaction does not commit any writes until it completes all its writes (until the end of transaction)
- degree 2 - degree 1 plus a transaction does not read dirty data from other transactions
- degree 3 - degree 2 plus other transactions do not dirty data read by a transaction before the transaction commits.

4. Durability:

Maintaining updates of committed transactions is critical. These updates must never be lost. The ACID property
of durability addresses this need. Durability refers to the ability of the system to recover committed transaction
updates if either the system or the storage media fails. Features to consider for durability:

- recovery to the most recent successful commit after a database software failure
- recovery to the most recent successful commit after an application software failure
- recovery to the most recent successful commit after a CPU failure
- recovery to the most recent successful backup after a disk failure
- recovery to the most recent successful commit after a data disk failure

Normalization and Anomalies

Anomalies :

Tables that have redundant data have problems known as anomalies. So data redundancy is cause of an anomaly. Redundancy is duplication of the data.
Three types of anomalies:
1. Insert Anomaly
2. Update Anomaly
3. Delete Anomaly

1. Insert Anomaly :

When you insert a record without having it stored on the related record.
An **Insert Anomaly** occurs when certain attributes cannot be inserted into the database without the presence of other attributes. For example this is the converse of delete **anomaly** - we can't add a new course unless we have at least one student enrolled on the course.

StudentNum	CourseNum	Student Name	Address	Course
S21	9201	Jones	Edinburgh	Accounts
S21	9267	Jones	Edinburgh	Accounts
S24	9267	Smith	Glasgow	physics
S30	9201	Richards	Manchester	Computing
S30	9322	Richards	Manchester	Maths

2. Update Anomaly :

When you delete some information and lose valuable related information at the same time.

An **Update Anomaly** exists when one or more instances of duplicated data is updated, but not all. For example, consider Jones moving address - you need to update all instances of Jones's address.

StudentNum	CourseNum	Student Name	Address	Course
S21	9201	Jones	Edinburgh	Accounts
S21	9267	Jones	Edinburgh	Accounts
S24	9267	Smith	Glasgow	physics
S30	9201	Richards	Manchester	Computing
S30	9322	Richards	Manchester	Maths

3. Delete Anomaly :

Any change made to your data will require you to scan all records to make the changes multiple time.

A **Delete Anomaly** exists when certain attributes are lost because of the deletion of other attributes. For example, consider what happens if Student S30 is the last student to leave the course - All information about the course is lost.

StudentNum	CourseNum	Student Name	Address	Course
S21	9201	Jones	Edinburgh	Accounts
S21	9267	Jones	Edinburgh	Accounts
S24	9267	Smith	Glasgow	physics
S30	9201	Richards	Manchester	Computing
S30	9322	Richards	Manchester	Maths

Normalization Stages :

Process involves applying a series of tests on a relation to determine whether it satisfies or violates the requirements of a given normal form.

· When a test fails, the relation is decomposed into simpler relations that individually meet the normalization tests.

· The higher the normal form the less vulnerable to update anomalies the relations become.

· Three Normal forms: 1NF, 2NF and 3NF were initially proposed by Codd.

· All these normal forms are based on the functional dependencies among the attributes of a relation.

Normalization follows a staged process that obeys a set of rules. The steps of normalization are:

Step 1: Select the data source and convert into an unnormalised table (UNF)

Step 2: Transform the unnormalised data into first normal form (1NF)

Step 3: Transform data in first normal form (1NF) into second normal form (2NF)

Step 4: Transform data in second normal form (2NF) into third normal form (3NF)

Occasionally, the data may still be subject to anomalies in third normal form. In this case, we may have to perform further transformations.

· Transform third normal form to Boyce-Codd normal form (BCNF)

· Transform Boyce-Codd normal form to fourth normal form (4NF)

· Transform fourth normal form to fifth normal form (5NF)

1 NF Form:

Each table cell should contain a single value.

Each record needs to be unique.

1 NF Example :

FULL NAMES	PHYSICAL ADDRESS	MOVIES RENTED	SALUTATION
Janet Jones	First Street Plot No 4	Pirates of the Caribbean	Ms.
Janet Jones	First Street Plot No 4	Clash of the Titans	Ms.
Robert Phil	3rd Street 34	Forgetting Sarah Marshal	Mr.
Robert Phil	3rd Street 34	Daddy's Little Girls	Mr.
Robert Phil	5th Avenue	Clash of the Titans	Mr.

Table 1: In 1NF Form

2 NF Form:

Rule 1: Be in 1NF

Rule 2: Single column primary key.

MEMBERSHIP ID	FULL NAMES	PHYSICAL ADDRESS	SALUTATION
1	Janet Jones	First Street Plot No 4	Ms.
2	Robert Phil	3rd Street 34	Mr.
3	Robert Phil	5th Avenue	Mr.

Table 1

MEMBERSHIP ID	MOVIES RENTED
1	Pirates of the Caribbean
1	Clash of the Titans
2	Forgetting Sarah Marshal
2	Daddy's Little Girls
3	Clash of the Titans

Table 2

We have divided our 1NF table into two tables as Table 1 and table 2. Whereas table 1 contains member information and table 2 contains information on movies rented.

We have introduced a new column called Membership_id which is the primary key for table 1. Records can be uniquely identified in Table 1 using membership id

3 NF Form:

Step 1: Be in 2NF

Step 2: Has no transitive functional dependencies

To move our 2NF table into 3NF, we again need to need to divide our table.

MEMBERSHIP ID	FULL NAMES	PHYSICAL ADDRESS	SALUTATION ID
1	Janet Jones	First Street Plot No 4	2
2	Robert Phil	3rd Street 34	1
3	Robert Phil	5th Avenue	1

TABLE 1

MEMBERSHIP ID	FULL NAMES	PHYSICAL ADDRESS	SALUTATION ID
1	Janet Jones	First Street Plot No 4	2
2	Robert Phil	3rd Street 34	1
3	Robert Phil	5th Avenue	1

TABLE 1

MEMBERSHIP ID	MOVIES RENTED
1	Pirates of the Caribbean
1	Clash of the Titans
2	Forgetting Sarah Marshal
2	Daddy's Little Girls
3	Clash of the Titans

Table 2

SALUTATION ID	SALUTATION
1	Mr.
2	Ms.
3	Mrs.
4	Dr.

Table 3

We have again divided our tables and created a new table which stores Salutations.
There are no transitive functional dependencies, and hence our table is in 3NF
In Table 3 Salutation ID is primary key, and in Table 1 Salutation ID is foreign to primary key in Table 3

BCNF:

Even when a database is in 3rd Normal Form, still there would be anomalies resulted if it has more than one **Candidate** Key. Sometimes is BCNF is also referred as **3.5 Normal Form.**

4NF (Fourth Normal Form) Rules:

If no database table instance contains two or more, independent and multivalued data describing the relevant entity, then it is in 4th Normal Form.

5NF (Fifth Normal Form) Rules :

A table is in 5th Normal Form only if it is in 4NF and it cannot be decomposed into any number of smaller tables without loss of data.

6NF (Sixth Normal Form) Proposed:

6th Normal Form is not standardized, yet however, it is being discussed by database experts for some time. Hopefully, we would have a clear & standardized definition for 6th Normal Form in the near future...
That's all to Normalization!!!

Types of Data Models

1. Object based data models
(a) ER Data models
(b) Object oriented data models
2. Physical Models
3. Record Based Data models
(a) Hierarchical Data Models
(b) Network Data models
(c) Relational Data models

1. Object based data mode ls:

(A) ER data models :

ER data model is the representation of real world objects with their attributes and relationship.

Entity:

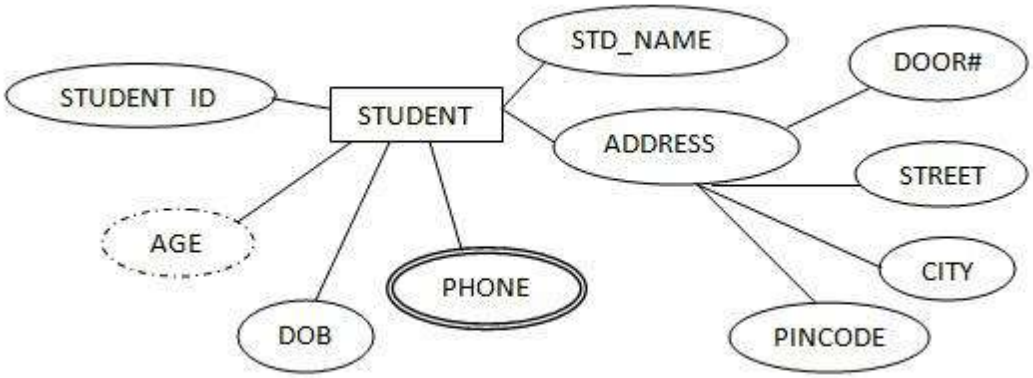
Rectangles are used to represent the entity in the diagram. Name of the Entity is written inside the rectangle.

A strong entity is represented by simple rectangle as shown above. A weak entity is represented by two rectangles as shown below.

Attribute:

An oval shape is used to represent the attributes. Name of the attribute is written inside the oval shape and is connected to its entity by a line.

Multivalued attributes are represented by double oval shape; whereas derived attributes are represented by oval shape with dashed lines. A composite attribute is also represented by oval shape, but these attribute will be connected to its parent attribute forming a tree structure.



Primary key:

An underline to the attribute name is put to represent the primary key. The key attribute of the weak entity is represented by dashed underline.

Relationship :

A diamond shape is used to show the relationship between the entities. A mapping with weak entity is shown using double diamond. Relationship name will be written inside them.

2. Physical Data Models :

Physical data model represents how the model will be built in the database. A physical database model shows all table structures, including column name, column data type, column constraints, primary key, foreign key, and relationships between tables. Features of a physical data model include:

Specification all tables and columns.

· Foreign keys are used to identify relationships between tables.

· Denormalization may occur based on user requirements.

· Physical considerations may cause the physical data model to be quite different from the logical

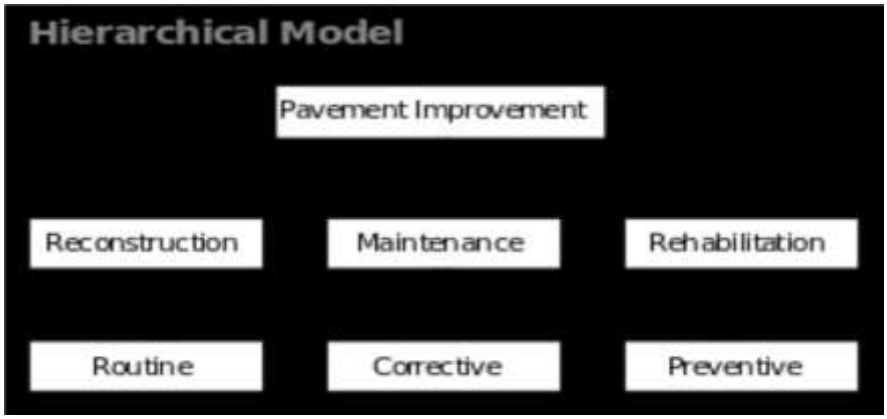
data model.

· Physical data model will be different for different RDBMS. For example, data type for a column may be different between MySQL and SQL Server.

3. Record based data models:

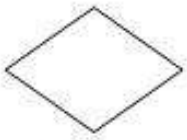
(a) Hierarchical data models:

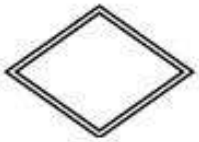
A hierarchical database model is a data model in which the data is organized into a tree-like structure. The data is stored as records which are connected to one another through links. A record is a collection of fields, with each field containing only one value. The entity type of a record defines which fields the record contains.



(b) Network Data Models :

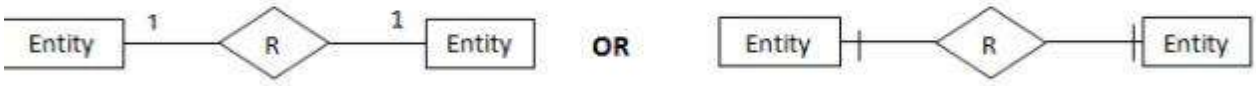
The network model is a database model conceived as a flexible way of representing objects and their relationships. Its distinguishing feature is that the schema, viewed as a graph in which object types are nodes and relationship types are arcs, is not restricted to being a hierarchy or lattice.


Normal Relations


Identifying or weak Relations

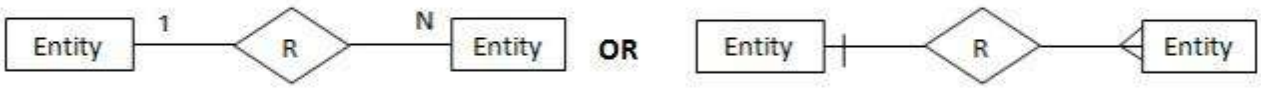
One to one relation :

A one-to-one relationship is represented by adding □1‘ near the entities on the line joining the relation. In another type of notation one dash is added to the relationship line at both ends.



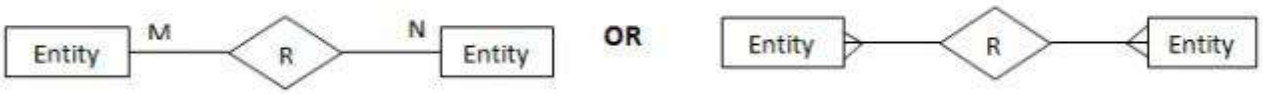
One to many relation:

A one-to-many relationship is represented by adding □1‘ near the entity at left hand side of relation and □N‘ is written near the entity at right side. Other type of notation will have dash at LHS of relation and three arrow kind of lines at the RHS of relation as shown below.



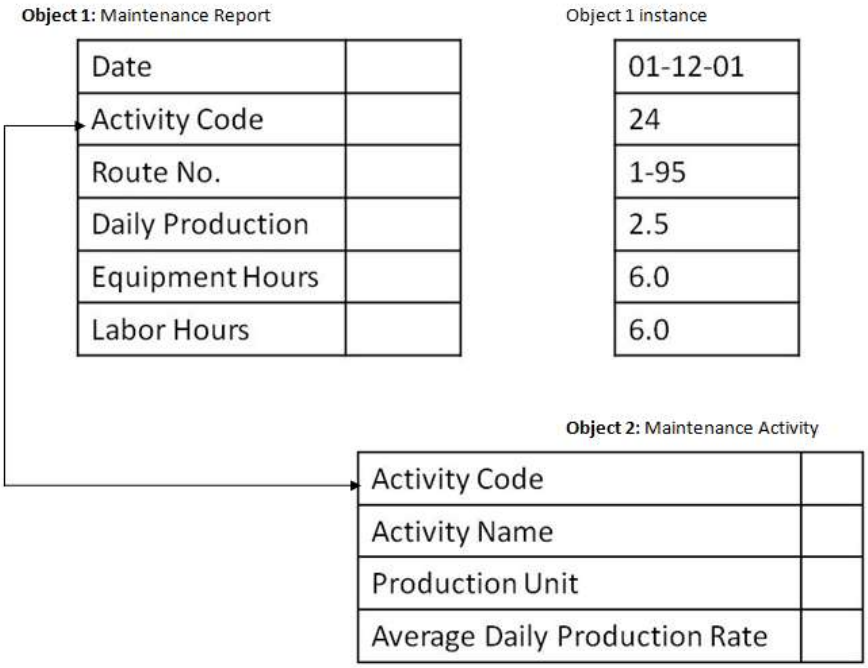
Many to many relation :

A one-to-many relationship is represented by adding M' near the entity at left hand side of relation and N' is written near the entity at right side. Other type of notation will have three arrow kinds of lines at both sides of relation as shown below.

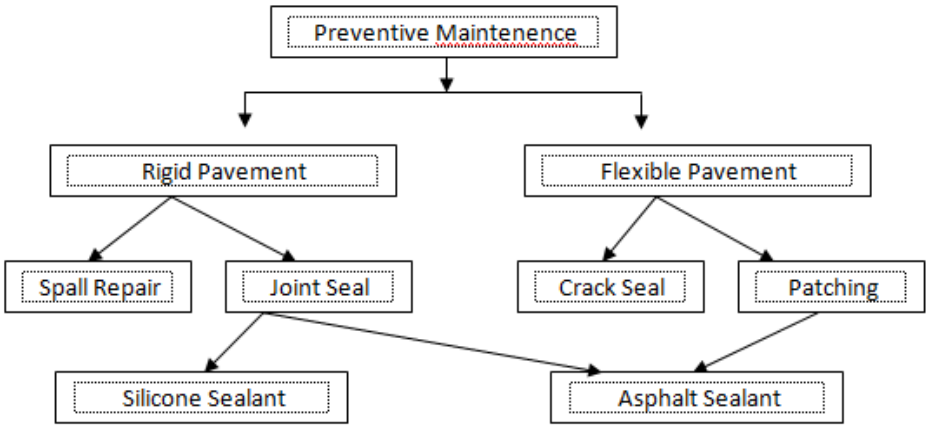


(B) Object oriented data model:

An **object databas** (**e**also **object-oriented database management sys**, **tOeOmDBMS**) is a database management system in which information is represented in the form of objects as used in object-oriented programming. Object databases are different from relational databases which are table-oriented. Object-Relational database are a hybrid of both approaches.



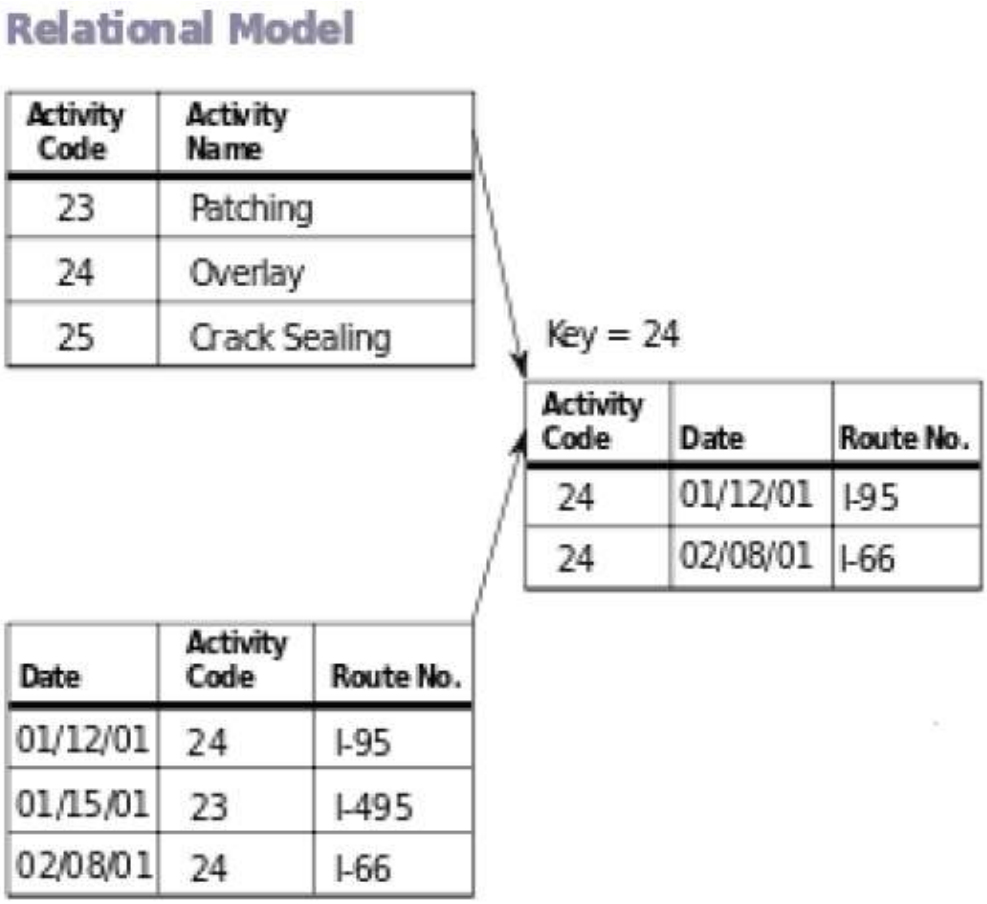
The Network model replaces the hierarchical tree with a graph thus allowing more general connections among the nodes. The main difference of the network model from the hierarchical model, is its ability to handle many to many (N:N) relations. In other words, it allows a record to have more than one parent.



(c) Relational Data Model s:

1. Where all data is represented in terms of tuples, grouped into relations. A database organized in terms of the relational model is a relational database.

The purpose of the relational model is to provide a declarative method for specifying data and queries: users directly state what information the database contains and what information they want from it, and let the database management system software take care of describing data structures for storing the data and retrieval procedures for answering queries.



5. SOFTWARE AND OPERATING SYSTEM OF COMPUTER

4.1 Computer Software :-

A computer system consists of hardware, the electronic devices capable of computing and manipulating information, and software that carries out predefined instructions to complete a given task. The combination of physical equipment (hardware) and logical instructions (software) gives power and versatility to the modern computing systems.

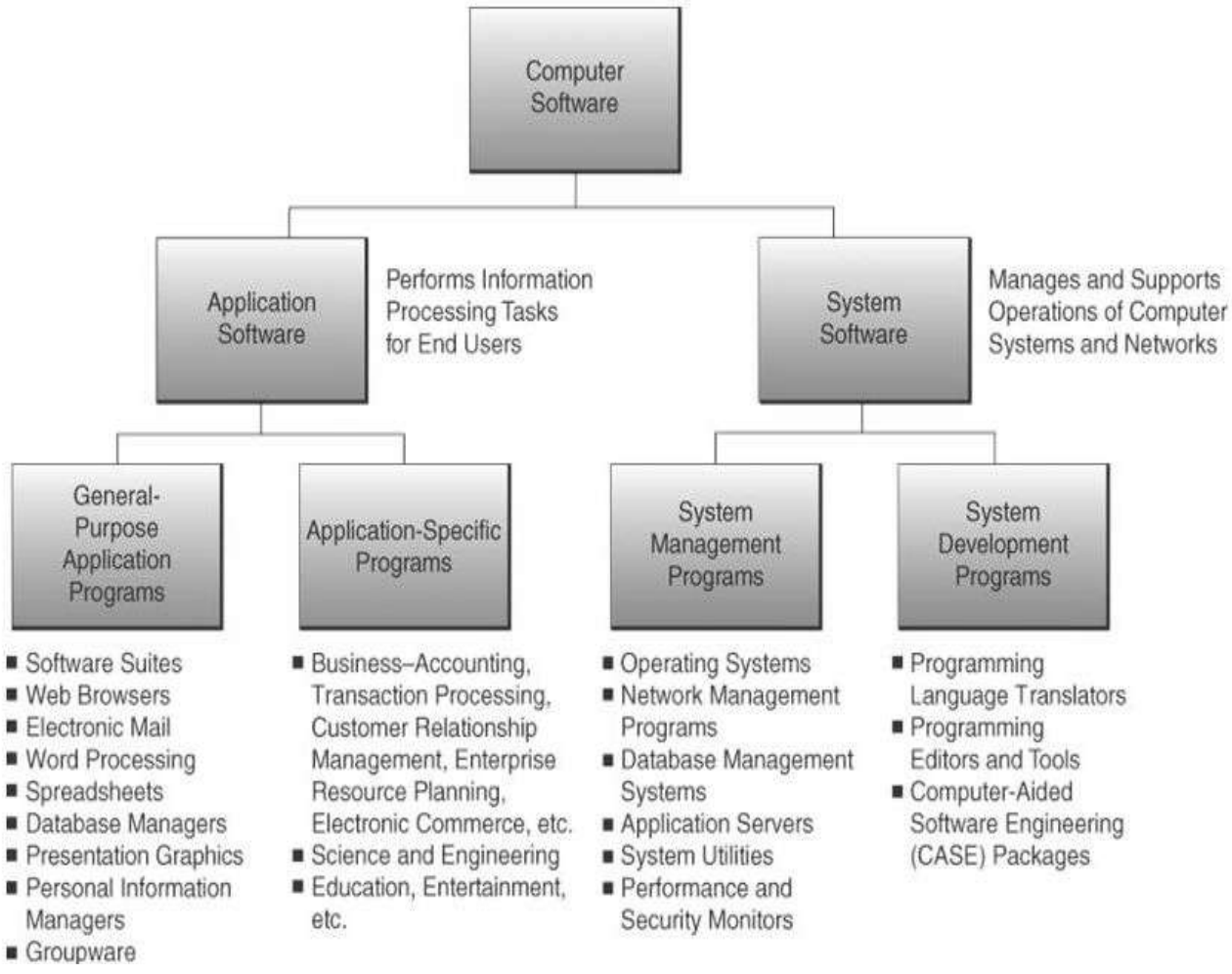
Software :-

- **Software is a collection of computer program**s and related data that provide the instructions for telling a computer what to do and how to do it.
- Software is a interface between user and computer. It is a set of instructions, programs that are used to give command to hardware.
- It is responsible for controlling, integrating and managing the hardware components of a computer system and for accomplishing specific tasks.

Types of Software :-

Software can be divided into two major categories.

1. System software **2. Application software**



1) System Software :-

- System software consists of several programs, which are directly responsible for controlling, integrating and managing the individual hardware components of a computer system.
- It also provides the interface between the user and component of the computer. The purpose of system software is to insulate the applications programmer as much as possible from the detail of the particular complex computer being used.
- Depending on the functionality, the system software can be further divided into two major categories; system management program and developing software.

A) System Management Program :-

- It includes an integrated system of programs, which manages the operations of the processor, controls input/output, manages storage resources and provides various support services.
- Some common examples of systems management programs are operating system, device driver and system utilities.

i) Operating System :-

- **It consists of programs, which controls, coordinates and supervises the activities of the various components of a computer system. Its function is to provide link between the computer hardware and the user.**
- It performs all internal management functions (disk access, memory management, task scheduling and user interfacing) and ensures systematic functioning of a computer system.
- It provides an environment to run the programs. **e.g., MS-DOS, Windows XP/2000/98, Unix Linux, etc.**

The operating system performs the following functions:-

i) It recognized input from keyboard, sends output to the display screen.
ii) It makes sure that programs running at the same time do not interface with each other.
iii) It is also responsible for security, ensuring that unauthorized users do not access the system.

ii) Device Drivers :-

- Software, which is written with the objective of making a device functional when it is connected to the computer is called device driver.
- **It is system software that acts like an interface between the device and the user. Every device, whether it is a printer, monitor, mouse or keyboard has a driver program associated with it for its proper functioning.**
- Device drivers are a set of instructions that introduce our PC to a hardware device.
- Device drivers are not independent programs, they assists and are assisted by the operating system for the proper functioning.

iii) System Utilities :-

- **These programs perform tasks related to the maintenance of the computer system.** These are **the packages which are loaded into computer during time of installation of operating system.**
- They are used to support, enhance, expand and secure existing programs and data in the computer system.

System utility mainly consists of the following functions :-

a) **Disk Compression:** It increases the amount of information that can be stored on a hard disk by compressing all information stored on a hard disk. This utility works automatically and the user does not need to be aware of its existence.

b) **Disk Fragments:** It detects computer files whose contents are broken across several locations on the hard disk and moves the fragments to one location to increase efficiency. It can be used to rearrange files and unused space on your hard disk.

c) **Backup Utilities:** It can make a copy of all information stored on a disk and restore either the entire disk or selected files.

d) **Disk Cleaners:** It is used to find files that have not been used for a long time. This utility also serves to increase the speed of a slow computer

e) **Anti-virus:** It is the utility which is used to scan computer for viruses and prevent the computer system files from being corrupt.

B) Developing Software :-

It is software which provides service required for the development and execution of application software. **The programming languages, language translator, loader, linker are required for the application software development.**

➢ Programming Languages :-

- A programming language is a primary interface of a programmer with a computer. A programming language is an artificial language to express computation that can be performed by a computer.
- Each language has its own syntax i.e., the set of specific rules and expresses the logical steps of an algorithm. Programming languages are divided into two categories; Low Level Language (LLL) and High Level Language (HLL).

1) **Low Level Language (LLL) :** Low level language is divided into two parts

(a) Machine Language: It is sometimes, referred to as machine code or object code. It is a collection of binary digits or bits that computer reads and interprets.

(b) Assembly Language: It is used to interface with computer hardware. It uses instructed commands as substitutions for numbers allowing human to read the code more easily than binary. **It uses English-like representation to write a program.**

2) **Medium Level Language :-**

It serves as the bridge between raw hardware and programming layer of computer system. It is designed to improve the translate code before it is executed by the processor.

3) **High Level Language (HLL) :-**

It is machine independent language and uses translator. It is also called source code. Some commonly used **high level languages are C, BASIC, FORTRAN, PASCAL, etc.**

Some Low Level Languages	PL/S BLISS
Some Middle Level Languages	C# C++
Some High Level Languges	Python Ruby
Some Web Designing Languages	PHP Ruby
Some Hardware Design Languages	VHDL Verilog (This Program is exclusively used to design Integrated Circuits(IC Chips))

❖ Language Translator :-

A language translator helps in converting programming languages to machine language. The translated program is called the object code. There are three different kinds of language translator.

- **Assembler:** It is used to convert the assembly language into machine language (i.e., 0 or 1.) This language consists of mnemonic codes which are difficult to learn and is machine dependent.

- **Compiler:** It is used to convert the source code (written in high level language) into machine language. Compilers read whole source code at a time and trap the errors and inform to programmer. For each high level language, the machine requires a separate compiler.

- **Interpreter:** This language processor converts a high level language program into machine language by converting it line-by-line. If there is any error in any line during execution, it will report it at the same time and cannot resume until the error is rectified.

- **Linker :** A linker is a system program that links together several object modules and libraries to form a single and coherent program (executable). The main purpose of linker is to resolve references among files. Linker is used to determine the memory locations that code form each module will occupy and relates its instruction by adjusting absolute references.

- **Loader :** Loader is a kind of system software, which is responsible for loading and relocation of the executable program in the main memory. It is a part of operating system that brings an executable file residing on disk into memory and starts its execution process.

2 Application Software :-

Application software is computer software designed to help the user to perform singular or multiple tasks. It is a set of instructions or program designed for specific uses or applications that enable the user to interact with a computer. **Application software is also called the end-user programs. These programs do the real work for users.**

Three are two types of application software :-

A) General Purpose Software :-

General purpose software are designed to perform general tasks

i) Word Processing Software :-

- **A word processor is a software program capable of creating, storing and printing of documents. Word processors have the ability to create a document and make changes anywhere in the document.**
- This document can also be saved for modification later on or be opened on any other computer using the same word processor.
- Today, the word processor is one of the most frequently used programs or online services used on a computer system. e.g., Microsoft Word, Word perfect (Windows only), Apple Works (Mac only), Open Office.org etc.

ii) Presentation Software :-

- Presentation is the practice of showing and explaining the contents of a topic to an audience or learner visually. People, in a variety of settings and situations, use presentation software to make

their presentations more interesting and professional. e.g., marketing managers use presentation graphics to present new marketing strategies to their superiors.

- Sales people use this software to demonstrate products and encourage customers to make purchases. Students use it to create high quality class presentations, **e.g., Microsoft PowerPoint, Corel Presentations, Lotus Freelance Graphics etc.**

iii) Electronic Spreadsheets :-

- Spreadsheet applications (sometimes referred to simply as spreadsheets) are the computer programs that accept data in a tabular form and allow you to create and manipulate spreadsheets electronically.
- In Spreadsheet Applications, each value exists in a cell. You can define what type of data is in each cell and how different cells depend on one another. The relationships between cells are called Formulas and the names of the cells are called Labels. **e.g., Microsoft Excel, Corel Quattro Pro, Lotus 1-2-3 etc.**

iv) Database Management System (DBMS) :-

- **A DBMS (Database Management System) refers to the software that is responsible for sorting, maintaining and utilizing a database. It enables a user to define, create and maintain the database and provide controlled access on it**
- A database is a collection of integrated data stored together to serve multiple applications.
- Database management system provide several additional features as,

(a) Remove data redundancy
(b) Elimination of data inconsistency
(c) Data sharing
(d) Data integration
(e) Data security

e.g., Microsoft Access, Corel Paradox, Lotus Approach etc.

v) Desktop Publishing Software :-

- Desktop publishing software is a tool for graphic designers and non-designers to create visual communications for professional or desktop printing as well as for online or on screen electronic publishing.
- Complete Desktop Publishing (DTP) involves the combination of type setting (choosing fonts and the text layout), graphic design, page layout (how it all fits on the page) and printing the document.
  e.g., Quark Express, Adobe Page Maker, 3B2, Corel Draw, Corel Venture Illustrator

vi) Graphics Software :-

- Graphics software or image editing software is an application program or collection of programs that enables a person to manipulate visual images on a computer system. Most graphics software have the ability to import and export one or more graphics file formats.
- Typical graphics software enables data to be plotted as line chart, bar chart and pie chart, e.g., Adobe Photoshop, Pizap, Microsoft Publishes etc.

vii) Multimedia Software :-

Multimedia includes a combination of text, audio, still images, animation, video or interactivity content forms. The term is used in contrast to media which uses only rudimentary computer display such as text only or traditional forms of printed or hand produced material.

B) Specific Purpose Software :-

Specific purpose software is designed to perform specific tasks. This type of application software generally has one purpose to execute.

i) Inventory Management System and Purchasing System :-

It is an attempt to balance inventory needs and requirement to minimize total cost, resulting from obtaining and holding an inventory. Inventory is a list of goods and materials available in a stock. Inventory management system is generally used in departmental stores or in an organization to keep the records of the stock of all the physical resources.

Modern inventory management systems must have the ability to track sales and available inventory, communicate with suppliers in near real-time, receive and incorporate other data, such as sessional demand.

ii) Payroll Management System :-

Payroll management system is used by all modern organizations to encompass every employee of the organization who receives a regular wage or other compensation. All different payment methods are calculated by the payroll software and the appropriate paychecks are issued.

iii) Hotel Management System :-

Hotel management system refers to the management techniques used in the hotel sector. These can include hotel administration, accounts, billing, marketing, housekeeping, front office or front desk.

iv) Reservation System :-

A reservation system or central reservation system (CRS) it a computerized system used to store and retrieve information and conduct transactions related to air travel, hotels, car rental, or other activities. It is application software which is commonly seen at railway reservation offices; this software helps the concerned department to automatically check the availability of the seats or berths of any train and any particular data with incomparable speed.

v) Report Card Generator :-

It is application software which is commonly used in schools by the examination department to prepare and generate the report cards of the students. It performs all possible mathematical calculations and checks whether a student can be also be used to calculate the class wise ranking of student.

vi) Accounting Software :-

According software is an application software that records and processes accounting transactions within functional modules such as accounts payable, accounts receivable, payroll and trial balance. It works as an accounting information system.

There are several types of accounting software's as follow

(a) Accounts Payable Software
(b) Bank Reconciliation Software
(c) Budget Management Software, etc.

vii) HR Management System :-

It refers to the systems and processes at the intersection between human resource management (HRM) and information technology. The function of HR department is generally administrative and common to all organizations.

e.g., Effective Staff, Cezanne HR etc.

viii) Attendance System :-

Attendance system is application software designed to track and optimize the presence of a person/student in an organization or school. Now-a-days, attendance system can be integrated with customer's existing time/attendance recording devices like Biometrics/Access cards. Attendance management can be done in two ways.

(a) Biometric Integration

(b) Manually Attendance Integration

ix) Billing System :-

It refers to the software that is used to perform the billing process. It handles the tracking of labled products and services delivered to a customer or set of customers.

e.g., Billing Manager, Billing Tracker etc.

4.2 Operating System (OS) :-

4.2.1 Definition of Operating System (OS) :-

- An operating system consists of a set of programs, which controls, coordinates and supervises the activities of the various components of a computer system.
- In other words, "An operating system is a program which acts as an interface between a user and hardware."

  e.g., UNIX, MS-DOS, WINDOWS 98/2000/XP.
- The interface enables a user to utilize hardware resources very efficiently. Operating system is an organized collection or integrated set of specialized programs that controls the overall operations of a computer. It is a program that must be on any computer for proper booting.

4.2.2 Objectives of OS :-

Generally, operating systems accomplish three major goals

- **To Hide Details of Hardware by Creating Abstraction**

  Here, abstraction term refers to the software that hides lower level details and provides a set of higher level functions.
- **To Allocate Resources to Processes**

  An Operating system is mainly responsible for controlling the resources as per process requirement.
- **Provide a Pleasant and Effective User Interface**

  As we know, operating system acts like interface between user and hardware that encompass activities of multiple processes on networks of computers.

4.2.3 Types of Operating System :-

There are different types of operating systems available, which require different types of hardware to run on. The operating systems are classified as

A) Single User Operating System :-

Single user operating system is a type of operating system which allows only one user at a time. Operating system for personal computer (PC) is single user OS. They are designed to manage one task at a time.

e.g., MS-DOS, WINDOWS 9X.

B) Multi-User Operating System :-

This operating system allows multiple users to access a computer system concurrently. It is used in computer networks that allow same data and applications to be accessed by multiple users at the same time.

e.g., UNIX, LINUX, WINDOWS 2000/7

UNIX was originally developed by Ken Thompson in 1969. It was the first operating system written in C language.

C) Multi-Tasking Operating System :-

In multi-tasking operating system, more than one process can be executed concurrently. It also allows the user to switch between the running applications.

e.g., LINUX, UNIX, WINDOWS 95.

D) Preemptive Multi-Tasking OS :-

Preemptive multi-tasking is a type of multi-tasking that allows that computer programs to share operating system and underlying hardware resources. It divides their overall operating and computing time between processes and the switching of resources between different processes occurs through predefined criteria.

e.g., OS/2, Window 95/NT.

E) Cooperative Multi-Tasking OS :-

It is the simplest form of multi-tasking. In it, each program can control the CPU for as long as it need it. If a program is not using the CPU, however, it can allow another program to use it temporarily.

e.g., Mac OS, MS Window 3-x, etc.

F) Real Time Operating System (RTOS) :-

The main objective of real time operating systems is their quick and predictable response to events than any other operating system. Real time operating systems are designed to respond to an event within a predetermined time. It must have preemptive kernels to execute a program.

The processing is done with a time constraint. They are often used in applications such as flight reservation system, military applications, etc. These types of operating system increase the availability and reliability of the system.

e.g., Lynx OS, HP-RT.

There are two types of real time operating system :-

1. **Hard Real Time OS :** Hard RTOS is referred to as an operating system that can absolutely guarantee a maximum time for the operations. It performs.

2. **Soft Real Time OS :** Soft RTOS is referred to as an operating system that cannot absolutely guarantee a maximum time for the operations, it performs.

G) Embedded Operating System :-

An embedded operating system refers to the operating system that is self-contained in the device and resident in the Read Only Memory (ROM).

These are able to operate with a limited number of resources. These are very compact and extremely efficient by design. They are used in appliances like microwaves, washing machines, traffic control system, etc.

e.g. WINDOWS CE, Minix-3, etc.

H) Batch Processing Operating System :-

In batch processing system, a number of jobs are put together and executed as a group. This operating system is responsible for scheduling the jobs according to priority and the resource required. It is the type of OS which do not interact with the computer directly.

The batch processing system works in two steps

The first step deals with the **storage of processes** in the form of a batch (collection) are known as accumulation of jobs. The jobs are processed in a sequential manner within the batch. This working stage is known as periodical processing of jobs.

e.g., UNIX

I) Distributed Operating System :-

Distributed means data can be stored and processed on multiple locations. Distributed OS use multiple central processors to serve multiple real-time applications. A distributed OS manages a group of independent computers and makes them appear to be a single computer. Data processing jobs are distributed among the processors according to their efficiency. The processors communicate with each other through various communication lines (such as high-speed buses or telephone lines).

J) Mobile Operating System :-

A mobile OS is an OS that operates on Smart Phones, Tablets and Digital Mobile devices.

A mobile OS controls a mobile device and its design supports wireless communication and different types of mobile applications. **It has built-in support for mobile multimedia formats.**

Mobile operating system can be classified as-

1. **Android :-**
   Android was introduced by Google in 2007. **Android is an OS based on Linux. It is basically designed for touch screen mobile devices like Tablets, smart phones, etc**. The latest version of Android is Kitkat launched in January, 2014.
2. **Symbian :-**
   It is the OS developed and sold by Symbian Ltd. Symbian is an open-source mobile OS designed for smart phones. It has been used by many major handset manufacturers including Motorola, Nokia, Samsung, Sony, etc.
3. **iOS :-**
   It is the popular mobile operating system developed by Apple incorporation. This operating system is commonly used in Apple iPhone, iPod Touch, iPad and second-generation Apple TV.
4. **BlackBerry :-**
   This is the most secure operating system used in leading smart phones developed by blackberry company. It also supports WAP 1.2. The latest version of blackberry operating system is Blackbery 10.

K) Multi-Programming Operating System :-

In multi-programming OS, more than one program reside in the main memory. When one job is unable to execute because of I/O operation. It switches to another program and allows that program to run.

L) Time Sharing Operating System :-

In time sharing, a small amount of time is allocated for the processing simultaneously. **e.g., MacOS**. The time sharing operating system allows multiple programs to simultaneously share the computer resources. Time sharing operating system provides scheduling to each process to be run on.

M) Server-Site Operating System :-

Server-Site Operating Systems are also known as Network Operating Systems (NOS). It is a complete set of files, tasks and job management.

It enables the usage of Overlays (Tags) that perform functions and make websites dynamic in nature.

Some of the server site operating systems are-

1. **Linux :-**

It is an open source computer operating system designed primarily for the PC but also available for a wide range of other systems.

One of the most valued advantage of Linux over the other platforms lies within the high security levels it ensures (It is virus free operating system). Linux is a clone of UNIX.

2. **UNIX :-**

It is an operating system which was first developed in the 1960s. UNIX systems have a Graphical User Interface (GUI) similar to different Microsoft Windows which provides an easy to use platform.

It supports fully multi-tasking with protected memory which means multiple users can run multiple programs at the same time without interfering with each other or crashing the system.

3. **Solaris :-**

It is a UNIX operating system originally developed by Sun Microsystems in 1993.

It is a standard UNIX operating system with excellent functions, Solaris 11 OS is the latest version with some extra features like software packaging, network virtualization, server virtualization, storage, security of hardware.

4.2.4 Functions of Operating System :-

Operating system is large and complex software consisting of several components. It is responsible for managing all the resources attached to a computer system.

Following functions are provided by an operating system to the convenience of users-

1) **Process Management :-**

'A process is a program under execution'. It is the task which is currently being executed by the processor (CPU). The operating system handles the creation and deletion of processes and also manages the scheduling and synchronization of process.

Process management is the important part of an operating system which enables the activities of planning, monitoring and performance of a process.

A process would require certain system resources such as processor time, main memory, files, I/O devices, etc. These all activities are handled by the operating system as a process manager.

2) **Memory Management :-**

Memory management of an operating system takes care of allocation and de-allocation of main memory to various processes.

Managing the primary memory, sharing and minimizing memory access time are the basic goals of the memory management. It also keeps track of memory usage. **The performance of memory management is crucial for the performance of entire system.**

3) **File Management :-**

File management module of operating system manages files held on various storage devices as well as transfers file form one storage device to another. The file management includes creating and deleting both files and directories, allocating space for files, keeping back-up, securing, easy access to files.

4) **Input/ Output Management :-**

The Input/ Output management module of the OS coordinates and assigns different input and output devices, namely terminals, printers, disk drives, tape drives etc. It controls all I/O devices, keep track of I/O requests, issues commands to these devices and takes measures which would ensure that data is transmitted efficiently and correctly to and from I/O devices.

It hides the complexity of interfacing to devices from user program and the user.

I/O management includes following features

a) Speed :-

The speed of different I/O devices is generally different from one another. e.g., the speed of printer is very fast as compared to keyboard which is based on OS processing.

b) Unit of Transfer :-

Data can be transferred in the form of units such as characters, words, bytes, blocks or records from one component to another and it is maintained by an operating system.

c) Data Representation :-

Data can be represented in different forms on different I/O devices, OS manages the data representation of I/O devices. Some devices use ASCII codes whereas others use BCD or EBCDIC codes.

d) Sharing :-

A device can be either a shareable device or non-shareable device. OS works as an interface between the devices and application programs and decides which device shares their task via which application program. e.g., disk drives (floppies, hard disks) and magnetic drums are shareable devices because they can handle successive requests from different programs or processes. Card readers and keyboards are the examples of non-shareable devices.

e) Buffering :-

Buffering is a technique of storing data in memory area called buffers while data is being transferred between two devices or between a device and an application program which is switched by OS permission.

It can be done because of three reasons as follows-

(i) It manages the speed mismatch between the sender and the receiver.

(ii) It maintains a balance between the devices.
(iii) It supports copy semantics for an I/O application.

f) Spooling :-

Spooling is the process of sending data to a spool (or buffers or temporary storage area) of the computer's memory. OS maintains the spooling of data by adding an address location with every element in the memory.

Spooling is useful because different devices access data at different rates. The most common type of spooling is print spooling in which print jobs are sent to a print buffer before being transmitted to the printer.

5) Storage Management :-

It is the process which describes the technologies and processes used by an organization to improve the performance of their data resources. The data or files will be stored into the computers in such a way that an authorized user can easily access and use it. It is a wide process which includes virtualization, replication, security, compression of data, traffic analysis, etc. Storage management can help to improve the data center's performance.

6) User Interface :-

An operating system provides an interface between the computer user and the hardware. The user interface is one of the most important parts of any operating system because it allows users to easily access and communicates with the applications and the hardware.

The user can interact with computer by using mainly two kinds of interfaces.

a) Graphical User Interface (GUI) :-

Graphical User Interface (GUI), is a computer program that enables a person to communicate with a computer through the use of symbols, visual metaphors and pointing devices. It is best known for its implementation in Apple products. The first graphical user interface was designed by Xerox Corporation in 1970s.

GUIs can be found in hand-held devices such as MP3 players, portable media players, gaming devices etc.

b) Character User Interface (CUI) :-

A Character User Interface (CUI) or Command-Line Interface (CLI), is a mechanism of interacting with a computer system or software by typing commands to perform specific tasks. Programs with character user interface are generally easier to automate via scripting. CUI only use types one after another just as commands used in MS-DOS.

7) MS-DOS (Microsoft-Disk Operating System) :-

The DOS OS was developed by Microsoft in 1980 for microcomputers. MS-DOS was the first operating system that ran on PC developed by IBM corporation in 1981.

DOS is a single user operating system. It is the only operating system, which can be loaded in the main memory of the computer using a single disk.

8) Virtual Memory :-

It is a space on hard disk which is used by CPU as extended RAM. It is also called logical memory which is controlled by operating system. It is an imaginary memory area which is supported by operating system.

DOS has a Character User Interface (CUI) i.e., communication between a computer and the user can be done by using characters. **DOS is a command driven operating system that provides all the commands for file handling such as creating, deleting, copying, viewing the contents of files, etc.**

In DOS, one has to key in the commands on the prompt. Prompt is a place where commands are issued. It may look like - C:\> Or C:\WINDOWS\>

a) Structure of DOS :-

There are four essential programs associated with the control of computer and the way it interacts with them.

1. **The Boot Record :** It includes loading the operating system into main memory. It is the main program of MS-DOS.
2. **The Basic Input /Output System (BIOS.SYS) :** It provides an interface between the hardware and programs.
3. **The MSDOS. SYS Program :** It is a collection of program routines and data tables that provides high level programs such as application programs.
4. **The Command.COM Program :** It provides a standard set of commands that gives users access to file management, configuration and miscellaneous functions.

b) Important Extension :-

Extensions	Meaning
.EXE	Executable Files
.COM	Command Files
.BAT	Batch Files
.DOC	Document Files
.TXT	Text Files
.PRG	Program Files
.OVR	Over lays
.SYS	System Files

4.2.5 Some Popular Operating Systems :-

Today's Command Line Interface (CLI) OS can operate using only the keyboard for input.
Modern OS's use a mouse for input with a Graphical User Interface (GUI) sometimes implemented as a shell. There are many types of OS. The most common are as under

a) Microsoft Windows :-

It is a family of operating systems for personal computers. Windows provides a graphical user interface, virtual memory management, multitasking and support for various peripheral devices.

b) Boss (Bharat Operating System Solutions) :-

BOSS GNU/Linux developed by C-DAC (Centre for Development of Advanced Computing) derived form Debian for enhancing the use of Free/Open source software throughout the India

c) Apple Macintosh :-

Most recent versions of OS are based on Unix because it has a good graphical interface. So, it is both stable (does not crash often or have as many software problems as other systems many have) and easy to learn. One drawback of this system is that it can only be run on Apple produced products.

6. MICROSOFT WINDOWS

5.1 Microsoft Windows :-

Microsoft windows stands for 'Microsoft-Wide interactive Network Development for Office Work Solution.' Microsoft windows is a series of graphical interface operating system developed, marked and sold by Microsoft. It enables you to work with a wide variety of programs on your computer, often simultaneously.

5.1.1 Windows :-

Windows is an operating system program that communicates your instructions to the actual computer hardware and displays the results. Windows is a rectangular area which provides an environment to run away programs. It is based on Graphical User Interface (GUI).

It consists of-

- **Windows Explorer :** It is a tool that allows you to browse, view, copy and delete files. It acts as a file manager that provides detailed information about your files, folders and drives.
- **Active Window :** It refers to the object that is being currently used or display on the desktop.
- **Up gradation :** It is the process of enhancing the features of any object. It changes or replaces the characteristics of any windows to any other advanced version of windows.

5.1.2 Versions of MS-Windows :-

- **Windows NT (New Technology) :-**

A version of Windows introduced in 1993 and made specifically for businesses offering better control over workstation capabilities to help network administrators.

Features :-

It is based on High Level Language.
It is able to run on DOS, Windows 3 and Win 32 applications.
It has 32-bit Windows applications.
It uses preemptive multitasking.
It provides higher stability and security.

- **Windows 95 :-**

Windows 95 is a graphical user interface based operating system. It was released on 24th August, 1995 by Microsoft.

Features :-

It is a mixed of 16-bit/32-bit Windows operating system.
It is a consumer-oriented.
It supports Graphical User Interface (GUI) operating system.
It supports FAT32 file system, multi-display, Web TV and the Internet Explorer.

- **Windows 98 :-**

It was developed in 1998. This was produced in two main versions. The first Windows 98 version was plagued with programming errors but the Windows 98 Second Edition came out later was much better with many errors resolved.

Features :-
It supports Internet Explorer 4.01.
It has Intel 80486DX2/66 MHz or a compatible CPU with a Math coprocessor (Pentium processor recommended).
Windows 98 was the first operating system to use the Windows Driver

- **Windows ME (Millennium Edition) :-**

An upgraded version from Windows 98, launched in 2000, but it has been historically plagued with programming errors which may be frustrating for home users.

Features :-
It is designed for single CPU or **SMP 32-Bit Intel X86 computer**.
It supports **8 or more CPU (the maximum 32 CPU).**
The minimum internal storage is **64MB and maximum 4GB**.
It introduced the Multilingual User Interface (MUI).

- **Windows XP (eXperience) :-**

Windows XP is an OS produced by Microsoft for use on personal computers. Microsoft released Windows XP on 25th October, 2001.
Some version of Windows XP are

1. Windows XP Home edition is a version made for home users.
2. Windows XP Professional is made for business users.

Features :-
It has various users with independent profiles.
It has **3.75 GB free space on the disk** and that the **total size of the disk is 19.5 GB.**
At least **64 megabytes (MB) of RAM internal storage**.
It provides **1.5 gigabytes (GB) of available space** on the hard disk.
It includes video adapter and monitor with Super VGA (800 × 600) or higher resolution.
It supports sound card, CD-ROM, DVD-ROM drive, speakers or headphones.

- **Windows Vista :-**

It is an operating system by Microsoft for use on personal computers, including home and business desktops, laptops, tablet PCs. It was released worldwide on 30th, January, 2007.

Features :-
It can be Pentium 4, higher, 512 MB RAM, 32 MB video card and 40 GB hard disk.
It enhanced the features of visual style.

- **Windows 7 :-**

Windows 7 is an OS released by Microsoft on 22nd July, 2009. It is an upgrade of Windows XP and Vista. It does not include some standard applications like Windows Movie Maker. Windows Mail, etc.

Features :-
It supports **64-Bit processor.**
It provides **touch, speech, handwriting recognition**.
It supports **a playback of media in MP4, MOV**.
It includes **Windows Bio-metric Framework.**
It provides multiple firewall.

- **Windows 8 :-**

It is a part of Windows NT family as personal OS developed by Microsoft and released on 1st August, 2012.

Features :-
It is a 64-bit logical CPU.
It supports 64 TB Dynamic Virtual Disk.
It provides 3 3D Graphic supports and Internet Explorer-10.
It enhanced feature of NTML-5 is assumed.
It is based on Microsoft's 'Metro design language'.
It supports new emerging technology like USB 3.0, cloud computing.

- **Windows 10 :-**

Windows 10 is a personal computer operating system developed and released by Microsoft as part of the Windows NT family of operating systems. It was officially unveiled in September 2014 following a brief demo at Build 2014. The first version of the operating system entered a public beta testing process in October 2014, leading up to its consumer release on July 29, 2015

5.1.3 Desktop :-

- When we turn on the computer then **the first screen, which will be display on the computer is known as desktop.**
- **The background image of desktop is called as wallpaper**. A small arrow of blinking symbol, moving on the desktop, is called as cursor.
- **Desktop contains start menu, task bar, icons, gadgets, etc**. Some important components of desktop are organized as

- **Icons :-**

A small image of a program, shown on the desktop with program name is known as icon. Icons are small pictures that represent files, folders, programs and other items. Icons contain the program that is selected.
Users can open these programs by double click on the icons. If you move an icon on your desktop, this is called 'dragging' and after releasing it, it will be called 'dropping'.

Some of the icons displayed on desktop are as follows :-

1. **My Computer :** It is the most important icon on the desktop, which contains icons of document folders, hard disk's partition, each removable disk drive. e.g., floppy disk, CD, DVD etc. It also allows the users to access drivers, printers, removable disk or other system applications. It is the main part of our windows where all the programs and software backup is stored.

2. **Recycle Bin :** It is also a form of icon on the desktop, which contains deleted file, folders or shortcuts. If we delete a file or folder then it goes to recycle bin. From recycle bin, we can restore the deleted file or folders on proper place. **It is like a dustbin of the computer**. Once the recycle bin is empty then we won't be able to restore those files and folder again

3. **Shortcut :** It is an icon on the desktop that provides a user with immediate access to a program or file

4. **My Document : This folder contains all your files which you have created and saved in it. This folder contains all types of file format word processor, spreadsheet, power point, image. etc.**
   It can open in three ways
   By clicking on start button and then select My Document.
   By clicking on My Computer and then select My Document.
   By creating shortcut on desktop.

5. **My Network Places : It consists of all network connections, which make possible to connect the computer from internet.**

- **Task Bar :-**
  Initially, the long horizontal box at the bottom of our desktop is known as task bar. When we open a program or any window. Then the button of that program will be displayed on the task bar.

Generally, task bar consists of three parts:-

1. **Start Button :** When we click on the start button then the start menu will appear.
2. **Middle Section:** It contains the button of programs or documents which are currently being used by the user.
3. **Notification Area:** It is on the right end of the task bar, consists of clock-date and time, icons of certain programs, computer setting, sound and icons of removable disk i.e., pen drive.

- **Start Menu :-**

The start menu is the main gateway of our computer's program such as file, folder and settings. Start menu also contains most recently opened program.
Start menu have following options

1. **Programs :** It contains a list of installed programs. When we installed any software it automatically shows in this menu.
2. **Favorites :** It is a collection of book marked web pages.
3. **Documents :** It shows a list of most recently opened documents.
4. **Setting :** It includes control panel, printers, taskbar, etc.
5. **Find :** It searches for specific files or folders.
6. **Log Off :** Provide a password to protect from unauthorized access.
7. **Turn Off :** (Shut down) To shut down or restart the system.

- **Menu Bar :-**

Each window contains its own menu which performs specific actions when they have been selected.
The menu bar consists of several options

1. **File Menu :** Like new, open, close, save, save as, send and print, etc.
2. **Edit Menu :** Like undo, cut, copy, paste, clear, etc.
3. **View Menu :** Consists of normal, toolbar, print layout, etc.
4. **Insert Menu :** contains options like header, footer, etc.
5. **Help Menu :** for tutorials or helpful informations.

- **Gadgets :-**

Windows contains mini-programs called gadgets which offer information at a glance and provide easy access to frequently used tools. Some of the gadgets that come in Windows 7 are calendar, clock, weather, feed headlines, slide show and picture puzzle.

- **Dialogue Box :-**

When we perform certain operation on your document and click on the close button without save your document then dialogue box will appear on the screen. **Generally, dialogue box contains message, close button, yes button, no button and cancel button. It is mainly used to suggest that what to do next.**
The three buttons are associated with most windows opened in your operating systems at the top right corner. They are as follows

- **Close Button :-**
  At the right edge of the title bar, there is a square containing a [X] called the close button. It helps to terminate the running program.
  Minimize :
  It **reduces to window** to a button on the task bar. It helps to shrink the window.
  Maximize :
  It enlarges the window to occupy the whole desktop. It expands the size of window fit to the desktop.
  The three buttons are associated with most windows opened in your operating system at the top right corner. They are as follows

- **MAIN PROGRAMS INSIDE THE WINDOWS :-**

1. **Notepad :-**

It is a text program. It is most commonly used for the edit or view text files. The file format of notepad files is .txt (text document)
To open
Click on start menu → All programs → Accessories → Notepad

2. **WordPad :-**

It is an another text editor program including some few features such as complex formatting, pictures, etc. The extension of WordPad file is .rtf (rich text format).
To open
Click on start menu → All programs → Accessories → WordPad

3. **Paint :-**

It is drawing program, used to create drawing or edit digital pictures (Images). The extension pf paint file is .png (png image).

To open
Click on start menu → All programs → Accessories → Paint

4. **Calculator :-**

It performs addition, subtraction, multiplication, division, etc.

To open
Click on start menu → All programs → Accessories → Calculator

5. **Media Player** :-

Windows media player is an easy-to-use interface to play digital media files, organize digital media collection, burn CDs, etc.

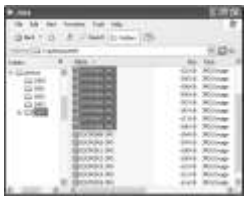
To open
Click on start menu → All programs → Windows media player

6. **Game** :-

Windows have some games like Chess titans, Hearts, Freecell, Mahjong titans, Purble place, Solitaire, Spider solitaire, etc.

To open
Click on start menu → All programs → Games

7. **Files** :-



Files are the collection of data stored on auxiliary storage medium. In windows, files are the basic unit to store data. The name given to a file or document by the user is called file name. Filename is used to identify the type of file format. All files are represented by the file extension.

8. **ZIP File** :-

ZIP stands for Zone Information Protocol. This is an application that allows for the compression of application files.

Executable File: When a file contains instruction that can be carried out by the computer. It is often called an executable file. Extension of executable file is exe.

9. **Folders :-** It is a container you can use to store files. Folders can also store folders i.e., sub-folders. You can create any number of sub-folders and each can hold any number of files and additional sub-folders. You can have libraries to access your files and folders and arrange them in different ways

Document Library : It is used to **organize and arrange word processing documents**, spreadsheets, presentation and other text related files. It is used to store in My Document folder.
Pictures Library: It is **used to organize and arrange your digital pictures.** By default it is saved in the Pictures folders.

Music Library: It is **used to organize and arrange your digital music, such as songs etc**. By default it is saved to the Music Library folder.
Videos Library: It is **used to organize and arrange your videos, such as clips, recording etc.** By default it stored in My Videos folder.

7. DATA COMMUNICATION AND NETWORKING

The term communication means sending or receiving information. When we communicate, we share information or data. This sharing can be local or remote access. A communication system can be defined as the collection of hardware and software that facilitates intersystem exchange of information between different devices.

6.1 : Data Communication :-

Data communication is the exchange of data between two devices using some form of transmission media. It includes the transfer of data or information and the method of preservation of data during the transfer process.

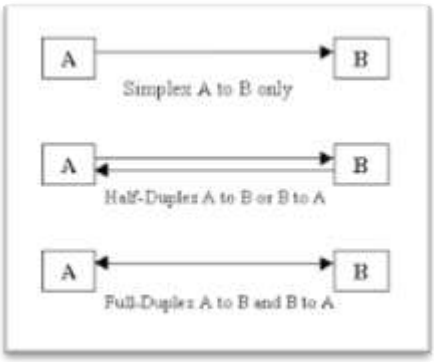
This transmission of data is done between a centralized computer and remove terminals or between two or more computer centers over established communication links.

Data is transferred from one place to another in the form of signals.

There are three types of signals:-

1. **Digital Signal :** In digital signal, data is transmitted in the electronic form of data i.e., binary digits (0 or 1).
2. **Analog Signal :** In along signal, data is transmitted in the form of radio waves like in telephone line.
3. **Hybrid Signal :** Hybrid signals have properties of both analog signal and digital signal.

6.2 : Types of Communication Channel :-



The communication channel refers to the direction of signal flow between linked devices.

There are mainly three types of transmission of data

1. **Simplex Channel** :-
   In this channel, the flow of data is always in one direction, with no capability to support response in other direction. This communication is unidirectional. Only one of the communicating devices transmits information and the other can only receive it.
   e.g., Radio, Television, Keyboard, etc.

2. **Half Duplex Channel** :-
   In this channel, the data can flow in both directions, but not at a same time. When one device transmits information, then other can only receive at that point of time.
   E.g., Walkie-Talkie.

3. **Full Duplex Channel :-**
   In this channel, the flow of data is in both directions at a time i.e., both stations can transmit and receive information simultaneously. **e.g., Wireless handset (mobile phone).**

6.3 : Communication Media :-

Communication media of a network refer to the transmission media or the connecting media used in the network.

It can be broadly defined as anything that can carry information from a source to destination. It refers to the physical media through which communication signals can be transmitted from one point to another.

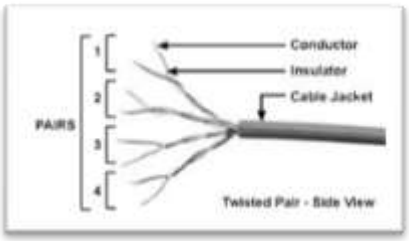
Transmission media can be divided into two broad categories; guided and unguided media.

6.3.1 : Guided Media or Wired Technologies :-

The data signal in guided medium is bound by the cabling system that guide the data signal along a specific path. It consists of a cable composed of metals like copper, tin or silver.

Basically, they are divided into three categories

1. **Ethernet Cable or Twisted Pair :-**



In this pair, wires are twisted together, which are surrounded by an insulating material and an outer layer called jacket. A twisted pair consists of two conductors (copper). One of the wires is used to carry signals to the receiver and the other is used only as a ground reference. It is used as a short distance communication. E.g., Local area networks use twisted pair cable.

❖ **Advantages of Ethernet cable are :-**

(i) Simple in its structure
(ii) Physically flexible
(iii) Can be easily connected
(iv) Has low weight
(v) Low in cost

❖ **Disadvantages of Ethernet cable are :-**

(i) Due to high attenuation signals cannot be transported over a long distance without using repeaters.
(ii) Due to low bandwidth, it is unsuitable for broad band application.
(iii) Data rates supported are 1 Mbps to 10 Mbps.

2. **Coaxial Cable :-**

It carries the signal of higher frequency data communication through the network. It consists of a solid wire core surrounded by foil shields or conducting braid or wire mesh, each separated by some insulator. It has a single inner conductor that transmits electric signals and the outer conductor acts as a ground and is wrapped in a sheath of Teflon or PVC. **Coaxial cable is commonly used in transporting multi-channel television signals in cities. E.g., Cable TV network.**

❖ **Advantages of coaxial cable are :-**

(i) Transmission quality of coaxial cable is better than twisted pair cable.
(ii) Can be successfully used for shared cable network.
(iii) Can transmit several channels simultaneously, so can be used to broad band transmission.

❖ **Disadvantages of coaxial cable are :-**

(i) It is expensive compared to twisted pair cable.
(ii) These are not compatible with twisted pair cable.

3. Fiber-Optic Cable :-

It is made up of glass or plastic and transmits signals in the form of light from a source at one end to another end. At the source, there are either Light Emitting Diodes (LEDs) or Laser Diodes (LDs), which modulated the data into light beam using frequency modulation techniques. **An optical fiber consists of a very narrow strand of glass called the core.** The surrounding core is a concentric layer of glass called the cladding. Cladding is covered by a protective coating of plastic, known as jacket. Optical fibers allow transmission over longer distance at higher bandwidth which is not affected by electromagnetic field. **The speed of optical fiber is hundred of times faster than coaxial cables.**
e.g., Wavelength Division Multiplexing (WDM) and SONET network.

❖ **Advantages of optical fiber are :-**

i) It is immune to electrical and magnetic fields. So, the data does not get disturbed and pure data is retrieved on the other end.
ii) Highly suitable for harsh industrial environment.
iii) It guarantees secure transmission and has a very high transmission capacity.
iv) It can be used for broadband transmission, where several channels are handled in parallel.

❖ **Disadvantages of optical fiber are :-**

i) Connecting two fibers or a light source to a fiber is difficult.
ii) Because of noise immunity, these are virtually impossible to tap.
iii) Optical cables are expensive to install but last longer than copper cables.
iv) Optical fibers require more protection around the cable compared to copper cables.
v) Installation problem. Fiber optic cables are quite fragile and may need special care to make them sufficiently robust for an office environment.

6.3.2 : Unguided Media or Wireless Technologies :-

It is the transfer of information over a distance without the use of enhanced electrical conductors or wires. When the computers in a network are interconnected and data is transmitted through waves, then they are said to be connected through unguided media.
Some commonly used unguided media of transmission are

1. **Radio wave Transmission :-**

When two terminals communicate by using radio frequencies then such type of communication is known as radio wave transmission. This transmission is also known as Radio Frequency (RF) transmission.

These are omnidirectional, Radio waves, particularly those waves that propagate in the sky mode, can travel long distances. Each computer attaches to an antenna that can both send and receive radio transmission.

Transmitter: The devices which transmit signals are termed as transmitter.

Receiver: The devices which received signals, are termed as receiver.

❖ **Advantages of radio waves are :-**

i) Cheaper than wired network.
ii) Provides mobility.
iii) Easy to use over difficult terrain.

❖ **Disadvantages of radio waves are :-**

i) Insecure communication can be easily taped.
ii) It is affected by the weather conditions such as rain, storms, thunder, etc.

2. **Microwave Transmission :-**

Microwaves are electromagnetic waves having frequencies range from 0.3 to 300 GHz. Microwaves are unidirectional. Microwaves have a higher frequency than that of radio waves. Microwave is one of the fastest media for data transmission over communication channel. They can be aimed at a single direction instead of broadcasting in all direction. Microwave antenna placed on the top of buildings. It consists series of stations approx 30 miles apart. It is used a cellular network and television broadcasting.

❖ **Advantages of microwaves are :-**

i) Cheaper than digging trenches for laying cables and using repeaters.
ii) Using microwave, communication is possible even in difficult terrains.

❖ **Disadvantages of microwaves are :-**

i) Insecure communications, as the taping of microwaves is easy.
ii) It is affected by the weather conditions such as rain, thunder, and storm. etc.
iii) Cost of maintenance, implementation and design is high.

3. **Satellite Communication :**

The communication across longer distances can be provided combining radio frequency transmission with satellites. It works over a long distance and fast communication. Satellite communication amplifies signal received from one Earth station and again, retransmits to another Earth station, which can be located many thousands of miles away. It is used for communications to ships, vehicles, planes and handheld terminals.

❖ **Advantages of satellite communication are :-**

i) It covers a vast range of area.
ii) The wired communication is almost impossible and too costly to use across the continents where the satellite communication proves to be the best alternative.
iii) It is very useful in television transmission.

❖ **Disadvantages of satellite communication are :-**

i) It is very costly. So, it preferred to use personal or low budget communication.

ii) There is atmospheric loss of transmitted signals.

4. Infrared Wave Transmission :-

Infrared waves are the high frequency waves used for short-range communication. These waves do not pass through the solid-objects. They are mainly used in TV remote, wireless speakers.

❖ **Advantages of infrared waves are :-**

i) Power consumption is less.

ii) Circuitry cost is less.

iii) Circuitry is simple.

❖ **Disadvantages of infrared waves are :-**

i) Line of sight, need to be in a straight line for communication.

ii) Limited in a short range.

iii) Can be blocked by common materials like, walls, people, plants, etc.

5. Bluetooth :-

It is a wireless technology used for exchanging data over short distances to create a Personal Area Network (PAN) or piconet invented by Erreiscon in 1994.

❖ **Advantages of Bluetooth are :-**

i) We are able to share data without any cord.

ii) We are able to share data without disclosing our private data.

iii) We can use Bluetooth on many different devices as it is mostly in all in all devices such as laptops, cell phones, music player, handsets, printers and a lot more other products.

❖ **Disadvantages of Bluetooth are :-**

i) Battery consumption, as it is the most common mode of data transfer these days, so it is left enabled in the devices, which consumes more battery. It can be remediated by disabling Bluetooth Internet is very slow, so it is suggested not to go for Bluetooth Internet.

ii) Bluetooth Internet is very slow, so it is suggested not to go for Bluetooth Internet.

6.4 : Computer Network :-

- **A computer network is a collection of two or more computers together to share information and resources.**
- **It is a combination of hardware and software that allows communication between computers over a network.**
- **The computers may be connected via any data communication link like wires ,cables, satellite link and other communication media**

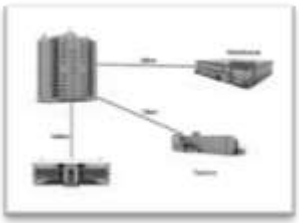
6.4.1 : Benefits Of Networking :-

1) **User Communication – allows user to communicate** using ,E mail, newsgroups, video conferencing within the network
2) **Application Sharing** - **application can be shared over the network** and this allows implementation of client application
3) **Hardware sharing- users can share devices** such as printers, scanners CD ROM drives , hard drives etc.
4) **File Sharing –** Networking of computer helps the users to share data files

6.4.2 : Types Of Computer Network :-

- **Local Area Network (LAN) :-**
  - ✓ It is a system in which computers are inter-connected and the geographical spread may be **within a building to 1 kilometer.**
  - ✓ A number of terminals can be used in the whole building at various places with sharing means.
  - ✓ All the terminals are connected to a main computer **called server.**

- **Wide Area Network (WAN) :-**
  Network spread across countries.
  - ✓ The network that brought the world on single platform.
  - ✓ Usually use mainframe oriented systems.
  - ✓ **Use transmission channels such as co-axial cable or microwave**.



- **Metropolitan Area Network (MAN) :-**
  - ✓ This type of network is spread **over a city.**
  - ✓ Its example is cable TV network.
  - ✓ Its main purpose is to share hardware and software Resources by the various users.

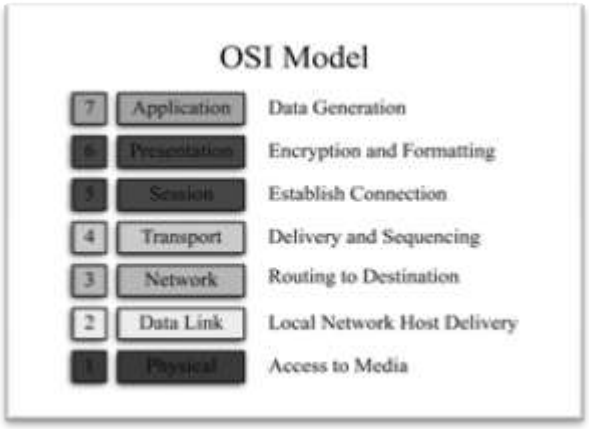
6.5 : Network Devices :-

Network devices are required to amplify the signal to restore the original strength of signal and to provide an interface to connect multiple computers in a network. There are many types of network devices used in networking.

1. **Repeater : A repeater is a device that operates only on the physical layer of OSI model**. Repeaters **have two ports** and can connect two segments of a LAN. It amplifies the feeble signals when they are transported over a long distance so that the signal can be as strong as the original signal. A repeater boosts the signal back to its correct level.
2. **Hub :** Hub is like a repeater with multiple ports used to connect the network channels. It acts as a connect the network channels. **It acts as a centralized connection to several computers with the central node or server.** When a hub receives a packet of data at one of its ports from a network channel, it transmits the packet to all of its ports to all other network channel.
3. **Gateway : A gateway is an interconnecting device, which joins two different network protocols together. Joins two different network protocols together. They are also known as protocol converters.** It accepts packet formatted for one protocol and converts the formatted packet into another protocol. The gateway is a node in a network which serves as a proxy server and a firewall system and prevents the unauthorized access. It holds the information form a website temporarily, so that the repeated access to same website or web page could be directed to the proxy server instead of actual web server. Thus helps in reducing the traffic load.
4. **Switch : It is a small hardware device that joins multiple computers together within on LAN.** Switches work on the data link layer of the OSI model. It helps to reduce overall network traffic. Switch forwards a data packet to a specific route by establishing a temporary connection between the source and the destination. There is a vast difference between switch and a hub. A hub forwards each incoming packet (data) to all the hub ports, while a switch forwards each incoming packet to the specified recipient.
5. **Bridge :** Bridge serve a similar function as switches. A bridge filters data traffic at a network boundary. Bridges reduce the amount of traffic on LAN by dividing it into two segments. Traditional

bridges support one network boundary, whereas switches usually offer four or more hardware ports. Switches are sometimes called **multiport bridges**.

6. **Router :** Router is a hardware device which is designed to take incoming packets, analyze the packets, moving the packets to another network, converting the packets to another network interface, dropping the packets, directing packets to the appropriate locations etc.
7. **Modem :** Modem is a device that converts digital signal to analog signal (modulator) at the sender's sits and converts back analog signal to digital signal (demodulator) at the receiver's end, in order to make communication possible via telephone lines. A MODEM is always placed between a telephone line and a computer.
8. **RJ11 Connector :** RJ11 connector is the typical connector used on two pair, four wire handset wiring, RJ means 'Registered Jack', the physical connector interface that is most often utilized for handset wire terminals. RJ11 connector wiring comes in two standard assortments – UTP or Unshielded Twisted Pair and flat-satin cable or the untwisted. RJ11 connectors are used to terminate phone lines, and are typically deployed with single line POTS (Plain Old Telephone Service) telephone jacks.
9. **RJ45 Connector :** RJ45 stands Registered Jack-45. It is an eight wire connector. RJ45 connector is used to connect computers onto a Local Area Network (LAN). It is commonly used in telephony applications and networking. It is also used for serial connections.
10. **Ethernet Card** : An Ethernet card is a kind of network adapter. These adapters support the Ethernet standard for high-speed network connections via cables. Ethernet cards are sometimes known as Network Interface Cards (NICs). Ethernet cards are available in several different standard packages called form factors. Newer Ethernet cards installed inside desktop computers use the PCI standard and are usually installed by the manufacturer. Ethernet cards may operate at different network speeds depending on the protocol standard they support.



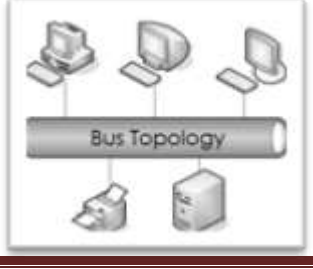
6.6 : OSI Model :-

Open System Interconnection (OSI) is a standard reference model for communication between two end users in a network. In 1993, the International Standards Organization (ISO) published a document called Basic Reference Model for Open System Interconnection, which visualizes network protocols as a seven layered model. **It is a layered framework for the design of network system that allows communication between all types of computer system.** It is mainly consists of seven layers across a network as shown in diagram

6.7 : Network Topology :-

- Topology means Physical and logical network layout .
- **Physical means** actual layout of the computer cables and other network devices
- **Logical means** the way in which the network appears to the devices that use it.
- **Common topologies are: – Bus, ring, star, mesh and wireless**

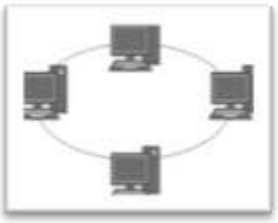
1) Bus topology :-



• Uses a trunk or backbone to which all of the computers on the network connect.
• Systems connect to this backbone using T connectors or taps.
• Coaxial cablings (10Base-2, 10Base5) were popular options years ago.

- **Advantages :-**
  - ✓ Cheap and easy to implement
  - ✓ Require less cable
  - ✓ Does not use any specialized network Equipment
- **Disadvantage :-**
  - ✓ Network disruption when computers are added or removed
  - ✓ A break in the cable will prevent all systems from accessing the network.
  - ✓ Difficult to troubleshoot

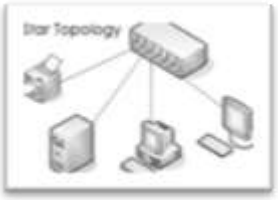
2) Ring Topology :-



- **Logical ring – Meaning that data travels in circular fashion from one computer to another on the network.**
- Typically FDDI, SONET or Token Ring technology are used to implement a ring network – Ring networks are most commonly wired in a star configuration
- **Token Ring has multi-station access unit (MSAU),**equivalent to hub or switch. **MSAU performs the token circulation internally**.

- **Advantages :-**
  - ✓ Cable faults are easily located, making troubleshooting easier
  - ✓ Ring networks are moderately easy to install
- **Disadvantage**
  - ✓ Expansion to the network can cause network disruption
  - ✓ A single break in the cable can disrupt the entire network.

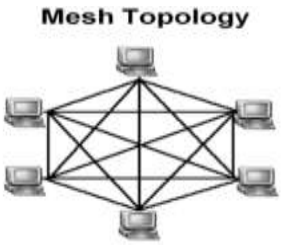
3) Star Topology :-



- All computers/devices connect to a central device called hub or switch.
- Each device requires a single cable
- point-to-point connection between the device and hub.
- Most widely implemented
- Hub is the single point of failure

- **Advantages :-**
  - ✓ Easily expanded without disruption to the network
  - ✓ Cable failure affects only a single user
  - ✓ Easy to troubleshoot and isolate problem
- **Disadvantage :-**
  - ✓ Requires more cable
  - ✓ A central connecting device allows for a single point of failure
  - ✓ More difficult to implement

4) Mesh Topology :-



- Each computer connects to every other.
- High level of redundancy.
- Rarely used. – Wiring is very complicated, Cabling cost is high, Troubleshooting a failed cable is tricky
- A variation hybrid mesh – create point to point connection between specific network devices, often seen in WAN implementation.

➢ **Advantages :-**
✓ Provides redundant paths between devices
✓ The network can be expanded without disruption to current uses
➢ **Disadvantages :-**
✓ Complicated implementation
✓ Requires more cable than the other LAN topologies

5) Wireless networking :-

- Do not require physical cabling.
- Particularly useful for remote access for laptop users
- Eliminate cable faults and cable breaks.
- Signal interference and security issue.

➢ **Advantages :-**
✓ Allows for wireless remote access
✓ Network can be expanded without disruption to current users
➢ **Disadvantages :-**
✓ Potential security issues associated with wireless transmissions
✓ Limited speed in comparison to other network topologies

6.8 : Models of Computer Networking :-

There are mainly two models of computer networking

1) Client-Server Network :-
The model of interaction between two application programs in which a program at one end (client) requests a service from a program at the other end (server). It is a network architecture which **separates the client from the server**. It is scalable architecture, where one computer works as server and others as client. Here, client acts as the active device and server behaves as passively.

2) Peer-to-Peer Network :-
It is also known as P2P network. This computer network relies on computing power at the edges of a connection rather than in the network itself. It is used for sharing content like audio, video, data or anything in digital format. In P2P connection, a couple of computers is connected via a Universal Serial Bus to transfer files. **In peer-to-peer networking, each of every computer may be worked as server or client.**

3) Computer Security :-
The computers are being used frequently in our daily life and it has proven importance in each and every field. We do all types of work which may be simple and some may be confidential and secret, so we expect our system to keep them personal and secure, otherwise it may got misused by anybody or may be attacked by viruses.

4) Computer Security :-
Computer security is also known as cyber security or IT security. Computer security is a branch of information technology known as information security, which is intended to protect computers. It is the protection of computing systems and the data that they store or access.

8. INTERNET SERVICES & SECURITY OF COMPUTER

7.1 : Internet :-

Internet stands for International Network ,which began in 1950 by Vint Curf Knows as the father of the internet .The term internet is derived from two words – Interconnections and networks, also referred to as 'NET'

Internet is a network of networks that consists millions of private and public network of local to global scope. Basically network is a group of two or more computer systems linked together

- **Advantages :-**

1) Information on almost every subject imaginable.

2) **Powerful search engines**

3) Ability to do research from your home versus research libraries.

4) Information at various levels of study. Everything from scholarly articles to ones directed at children.

5) Message boards where people can discuss ideas on any topic. Ability to get wide range of opinions. People can find others that have a similar interest in whatever they are interested in.

6) **The internet provides the ability of emails. Free mail service to anyone in the country.**

7) Platform for products like SKYPE, which allow for holding a video conference with anyone in the world who also has access.

- **Disadvantages :-**

1) There is a lot of wrong information on the internet. Anyone can post anything, and much of it is garbage.

2) Easy to waste a lot of time on the internet. You can start surfing, and then realize far more time has passed than you realized. Internet and television together of added to the more sedentary lifestyles of people which further exacerbates the obesity problem

3) Internet has a lot of "cheater" sites. People can buy essays and pass them off as their own far more easily than they used to be able to do.

4) There are a lot of unscrupulous businesses that have sprung up on the internet to take advantage of people.

5) Hackers can create viruses that can get into your personal computer and ruin valuable data.

6) Hackers can use the internet for identity theft.

7.2 : Internet Connections :-

There exist several ways to connect to the internet. Following are these connection types available:

1. Dial-up Connection
2. ISDN
3. DSL
4. Cable TV Internet connections
5. Satellite Internet connections
6. Wireless Internet Connections

1) Dial-up Connection :-

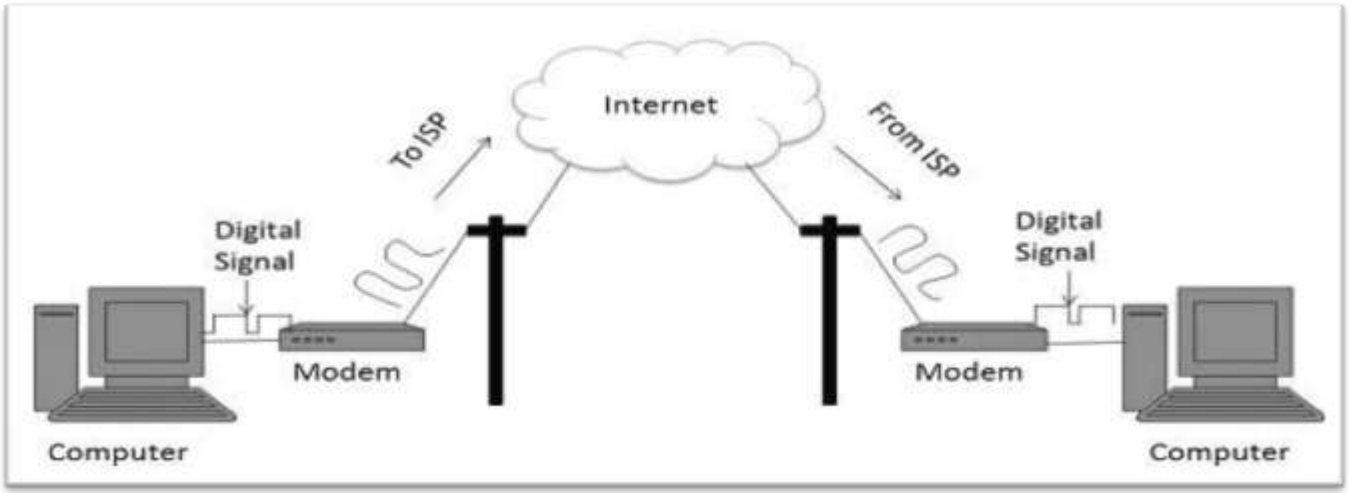
Dial-up connection uses telephone line to connect PC to the internet. It requires a modem to setup dial-up connection. This modem works as an interface between PC and the telephone line.

There is also a communication program that instructs the modem to make a call to specific number provided by an ISP.

Dial-up connection uses either of the following protocols:

1. **Serial Line Internet Protocol (SLIP)**
2. **Point to Point Protocol (PPP)**

The following diagram shows the accessing internet using modem:



2) <u>ISDN</u> :-

ISDN is acronym of Integrated Services Digital Network. It establishes the connection using the phone lines which carry digital signals instead of analog signals.

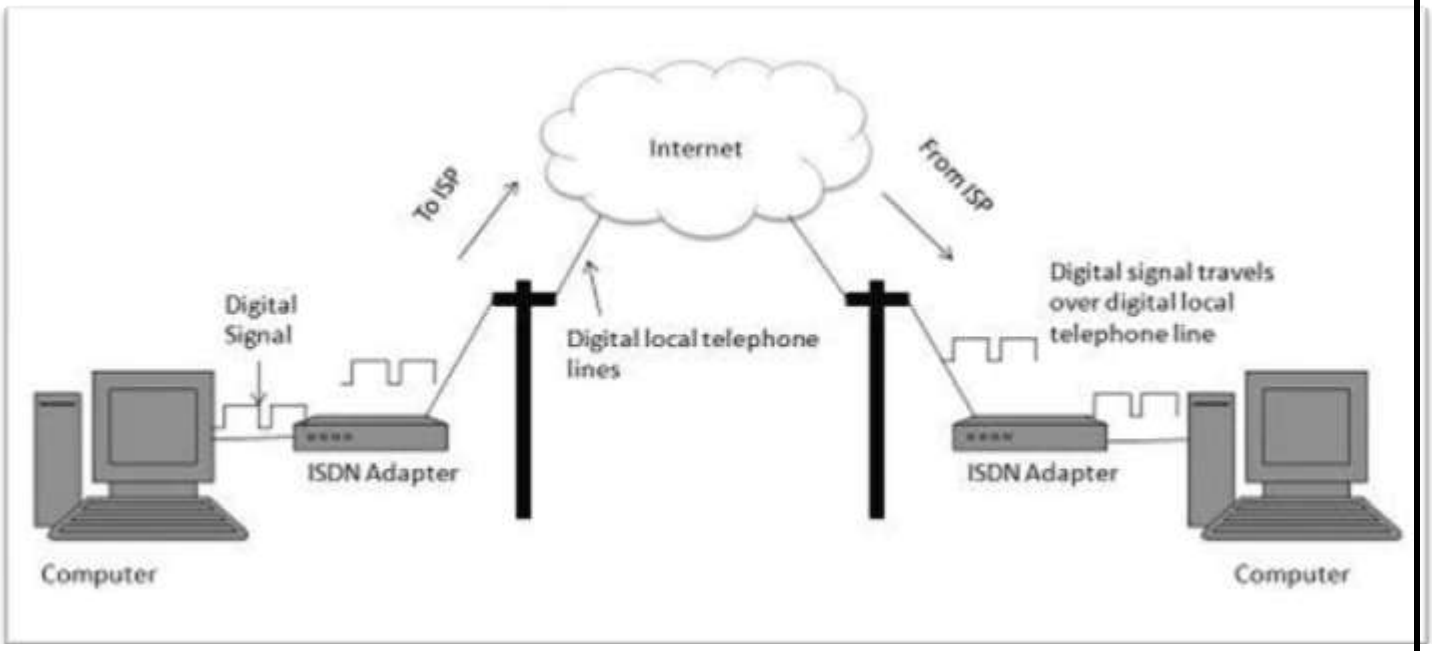
There are two techniques to deliver ISDN services:

1. **Basic Rate Interface (BRI)**
2. **Primary Rate Interface (PRI)**

<u>Key points</u> :-

- The BRI ISDN consists of three distinct channels on a single ISDN line: t1o 64kbps B (Bearer) channel and one 16kbps D (Delta or Data) channels.
- The PRI ISDN consists of 23 B channels and one D channels with both have operating capacity of 64kbps individually making a total transmission rate of 1.54Mbps.

The following diagram shows accessing internet using ISDN connection:



3) DSL :-

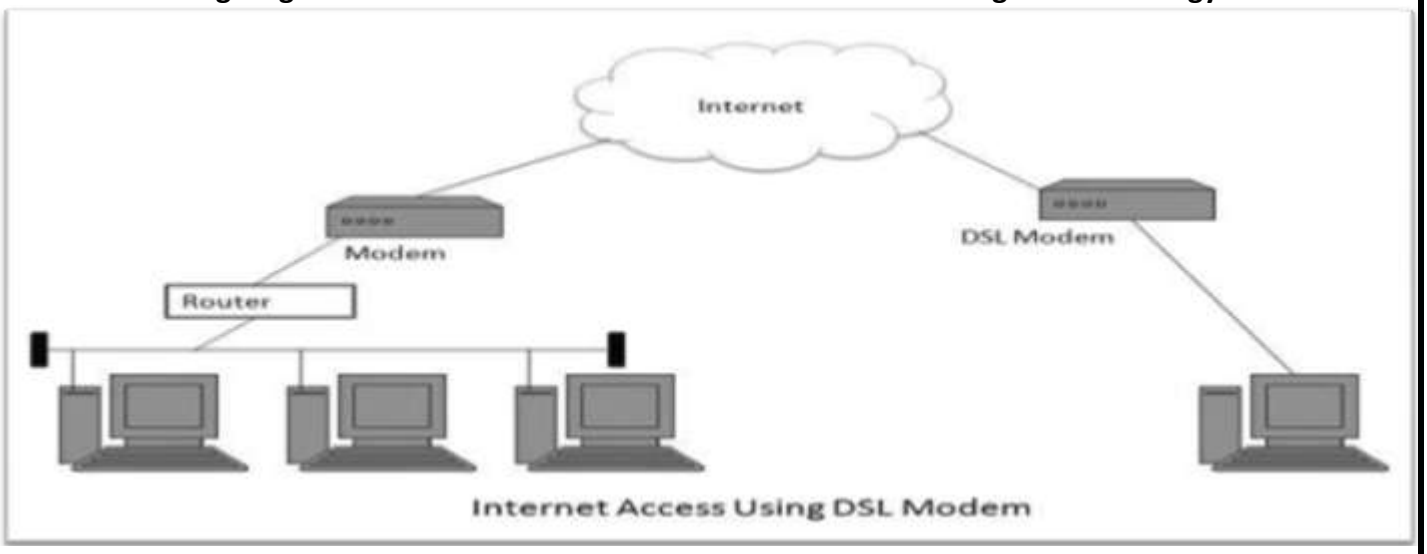
DSL is acronym of Digital Subscriber Line. It is a form of broadband connection as it provides connection over ordinary telephone lines.

Following are the several versions of DSL technique available today:

1. **Asymmetric DSL (ADSL)**
2. **Symmetric DSL (SDSL)**
3. **High bit-rate DSL (HDSL)**
4. **Rate adaptive DSL (RDSL)**
5. **Very high bit-rate DSL (VDSL)**
6. **ISDN DSL (IDSL)**

All of the above mentioned technologies differ in their upload and download speed, bit transfer rate and level of service.

The following diagram shows that how we can connect to internet using DSL technology:



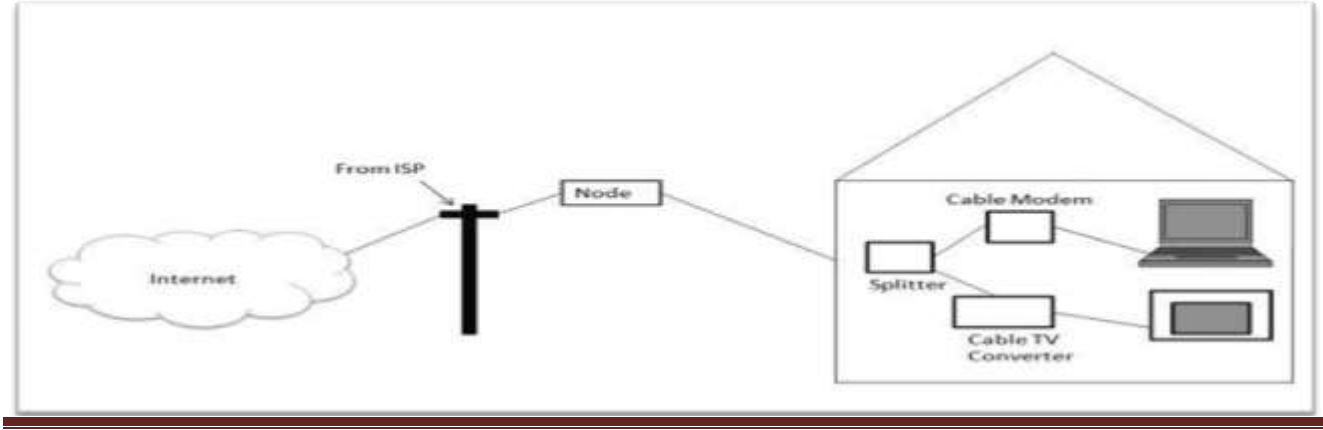
4) Cable TV Internet Connection :-

Cable TV Internet connection is provided through Cable TV lines. It uses coaxial cable which is capable of transferring data at much higher speed than common telephone line.

Key Points:

- A cable modem is used to access this service, provided by the cable operator.
- The Cable modem comprises of two connections: one for internet service and other for Cable TV signals.
- Since Cable TV internet connections share a set amount of bandwidth with a group of customers, therefore, data transfer rate also depends on number of customers using the internet at the same time.

The following diagram shows that how internet is accessed using Cable TV connection:



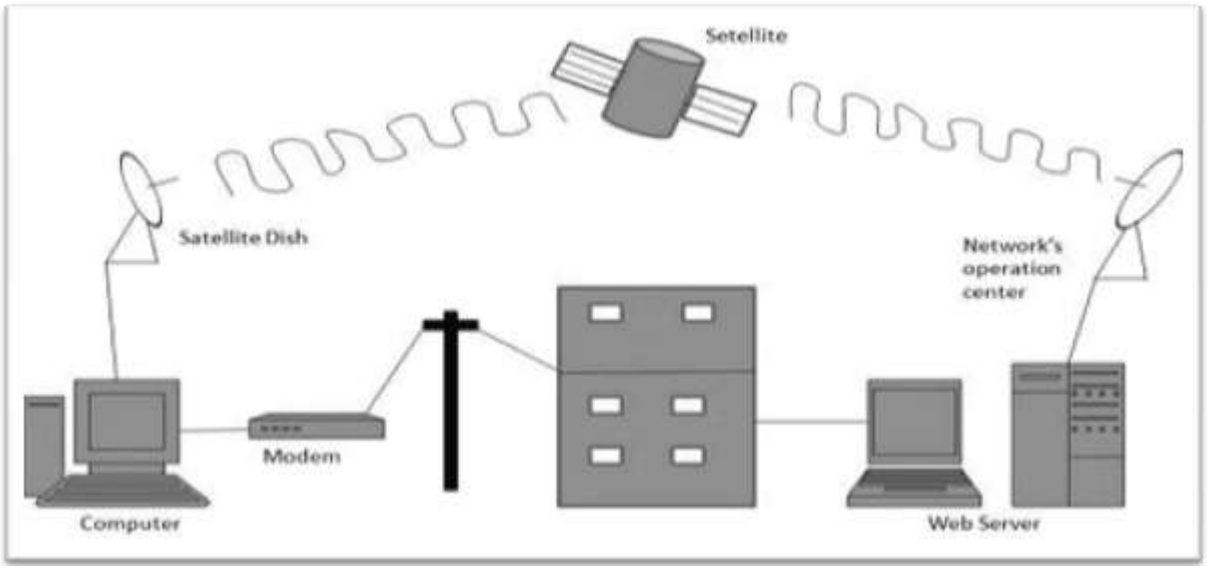
5) Satellite Internet Connection :-

Satellite Internet connection offers high speed connection to the internet. There are two types of satellite internet connection: one way connection or two way connection.

In one way connection, we can only download data but if we want to upload, we need a dialup access through ISP over telephone line.

In two way connection, we can download and upload the data by the satellite. It does not require any dialup connection.

The following diagram shows how internet is accessed using satellite internet connection:



6) Wireless Internet Connection :-

Wireless Internet Connection makes use of radio frequency bands to connect to the internet and offers a very high speed. The wireless internet connection can be obtained by either WiFi or Bluetooth.

Key Points:

- Wi Fi wireless technology is based on IEEE 802.11 standards which allow the electronic device to connect to the internet.
- Bluetooth wireless technology makes use of short-wavelength radio waves and helps to create personal area network (PAN).

7.3 : Interconnecting Protocol :-

1) Transmission Control Protocol (TCP) :-

TCP is a connection oriented protocol and offers end-to-end packet delivery. It acts as back bone for connection. It exhibits the following key features:

- Transmission Control Protocol (TCP) corresponds to the Transport Layer of OSI Model.
- TCP is a reliable and connection oriented protocol.
- **TCP offers:**
  - **Stream Data Transfer.**
  - **Reliability.**
  - **Efficient Flow Control**
  - **Full-duplex operation.**
  - **Multiplexing.**
- TCP offers connection **oriented end-to-end packet delivery.**
- TCP ensures reliability by sequencing bytes with a forwarding acknowledgement number that indicates to the destination the next byte the source expect to receive.
- It retransmits the bytes not acknowledged with in specified time period.

- **TCP Services :-**

  TCP offers following services to the processes at the application layer

  Stream deliver service :-

  TCP protocol is stream oriented because it allows the sending process to send data as stream of bytes and the receiving process to obtain data as stream of bytes.

  Sending and receiving buffers :-

  It may not be possible for sending and receiving process to produce and obtain data at same speed, therefore, TCP needs buffers for storage at sending and receiving ends.

- **Bytes and segments :-**

  The Transmission Control Protocol (TCP), at transport layer groups the bytes into a packet. This packet is called segment. Before transmission of these packets, these segments are encapsulated into an IP datagram Full duplex service Transmitting the data in duplex mode means flow of data in both the directions at the same time.

- **Connection oriented service :-**

  TCP offers connection oriented service in the following manner:

1. TCP of process-1 informs TCP of process – 2 and gets its approval.
2. TCP of process – 1 and TCP of process – 2 and exchange data in both the two directions.
3. After completing the data exchange, when buffers on both sides are empty, the two TCP's destroy their buffers.

- **Reliable service :-**

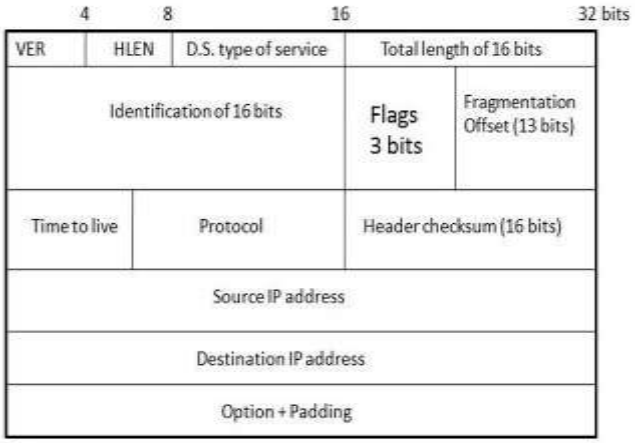
  For sake of reliability, TCP uses acknowledgement mechanism.

2) Internet Protocol (IP) :-

Internet Protocol is **connectionless** and **unreliable** protocol. It ensures no guarantee of successfully transmission of data.

In order to make it reliable, it must be paired with reliable protocol such as TCP at the transport layer.

Internet protocol transmits the data in form of a datagram as shown in the following diagram

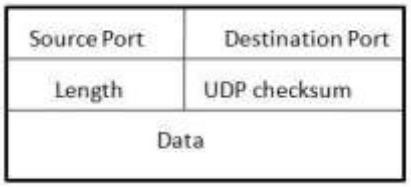


Points to remember :-

- The length of datagram is variable.
- The Datagram is divided into two parts: **header** and **data.**
- The length of header is 20 to 60 bytes.
- The header contains information for routing and delivery of the packet.

3) User Datagram Protocol (UDP) :-

Like IP, UDP is connectionless and unreliable protocol. It doesn't require making a connection with the host to exchange data. Since UDP is unreliable protocol, there is no mechanism for ensuring that data sent is received.



UDP transmits the data in form of a datagram. The UDP datagram consists of five parts as shown in the following diagram

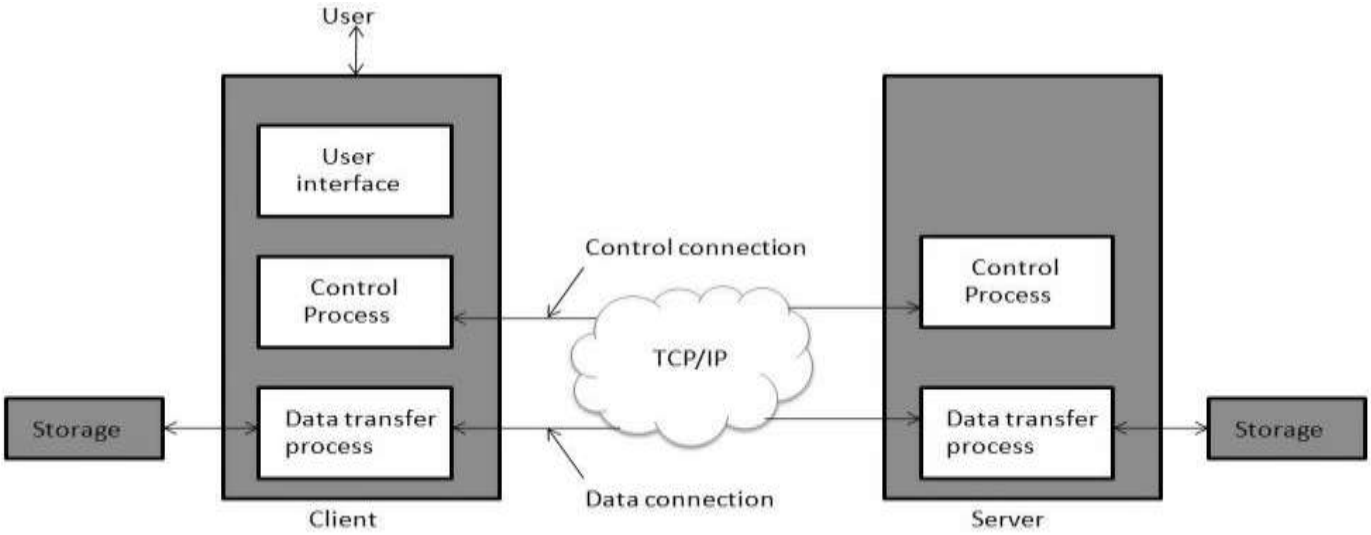
Points to remember :-

- UDP is used by the application that typically transmit small amount of data at one time.
- UDP provides protocol port used i.e. UDP message contains both source and destination port number, that makes it possible for UDP software at the destination to deliver the message to correct application program.

4) File Transfer Protocol (FTP) :-

FTP is used to copy files from one host to another. FTP offers the mechanism for the same in following manner:

- FTP creates two processes such as **Control Process and Data Transfer Process at both ends** i.e. at client as well as at server.
- FTP establishes two different connections: **one is for data transfer and other is for control information.**
- **Control connection** is made between **control processes** while **Data Connection** is made between<="" b="" style="box-sizing: border-box;">
- FTP uses **port 21** for the control connection and **Port 20** for the data connection.



5) Trivial File Transfer Protocol (TFTP) :-

Trivial File Transfer Protocol is also used to transfer the files but it transfers the files without authentication. Unlike FTP, TFTP does not separate control and data information. Since there is no authentication exists, TFTP lacks in security features therefore it is not recommended to use TFTP.

Key points

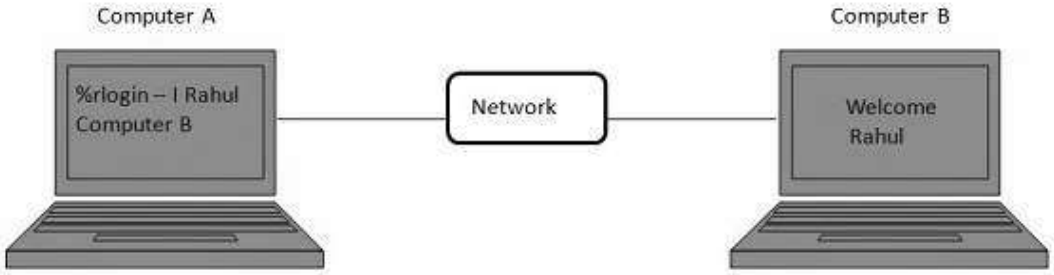
- TFTP makes use of UDP for data transport. Each TFTP message is carried in separate UDP datagram.
- The first two bytes of a TFTP message specify the type of message.
- The TFTP session is initiated when a TFTP client sends a request to upload or download a file.
- The request is sent from an ephemeral UDP port to the **UDP port 69** of an TFTP server.

❖ **Difference between FTP and TFTP :-**

S.N.	Parameter	FTP	TFTP
1	Operation	Transferring Files	Transferring Files
2	Authentication	Yes	No
3	Protocol	TCP	UDP
4	Ports	21 – Control, 20 – Data	Port 3214, 69, 4012
5	Control and Data	Separated	Separated
6	Data Transfer	Reliable	Unreliable

6) Telnet :-

Telnet is a protocol used to log in to remote computer on the internet. There are a number of Telnet clients having user friendly user interface. The following diagram shows a person is logged in to computer A, and from there, he remote logged into computer B.



7) Hyper Text Transfer Protocol (HTTP) :-

HTTP is a communication protocol. It defines mechanism for communication between browser and the web server. It is also called request and response protocol because the communication between browser and server takes place in request and response pairs.

➢ **HTTP Request :-**

HTTP request comprises of lines which contains:

- **Request line**
- **Header Fields**
- **Message body**

Key Points :

- The first line i.e. the **Request line** specifies the request method i.e.**Get** or **Post.**
- The second line specifies the header which indicates the domain name of the server from where index.htm is retrieved.

HTTP Response :

Like HTTP request, HTTP response also has certain structure. HTTP response contains

- Status line
- Headers
- Message body

7.4 Internet Related Terms :-

1) **World Wide Web (www) :-**
Is also called web or www, it is a collection of information, resources, pictures, sounds, multimedia on the internet that are linked and connected together. Using a software product such as Netscape makes accessing and linking to web pages containing information, easy. **The world wide web was invented by Tim Bernes-lee in the CERN Laboratory in March 1989.**

2) **Web Browser :-**
A web browser (commonly referred to as a browser) is a software application for retrieving, presenting, and traversing information resources on the World Wide Web. An information resource is identified by a Uniform Resource Identifier (URI/URL) and may be a web page, image, video or other piece of content. Hyperlinks present in resources enable users easily to navigate their browsers to related resources.
Although browsers are primarily intended to use the World Wide Web, they can also be used to access information provided by web servers in private networks or files in file systems.

3) **Web Page :-**
A Web site is a related collection of World Wide Web (WWW) files that includes a beginning file called a home page. A company or an individual tells you how to get to their Web site by giving you the address of their home page. From the home page, you can get to all the other pages on their site.
For example, the Web site for IBM has the home page address of http://www.ibm.com.

4) **Domain Name :-**
A domain name is a description or representation of a computer's location on the Internet.
It is usually separated by a dot.
For example:
www.comentum.com
sales.comentum.com

5) Domain Name System :-
DNS (Domain Name System) is a large database of domain names and their correspondent Internet (IP Addresses)

For example: www.widget.com corresponds to its unique number 207.168.6.12

6) **Web Address/ URL :-**
Uniform Resource Locator is a web address used to connect to a remote resource on the world wide web.
For example:
http://reliableacademy.com/

7) **Blog :-**
A regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style.
For Example:
http://bankingtoppers.blogspot.in/

8) **Search Engine :-**
A program that searches for and identifies items in a database that correspond to keywords or characters specified by the user, used especially for finding particular sites on the World Wide Web.

7.5 Internet Services :-

1) Downloading And uploading files from/to Sites
2) Chat
3) Email
4) Video Confercing
5) E Learing
6) E Banking
7) E Shopping
8) E Reservations
9) Social Networking
10) E Commerce

7.6 Computer Security :-

Computer security, also known as cyber security or IT security, is the protection of information systems from theft or damage to the hardware, the software, and to the information on them, as well as from disruption or misdirection of the services they provide

- **Methods to Provide Protection :-**

There are four primary methods to provide protection

1. **System Access Control :**
   It ensures that unauthorized users do not get into the system be encouraging authorized users to be security conscious.
   For example, by changing their passwords on a regular basis.
2. **Data Access Control :**
   It monitors who can access what data, and for what purpose. Your system might support mandatory access controls with these. The system determines access rules based on the security levels of the people, the files, and the other objects in your system.
3. **System and Security Administration :**
   It performs offline procedures that makes or breaks secure system.
4. **System Design :**
   It takes advantage of basic hardware and software security characteristics.
   For example, using a system architecture that's able to segment memory, thus isolating privileged processes from no privileged processes.

❖ Components of Computer Security :-

Computer security is associated with many core areas. Basic components of computer security system are

1. **Confidentiality :** It ensures that data is not accessed by any unauthorized person.
2. **Integrity :** It ensures that information is not altered by any unauthorized person in such a way that it is not detectable by authorized users.
3. **Authentication :** It ensures that users are the persons they claim to be.
4. **Access Control :** It ensures that users access only those resources that they are allowed to access.
5. **Non-Repudiation** : It ensures that originators of messages cannot deny they are not sender of the message.
6. **Availability :** It ensures that systems work promptly and service is not denied to authorized users.

7. **Privacy :** It ensures that individual has the right to use the information and allows another to use that information.
8. **Steganography :** It is an art of hiding the existence of a message. It aids confidentiality and integrity of the data.
9. **Crytography :** It is the science of writing information in a 'hidden' or 'secret' from and is an ancient art. It protects the data in transmit and also the data stored on the disk.

- **Some terms commonly used in cryptography are -**
  Plain Text : It is the original message that is an input.
  Gipher : It is a bit-by-bit or character-by-character transformation without regard to the meaning of the message.
  Gipher Text : It is the coded message or the encrypted data.
  Encryption : It is the process of converting plain text to cipher text, using an encryption algorithm.
  Decryption : It is reverse of encryption i.e., converting cipher text to plain text.

7.7 Sources of Attack :-

The most potent and vulnerable threat of computer users is virus attacks. A computer virus is a small software program that spreads from one computer to another and that interferes with computer operation.

It is imperative for every computer user to be aware about the software and programs that can help to protect the personal computers from attack

The sources of Attack can be -

1. Downlodable Programs
2. Cracked Softwares
3. E-mail Attachments
4. Internet
5. Booting from unknown CD

7.8 Threats to Computer Security :-

1. **Virus :**
   It is a program written to attack the normal operation of a Computer, normally which affects the programs associated with the Operating System or Device Driver. Usually it is transmitted through the executable files. Viruses can run only if the affected program is running. These are the most well-known internet security threat.

2. **Worms:**
   Similar to viruses but much more dangerous. They spread rapidly by accessing your email address book and automatically forwarding themselves to every address it has.

3. **Trojan:**
   It is a program written to make your Computer unprotected so that hackers can reach the data in your computer. Trojans are self-sufficient programs. These programs give unrestricted access of computers to attackers.

4. **Spyware:**
   It is software that secretly collects user information while on the internet. Spyware can capture information like web browsing habits, email messages, usernames and passwords, and credit card information

5. **Adware:**
   This program launches the advertisements in the form of pop ups. Usually the add words are based on the internet behavior of the user.

6. **Spam:**
   These are unwanted emails. In other words we can call them as unsolicited promotional mail.

7. **Phishing:**
   This is acquiring the personal and sensitive information of a person through official looking emails. Users of online banking and e-commerce websites are more prone to this attack.

8. **Pharming:**
   More advance method of Phishing in which the attackers create duplicate or similar looking website of other companies, to attract the customers and steal the data.

9. **Cookies:**
   These are program or information secretly stored in a computer especially the internet browser, which allows other users to monitor the internet activities of a person. These programs usually monitor the browsing nature of person so that the companies can create better marketing strategies.

10. **Mail Bomb:**
    An excessively large email (typically many thousands of messages) or one large message sent to a user's email account. This is done to crash the system and prevent genuine messages from being received.

11. **Scareware:**
    A common trick cyber criminals use to make users think that their computer has become infected with malware to get them to purchase a fake application. Often the fake application that the user is tricked into purchasing is actually a malicious program which can disable real antivirus software and wreak havoc on a user's machine.

12. **Sniffers:**
    A software program used to monitor the traffic in a network. The hackers may use the sniffed data to access important confidential data.

13. **Rootkit:**
    A program designed to hide objects such as processes, files or Windows registry entries (often including its own). This type of software is not malicious in itself, but is used by hackers to cover their

tracks in previously compromised systems. There are types of malware that use rootkits to hide their presence on the system

Internet Technologies - Important Terms for Bank Exams

1. **Intranet** : is a network of computers within an organization.

2. **Extranet** : is a network of computers between some related organizations.

3. **Gateway** : is a particular point in a network that acts as an entrance to another network. For example, the 'payment gateway', if you've done any internet payment transaction you would have seen that from the merchant's site you are taken to a payment gateway, from where you are then taken to your bank's net banking site.

4. **Firewall** : is a program in charge of rejecting unwanted incoming connection requests. A server with a firewall will keep other computers form connecting to the server. It is like a boundary wall to keep intruders at bay.

5. **DNS** : Domain name server – is a program which deals with computer addresses. You can look at it as a telephone directory, but for the Internet; it translates user friendly computer hostnames into IP addresses.

Popular Domain names:

.jobs = Jobs	.org = organization
.gov = government agencies	.name = personal
.in =India	.edu = educational
.com = commercial business	.mil = military
.net = network organization	. biz = business organisations

6. **Flash** : is an embedded animation software/program that displays small animations on web pages; like the how many ducks can you shoot!?

7. **URL** : Uniform Resource Locater – is nothing but a web page's address, or in other words URL specifies the address of every file on the internet.

URL has three parts

(i) the protocol to be used to access the file = {http://}
(ii) the IP address = {www.gmail}
(iii) the domain name = {.com}

8. **Browser** : is the software or program that allows a computer to view web pages. Like Mozilla Firefox, Google Chrome, Internet Explorer, Safari, Opera.

9. **Web Crawler** : is a program that visits web sites and reads their pages and other information in order to create entries for a search engine index.

10. **Search Engines** : are special program running on a website which offers user results of simultaneous searches of other websites for the required information. For example – Google

11. **Traffic Congestion** : is a phenomenon where too many users are connecting to the internet at the same time or the internet service provider's cables are not able to support the user's maximum speed; it really is like the traffic jam!

12. **Digital Signature** : also known as electronic signature is like an encryption technique for documents, which guarantees authenticity of the document and helps combat digital forgeries and frauds.

13. **Encryption/ Decryption** : Encryption is a technique, derived from military use, to mask/disguise any information, which cannot be read by anyone who does not have the password/key.

In other words, encryption is 'encoding' any message/information so that only authorizes people can read it. Encryption is done with a private key.

Thus, decryption is the 'decoding' of the encoded message, with the help of a public key.

14. **Cloud Computing** : is a service provided, wherein one can obtain network based storage space with such service providers.

User needs to open an account with the service provider, much like creating an e-mail id. E-mails are also cloud computing but on a smaller scale.

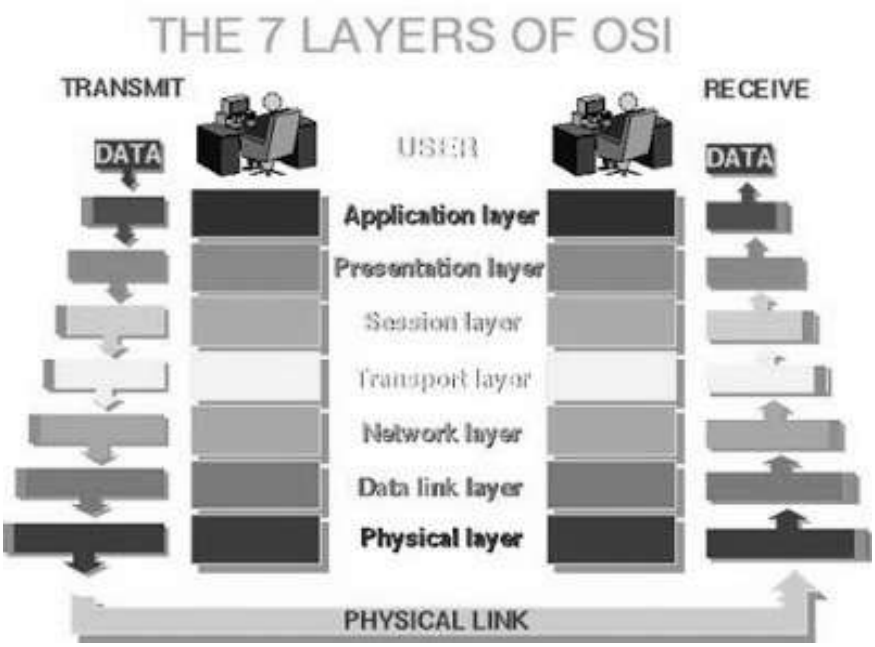
Cloud computing is the newest internet fascination which is attracting large user base from all around the world; virtual storage space is not only easier but also has many benefits:
(i) accessing documents/data from anywhere as long as you have internet connection,
(ii) no need to carry storage devices, like external hard disks,
(iii) online backups help when data are lost on existing systems,
(iv) for small businesses cloud storage is very helpful as it saves their costs of purchasing and maintaining storage devices and hardwares,
(v) you can buy space as per requirement, and cost of storage is lesser than other options,
Types of clouds:
(i) Public Cloud: it can be accessed by any subscriber with an internet connection and access to the cloud space.
(ii) Private Cloud: is where only an authorized group of individuals or organizations have limited access.
(iii) Community Cloud: like the name suggests is a 'communal' thing, where the service is shared among two or more organizations or companies, that have similar cloud requirements.
(iv) Hybrid Cloud: where a mixture of user interests are all catered to, i.e. a combination of public, private and community.
Types of cloud service providers:
(i)SaaS = Software as a Service provider gives access to users for resources as well as apps.

Thus, the user does not need to store software or apps on their computer/smartphones/tablets. So, you can do your work using the software provided by the cloud service providers. User has least control over the cloud.

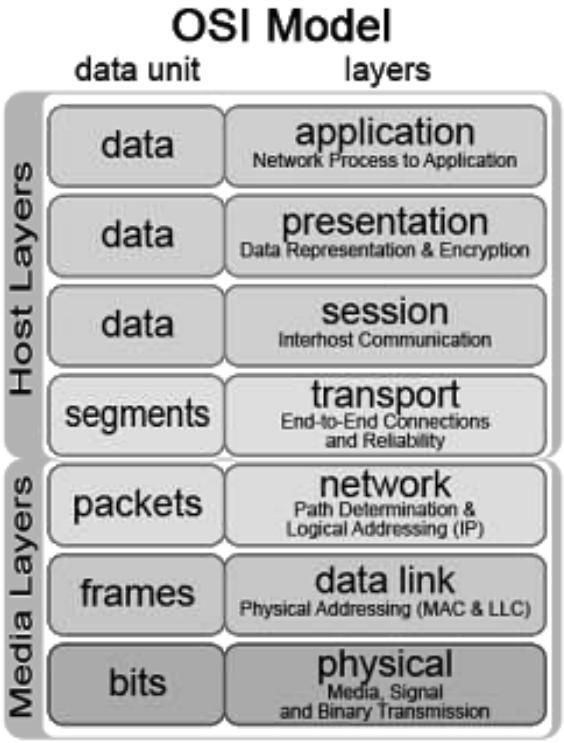
(ii)PaaS = Platform as a Service provider is a level above Saas; it gives users access and utilities(tools) to develop applications(apps) as per their requirement, save such apps and then use such apps. User has more control over the cloud.

(iii) IaaS = Infrastructure as a Service provider provides infrastructure; computer infrastructure is the hardware and software.
Thus IaaS service providers provide users outsourcing services for the entire computing system with the hardware and software required for storage. Thus, here user has maximum control over the cloud. Examples of cloud storage service providers are, OneDrive, Dropbox, NetSuite, Rackspace etc.

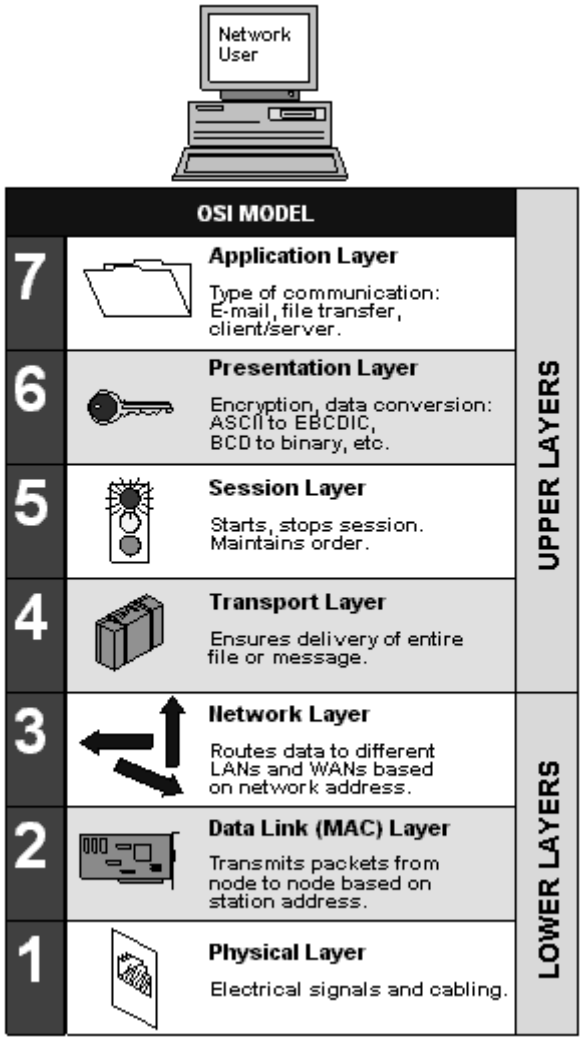
OSI Model Layers in Computer Networks



- OSI stands for Open System Interconnection Model(OSI Model).
- It use to transfer data over a network which moves through different layer.
- It has 7 layer which divided into two level : upper or host & lower or media level
- data moves through different stages like (in ascending order) bits,frames,packets,segments.



Working of OSI



1. **Physical layer :**
   - Prepare the physical devices enabling devices for transmission of data and data is received.
   - It is responsible for establish and termination of connection between two nodes over a network.
   - It defines the medium of transmission of data like: simple(one way transmission,eg t.v),half duplex(two way transmission but partially,eg: walki talki), full duplex(Two way transmission of data, eg: mobile or phone)

2. **Data link Layer :**
   - It provides permission to devices for gain access to data.It controlling devices over a netwrork.
   - Data is sent to Network layer in the form of packets and it is responsible to controls error checking and packet synchronization.

3. **Network layer :**
   - In a network each node(computer) has a unique address here network layer is responsible for letting the data to its destination address or node.
   - It splits the data or message into several fragments, delivering each fragment by a separate route and reassembling the fragments, report delivery errors, etc.(like phone calls which you made, first it sounds like beep that is a second which it take to you to connect with available line.)

4. **Transport layer :**
   - It manages connection and handle errors while delivering of data or message over a network.

Feature name	TP0	TP1	TP2	TP3
Connection-oriented network	Yes	Yes	Yes	Yes
Connectionless network	No	No	No	Yes
Concatenation and separation	No	Yes	Yes	Yes
Segmentation and reassembly	Yes	Yes	Yes	Yes
Error recovery	No	Yes	Yes	Yes
Reinitiate connection (a)	No	Yes	No	No
Multiplexing / demultiplexing over single virtual circuit	No	No	Yes	Yes
Explicit flow control	No	No	Yes	Yes
Retransmission on timeout	No	No	No	Yes
Reliable transport service	No	Yes	No	Yes
(a) If an excessive number of PDUs are unacknowledged.				

5. **Session layer :**
   - It starts , manages and stop the connection between nodes.
   - It provides checkpointing, adjournment, termination, and restart procedures.

6. **Presentation layer :**
   - It encrypt the message or data and provide to application layer.

7. **Application layer :**
   - It interact with software.
   - Some example of Application layer : Web Browser , Mails

9. COMPUTER ABBREVIATIONS AND SHORT CUT KEYS

8.1 Abbreviations

A

ACE-Access Control Entry
ACL-Access Control List
ADO-Active Data Objects
AGP-Accelerated Graphics Part
AI-Artificial Intelligence
AlGOL–Algorithm Language
ALU-Arithmetic Logic Unit
API-Application Program Interface
APIPA-Automatic Private Internet Protocol Addressing
ARP-Address Resolution Protocol
ASCII-American Standard Code for Information Interchange
ASF-Advanced Streaming Format
ASM–Association for System Management
ASP-Active Server Pages
ATAPI-Advanced Technology Attachment Packet Interface
ATM-Asynchronous Transfer Mode
AUI-Attachment Unit Interface
AVI-Audio Video Interface

B

B2B-Business to Business
B2C-Business to Commerce
BASIC-Beginner's All Purpose Symbolic Instruction Code
BCD-Binary Coded Decimal
BHTML-Broadcast Hyper Text Markup Language
BCR-Bar Code Reader
BPEL-Business Process Execytion Language
BOOTP-Bootstarp Protocol
BINAC-Binary Automatic Computer
BIOS-Basic Input Output System
Bit-Binary Digit
BMP-Bitmp

C

CAD-Computer Aided Design
CAI-Computer Aided Instruction
CAM-Computer Aided Manufacturing
CASE-Computer Aided Software Engineering
CCNA-Cisco Certified Network Associate
CD-Compact Disc
CDROM-Compact Disk Read Only Memory
CD-RW-Compact Disc Re Writable
CDMA-Code Division Multiple Access
CD-WORM-Compact Disc -Write One Read Many
C-DAC-Centre for development of advance computing
C-DoT- Centre For Development of telematics
CDONTS-Collaboratio on Data Objects for Windows NT Server
CGI-Common Gateway Interface
CIDR-Classless Inter-Domain Routing
CLR-Common Language Runtime
CMOS-Complementry Metal Oxide Semiconductor
CMS-Content Management System
CMYK-Cyan,Magenta,Yellow,Key(black)
COBOL-Common Oriented business Language
CORBA-Common Object Request Broker Architecture
COM-Component Object Model
CPU-Central Processing Unit
CRC-Cyclic Redundancy Check
CRM-Customer Relationship Management
CROM-Control Read Only Memory
CRT-Cathode Ray Tube

D

DAC—Digital-To-Analog Converter
DAL—Database Abstraction Layer
DAO—Data Access Object
DAP—Directory Access Protocol
DARPA—Defense Advanced Research Projects Agency
DAT—Digital Audio Tape
DB—Database
DBA—Database Administrator
DBCS—Double Byte Character Set
DBMS—Database Management System
DCOM—Distributed Component Object Model
DDL—Data Definition Language
DDoS—Distributed Denial of Service
DFS—Distributed File System
DHCP—Dynamic Host Configuration Protocol
DHTML—Dynamic Hypertext Markup Language
DLP—Data loss protection
DMA—Direct Memory Access
DML—Data Manipulation Language
DOM—Document Object Model
DoS— Denial of Service
DOS—Disk Operating System
DPI—Dots Per Inch
DRAM—Dynamic Random Access Memory
DSA–Digital Signature Algorithm
DSDL—Document Schema Definition Languages
DSDM—Dynamic Systems Development Method
DSL—Digital Subscriber Line
DSP—Digital Signal Processing
DVD—Digital Versatile Disc
DVD-R—DVD-Recordable
DVD-ROM—DVD-Read Only Memory
DVD-RW—DVD-Rewritable
DVI—Digital Visual Interface
DVR—Digital Video Recorder

E

EBCDIC—Extended Binary Coded Decimal Interchange Code
EBML—Extensible Binary Meta Language
ECC—Elliptic Curve Cryptography
ECMA—European Computer Manufacturers Association
EDVAC—Electronic Discrete Variable Automatic Computer
EPROM—Erasable Programmable Read-Only Memory
EEPROM-Electronically Erasable Programmable Read-Only Memory
E-mail— Electronic mail
ENIAC—Electronic Numerical Integrator And Computer
ERP—Enterprise Resource Planning
ESCON—Enterprise Systems Connection
EXE-Executable

F

FAT—File Allocation Table
FAQ—Frequently Asked Questions
FDD—Floppy Disk Drive
FDDI—Fiber Distributed Data Interface
FET—Field Effect Transistor
FHS—File system Hierarchy Standard
FLAC—Free Lossless Audio Codec
FLOPS—Floating-Point Operations Per Second

FTTP—Fiber To The Premises
FXP—File eXchange Protocol
FORTRAN-Formula Translator
FRAM-Ferro-electronic Random Rccess Memory
FTP—File Transfer Protocol
FYI—For Your Information
fps-frames per second

G

Gb—Gigabit
GIF—Graphics Interchange Format
GNU—GNU's Not Unix
GPU—Graphics Processing Unit
GUI—Graphical User Interface
GB—Gigabyte
GIGO—Garbage In, Garbage Out
GPL—General Public License
GSM—Global System for Mobile Communications

H

HDD—Hard Disk Drive
HDL—Hardware Description Language
HF—High Frequency
HID—Human Interface Device
HPFS—High Performance File System
HTML—Hypertext Markup Language
Hz—Hertz
HD DVD—High Definition DVD
HDMI—High-Definition Multimedia Interface
HFS—Hierarchical File System
HPC—High-Performance Computing
HSDPA—High-Speed Downlink Packet Access
HTTP—Hypertext Transfer Protocol

I

IBM—International Business Machines
ICMP—Internet Control Message Protocol
ICT—Information and Communication Technology
IE—Internet Explorer
IIS—Internet Information Services
I/O—Input/output
IPX—Internetwork Packet Exchange
IRI—Internationalized Resource Identifier
IS—Information Systems
ISO—International Organization for Standardization
IT—Information Technology
IC—Integrated Circuit
ICP—Internet Cache Protocol
IDE—Integrated Development Environment
IGMP—Internet Group Management Protocol
IMAP—Internet Message Access Protocol
IP—Internet Protocol
IrDA—Infrared Data Association
IRQ—Interrupt Request
ISDN—Integrated Services Digital Network
ISP—Internet Service Provider

J

J2ME— Java 2 Micro Edition
JIT—Just-In-Time
JME—Java Micro Edition
JRE—Java Runtime Environment
JS—JavaScript
JSP—Java Server Pages

K

Kbps-Kilo bit per second
Kb—Kilobit
KB—Kilobyte
kHz—Kilohertz

L

LAN—Local Area Network
LCD—Liquid Crystal Display
LED—Light-Emitting Diode
LF—Low Frequency
LIFO—Last In First Out
LISP—LISt Processing
LM—Lan Manager
LOC—Lines of Code
LSI—Large-Scale Integration
LTR—Left-to-Right

M

MAC— Media Access Control
MAPI— Messaging Application Programming Interface
Mb— Megabit
MB— Megabyte
MBR— Master Boot Record
MDA— Mail Delivery Agent
MDI— Multiple Document Interface
MF— Medium Frequency
MFC— Microsoft Foundation Classes
MGCP— Media Gateway Control Protocol
MHz— Megahertz
MIB— Management Information Base
MIDI—Musical Instrument Digital Interface
MIMD—Multiple Instruction, Multiple Data
MISD- Multiple Instruction Single Data
MIPS- Millions Of Instruction Per second
MIME— Multipurpose Internet Mail Extensions
MODEM-Modulator And Demodulator
MP3-Motion Picture Expert Group no 3
MS—Microsoft
MSDN-Microsoft Developer Network
MS-DOS—Microsoft DOS
MSIL—Microsoft Intermediate Language
MUA—Mail User Agent
MSN-Microsoft Network
MSRAP-Microsoft Remote Administration Process
MTS-Microsoft Transaction Server
MTU-Maximum Transmission Unit
MOSFET— Metal-Oxide Semiconductor Field Effect Transistor

N

NASSCOM- National Association of Software and Service Company
NDIS- Network Driver Interface Application
NFC— Near field communication
NFS— Network File System
NIC— Network Interface Controller

NPU—Network Processing Unit
NSA—National Security Agency
NNTP—Network News Transfer Protocol
NTFS—NT File system
NT-New Technology
NS—Netscape
NSPR—Netscape Portable Runtime
NOS—Network Operating System
NTP-Network Time Protocol

O

OCP-Oracle Certified Professional
OLE—Object Linking and Embedding
OMR—Optical Mark Recognition
OOAD-Object Oriented Analysis and Design
Open GL-Open Graphics Library
ODBC—Open Database Connectivity
OLED—Organic Light Emitting Diode
ONE-Open Network Architecture
OOPS-Object Oriented Programming System
OS-Operating system

P

P2P—Peer-To-Peer
PAP—Password Authentication Protocol
PCB—Printed Circuit Board
PC DOS—Personal Computer Disk Operating System
PD—Public Domain
PDF—Portable Document Format
PERL—Practical Extraction and Reporting Language
PIC—Peripheral Interface Controller
PNG—Portable Network Graphics
POST-Power on self-test
PPTP—Point-to-Point Tunneling Protocol
PS—PostScript
PSN-Processor Serial Number
PAN—Personal Area Network
PC—Personal Computer
PCB—Process Control Block
PCI—Peripheral Component Interconnect
PDA—Personal Digital Assistant
PDL-Page Description Language
PHP—PHP: Hypertext Preprocessor
PLC—Programmable Logic Controller
POP3—Post Office Protocol v3
PPP-Peer to Peer protocol
PROM-Programmable Read Only Memory
PSTN-Public Switched telephone network

Q

QDR— Quad Data Rate
QoS— Quality of Service

R

RSS—Rich Site Summary, RDF Site Summary, or Really Simple Syndication
ROM-DOS—Read Only Memory – Disk Operating System
RAMDAC-Random Access Memory Digital to Analog Convertor
RD RAM- Rambus Dynamic Random Access Memory

RDBMS—Relational Database Management System
RADIUS— Remote Authentication Dial In User Service
RAID—Redundant Array of Independent Disks
RAM—Random Access Memory
RDO—Remote Data Object
RDP—Remote Desktop protocol
RDOS—Real-time Disk Operating System
RDS—Remote Data Services
RIP—Raster Image Processor
RISC—Reduced Instruction Set Computer
ROM—Read Only Memory
RPC—Remote Procedure Call
RTC—Real-Time Clock
RTF-Rich Text Format
RTOS-Real Time Operating System

S

SACK-Selective Acknowledgement
SAM-Security Access Manager
SAP-Service Access Point
SCSI—Small Computer System Interface
SCTP—Stream Control Transmission Protocol
SD—Secure Digital
SDRAM—Synchronous Dynamic Random Access Memory
SEO—Search Engine Optimization
SFTP—Simple File Transfer Protocol
SFTP—SSH File Transfer Protocol
SIM-Subscriber Identification Module
SISD—Single Instruction, Single Data
SMS—Short Message Service
SMTP—Simple Mail Transfer Protocol
SNAP—Sub Network Access Protocol
SNMP—Simple Network Management Protocol
SNTP—Simple Network Time Protocol
SOAP—Simple Object Access Protocol
SQL—Structured Query Language
SRAM—Static Random Access Memory
SSD—Solid-State Drive
SSH—Secure Shell
sw—software
SWF—Shock Wave Flash

T

TCP/IP—Transmission Control Protocol/Internet Protocol
TAPI-Telephony Application Program Interface
TB—Tera Byte
TCP—Transmission Control Protocol
TDI-Transport Data Interface
TFT—Thin Film Transistor
TPM-Transaction Processing monitor

U

UNIX-Uniplexed Information and Computer System
UDP—User Datagram Protocol
UHF—Ultra High Frequency
UNC—Universal Naming Convention
UPS—Uninterruptible Power Supply
UML-Unified Modeling Language
URL—Uniform Resource Locator
URN—Uniform Resource Name
USB—Universal Serial Bus
UTP—Unshielded Twisted Pair

V

var—variable
VB—Visual Basic
VHF—Very High Frequency
VCD-Visual Compact Disk
VoIP—Voice over Internet Protocol
VLSI-Very Large Scale integrated Circuit
VS-Visual Studio
VAN-Virtual Area Network
VGA—Video Graphics Adapter
VLAN—Virtual Local Area Network
VOD—Video On Demand
VPN—Virtual Private Network
VRAM-Video Random Access Memory

W

W3C—World Wide Web Consortium
WAP—Wireless Access Point
WCAG—Web Content Accessibility Guidelines
WMA—Windows Media Audio
WPA—Wi-Fi Protected Access
WWAN—Wireless Wide Area Network
WYSIWYG—What You See Is What You Get
WORM-Write one read many
WAN—Wide Area Network
WAP—Wireless Application Protocol
WLAN—Wireless Local Area Network
WMV—Windows Media Video
WUSB—Wireless Universal Serial Bus
WWW—World Wide Web
WML-Wireless Markup Language
WINS-Windows internet Name service

X

XHTML—eXtensible Hypertext Markup Language
XSL—eXtensible Stylesheet Language
XML—eXtensible Markup Language
XVGA—Extended Video Graphics Adapter

Z

ZIF—Zero Insertion Force
ZIP-Zero information protocol

8.2 SHORT CUT KEY

- **Alt + F** - **File menu options in current program.**
- **Alt + E** - **Edit options in current program**
- **Alt + Tab** - **Switch between open programs**
- **F1** - **Universal Help in almost every Windows program.**
- **F2** - **Rename a selected file**
- **F5** - **Refresh the current program window**
- **Ctrl + N** - **Create a new, blank document in some software programs**
- **Ctrl + O** - **Open a file in current software program**
- **Ctrl + A** - **Select all text.**
- **Ctrl + B** - **Change selected text to be Bold**
- **Ctrl + I** - **Change selected text to be in Italics**
- **Ctrl + U** - **Change selected text to be Underlined**
- **Ctrl + F** - **Open find window for current document or window.**
- **Ctrl + S** - **Save current document file.**
- **Ctrl + X** - **Cut selected item.**
- **Shift + Del** - **Cut selected item.**
- **Ctrl + C** - **Copy selected item.**
- **Ctrl + Ins** - **Copy selected item**
- **Ctrl + V** - **Paste**
- **Shift + Ins** - **Paste**
- **Ctrl + K** - **Insert hyperlink for selected text**
- **Ctrl + P** - **Print the current page or document.**
- **Home** - **Goes to beginning of current line.**
- **Ctrl + Home** - **Goes to beginning of document.**
- **End** - **Goes to end of current line.**
- **Ctrl + End** - **Goes to end of document.**
- **Shift + Home** - **Highlights from current position to beginning of line.**
- **Shift + End** - **Highlights from current position to end of line.**
- **Ctrl + Left arrow** - **Moves one word to the left at a time.**
- **Ctrl + Right arrow** - **Moves one word to the right at a time.**
- **Ctrl + Esc** - **Opens the START menu**
- **Ctrl + Shift + Esc** - **Opens Windows Task Manager**
- **Alt + F4** - **Close the currently active program**
- **Alt + Enter** - **Open the Properties for the selected item (file, folder, shortcut etc.)**

8.3 IMPORTANT EXTENSIONS

Text Files:

1) .log – Log File
2) .wpd – WordPerfect Document
3) .odt – Open Document Text Document
4) .pages – Pages Document
5) .doc – Microsoft Word Document
6) .docx – Microsoft Word Open XML Document
7) .tex – Latex Source Document
8) .wps – Microsoft Works Word Processor Document
9) .msg – Outlook Mail Message
10) .rtf – Rich Text Format File
11) .txt – Plain Text File

Data Files :

1) .vcf – vCard File
2) .dat – Data File
3) .pptx – PowerPoint Open XML Presentation
4) .sdf – Standard Data File
5) .tar – Consolidated Unix File Archive
6) .csv – Comma Seperated Values File
7) .xml – XML File
8) .pps – PowerPoint Slide Show
9) .ppt – PowerPoint Presentation

Audio Files :

1) .aif – Audio Interchange File Format
2) .mpa – MPEG-2 Audio File
3) .ra – Real Audio File
4) .iff – Interchange File Format
5) .wav – WAVE Audio File
6) .wma – Windows Media Audio File
7) .mp3 – MP3 Audio File

Video Files :

1) .avi – Audio Video Interleave File
2) .3gp – 3GPP Multimedia File
3) .flv – Flash Video File
4) .mpg – MPEG Video File
5) .vob – DVD Video Object File
6) .mp4 – MPEG-4 Video File

7) .3g2 – 3GPP2 Multimedia File
8) .m4v – iTunes Video File
9) .wmv – Windows Media Video File

3D Image Files:

1) .max – 3ds Max Scene File
2) .obj – Wave front 3D Object File
3) .3ds – 3D Studio Scene
4) .3dm – Rhino 3D Model

Raster Image Files:

1) .gif – Graphical Interchange Format File
2) .jpg – JPEG Image
3) .bmp – Bitmap Image File
4) .psd – Adobe Photoshop Document
5) .png – Portable Network Graphic

Spreadsheet Files:

1) .xls – Excel Spreadsheet
2) .xlr – Works Spreadsheet
3) .xlsx – Microsoft Excel Open XML Spreadsheet

Database Files :

1) .pdb – Program Database
2) .dbf – Database File
3) .accdb – Access 2007 Database File
4) .db – Database File
5) .sql – Structured Query Language Data File
6) .mdb – Microsoft Access Database

Executable Files :

1) .cgi – Common Gateway Interface Script
2) .com – DOS Command File
3) .vb – VBScript File
4) .exe – Windows Executable File
5) .jar – Java Archive File
6) .bat – DOS Batch File

Web Files :

1) .cer – Internet Security Certificate
2) .css – Cascading Style Sheet
3) .html – Hypertext Markup Language File
4) .js – JavaScript File
5) .jsp – Java Server Page
6) .htm – Hypertext Markup Language File

7) asp – Active Server Page
8) .php – PHP Source Code File
9) .xhtml – Extensible Hypertext Markup Language File
10) .rss – Rich Site Summary
11) .aspx – Active Server Page Extended File

Plugin Files :

1) .plugin – Mac OS X Plug-in
2) .crx – Chrome Extension

Developer Files :

1) .cs – Visual C# Source Code File
2) cpp – C++ Source Code File
3) .dtd – Document Type Definition File
4) .c – C/C++ Source Code File
5) .fla – Adobe Flash Animation
6) .class – Java Class File
7) .java – Java Source Code File

Backup Files

1) .tmp – Temporary File
2) .bak – Backup File

8.4 POINTS TO REMEMBER

1	Inventor of Computer	Charles Babbage
2	First Modern Computer in the World	ENIAC
3	First Commercial Computer	Univac
4	First Programmable Digital Computer	SEAC (Standards Eastern Automatic Computer)
5	ENIAC was developed by	John Mauchly and J. Presper Eckert
6	Inventor of Punch Cards in Computer	Hollerith
7	First Computer Programming Languages	FORTRAN, LISP and COBOL
8	Computer Graphics was developed by	William Fetter
9	ARPANET was developed by	DARPA
10	First Compiler was developed by	Dr. Grace Murray Hopper
11	Father of Computer Animations	John Whitney
12	First movie to use Digital Image Processing	West World in 1973
13	Computer Mouse was invented by-	Douglas Engel Bart
14	Computer Keyboard was invented by	Christopher Latham Sholes
15	Laptop Computer was invented by	Adam Osborne
16	First Graphical Computer Game was invented by	A.S. Douglas
17	Computer BIOS was invented by	Gary Kildall
18	Inventor of Computer Bug	Dr. Grace Murray Hopper
19	Inventors of Computer Chip (IC)	Jack Kilby and Robert Noyce
20	Father of Computer Hard Disk	Reynold Johnson
21	Inventor of First Data Base	Dr. Edgar Frank Codd
22	Inventor of Ethernet Computer Networking-	David Boggs, Chuck Thacker and Butler Lampsonin Xerox PARC
23	Inventor of Computer Scanner	Ray Kurzweil
24	Inventor of Computer Speakers	Abinawan Puracchidas
25	Inventor of MS-DOS Operating Systems	Microsoft
26	Inventors of first computer Microprocessors	Faggin , Hoff & Mazor
27	Inventor of Spacewar computer Game	Steve Russell & MIT
28	UNIVAC was developed by	John Mauchly and J. Presper Eckert

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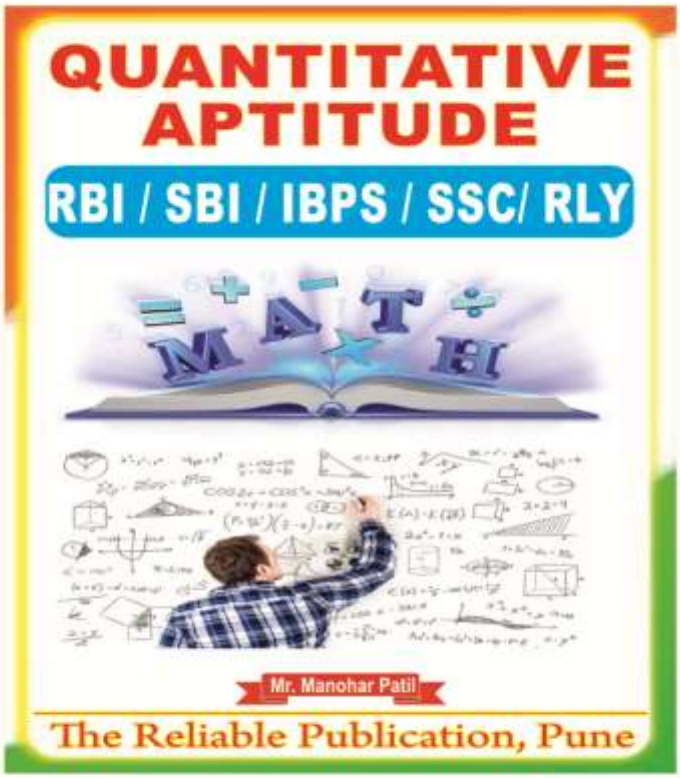
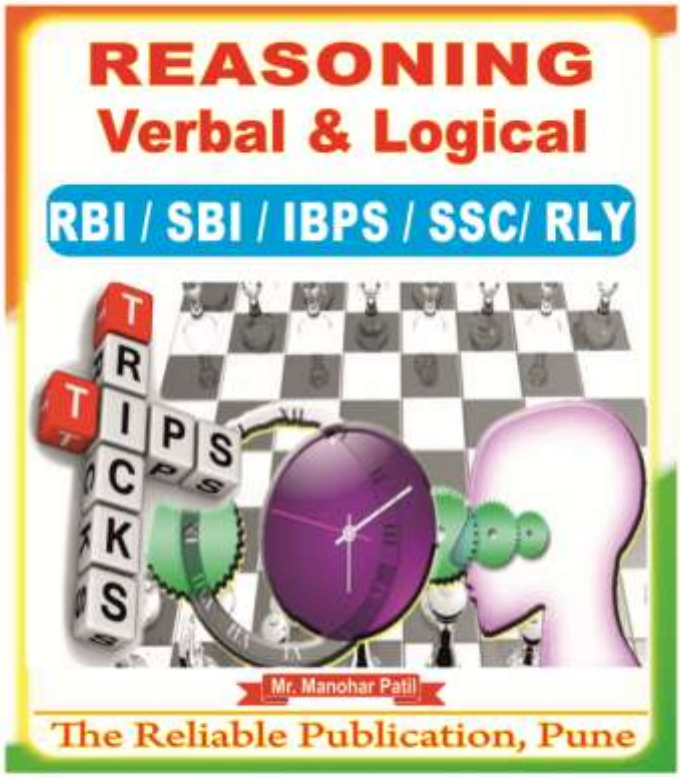
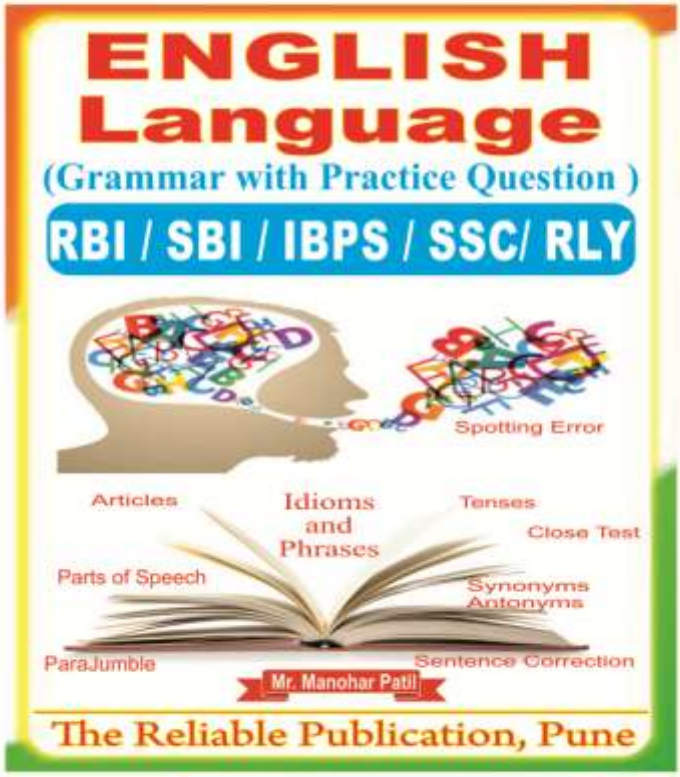


Quantitative Aptitude



Reasoning Ability

General Awareness



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