[text]

BELL Computer Education

BELL EDUCATION

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RSCIT BOOK

INDEX

Ch:1:- Introduction of Computer

- **Computer :** is an electronic device that operates (works) under the control of programs stored in its own memory unit.

- **A computer** is an electronic machine that processes raw data to give information as output.
  - A computer has an internal memory, which stores data & instructions temporarily awaiting processing, and even holds the intermediate result (information) before it is communicated to the recipients through the Output devices.

Personal computer system
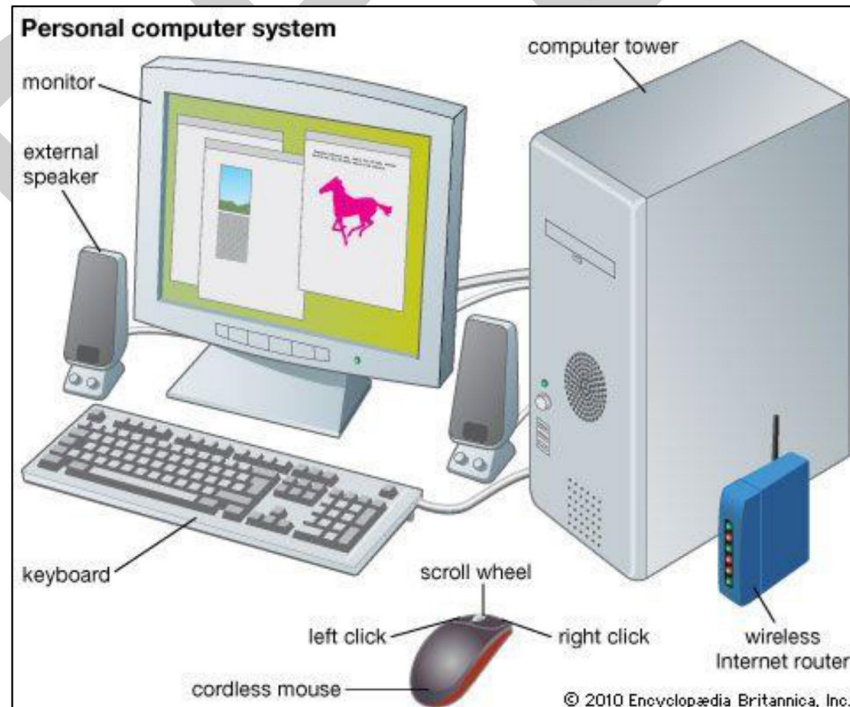
❖ CLASSIFICATION OF COMPUTER SYSTEM:--

- The computer systems can be classified on the following basis:

    1. On the basis of size.

    2. On the basis of functionality.

    3. On the basis of data handling.

✹ **ON THE BASIS OF SIZE:**

(A.) Super computers: A supercomputer is an extremely robust computing device that processes data at speeds measured in floating-point operations per second (FLOPS) to perform complex calculations and simulations, usually in the field of research, artificial intelligence, and big data computing.

- ✓ **Supporting AI Research Initiatives**
- ✓ **Predicting the future with an increasing level of accuracy**
- ✓ **Identifying cyber threats**
- ✓ **Stimulating mathematical problems**

(B.) Mainframe computers: A mainframe is defined as a large, powerful computer typically used for complex calculations and data processing tasks. It can connect to multiple end clients simultaneously so that several users can access different applications and processes running on the mainframe concurrently without impacting performance or security.

- ✓ **Enable cloud-ready infrastructure**
- ✓ **Maintain security**
- ✓ **Simplify the consolidation of workloads**
- ✓ **Reduce the total cost of ownership**

(C.) Mini computers: Minicomputers are typically multi-user systems that support multiple simultaneous users and run multiple programs at the same time. Minicomputers are smaller and less powerful than supercomputers but more powerful than personal computers. They are designed to handle a large volume of data.

- ✓ **Controlled operational Environment**
- ✓ **Smaller in size so it is easy to carry**
- ✓ **Use less power**
- ✓ **Home automation server**

(D.) Micro computers: A microcomputer is a standalone and compact computer system with a central processing unit, memory, storage, and also input/output devices. It is designated for small-scale or personal use. It provides processing effectiveness in an insignificant form factor to both people and small enterprises.

- ✓ **Increased productivity**
- ✓ **Portability**
- ✓ **Quick Progress**
- ✓ **Cost-Friendly**

❈ ON THE BASIS OF FUNCTIONALITY:

(A.) Servers: A server is a powerful machine designed to compute, store, and manage data, devices, and systems over a network. A Server is a program or a device that provides functionality for called clients which are other programs or devices. This architecture is called the client-server model.

- ✓ **High-Processing Power**
- ✓ **Better Collaboration**
- ✓ **Safeguard from cyber-attacks**
- ✓ **Cost-Saving**

(B.) Workstation: A workstation (WS) is a computer system businesses or professionals use for their work. Workstations can do difficult jobs rapidly since they have a quicker CPU. They have one or more high-resolution monitors, which makes it simpler for users to view complicated designs or images.

- ✓ **Enhanced Performance and Productivity**
- ✓ **Stable and Reliable Computing Environment**
- ✓ **Effective Data Processing and Analysis**
- ✓ **collaborative workstation environments**

(C.) Information Appliances: An information appliance (IA) is an appliance that is designed to easily perform a specific electronic function such as playing music, photography, or editing text.

- ✓ **Increased Productivity**
- ✓ **Effective Data Management**
- ✓ **Access to vast information**

(D.) **Embedded computers:** An embedded PC is a computer system that is designed for a specific use and implemented as part of a larger device, intelligent system, or installation. Embedded computers also play a key role in the ever-evolving Internet of Things, enabling the connections between machines, people, places, things, and the cloud.

- ✓ **Low Maintenance**
- ✓ **Effective Cooling**
- ✓ **Small Form Factor Motherboard**

✲ ON THE BASIS OF DATA HANDLING:

(A.) **Analog:** Analogue computers are designed to ***process analogue data***. Analogue data is continuous data that changes continuously and cannot have discrete values.

- ✓ **Non-programmable**
- ✓ **Real-time processing**
- ✓ **Accuracy**
- ✓ **Continuous signals usage**

(B.) **Digital:** Digital computer is designed to perform calculations and logical operations at high speed. It accepts the raw data as input in the form of digits or binary numbers (0 and 1) and processes it with programs stored in its memory to produce the output. All modern computers like laptops, desktops including smartphones that we use at home or office are digital computers.

- ✓ **Performs complex mathematical operations quickly**
- ✓ **Signal Processing Ability**
- ✓ **Cost-Effectiveness**

(C.) **Hybrid:** Hybrid computer has features of both analogue and digital computer. It is ***fast like an analogue*** computer and has memory and ***accuracy like digital computers***. It can process both continuous and discrete data. It accepts analogue signals and convert them into digital form before processing.

- ✓ **More accurate and Useful**
- ✓ **Online Data Processing**
- ✓ **Manage big equation in real-time.**

❖ BENEFITS OF COMPUTER SYSTEM:--

1. **SPEED:** One of the reasons for the improvement in the quality of life is the personal computer's speed. The modern computer offers great speed, helping us to do our tasks within a matter of seconds. Let's say you want to watch a video. You'll just go to YouTube and find the required video within seconds.

2. **ACCURACY:** Humans make errors. Hence, while performing complex calculations, we check once with the calculator. The fact that computers are extremely accurate makes them quite reliable. You'll trust the information or answers that a calculator gives just due to its accuracy.

3. **HIGH STORAGE CAPACITY:** The storage capacity of computers is usually in Giga–Bytes (GBs) or more. We can store videos, images, games, etc., on our computers and access them easily after downloading them.

4. **VERSATILITY:** The simple meaning of Versatility is performing more than one task, and as everyone knows, Computers are capable of performing more than one task at a time, hence it is highly versatile.

5. **DILIGENCE:** The capacity of computer of performing repetitive task without getting tired is called diligence. A computer is free from tiredness, lack of concentration, fatigue etc., therefore it can work for hours without creating any errors.

❖ LIMITATIONS OF COMPUTER SYSTEM:--

1. **ONLINE CYBER-CRIMES:** As with any device, cybercrimes occur on computers. Data stealing is one of the major threats in the world of computers. It may occur online or via an offline removable device like a USB.

2. **HEALTH ISSUES:** Prolonged use of personal computers results in many health-related issues. Eye strain, headache, back pain, etc. are some of them.

3. **FAKE NEWS:** Computers enable a wide array of data-sharing options. But, this becomes a medium for the spread of spurious news. Many cases are there when fake news is shared among people using messaging apps.

4. **E-WASTE:** The use of computers is nothing but a form of e-waste. They contribute negatively by releasing harmful toxic materials. Additionally, computers are not easy to dispose of.

5. **LACK OF CONCENTRATION AND IRRITATION:** Multitasking makes our lives easier, but it comes with its disadvantages. We try to focus on multiple tasks and notifications. This leads to a decrease in attention span and a lack of concentration on one particular task. Also, addictive games played on the computer contribute to irritability when not allowed to play.

❖ COMPUTER HARDWARE:--

- Hardware refers to the physical components of a computer. Computer Hardware is any part of the computer that we can touch these parts. These are the primary electronic devices used to build up the computer. Examples of hardware in a computer are the Processor, Memory Devices, Monitor, Printer, Keyboard, Mouse, and Central Processing Unit.

❋ Types of Computer Hardware:

1. **Input Devices:** Input Devices are those devices through which a user enters data and information into the Computer or simply, User interacts with the Computer. Examples of Input Devices are Keyboard, Mouse, Scanner, etc.

2. **Output Devices:** Output Devices are devices that are used to show the result of the task performed by the user. Examples of Output Devices are Monitors, Printers, Speakers, etc.

3. **Storage Devices:** Storage Devices are devices that are used for storing data and they are also known as Secondary Storage Data. Examples of Storage Devices are CDs, DVDs, Hard Disk, etc.

4. **Internal Component:** Internal Components consists of important hardware devices present in the System. Examples of Internal Components are the CPU, Motherboard, etc.

HARDWARE

❖ COMPUTER SOFTWARE:--

- Software is a collection of instructions, procedures, and documentation that performs different tasks on a computer system. we can say also Computer Software is a programming code executed on a computer processor. The code can be machine-level code or code written for an operating system. Examples of software are MS- Word, Excel, PowerPoint, Google Chrome, Photoshop, MySQL, etc.

✹ Types of Computer Software:

1. System Software: System Software is a component of Computer Software that directly operates with Computer Hardware which has the work to control the Computer's Internal Functioning and also takes responsibility for controlling Hardware Devices such as Printers, Storage Devices, etc. Types of System Software include Operating systems, Language processors, and Device Drivers.

2. Application Software: Application Software are the software that works the basic operations of the computer. It performs a specific task for users. Application Software basically includes Word Processors, Spreadsheets, etc. Types of Application software include General Purpose Software, Customized Software, etc.

Uses of Computer

Science
Government
Health and Medical
Education
Industry
Banking
Entertainment
Training
Arts
Sports
Robotics
Safety and Security
Publishing
Weather Forecasting
Communication
Business

Ch:2:- Computer System

- A computer system primarily comprises a central processing unit (CPU), memory, input/output devices and storage devices. All these components function together as a single unit to deliver the desired output. A computer system comes in various forms and sizes. It can vary from a high-end server to personal desktop, laptop, tablet computer, or a smartphone.

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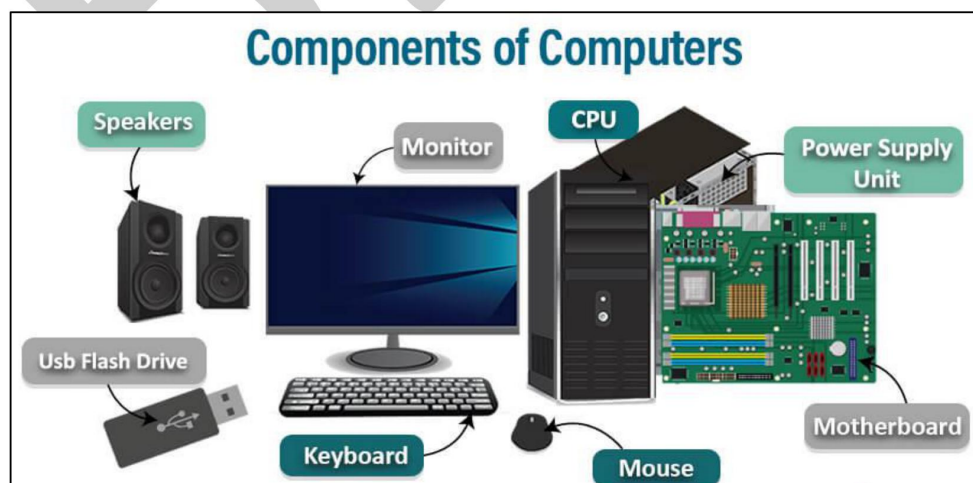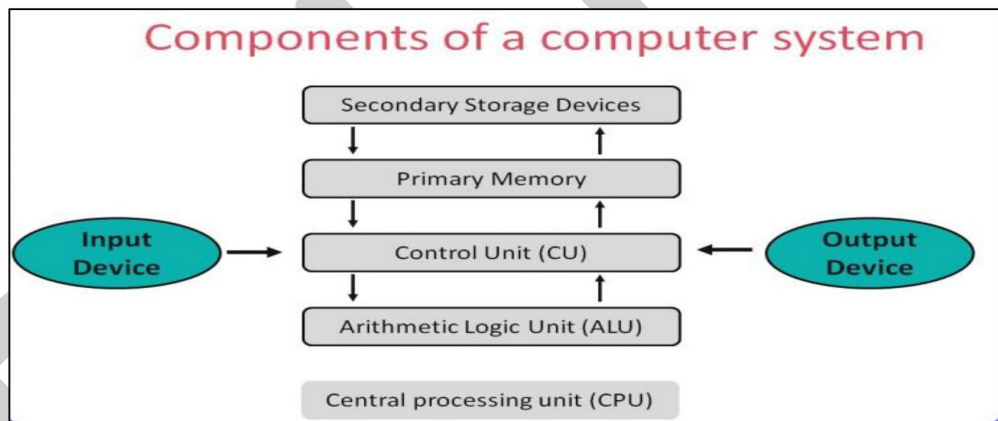
❖ HARDWARE COMPONENTS:--

- The hardware components are the real component parts of a computer.
- The knowledge of hardware components is important as they directly influence the performance as well as the capabilities of a computer.

✹ Computer Hardware Components:--
1. Central Processing Unit [CPU]
2. Random Access Memory [RAM]
3. Hard Disk Drive
4. Motherboard
5. Graphics Processing Unit [GPU]
6. Power Supply Unit [PSU]
7. Peripheral Devices
8. Secondary Storage Device
9. Internal Components

- Software components of computer are the set of instructions which we store and execute on our system that are known as software components.
- Software components are essential in enabling different operations and functions to enable users to interact with the hardware successfully.

❋ **Computer Software Components:--**
   1) Operating System [OS]
   2) Application Software
      i)   Word Processing Software
      ii) Spreadsheet Software
      iii) Application for Multimedia
      iv) Enterprise Software
   3) Programming Software
   4) Device Driver
   5) Firmware
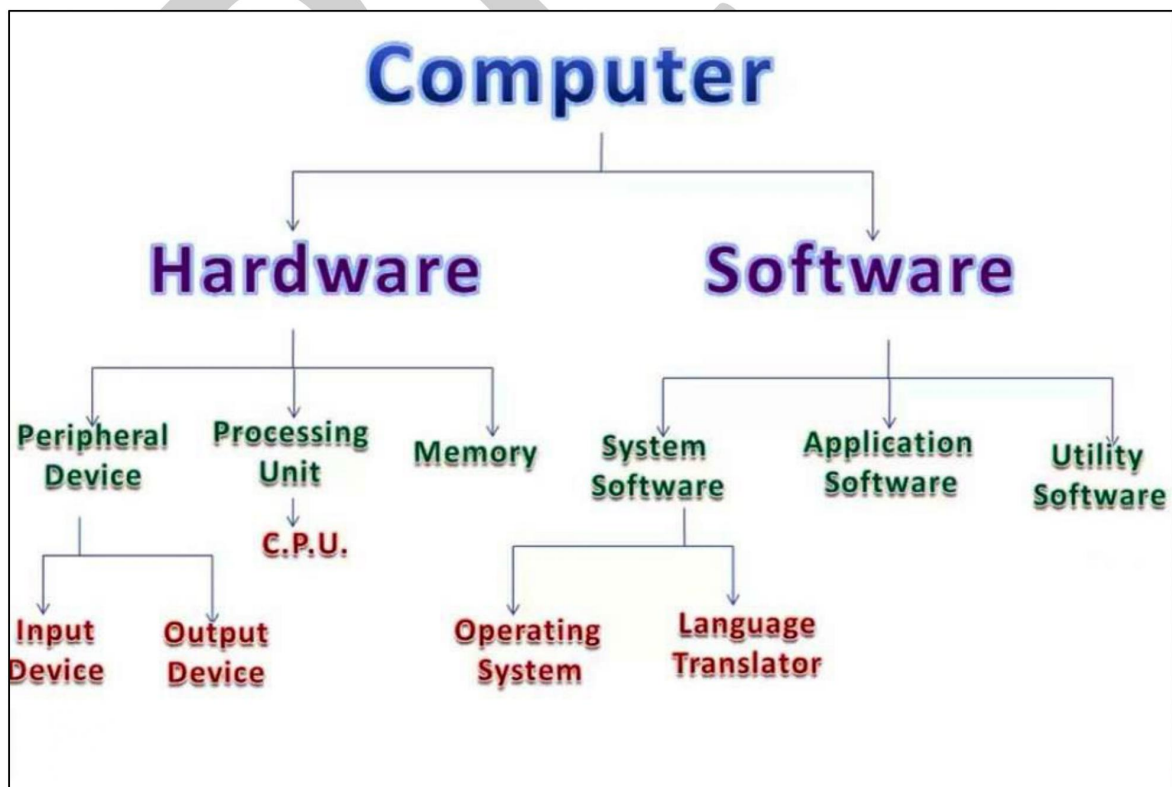
❖ INPUT DEVICES:--

- The electromagnetic devices that accept data or a set of instructions from the outside world and then translate that data into machine-readable and understandable form are known as input devices.
- Computer input devices serve as an interface between the outside world and the computer for proper communication. An input device transmits data to a computer and allows you to communicate with it and control it.

✹ Different Types of Input Devices:

- o Keyboard
- o Mouse
- o Joy Stick
- o Light Pen
- o Scanner
- o OCR
- o Barcode Reader
- o Web Camera
- o Graphic Tablet
- o Digital Camera
- o Touchscreen

❖ OUTPUT DEVICES:--

- Any peripheral that accepts data from a computer and prints, projects, or reproduces it is known as an output device. The output may be audio, video, hard copy – printed paper, etc. Output devices convert the computer data to human understandable form. We give input to the computer using input devices and the computer performs operations on the data and displays the output to the user using the output device.

✹ Different Types of Output Devices:

- o Monitor
- o Printer
- o Plotter
- o Projector
- o Speaker
- o Headphones
- o Sound Card
- o Video Card
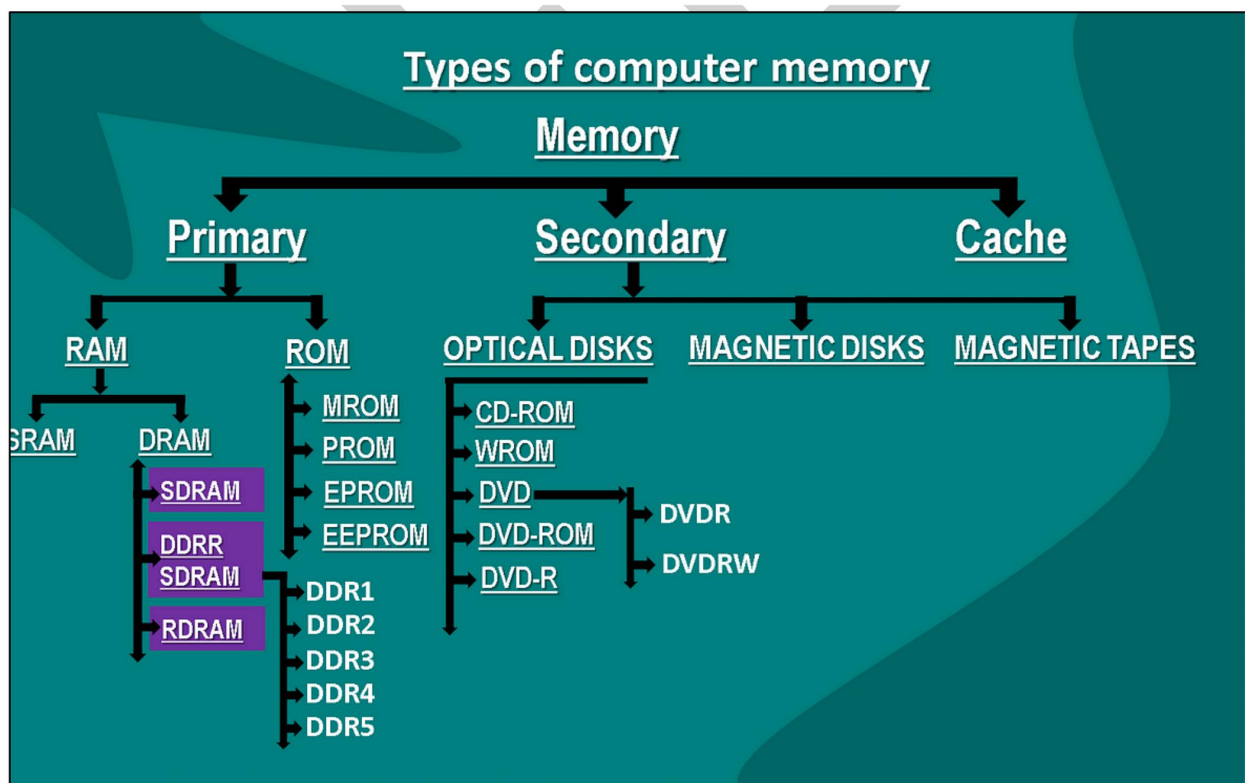- o GPS
- o Speech Synthesizer

❖ COMPUTER MEMORY:--

- Computer memory is just like the human brain. It is used to store data/information and instructions. It is a data storage unit or a data storage device where data is to be processed and instructions required for processing are stored. It can store both the input and output can be stored here.

✴ Characteristics of Computer Memory:

- o It is faster computer memory as compared to secondary memory.
- o It is semiconductor memories.
- o It is usually a volatile memory, and main memory of the computer.
- o A computer system cannot run without primary memory.

Types of computer memory

Memory

Primary
- RAM
  - SRAM
  - DRAM
    - SDRAM
    - DDRR SDRAM
    - RDRAM
- ROM
  - MROM
  - PROM
  - EPROM
  - EEPROM
  - DDR1
  - DDR2
  - DDR3
  - DDR4
  - DDR5

Secondary
- OPTICAL DISKS
  - CD-ROM
  - WROM
  - DVD
  - DVD-ROM
  - DVD-R
    - DVDR
    - DVDRW
- MAGNETIC DISKS
- MAGNETIC TAPES

Cache

✹ Types of Computer Memory:

- In general, computer memory is of three types:
  - ✓ Primary Memory
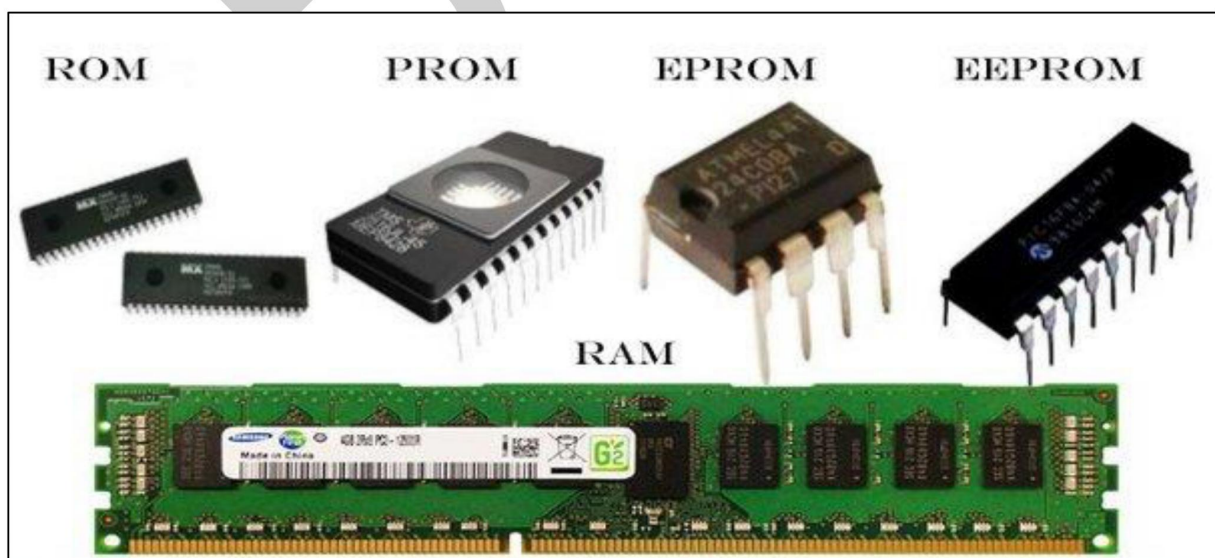 - ✓ Secondary Memory
  - ✓ Cache Memory

1. Primary Memory:

It is also known as the main memory of the computer system. It is used to store data and programs or instructions during computer operations. It uses semiconductor technology and hence is commonly called semiconductor memory.

➢ Primary memory is of two types:

- **RAM (Random Access Memory):** It is a volatile memory. Volatile memory stores information based on the power supply. If the power supply fails/ interrupted/stopped, all the data and information on this memory will be lost. RAM is used for booting up or start the computer. It temporarily stores programs/data which has to be executed by the processor.
- RAM is of two types:
  - o **S RAM (Static RAM):** S RAM uses transistors and the circuits of this memory are capable of retaining their state as long as the power is applied. This memory consists of the number of flip flops with each flip flop storing 1 bit. It has less access time and hence, it is faster.
  - o **D RAM (Dynamic RAM):** D RAM uses capacitors and transistors and stores the data as a charge on the capacitors. They contain thousands of memory cells. It needs refreshing of charge on capacitor after a few milliseconds. This memory is slower than S RAM.
- **ROM (Read Only Memory):** It is a non-volatile memory. Non-volatile memory stores information even when there is a power supply failed/ interrupted/stopped. ROM is used to store information that is used to operate the system. As its name refers to read-only

memory, we can only read the programs and data that is stored on it. It contains some electronic fuses that can be programmed for a piece of specific information. The information stored in the ROM in binary format. It is also known as permanent memory.

- ROM is of four types:
  - **MROM (Masked ROM):** Hard-wired devices with a pre-programmed collection of data or instructions were the first ROMs. Masked ROMs are a type of low-cost ROM that works in this way.
  - **PROM (Programmable Read Only Memory):** This read-only memory is modifiable once by the user. The user purchases a blank PROM and uses a PROM program to put the required contents into the PROM. Its content can't be erased once written.
  - **EPROM (Erasable Programmable Read Only Memory):** EPROM is an extension to PROM where you can erase the content of ROM by exposing it to Ultraviolet rays for nearly 40 minutes.
  - **EEPROM (Electrically Erasable Programmable Read Only Memory):** Here the written contents can be erased electrically. You can delete and re-program EEPROM up to 10,000 times. Erasing and programming take very little time, i.e., nearly 4 -10 MS (milliseconds). Any area in an EEPROM can be wiped and programmed selectively.

2.) Secondary Memory:

It is also known as auxiliary memory and backup memory. It is a non-volatile memory and used to store a large amount of data or information. The data or information stored in secondary memory is permanent, and it is slower than primary memory. A CPU cannot access secondary memory directly. The data/information from the auxiliary memory is first transferred to the main memory, and then the CPU can access it.

➢ Secondary memory is of two types:

- **Magnetic Tapes:** Magnetic tape is a long, narrow strip of plastic film with a thin, magnetic coating on it that is used for magnetic recording. Bits are recorded on tape as magnetic patches called RECORDS that run along many tracks. Typically, 7 or 9 bits are recorded concurrently. Each track has one read/write head, which allows data to be recorded and read as a sequence of characters. It can be stopped, started moving forward or backward, or rewound.
- **Magnetic Disks:** A magnetic disk is a circular metal or a plastic plate and these plates are coated with magnetic material. The disc is used on both sides. Bits are stored in magnetized surfaces in locations called tracks that run in concentric rings. Sectors are typically used to break tracks into pieces. Hard discs are discs that are permanently attached and cannot be removed by a single user.

- **Optical Disks:** It's a laser-based storage medium that can be written to and read. It is reasonably priced and has a long lifespan. The optical disc can be taken out of the computer by occasional users.

➢ **Types of Optical Disks**
+ **CD – ROM**
  - It's called compact disk. Only read from memory.

- Information is written to the disc by using a controlled laser beam to burn pits on the disc surface.
- It has a highly reflecting surface, which is usually aluminium.
- The diameter of the disc is 5.25 inches.
- 16000 tracks per inch is the track density.
- The capacity of a CD-ROM is 600 MB, with each sector storing 2048 bytes of data.
- The data transfer rate is about 4800KB/sec. & the new access time is around 80 milliseconds.

WORM-(WRITE ONCE READ MANY)

- A user can only write data once.
- The information is written on the disc using a laser beam.
- It is possible to read the written data as many times as desired.
- They keep lasting records of information but access time is high.
- It is possible to rewrite updated or new data to another part of the disc.
- Data that has already been written cannot be changed.
- Usual size – 5.25 inch or 3.5 inch diameter.
- The usual capacity of 5.25 inch disk is 650 MB,5.2GB etc.

DVDs

- The term "DVD" stands for "Digital Versatile/Video Disc," and there are two sorts of DVDs:
    - DVDR (writable)
    - DVDRW (Re-Writable)

DVD-ROMS (Digital Versatile Discs): These are read-only memory (ROM) discs that can be used in a variety of ways. When compared to CD-ROMs, they can store a lot more data. It has a thick polycarbonate plastic layer that serves as a foundation for the other layers. It's an optical memory that can read and write data.

- **DVD-R**: DVD-R is a writable optical disc that can be used just once. It's a DVD that can be recorded. It's a lot like WORM. DVD-ROMs have capacities ranging from 4.7 to 17 GB. The capacity of 3.5 inch disk is 1.3 GB.
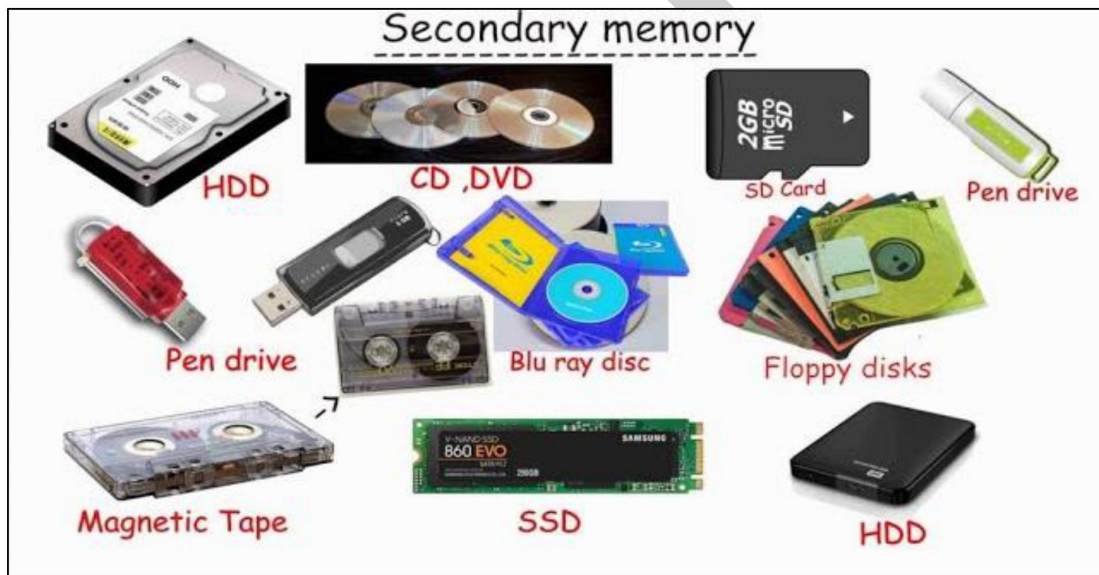
3.) Cache Memory:
It is a type of high-speed semiconductor memory that can help the CPU run faster. Between the CPU and the main memory, it serves as a buffer. It is used to store the data and programs that the CPU uses the most frequently.

- **Advantages of Cache Memory-**
  - ✓ It is faster than the main memory.
  - ✓ When compared to the main memory, it takes less time to access it.
  - ✓ It keeps the programs that can be run in a short amount of time.
  - ✓ It stores data in temporary use.
- **Disadvantages of Cache Memory-**
  - ✓ Because of the semiconductors used, it is very expensive.
  - ✓ The size of the cache (amount of data it can store) is usually small.

Ch:3:- Exploring Your Computer

❖ **OPERATING SYSTEM:--**

- An Operating System (OS) is a collection of software that manages computer hardware resources and provides common services for computer programs. The operating system is the most important type of system software in a computer system.
- Operating System is a fully integrated set of specialized programs that handle all the operations of the computer. It controls and monitors the execution of all other programs that reside in the computer, which also includes application programs and other system software of the computer. Examples of Operating Systems are Windows, Linux, Mac OS, etc.

Computer Architecture

User

Application

Operating System
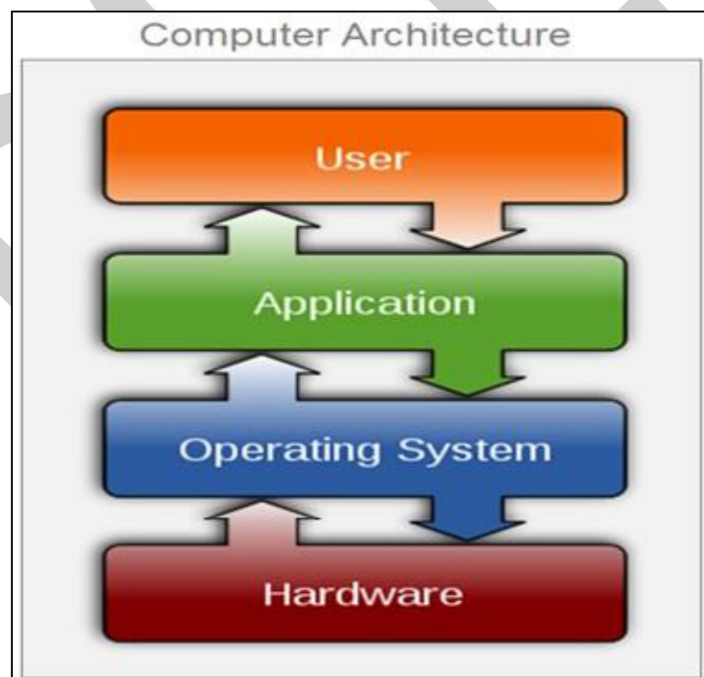
Hardware

❋ Characteristics of Computer Memory:

1. **RESOURCE MANAGEMENT:** The operating system manages and allocates memory, CPU time, and other hardware resources among the various programs and processes running on the computer.

2. **INTERFACE:** The operating system provides a user interface that enables users to interact with the computer system. This can be a Graphical User Interface (GUI), a Command-Line Interface (CLI), or a combination of both.

3. **PROGRAM EXECUTION:** The OS is in charge of running all types of programs, whether they are user or system programs. The operating system makes use of a variety of resources to ensure that all types of functions perform smoothly.

❖ GRAPHICAL USER INTERFACE [GUI]:--

- A system of interactive visual components for a computer or system software is called a GUI (graphical user interface).
- GUI is the interface that uses graphical elements to let people interact as per requirement with electronic devices including computers, laptops, tablets, and smartphones.

❋ Components of GUI:

- **Pointers: The pointer** appears on the user's screen as a marking symbol. The pointer moves on to choose instructions and objects as per requirement.

- **Icons:** Icons allude to tiny visual representations of windows, documents, actions, and other things on the display screen to simplify. A pointer and pointing device can be used by the user to carry out the initial tasks for the overall processes.
- **Pointing tool:** At the initial stages, the pointing tool enables the user to select and move the required pointer items on the screen, including a trackball or mouse. It is the most beneficial tool in GUI.
- **Desktop:** The desktop is the screen that is contained within the icons and user beneficial.

✸ Advantages of GUI:

- A graphical user interface (GUI) is basically seen as more intuitive for users than a text-based command-line interface as per requirement, such MS-DOS or the Unix-like operating system shell process.
- It is incredibly user-friendly and readily available to all and for novices, the user interface is rather easy to understand and uncomplicated as per requirement.
- GUI represents the now-hidden lines of command with the required graphic elements.
- The end users must commit required instructions to memory for the software to function properly.

✸ Disadvantages of GUI:

- An interface which is very much difficult to use will make the required tasks more difficult for the user to complete and less effective overall processes.
- Gamers are still much affected negatively by a poor interface or surface system, therefore it remains a problem for them to control the overall system.

Ch:4:-INTRODUCTION TO INTERNET

❖ INTERNET:--

- The internet is a global network of interconnected computers, servers, phones, and smart appliances that communicate with each other using the transmission control protocol (TCP) standard to enable a fast exchange of information and files, along with other types of services.

Types of Internet Services

Communication services

File transfer services

Directory services

Ecommerce and online transactions

Network management services

Time services

Search engine services on the web

❖ HOW TO ACCESS INTERNET:--

- ✓ Internet Service Provider [ISP]
- ✓ Modem
    - o Internal Modem
    - o External Modem
    - o PC Card Modem

1. **INTERNET SERVICE PROVIDER:** An internet service provider (ISP) is a company that provides access to the internet. ISPs can provide this access through multiple means, including dial-up, DSL, cable, wireless and fiber-optic connections.

2. **MODEM:** Modem stands for Modulator/Demodulator. The modem is defined as a networking device that is used to connect devices connected in the network to the internet. The main function of a modem is to convert the analog signals that come from telephone wire into a digital form.

   (a.) INTERNAL MODEM: An Internal Modem is a device that allows a computer to transmit data over telephone or cable lines. It facilitates the connection and communication between computers, enabling Internet access.
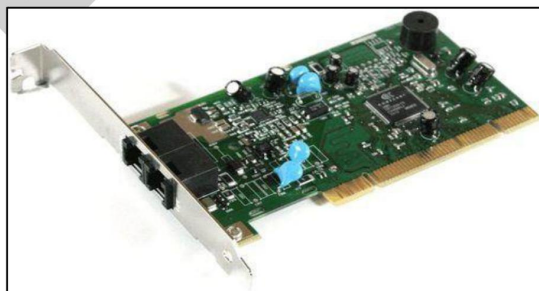
(b.) **EXTERNAL MODEM:** An external modem is a standalone device, separate from a computer that enables communication between the computer and a network. It connects to the computer via a cable, often through serial, USB, or Ethernet ports.

(c.) **PC CARD MODEM:** A modem for use in a laptop or other computer with a PC Card (PCMCIA) slot. Modem PC Cards come in landline and wireless varieties, the latter enabling you to connect to a specific cellular or data service.

❖ TYPES OF INTERNET CONNECTIVITY:--

1. Dial-Up
2. Broadband
3. Wi-Fi
4. DSL
5. Cable
6. Satellite
7. Mobile

❖ INTRANET:--

- A private network utilized by a company might be referred to as an intranet. Its main objectives are to support safe staff communication, information archiving, and teamwork. Employees can create profiles, submit, like, comment on, and share posts using social intranet features that are common in contemporary intranets.

✺ Features of Intranet:

- **Document management:** The ability to store, organize, and share documents.
- **Collaboration tools:** The ability to collaborate on projects and tasks.
- **News and announcements:** The ability to share news and announcements with employees.
- **Employee directory:** The ability to find contact information for employees.
- **Training and development:** The ability to provide training and development resources to employees.
- **HR resources:** The ability to access HR-related information, such as benefits and policies.
- **Support services:** The ability to submit support tickets and get help from IT.
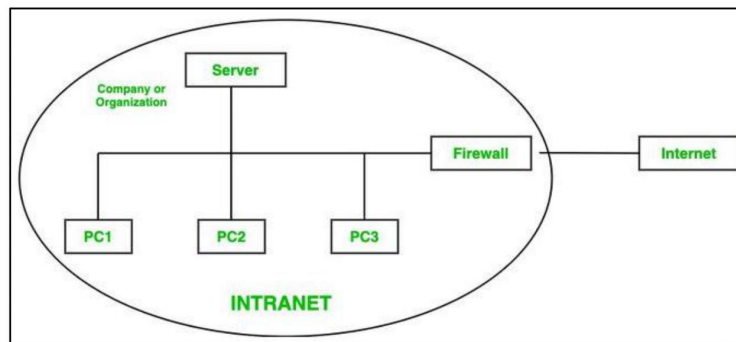
✹ Difference between Intranet & Internet:

Internet	Intranet
Internet is available to all computers and everybody has access.	Intranet is limited and available to few computers(members who have access).
The Internet has wider access and it provides access to a larger population with better access to its websites.	Intranet is restricted.
The internet is not as safe as Intranet.	Intranet is safe and secure when it comes to data security and Intranet can be safely privatized as per the user requirement

✺ Similarities between Intranet & Internet:

Internet	Intranet
TCP/IP and FTP are the protocol of Internet.	Intranet uses TCP/IP and FTP .
internet sites are accessible to all and intranet hosted sites are available only to its members or staff's with access.	Via web browser Intranet sites are accessible in the same as internet sites are accessible.
There is yahoo messenger or Gtalk available on the internet	Similarly, There is own instant messenger available in Intranet.

❖ WEBSITE:--

- A Website is a collection of web pages and related content that is identified by a common domain name and published on at least one web server. Websites are typically dedicated to a particular topic or purpose, such as news, education, commerce, entertainment, or social media.

✺ World Wide Web [WWW]:

- The World Wide Web -- also known as the web, WWW or W3 -- refers to all the public websites or pages that users can access on their local computers and other devices through the internet. These pages and documents are interconnected by means of hyperlinks that users click on for information. This information can be in different formats, including text, images, audio and video.
- British physicist Tim Berners-Lee invented the World Wide Web.
- Berners-Lee had been working on the concept since 1989.

✺ Uniform Resource Locator [URL]:

- A URL is the address of a specific webpage or file (such as video, image, GIF, etc.) on the internet.
- It is a unique identifier that tells a web browser how to find and retrieve a resource on the internet.
- It's also known as a web address.

✺ Domain Name System [DNS]:

- A Domain Name System (DNS) turns domain names into IP addresses, which allow browsers to get to websites and other internet resources. Every device on the internet has an IP address, which other devices can use to locate the device.

✹ Web Browser:

- The web browser is an application software that provides an interface between the server and the client and it requests to the server for web documents and services.
- It works as a compiler to render HTML which is used to design a webpage.
- Examples of Web Browsers:
  - ✓ Google Chrome
  - ✓ Microsoft Edge
  - ✓ Mozilla Firefox
  - ✓ Safari
  - ✓ Opera

✹ Hyper-Text Transfer Protocol [HTTP]:

- It is a set of rules for sharing data on the World Wide Web (WWW). HTTP helps web browsers and servers communicate, allowing people to access and share information over the internet.
- It is an application protocol that is used for distributed, collaborative, hypermedia information systems.

✹ Hyper-Text Transfer Protocol Secure [HTTPS]:

- It is a secure version of the HTTP protocol that uses the SSL/TLS protocol for encryption and authentication.
- The HTTPS protocol makes it possible for website users to transmit sensitive data such as credit card numbers, banking information, and login credentials securely over the internet.

❖ SEARCH ENGINE:--

- A search engine is a software program that helps people find the information they are looking for online using keywords or phrases.
- Search engines are able to return results quickly – even with millions of websites online – by scanning the Internet continuously and indexing every page they find.

❖ WIKIPEDIA:--

- Wikipedia is a free, open content online encyclopedia created through the collaborative effort of a community of users known as Wikipedians.
- Wikipedia's purpose is to benefit readers by presenting information on all branches of knowledge.

❖ E-MAIL:--

- Electronic mail, commonly shortened to "email," is a communication method that uses electronic devices to deliver messages across computer networks.
- "Email" refers to both the delivery system and individual messages that are sent and received.
- It is the preferred mode of communication in business, both internally and externally. It's simple, straightforward, secure, and takes place in real time.

✵ Carbon Copy [CC]:

- CC field allows you to send a copy of your email to multiple recipients.
- The term "carbon copying" comes from the carbon paper you use to make copies of documents — the email service makes copies of your email and sends it to CC'd recipients.

✵ Blind Carbon Copy [BCC]:

- A blind carbon copy is a message copy sent to an additional recipient, without the primary recipient being made aware.
- It allows you to include recipients without their knowledge. The recipients' email addresses are hidden from other recipients, and they won't be able to see that someone else has been sent a copy of the email. You can use BCC to respect privacy, personalize mass emails, or send notifications without requiring individual responses.

✵ Attachments:

- An email attachment is a computer file sent along with an email message. One or more files can be attached to any email message, and be sent along with it to the recipient. This is typically used as a simple method to share documents and images.

❖ USEFUL WEBSITES IN RAJASTHAN:--

1. State Portal, Government of Rajasthan:

   - https://rajasthan.gov.in/Government/WebDirectory/Pages/default.aspx/

2. RPSC Website for Application Filling:

   - https://rpsc.rajasthan.gov.in/
   - https://rpsc.rajasthan.gov.in/applyonline/

3. Right to Education-RTE Portal:
   - https://rajpsp.nic.in/PSP1/Home/home.aspx/

Ch:5:-DIGITAL PAYMENTS & PLATFORMS

❖ ONLINE BANKING:--

- Online banking allows you to conduct financial transactions through the internet.
- Online banking offers customers almost every service traditionally available through a local branch including deposits, transfers, and online bill payments.
- Online banking lets you complete everyday banking tasks from a desktop, tablet or mobile device.

✹ Benefits of Online Banking:

1.) Convenience
✓ You can access your account anytime, anywhere, instead of having to wait in line at a bank branch. You can also bank on the go using a mobile app.

2.) Time efficiency
✓ You can complete transactions in minutes, such as depositing checks, transferring money, or paying bills.

3.) Security
✓ Online banking systems use encryption and multi-factor authentication to protect your financial information.

❖ DEBIT CARD vs. CREDIT CARD:--

Credit Card	**VS**	Debit Card
Borrowed money is issued by a bank		Money is deducted from bank account
No requirement of bank account		Bank account is required
Helps you build credit score		Won't help you build credit score
Comes with interest charges		No interest charges are levied
Offers fraud or lost card protection		Does not offer fraud protection

❖ NET BANKING PAYMENT:--

- Net Banking is a payment method that you can use to make manual payments using a bank transfer.
- This kind of payment is supported by our processors.

❖ MOBILE PAYMENTS:--

- A mobile payment is a money payment made for a product or service through a portable electronic device such as a tablet or cell phone. Mobile payment technology can also be used to send money to friends or family members.

❖ DIGITAL WALLETS:--

- An application on an electronic device that stores payment information and allows you to securely make purchases without carrying cash or card.

✺ Types of Digital Wallets:

- PAYTM
- YONO App
- Unified Payment Interface [UPI]
- Bharat Interface for Money [BHIM]
- Unstructured Supplementary Service Data [USSD]
- Aadhaar Enabled Payment System [AEPS]
- Google Pay App
- National Electronic Funds Transfer [NEFT]
- Immediate Payment Services [IMPS]
- Real Time Gross Settlement [RTGS]
- Bharat Bill Payment System [BBPS]

❖ FASTag:--

- FASTag is an electronic toll collection system introduced in India to facilitate smooth and cashless transactions at toll plazas. It uses Radio Frequency Identification (RFID) technology to automatically deduct toll charges from a prepaid or linked account as vehicles pass through toll booths. FASTag is affixed to the windscreen of vehicles and is linked to the vehicle's registration number.

✺ Benefits of FASTag:

- Convenience
- Faster Transaction
- Cashless Payments
- Cost Saving
- Environmental-friendly
- Nationwide Acceptance

Ch:6:-INTERNET APPLICATIONS

❖ INTERNET APPLICATIONS:--

- Internet Applications can be described as the type of applications that use the internet for operating successfully, that is, by using the internet for fetching, sharing and displaying the information from the respective server systems.
- It can be accessed only with the help of the internet facility, and it cannot be functional without the internet.

❖ E-COMMERCE:--

- E-commerce (electronic commerce) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet.
- These e-commerce transactions typically fall within four types: business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer or consumer-to-business.
- Let's discuss them one by one:-

✹ Business-to-Business [B2B]:

- This refers to the electronic exchange of products, services or information between businesses rather than between businesses and consumers. Examples include online directories and exchange websites that let businesses search for products, services or information and initiate online transactions through e-procurement interfaces.

✳ Business-to-Consumer [B2C]:

- These transactions are when businesses sell products, services or information to consumers. There are typically intermediaries or middlemen that handle shipping, delivery and customer service, however. The term was popular during the dot-com boom of the late 1990s, when online retailers and sellers of goods were a novelty.

- Today, there are innumerable virtual stores and malls on the internet selling all types of consumer goods. Amazon is the most recognized among these sites, dominating the B2C market.

✳ Consumer-to-Consumer [C2C]:

- This is a type of e-commerce in which consumer trade products, services and information with each other online. These transactions are generally conducted through a third party that provides an online platform in which the transactions are carried out.
- Platforms like Facebook marketplace and Depop -- a fashion reselling platform -- also enable C2C transactions.

✺ Consumer-to-Business [C2B]:

- This is a type of e-commerce in which consumers make their products and services available online for companies to bid on and purchase. This is the opposite of the traditional commerce model of B2C.
- A popular example of a C2B platform is a market that sells royalty-free photographs, images, media and design elements, such as iStock. Another example would be a job board.

✺ Mobile Commerce:

- Also known as m-commerce, mobile commerce refers to online sales transactions using mobile devices, such as smartphones and tablets. It includes mobile shopping, banking and payments. Mobile chat-bots facilitate m-commerce, letting consumer complete transactions using voice or text conversations.

❋ Advantages of E-Commerce:

- ✓ Convenience
- ✓ Product Range
- ✓ Cost Saving
- ✓ Payment Options
- ✓ Product Return
- ✓ International Reach
- ✓ Personalized items

❋ Disadvantages of E-Commerce:

- ✓ Limited customer service
- ✓ Limited product experience
- ✓ Wait time
- ✓ Security

❖ SOCIAL NETWORKING:--

- Social networking refers to using internet-based social media sites to stay connected with friends, family, colleagues, or customers.
- Social networking can have a social purpose, a business purpose, or both through sites like Facebook, X (formerly Twitter), Instagram, and Pinterest.
- Social networking is also a significant opportunity for marketers seeking to engage customers.
- Social media can help connect people with businesses for various needs.
- There are disadvantages related to social media, including spreading misinformation, concerns posed by user anonymity, and the high cost of using and maintaining social network profiles.

❖ E LEARNING/ONLINE EDUCATION:--

- E-learning is a structured course or learning experience delivered electronically; it can also include performance support content. There are also many different elements that can make up an e-learning program, such as live or pre-recorded lecture content, video, quizzes, simulations, games, activities, and other interactive elements.

✹ Advantages of E-Learning:
- ✓ Flexibility
- ✓ Convenience
- ✓ Affordability
- ✓ Increased access to resources
- ✓ Self-paced learning

✹ Disadvantages of E-Learning:
- ✓ Lack of face-to-face interaction
- ✓ Technical issues
- ✓ Lack of structure
- ✓ Limited social interaction
- ✓ Limited hands-on learning

❖ MASSIVE OPEN ONLINE COURSE [MOOC]:--

- A massive open online course (MOOC) is a model for delivering learning content online to any person who wants to take a course, with no limit on attendance.
- Massive Open Online Courses (MOOCs) are free online courses available for anyone to enroll.

- MOOC's are online courses that allow participants free access and unrestricted participation to any course of their choice. Besides the conventional modes of teaching such as lectures, videos and reading material; MOOCs also provide a platform for interactive forums.

❖ CLOUD BASED STORAGE:--

- Cloud Storage is a mode of computer data storage in which digital data is stored on servers in off-site locations. The servers are maintained by a third-party provider who is responsible for hosting, managing, and securing data stored on its infrastructure.
- Cloud storage saves your data across redundant servers, so even if one of the data centers collapses, your data will be managed by the other data centers, which makes your data safe and supervised.

❖ DIGITAL SIGNATURE:--

- A digital signature is an electronic, encrypted, stamp of authentication on digital information such as email messages, macros, or electronic documents.
- A signature confirms that the information originated from the signer and has not been altered.
- A valid digital signature on a message gives a recipient confidence that the message came from a sender known to the recipient.

❖ RAJ E-SIGN:--

- With this service, any Aadhaar holder can digitally sign an electronic document without having to obtain a physical digital signature dongle.
- Through E-sign facility, public can avail government services/schemes by signing the applications, documents or certificates online, instead of signing the papers manually by taking a print out.
- E-sign facility was earlier used in the state at the government's department-to-department level.

✸ Advantages of E-Sign:

- ✓ Simple and Secure
- ✓ Facilitates Legally Valid Signature
- ✓ Flexible and Easy to Implement
- ✓ Secure Online Services
- ✓ Framework of Rajasthan

Ch:7:-WORKING WITH MOBILE DEVICES/SMARTPHONES

❖ **TYPES OF HANDHELD DEVICES:--**
- ✓ Feature Phone
- ✓ Smartphones
- ✓ Tablets
- ✓ Phablets

❖ **TYPES OF POPULAR MOBILE OPERATING SYSTEM:--**
- A mobile operating system is an operating system that helps to run other application software on mobile devices. It is the same kind of software as the famous computer operating systems like Linux and Windows, but now they are light and simple to some extent.

❋ Android OS:
- The Android operating system is the most popular operating system today. It is a mobile OS based on the Linux Kernel and open-source software. The android operating system was developed by Google. The first Android device was launched in 2008.

❋ Apple iOS:
- The iOS was developed by the Apple inc for the use on its device. The iOS operating system is the most popular operating system today. It is a very secure operating system. The iOS operating system is not available for any other mobiles.

❖ SETTING PANEL:--

- Control Panel is a component of Microsoft Windows that provides the ability to view and change system settings. It consists of a set of applets that include adding or removing hardware and software, controlling user accounts, changing accessibility options, and accessing networking settings.

✺ Bluetooth:

- Bluetooth technology allows devices to communicate with each other without cables or wires. Bluetooth relies on short-range radio frequency, and any device that incorporates the technology can communicate as long as it is within the required distance.

✺ Global Positioning System [GPS]:

- The Global Positioning System, is a global navigation satellite system that provides location, velocity and time synchronization.
- The Global Positioning System (GPS) is a U.S.-owned utility that provides users with positioning, navigation, and timing (PNT) services.

✺ Wireless Fidelity [Wi-Fi]:

- A Wi-Fi network is simply an internet connection that's shared with multiple devices in a home or business via a wireless router. The router is connected directly to your internet modem and acts as a hub to broadcast the internet signal to all your Wi-Fi enabled devices.

❖ NATIONAL DIGITAL LIBRARY OF INDIA [NDL]:--

- The NDLI provides free-of-cost access to many books. It is designed to hold content of any language and provides search facilities for the 12 most widely used Indian languages. It is developed, operated, and maintained by the Indian Institute of Technology Kharagpur.
- The library is designated to collect, disseminate and preserve printed material produced within India. With a collection in excess of 2.5 million books and records, it is the largest in the country.

❖ OTHER POPULAR APPS:--

✸ WhatsApp:

- WhatsApp is an instant messaging and voice-over-IP service owned by technology conglomerate Meta. It allows users to send text, voice messages and video messages, make voice and video calls, and share images, documents, user locations, and other content.

✸ File Manager:

- A file manager is like a digital organizer for your computer. It helps you navigate and organize files and folders on your system. Think of it as your virtual filing cabinet where you can arrange, access, and manage your digital documents, photos, and more.

Ch:8:-MICROSOFT WORD

🞣 Microsoft Word is a word processing program that allows for the creation of both simple and complex documents.

- Allows Collaboration
- Instant Help Availability
- Document Flexibility
- Feature-Rich Platform
- Cross Platform Support

❖ QUICK ACCESS TOOLBAR:--

- It is a customizable toolbar that comes with a set of independent commands. It gives you quick access to commonly used commands such as Save, Undo, Redo, etc.

❖ HYPERLINK:--

- A hyperlink in Microsoft Word is a word, phrase, or image that can be clicked to navigate to another document, section, or webpage.

❖ BOOKMARK:--

- Bookmarks in Microsoft Word mark a specific location or text in a document for easy reference later.

❖ PARAGRAPH FORMATTING:--

- Paragraph formatting refers to formatting commands that affect entire paragraphs – settings such as indenting, bullets, line spacing and paragraph spacing.

Ch:9:-MICROSOFT EXCEL

- MS Excel is a commonly used Microsoft Office application. It is a spreadsheet program which is used to save and analyze numerical data.
- Excel is a spreadsheet program from Microsoft and a component of its Office product group for business applications.
- Microsoft Excel enables users to format, organize and calculate data in a spreadsheet.

❖ SORTING:--

- Sorting is the process of rearranging data in a worksheet or table based on specific criteria.
- This can be done by numerical order, alphabetical order, date order, or custom criteria.
- Sorting data can help you analyze it more effectively.

❖ FILTERING:--

- Filtering data means choosing or not choosing certain information from a set of data using a set of criteria.
- This is important for finding important data, getting rid of unnecessary information, and improving the overall quality of the data.

❖ CHARTS:--

- Charts are visual representations of data used to make it more understandable.
- Commonly used charts are: Pie chart. Column chart. Line chart.

Ch:10:-MICROSOFT POWERPOINT

- Microsoft PowerPoint is a powerful slide show presentation program.
- It is a standard component of the company's Microsoft Office suite software, and is bundled together with Word, Excel, and other office productivity tools.
- The program uses slides to convey information rich in multimedia.

❖ HYPERLINK:--

- In PowerPoint, you can create a hyperlink using any text within your presentation.
- When clicked on, a hyperlink can directly link to a specific slide within your presentation, a saved file, a web page, another PowerPoint presentation, or a custom email.

❖ SLIDE SHOW:--

- A slide show, or slideshow, is a presentation of a series of still images (slides) on a projection screen or electronic display device, typically in a prearranged sequence.
- The changes may be automatic and at regular intervals or they may be manually controlled by a presenter or the viewer.

❖ DESIGN TAB:--

- The Design Tab commands allow you to control the look and the appearance of your presentation.
- You can apply a theme from the available themes and can also change the color schemes.
- Themes are used to simplify the process of creating professional presentations.

❖ THEMES:--

- A theme is a predefined set of colors, fonts, and visual effects that you apply to your slides for a unified, professional look.

❖ TRANSITION TAB:--

- Transitions are your way of letting the audience know you are changing ideas.
- The Transitions tab in PowerPoint presentations allows you to add transitions between slides to make your presentation more interesting.

❖ ANIMATION TAB:--

- The Animation tab in PowerPoint allows you to add animations to objects on slides, such as text, shapes, clip art, and pictures.
- You can use animations to draw attention to specific content or make a slide easier to read.
- There are four types of animation effects: entrance, emphasis, exit, and motion paths.

Ch:11:-CYBER SECURITY & AWARENESS

❖ CYBER SECURITY:--

- Cyber Security is the practice of protecting systems, networks, and programs from digital attacks.
- These cyber attacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users via ransomware; or interrupting normal business processes.

❖ CYBER AWARENESS:--

- Cyber Security Awareness is a method to read the types of threats and implement the protection against such threats from the internet to protect our privacy and secure our data.
- Internet is used by us on regular basis and we all are aware of the security threats on the internet.

❖ CYBER THREATS:--

- Cyber security threat is a malicious act that seeks to damage data, steal data, or disrupt digital life in general.
- Cyber threats include computer viruses, data breaches, Denial of Service (DoS) attacks, and other attack vectors.

- Cyber threats also refer to the possibility of a successful cyber-attack that aims to gain unauthorized access, damage, disrupt, or steal an information technology asset, computer network, intellectual property, or any other form of sensitive data.

✹ Types of Cyber Threats:

- ✓ **PHISHING:** Phishing is the practice of sending fraudulent emails that resemble emails from reputable sources. The aim is to steal sensitive data like credit card numbers and login information. It's the most common type of cyber-attack. You can help protect yourself through education or a technology solution that filters malicious emails.

- ✓ **MALWARE:** Malware is a type of software designed to gain unauthorized access or to cause damage to a computer.

  - Common types of malware include:
    - o Ransomware locks a victim's data or device and threatens to keep it locked, or leak it publicly, unless the victim pays a ransom to the attacker.

    - o A Trojan horse is malicious code that tricks people into downloading it by appearing to be a useful program or hiding within legitimate software.

- o <mark>Spyware</mark> is a highly secretive malware that gathers sensitive information, like usernames, passwords, credit card numbers and other personal data, and transmits it back to the attacker without the victim knowing.
- o <mark>Worms</mark> are self-replicating programs that automatically spread to apps and devices without human interaction.

- ✓ **DENIAL-OF-SERVICE ATTACK:** A denial-of-service (DoS) attack is a cyber-attack that overwhelms a website, application or system with volumes of fraudulent traffic, making it too slow to use or entirely unavailable to legitimate users. A distributed denial-of-service attack, or DDoS attack, is similar except it uses a network of internet-connected, malware-infected devices or bots, which are known as a botnet, to cripple or crash the target system.

- ✓ **PASSWORD ATTACK:** These attacks involve cybercriminals trying to guess or steal the password or login credentials to a user's account. Many password attacks use social engineering to trick victims into unwittingly sharing this sensitive data. However, hackers can also use brute force attacks to steal passwords, repeatedly trying different password combinations until one is successful.

- ✓ **SESSION HIJACKING:** Session Hijacking is a Hacking Technique. In this, the hackers (the one who perform hacking) gain the access of a target's computer or online account and exploit the whole web session control mechanism. This is done by taking over an active TCP/IP communication session by performing illegal actions on a protected network.

- ✓ **DNS POISONING:** Domain Name System (DNS) poisoning happens when fake information is entered into the cache of a domain name server, resulting in DNS queries producing an incorrect reply, sending users to the wrong website.

- ✓ **DATA BREACHING:** A data breach is any security incident in which unauthorized party's access sensitive or confidential information, including personal data (Social Security numbers, bank account numbers, healthcare data) and corporate data (customer records, intellectual property, financial information).

❖ SECURE SEALS:--

- A security seal is a mechanism used to seal and secure the compartment in which products are transported. They are often used to seal trailers, containers and truck doors. In addition, they can be used as evidence of attempted break-ins and theft.

- Types of Secure Seals:
  - ✓ PRIVACY SEAL
  - ✓ BUSINESS PRACTICE SEALS
  - ✓ BUSINESS IDENTITY SEAL
  - ✓ SECURITY SEALS

❖ SECURE BROWSING:--

- Secure web browsing involves the use of tools and techniques to protect users from cyber-attacks, malware, or other cyber-security vulnerabilities.
- Web browsers allow users to view sites on the internet by displaying images and text, executing code, rendering animations, and saving information.

❖ MAILING ETIQUETTES:--

- Introduce Yourself
- Check your Subject Line
- Understand the difference between "To" and "CC"
- Keep messages brief and to the point
- Don't discuss multiple subjects in a single message
- Be mindful of your tone
- Don't write in ALL CAPS
- Check mail authenticity before forwarding mails
- Use a signature with your contact information
- Use spell-checker

❖ SOCIAL, LEGAL & ETHICAL ASPECTS OF IT:--

- Social, legal, and ethical (SLE) aspects can impact the development and acceptance of new systems and technologies.
- They can have both positive and negative implications.
- For example, in information technology (IT), SLE aspects can include:

✓ **Social issues:**

These can impact society as a whole and include privacy, security, the digital divide, and socio-economic changes.

✓ **Ethical issues:**

These deal with moral principles and what is considered right and wrong. They can include handling personal data, intellectual property rights, and the implications of machine autonomy and decision-making.

✓ **Legal issues:**

These are bound by law and are enforceable with consequences. They can include copyrights, trade secrets, and liability for damages from software or hardware failures.

❖ LEGAL FRAMEWORK FOR IT IN INDIA:--

1) Indian IT Act, 2000
2) Indian Copyright Act, 1957
3) Indian Penal Code
4) Indian Contract Act, 1872

❖ CYBER-CRIMES:--

- Cybercrime is illegal activity involving computers, the internet, or network devices.
- Cybercriminals commit identity theft, initiate phishing scams, spread malware, and instigate other digital attacks.

✺ Cyber-Crimes Tips:

1) Don't click on Suspicious Emails
2) Use Strong Passwords
3) Apply Two-Factor Authentication
4) Don't use Public Wi-Fi for Payment
5) Check QR Code
6) Avoiding Fraud
7) Avoiding Customer Care Call Fraud
8) Avoiding Password Change Fraud
9) Avoiding Bank KYC Fraud
10) Avoiding LIC Account Aadhaar Update Fraud

Ch:12:-OTHER OFFICE TOOLS

❖ GOOGLE WORKSPACE:--

- Google Workspace is a collection of cloud computing, productivity and collaboration tools, software and products developed and marketed by Google.
- It consists of Gmail, Contacts, Calendar, Meet and Chat for communication; Drive for storage; and the Google Docs Editors suite for content creation.

✺ Google Docs:

- Google Docs is an online word processor included as part of the free, web-based Google Docs Editors suite offered by Google.
- Google Docs allows users to create and edit documents online while collaborating with other users in real time.

✺ Google Sheets:

- Google Sheets is a spreadsheet application included as part of the free, web-based Google Docs Editors suite offered by Google.
- The app allows users to create and edit files online while collaborating with other users in real-time

❋ Google Forms:

- Google Forms is a survey administration software included as part of the free, web-based Google Docs Editors suite offered by Google.
- The app allows users to create and edit surveys online while collaborating with other users in real-time.
- The collected information can be automatically entered into a spreadsheet.

❋ Google Drive:

- Google Drive is a file-hosting service and synchronization service developed by Google.
- Google Drive allows users to store files in the cloud (on Google's servers), synchronize files across devices, and share files.

❋ Google Slides:

- Google Slides is a presentation program included as part of the free, web-based Google Docs suite offered by Google.
- The app allows users to create and edit files online while collaborating with other users in real-time.

❋ Google Keep:

- Google Keep is a note-taking service included as part of the free, web-based Google Docs Editors suite offered by Google.
- The app offers a variety of tools for taking notes, including texts, lists, images, and audio.

✹ Google Calendar:

- Google Calendar is a time-management and scheduling calendar service developed by Google.
- Google Calendar allows users to create and edit events.

❖ OPEN SOURCE OFFICE :--

- An Open Source Program Office (OSPO) is a physical or virtual department formed by Subject-matter experts involved in Free- and Open Software and Open standards management and operations in the organization.

✹ Libre Office:
.
- Libre Office is an offshoot of the Open Office project and is developed by a team of enthusiastic coders who lend their services without pay.
- This same team delivers regular updates and new features to ensure that it keeps pace with premium office software.
- Libre Office comes with six component programs that provide everything you need from an office suite, including Writer (word processing), Calc (spreadsheets), Impress (presentations), Draw (vector graphics), Math (mathematical formulae), and Base (databases).

✹ WPS Office:

- WPS Office is a popular office suite software that provides users with a wide range of features for free.
- It is available for Windows 10, Linux, iOS, and Android platforms and is designed to meet the needs of both personal and business users.

- WPS Office comes with three core applications, including Writer, Presentation, and Spreadsheets, which offer a similar set of tools and functionalities as Microsoft Office.
- It also supports a range of file formats, including Microsoft Word, Excel, and PowerPoint, making it easy for users to collaborate with others who use different office software.

❖ IMAGE OPTIMIZATION :--

- Image optimization helps website owners modify images to ensure they load quickly and display correctly on various devices.
- It also helps maintain user engagement by finding the right balance between the smallest file size and acceptable image quality.
- Some image optimization techniques include resizing, changing formats, compressing, and adjusting resolution.
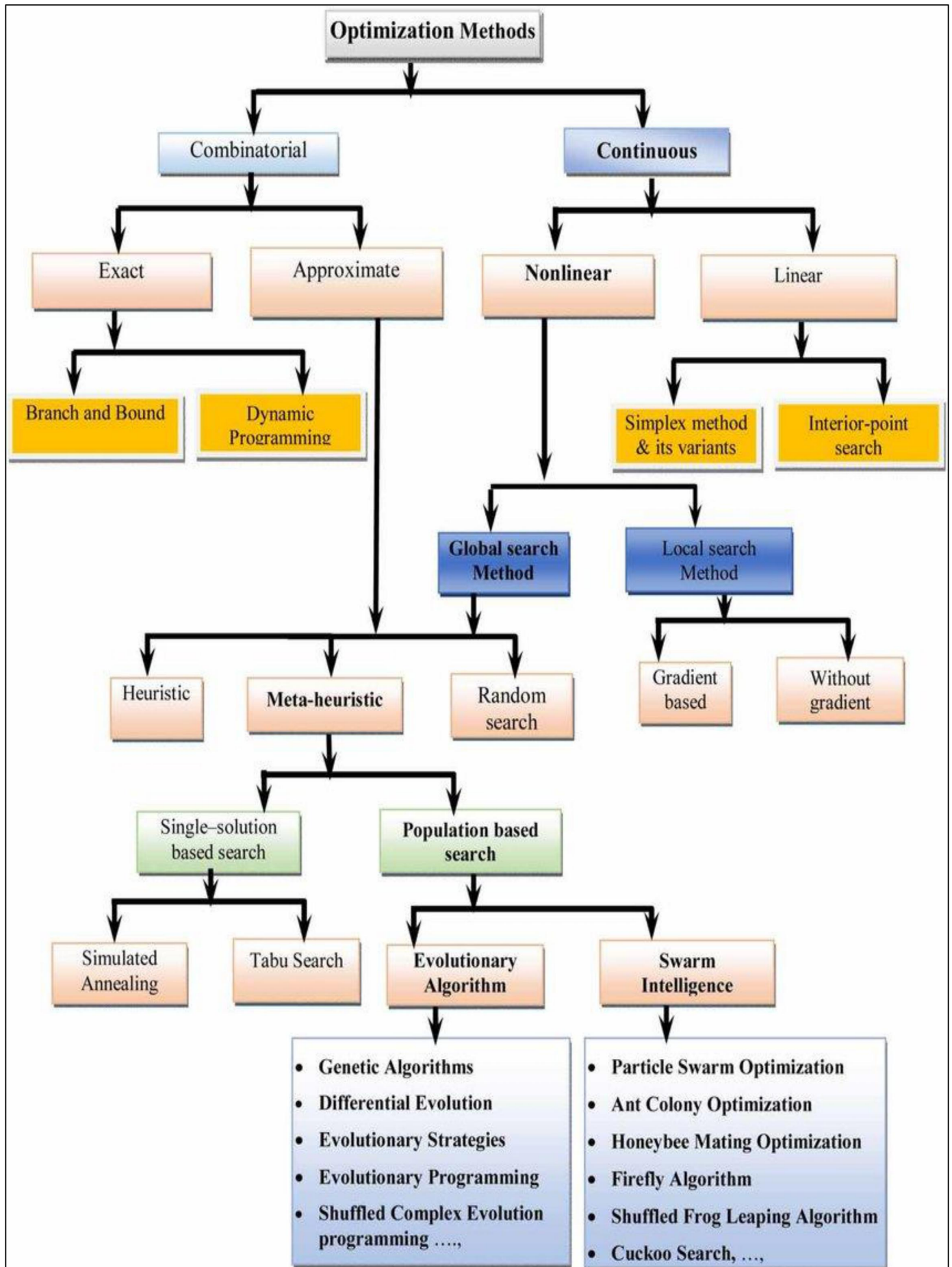
✹ Advantages of Image Optimization:
1) Easy to implement
2) Efficient
3) Flexible
4) Easy to Communicate
5) Consider the quality performance

✹ Disadvantages of Image Optimization:
1) Need to be Updated Continuously
2) Complicate
3) Time-Consuming
4) Difficult to be adapted to new situations
5) Consider small-scale problems

Ch:13:-USEFUL APPLICATION OF IT

- **Information Technology** is the use of computer systems, storage devices, and any other type of physical device to manage exercise, store, and retrieve all types of data transmitted over electronic lines or electronic data.
- We can clearly see the growth of information technology in today's world, and the main reason for this growth is the increased use of technology.
- Today, information technology is a part of almost every organization, and the reason for this is obvious: the rapid increase in technology use.

❖ CD/DVD BURNING :--

- When you copy music, pictures, and videos from your PC to a blank CD or DVD, it's called "burning".
- When you copy music, pictures, and videos from a CD or DVD to your PC, it's called "ripping".
- You can use Windows Media Player to do both.

❖ HDMI :--

- HDMI stands for High Definition Multimedia Interface and is the most frequently used HD signal for transferring both high definition audio and video over a single cable.
- It is a proprietary audio/video interface for transmitting uncompressed video data and compressed or uncompressed digital audio data from an HDMI-compliant source device.

Ch:14:-EXPLORING COMMON CITIZEN CENTIC SERVICES

❖ INCOME TAX RETURN [ITR] :--

- Income Tax Return (ITR) is a form that an individual submits to the Income Tax Department of India to file information about his income and taxes payable during that year.
- ITR filing is mandatory if a resident individual owns assets such as shares, bonds of foreign companies; a house in foreign countries; or has income such as dividends, interest or rent from foreign countries.

❖ AADHAAR UPDATION :--

- Aadhaar updation is the process of updating your Aadhaar card details, such as your name, address, date of birth, gender, mobile number, email ID, and more.

❖ PASSPORT SEVA SERVICES :--

- The Passport Seva Project (PSP) is transforming passport and related services in India to provide a best-in-class experience to Indian citizens.
- PSP is enabling MEA to deliver passport services in a reliable, convenient and transparent manner, within defined service levels.

❖ TICKET BOOKING :--

- Ticket booking is the process of reserving a seat or berth for a journey on a train or bus.
  - ✓ IRCTC
  - ✓ RSRTC

❖ LPG :--

- Liquefied petroleum gas (LPG) is the liquefied form of petroleum gases released during the extraction of crude oil and natural gas or during the refining of crude oil.
- Online LPG booking is a convenient way to book LPG refills and check the status of your booking without having to visit a gas agency.
- You can book online through the official website of the gas company or through an app like Paytm.

Ch:15:-MAJOR SCHEMES FOR CITIZENS OF RAJASTHAN

❖ E-GOVERENANCE :--

- E-governance, or "electronic governance", is the use of information and communication technologies (ICTs) to improve governance and provide government services.
- ICTs include the internet, mobile computing, and wide area networks.
- E-governance can help promote efficiency, transparency, and accountability.

✹ Advantages of E-Governance:

- ✓ Better Access to Information and Quality Services for Citizen
- ✓ Simplicity, Efficiency and Accountability in the Government
- ✓ Expanded reach of Governance

❖ INITIATIVES :--

1) Rajasthan State Data Centre & Network Operating Centre
2) Raj Megh
3) Raj Net
4) Raj Dharaa
5) Raj Seva Dwaar
6) Public Interface
7) Rajasthan Single Sign On and State Portal

❖ AYUSHMAN BHARAT YOJANA :--

The Ayushman Bharat Mahatma Gandhi Rajasthan Swasthya Bima Yojana (AB-MGRSBY) is a government healthcare scheme introduced on August 30, 2019, under CM Ashok Gehlot's government in Rajasthan.

This scheme covers various expenses like hospitalization cost, daycare treatment and more.

✸ Key Features:

- ✓ Health Coverage for Families from Lower-Income Group
- ✓ Cashless Hospitalization
- ✓ High Sum Insured
- ✓ Insurance Cover for the Whole Family
- ✓ Variety of Medical Packages

❖ SINGLE SIGN ON FACILITY :--

- The Rajasthan government has launched the Rajasthan SSO Portal.

- The purpose of launching this portal is to provide the citizens of Rajasthan with various government services under a single platform.

- SSO ID is a single-digit identity for all application in Rajasthan.

- The SSO ID (Single sign-on) is used to benefit from various schemes of the Rajasthan state government and to fill all application forms online.

- With Rajasthan's Single Sign-On ID, users gain access to over 100 online services.

❖ RAJASTHAN SAMPARK :--

- Rajasthan Sampark is a centralized web portal for Grievance Redressal System which consists of State Level Help line.
- It provides a central Toll Free number 1800-180-6127 where citizen can call and register their grievances.
- Citizen can register their grievance through Web, Phone and E-mail.

❖ JAN SOOCHNA PORTAL:--

- The purpose of the Jan Soochna portal is to make the facility available to the common people along with social audit.
- The portal aims to provide information to the public about government authorities and departments empowering them with access to useful information.
- The portal was developed by the government officials in close collaboration with the IT professionals and civil society groups.

Thank You