Computer Laboratory
Lecture 1

Basic Concepts of Information Technology

Computer

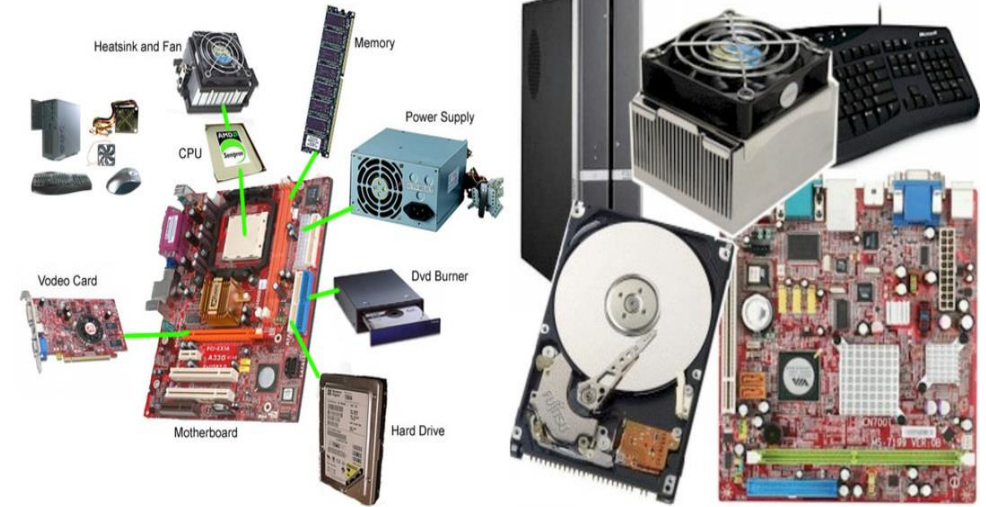- A computer is an electronic device used to process data, converting data into information that is useful to people.

- Hardware refers to the physical components of a computer.

- Software refers to the programs that control the computer and make it function.

- Information Technology is a broad term which covers all aspects of the use of computer technology. It includes not only hardware and software, but also communication technology applied to linking computer systems, software engineering, and the administration and use of computer systems.

Input

Output

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Hardware:

- These are the parts that you can see, feel and hear.
  - Keyboard
  - Monitor
  - Mouse
  - Case/Box
    - CPU
    - HDD (Hard Disk Drive)
    - SSD (solid State Drive)
    - RAM (Random Access Memory)
    - CD-ROM Drive
    - Power supply
  - Speakers
  - LAN card, WLAN card, Modem
  - Cables

Keyboard

- It is used to enter information in the computer.

- Its like a board having Keys (buttons)

Mouse

- It is used to operate or control the computer.

- When mouse is moved then a cursor is moved on the computer screen.

- With mouse we can select menu options, drag & drop and point & click.

Monitor / VDU (Video Display Unit)

- It is used to view information or results from the computer.

- Monitors are of many sizes and qualities.

- LEDs, LCDs are new shapes of monitors.

System Unit/Case/Box

- It is a plastic or metal box.
- Box has many other parts of the computer like CPU, Motherboard, Hard disk, CD-ROM.
- Box may be Tower-top or Desk-top.

Hard Disk Drive (HDD)

- Hard disk is inside the computer box.

- It is used to store data and programs.

- Hard disk may be external or internal.

Solid State Drive (SSD)

- A solid-state drive is a storage device that uses integrated circuit to store data persistently and functioning as secondary storage in the hierarchy of computer storage.

- Also, we have Memory sticks/Flash drive.

CD-ROM Drive (CD-ROM) or DVD-ROM Drive (DVD-ROM)

- CD or DVD is used to read information.

- CD or DVD may contain computer software, data or music.

- We can also rewrite data/information on rewriteable CDs and DVDs.

Speakers

- Speakers are used to play music or any audio.

- There are many types of speakers.

Modem

- Modem is used to connect to internet via a telephone line.

- Modem can be internal or external.

LAN (Local Area Network)

- LAN is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building.

- LAN is used to connect to internet.

- LAN card can be internal or external.

WLAN (Wireless Local Area Network)

- WLAN is a computer network that interconnects computers <u>wirelessly</u> within a limited area such as a residence, school, laboratory, university campus or office building.

- WLAN is used to connect to internet.

- WLAN card can be internal or external.

Types of Computers

- Computers are of following types:

    - Personal Computer

    - Laptop computer

    - Handheld Devices
        - PDA
        - Mobile Phones & Smart phones

    - Multimedia Players

    - Networked computer
    - Server

    - Mainframe computer

    - Super-computer

- ## Personal Computer

  - In General, the term Personal Computer PC is used for any computer the user familiar with.

  - Also sometimes called desktop.

  - Operating systems such as <u>Linux</u> and <u>Windows</u> were designed specifically for personal computers.

  - A typical PC consists of a main unit housing the CPU and disk drives, a VDU (Video Display Unit), a keyboard and a mouse.

  - can be used for thousands of different tasks from creating a simple document to controlling a large industrial machine.

  - PC is cheap and easy to use.

  - PC is normally used by students, families and in small businesses.

- Laptop Computer

  - Similar to personal computers except that they comprise an integrated unit

  - A laptop is a small computer which can be easily carried in a small bag/case

  - In laptop, batteries are used for power.

  - Laptop has keyboard and a touchpad.

  - It is expensive than PC.

  - Laptop is almost equal in speed of a PC.

  - It is normally used by business people, students, and etc.

- Handheld Devices
  - Personal Digital Assistant (PDA)
    - It is a small computer which can be placed on the palm of hand.
    - It has touch screen where we can use finger or digital pen.
    - It can be used as a phone, Media Player, for internet.
    - It is also used by businessmen.

  - Mobile phones & Smart Phones
    - These are advanced phones with latest functions.
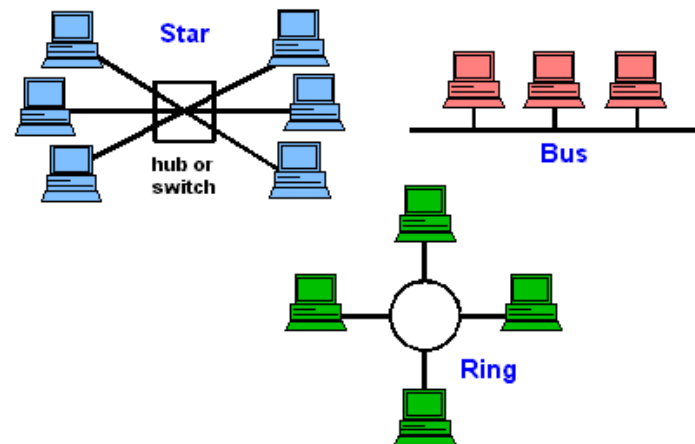   - We can use them as a phone and as a computer to use some software.

- Multimedia Players

  - These players can play and view many types of media files e.g. video, music and photos.

  - Example is Apple iPod

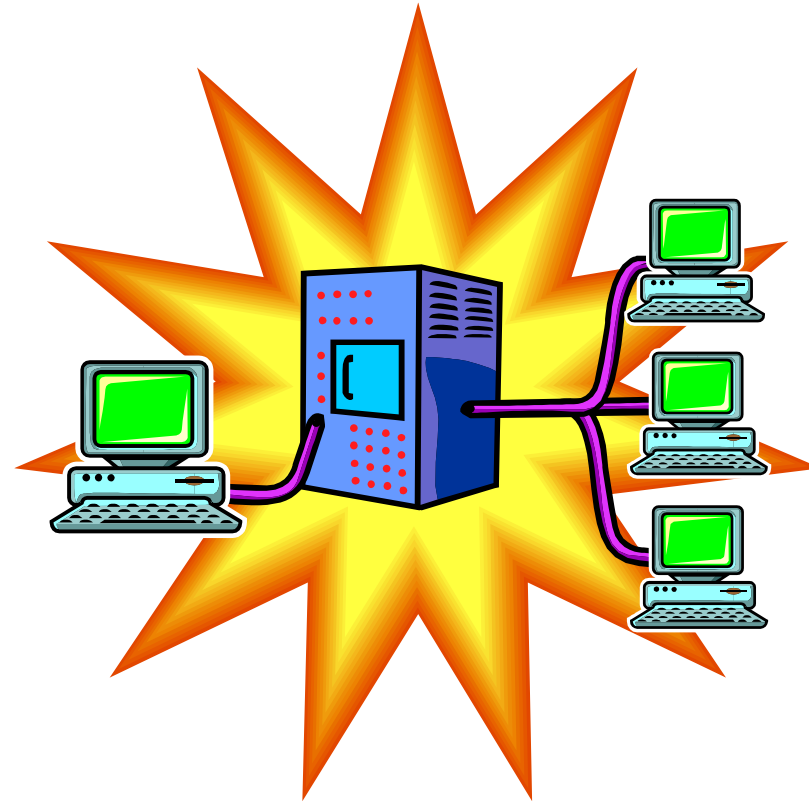 - We can connect these players to internet or other network.

- Network Computers

  - A <u>network</u> is a collection or group of computers connected with each other via cables or wireless.

  - A network is used to share resources and information.

  - Network is used in large organisations, schools, hotels and offices.

- Server

- Purpose is to "serve."

- A computer that has the purpose of supplying its users with data; usually using a LAN (local area network).

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- Mainframe Computers

  - These are very big, powerful and very high speed computers.

  - They can do multiple tasks at high speed.

  - These are used by large organisations such an banks to control the entire business operation.

  - These are very expensive.

  - They are placed in a big room.

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- Supercomputer

- A computer that was the fastest in the world at the time it was constructed.

- Can tackle tasks that would not be practical for other computers.

  - Typical uses

    - Breaking codes

    - Modeling weather systems

    - Modeling Chemical reactions

- ## Cloud Computers

- Cloud computing is a technology that allows you to access and use computing resources (like servers, storage, databases, networking, software) over the internet, instead of having them on your local device or computer.

- It's like renting computing power and services on-demand,

- which can be convenient for tasks ranging from storing data to running applications without the need for owning and maintaining physical hardware.