Meeting 2

Inside Computer

Inside a Computer

A general purpose computer has four main components: the *Arithmetic Logic Unit (ALU), the Control Unit*, *the Memory*, and *the Input and Output devices (collectively termed I/O)*. These parts are interconnected by busses, often made of groups of wires.

Arithmetic Logic Unit (ALU)

The ALU is capable of performing two classes of operations: arithmetic and logic

Control unit

The control unit (often called a control system or central controller) manages the computer's various components; it reads and interprets (decodes) the program instructions, transforming them into a series of control signals which activate other parts of the computer

Memory

A computer's memory can be viewed as a list of cells into which numbers can be placed or read. Computer main memory comes in two principal varieties: random-access memory or RAM and read-only memory or ROM. RAM can be read and written to anytime the CPU commands it, but ROM is pre-loaded with data and software that never changes, therefore the CPU can only read from it.

Input/Output (I/O)

I/O is the means by which a computer exchanges information with the outside world. Devices that provide input or output to the computer are called peripherals. On a typical personal computer, peripherals include input devices like the keyboard and mouse, and output devices such as the display and printer. Hard disk drives, floppy disk drives and optical disc drives serve as both input and output devices.

Hardware Components

Input Devices

Input Device is any peripheral (piece of computer hardware equipment) used to provide data and control signals to an information processing system such as a computer or other information appliance. Examples of input devices include keyboards, mice, scanners, digital cameras and joysticks.

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 system (such as a computer) which converts the electronically generated information into human-readable form.

Input Devices :

The Mouse

A **mouse** is a pointing device that functions by detecting two-dimensional motion relative to its supporting surface. Physically, a mouse consists of an object held under one of the user's hands, with one or more buttons.

The Keyboard

The keyboard is still the commonest way of entering information into a computer

Tracker Balls

an alternative to the traditional mouse and often used by graphic designers

Input Devices :

Scanners

A scanner allows you to scan printed material and convert it into a file format that may be used within the PC

Touch Pads

A device that lays on the desktop and responds to pressure

Light Pens

Used to allow users to point to areas on a screen

Joysticks

Many games require a joystick for playing of the game

Output Devices :

Monitor/LCD

The computer screen is used for outputting information in an understandable format

Printers

There are many different types of printers. In large organizations laser printers are most commonly used due to the fact that they can print very fast and give a very high quality output.

Output Devices

Plotters

A plotter is an output device similar to a printer, but normally allows you to print larger images.

Speakers

Enhances the value of educational and presentation products.

Speech synthesisers

Gives you the ability to not only to display text on a monitor but also to read the text to you

Storage Device

Storage Devices -- "How it saves data and programs“

Hard disk drives are an internal, higher capacity drive which also stores the operating system whic when you power on the computer.

Flash disk drives allow you to save work on small disks and take the data with you.

Storage Device

Hard Disks

Speed:

Very fast!

The speed of a hard disk is often quoted as "average access time" speed, measured in milliseconds. The smaller this number the faster the disk.

Capacity:

Enormous! Often 1000/5000 Gigabytes. A Gigabyte is equivalent to 1024 Megabytes.

Cost:

Hard disks costs are falling rapidly and normally represent the cheapest way of storing data.

Main Parts of Computer

Memory -- "How the processor stores and uses immediate data“

RAM - Random Access Memory

The main 'working' memory used by the computer. When the operating system loads from disk when you first switch on the computer, it is copied into RAM.

As a rough rule, a Microsoft Windows based computer will operate faster if you install more RAM. Data and programs stored in RAM are volatile (i.e. the information is lost when you switch off the computer).

How Computer Memory Is Measured

- Bit

  All computers work on a binary numbering system, i.e. they process data in one's or zero's. This 1 or 0 level of storage is called a bit.
- Byte

  A byte consists of eight bits.
- Kilobyte

  A kilobyte (KB) consists of 1024 bytes.
- Megabyte

  A megabyte (MB) consists of 1024 kilobytes.
- Gigabyte

  A gigabyte (GB) consists of 1024 megabytes.

How Computer Memory is Measured

- Microprocessors -- "The brain of the computer“

- PCs primarily use microprocessors (sometimes called the chip).

The older Intel versions include the 386, 486 and now the Pentium line.

- The CPU (Central Processing Unit) is normally an Intel Pentium (or equivalent) and it is one of the most important components within your computer.
- It determines how fast your computer will run and is measured by its MHz speed.
- Thus a 3200 MHz Pentium is much faster than say a 4200 MHz Pentium CPU.
- It is the CPU that performs all the calculations within the computer.

Exercises Meeting-2

1. What is the meaning of “CPU” ?
2. What are the component of inside a computer ?
3. What is the meaning of “ALU” ?
4. Can you explain about ROM, RAM ? With your own words
5. What are some including the hardware computer ?
6. Mentioned examples of “Input Device” and “Output Device” !
7. Mentioned examples of Storage Device” !