Introduction to computers

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Week I :- Introduction to computers

Computer Science,
Nile University of Nigeria

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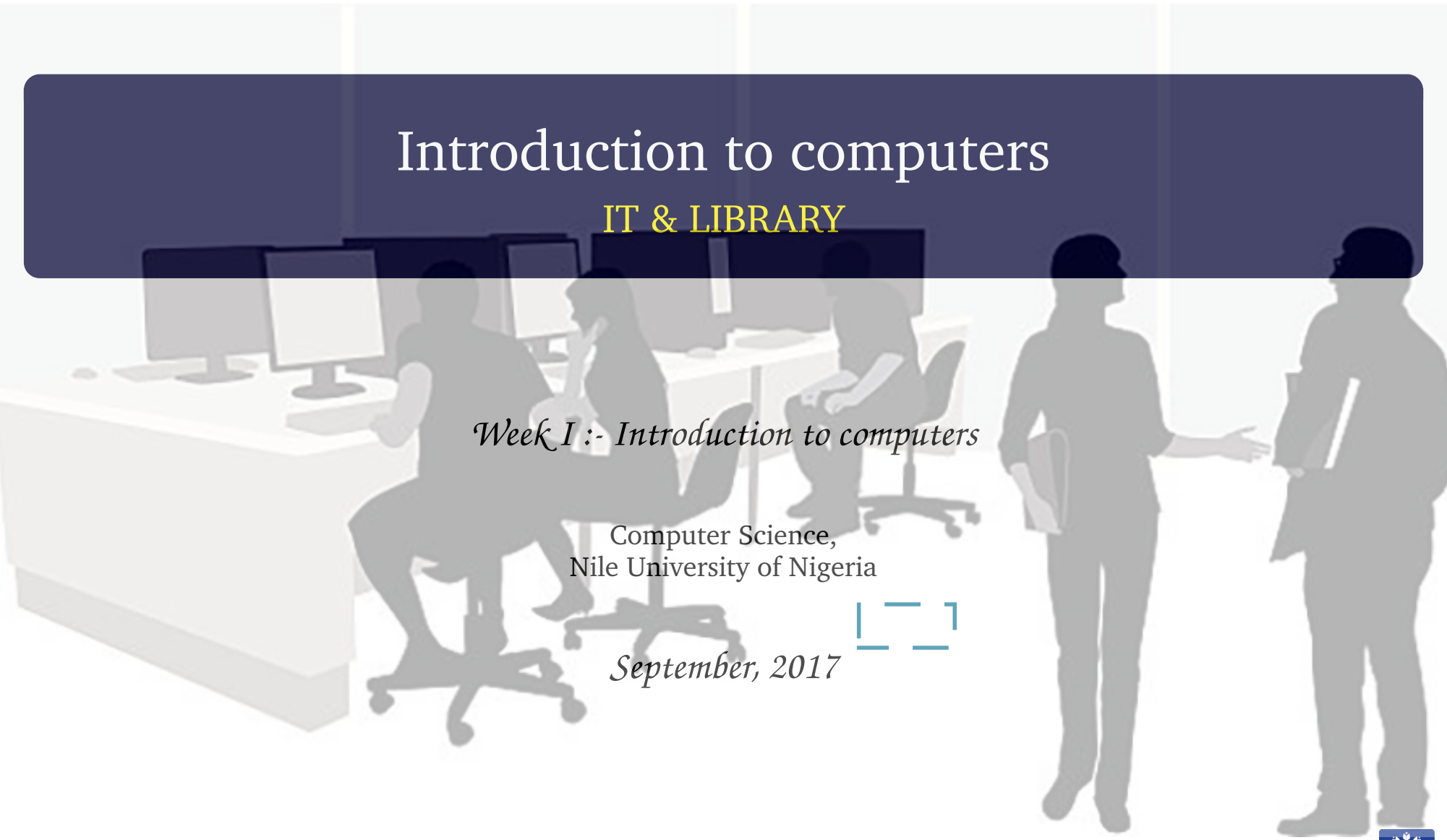


Outline

DEFINITIONS

- What is computer Science?
  - ☞ Is the scientific approach to computation and its applications.
  - ☞ Its subfields can be divided into a variety of theoretical and practical disciplines : Computational complexity theory, computer graphics, programming language theory, Human computer interaction, etc.
- What is a computer?
  - ☞ Is a machine that is able to take information (input), do some work on or make changes to the information, to make new information (output).

Computer classification

- Modern computers are very different from early computers. They are now very powerful machines that are able to do billions of calculations every second.
  - MAINFRAME COMPUTER
  - MINI-COMPUTER
  - MICRO-COMPUTER
  - SUPER-COMPUTER

Computer classification (cont.)

- **Mini Computers:** These are powerful computer. Come into existence in 1960s at that time mainframe computer was very costly. Mini computers were available in cheap prices.

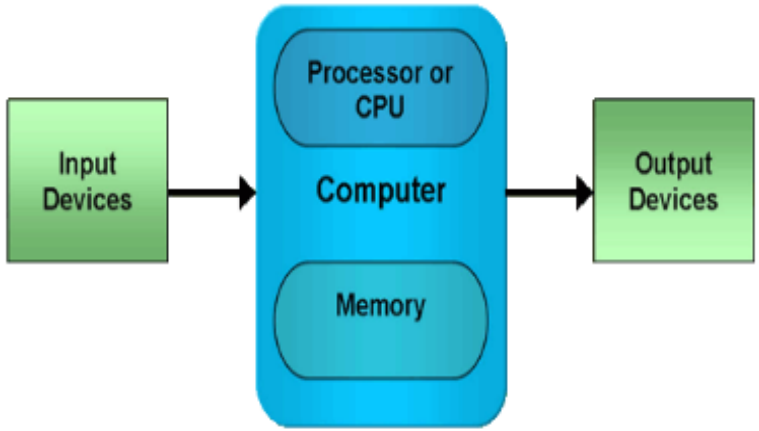
- **Micro computers:** These computers use a microprocessor chip and this chip is used instead of CPU. These computers are also called personal computers (laptop or Desktop). Only one user uses these computers at time.

- **Mainframe Computer:** It as a very powerful and large computer. You can get idea of its power as it can handle processing of many users at a time. Terminals are used to connect a user to this computer.

- **Super Computers:** As the name ”super computer” specifies that these are most powerful computers even than mainframe. Actually, when we optimize a mainframe computer then we get super computer.

Parts of a computer

- A computer consists of both hardware and software working together to help you accomplish tasks.
- The physical components of the computer system (computer's hardware) are: Input devices, output devices, the processor or central processing unit (CPU).

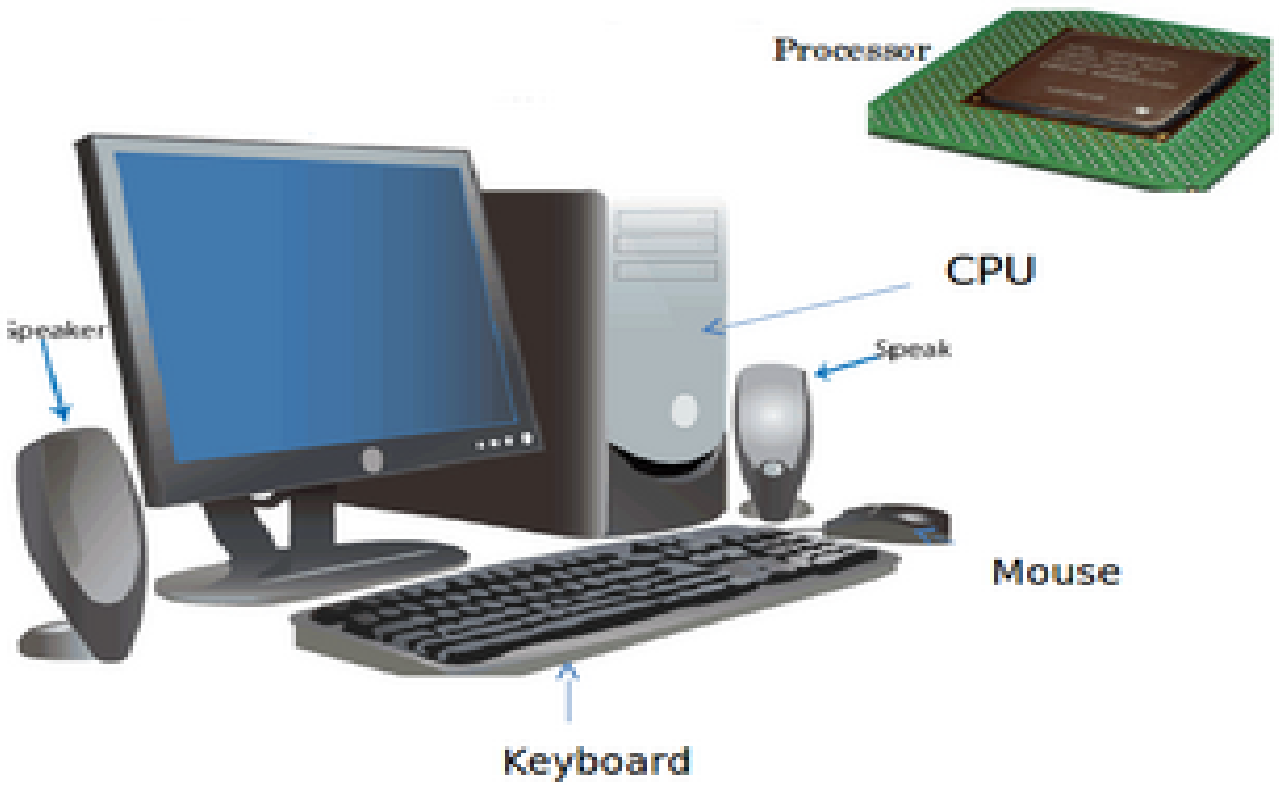


Parts of a computer (cont.)

- **Input devices:** Describe any operation, program, or device that transfers data to the computer. Example: keyboard, mouse, Scanner, etc. . .
- **The Processor:** Is a microchip inside the computer which contains the logic circuitry that responds to and processes instructions that drive the computer.
- **Output devices:** Are machines displaying information from the computer. Example: monitor, speakers, printer, etc ...

Example: organize data

- How computer computer work?



Central Processor Unit (CPU)

- Sometimes referred to simply as the central processor, but more commonly called **processor**, the CPU is the brains of the computer where most calculations take place.

- On large machines, the CPU requires one or more **printed circuit boards**. On **personal computers** and small **workstations**, the CPU is housed in a single chip called a **microprocessor**.

- Two typical components of a CPU are the following:

  - The logic unit (ALU), which performs arithmetic and logical operations.

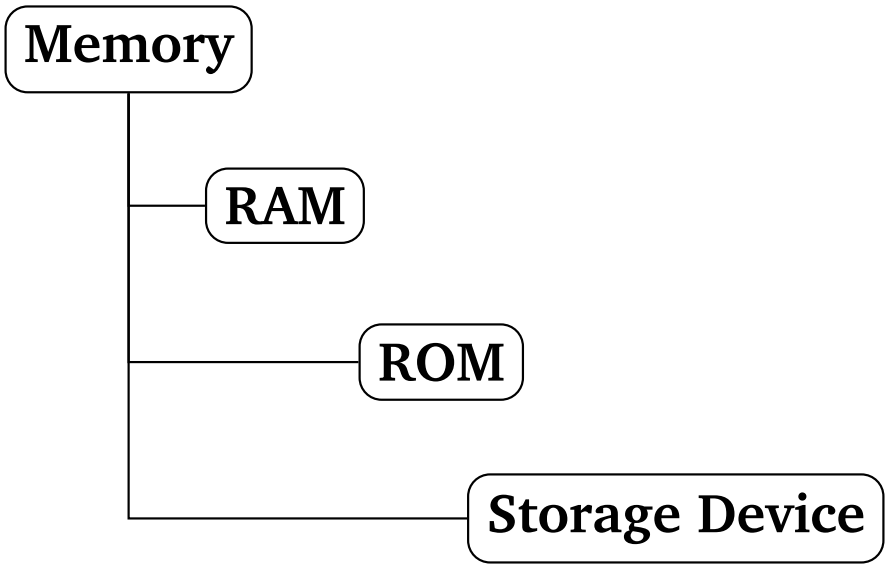
  - The control unit (CU), which extracts instructions from memory and decodes and executes them, calling on the ALU when necessary.

Central Processor Unit (CPU) (cont.)

- The processor only recognizes two digits: the ”0” and the ”1”. (The two digit language is known as binary.) All information is stored as 0’s and 1’s.
- After the processor translates the information from the input devices, the output devices deliver the information to the user. Words on the screen, information to the printer, or sound from the speaker.
- The computer receives information from input devices, the processor processes it, and it is fed back to the user through output devices. This cycle (input - process - output) would not be possible without a holding place for the information. This holding place is known as memory

Memory

- Memory: Is the electronic holding place for instructions and data that your computer's microprocessor can easily reach.



Memory (cont.)

- **Random Access Memory (RAM):** Is the primary working memory that holds data and instructions while the computer is in use. RAM can be written to and read from. If you do not save the information in RAM to a storage device before you turn the computer off, the information in RAM will be lost.

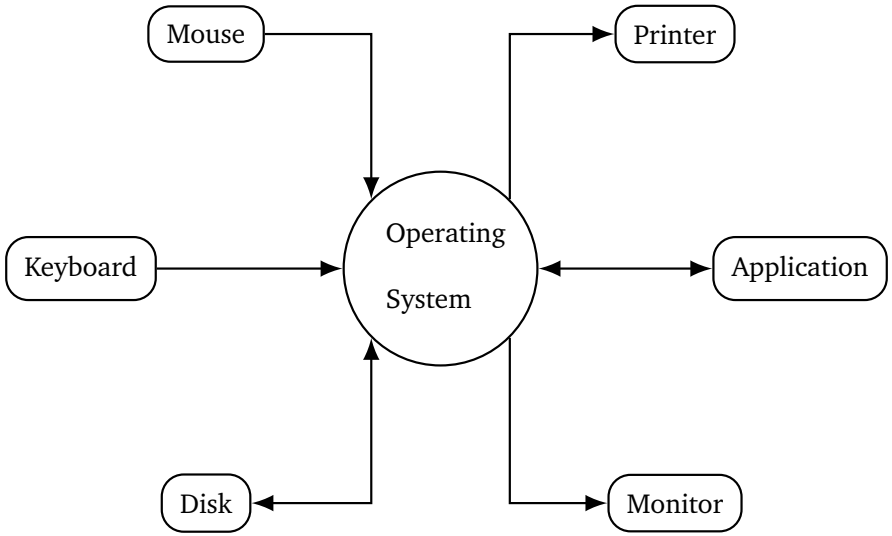
- **Read Only Memory (ROM):** Permanently stores instructions and data. The instructions and data in ROM are created when it is manufactured and it cannot be changed.

- **Disks and Storage:** A disk is a place to store data. Example: Hard Drive, USB Flash Drive, Floppy Disk / ZIP Disk, Compact Disk/DVD

Operating System and Desktop

- Computers use the operating system to manage all the related tasks needed to run the computer and its input and output devices.

- The operating system is an application that manages other applications and devices.



Desktop overview

- Desktop is the main screen (GUI) generated by the Windows operating system. The Desktop serves as the home base for just about everything you will do on the computer.

- The task-bar keeps track of all currently open programs :

Figure 2: Windows task-bar

Icons, Menus, File Management, Customizing Windows 7

- **Icons:** There are five categories of icons in the Windows OS: program icons, file icons, folder icons, shortcut icons, and special icons.

- **Menus:** Like icons, they are another way to access information. A Menu is a list of options from which you can execute commands.

File management

- In Windows OS, files are managed in a hierarchical.(upside down tree) file system.
- Customizing Windows 7: Create a new account
- Windows 7 Control panel features: used to change settings for Windows.