UNIT-I

INTRODUCTION TO COMPUTERS

Processing Device

- ✓ The **Central Processing Unit** or CPU is the processing device of a computer.
- ✓ It is called the **brain** of the computer.
- ✓ It makes all the required calculations and processes data into information.
- ✓ It controls all the input and output devices.
- ✓ The CPU consists of three units : ALU, CU and MU.

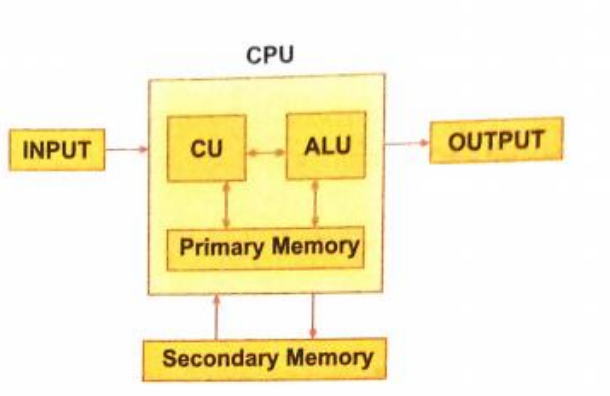
CPU

ALU or Arithmetic Logical Unit:

- ✓ It performs all the arithmetic computations and logical operations.
- ✓ It performs the mathematical calculations involving addition, subtraction, division, multiplication, logical as well as relational operations such as AND, OR, greater than, less than, etc.

CU or Control Unit :

- ✓ It controls and co ordinates the activities of all the other units of a computer system.
- ✓ It controls all the operations of the computer.
- ✓ It decodes instructions, determines the storage of instructions and data.
- ✓ It takes data to the ALU, from the ALU to the memory and then to the output unit.

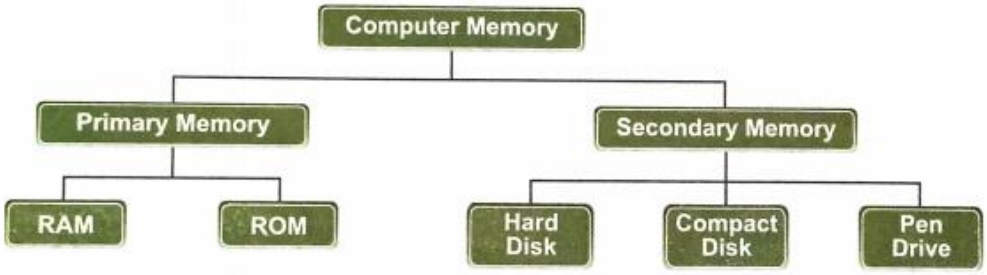


MU or Memory Unit :

- ✓ It is an important part of the computer system.
- ✓ Memory unit receives data, holds it and then delivers it according to the instructions from the Control Unit.

Storage Devices

- ✓ **Storage devices** enable you to store data and information in them.
- ✓ The storage device of a computer system is known as **computer memory**.



There are **two** types of computer memory **primary memory** and **secondary memory**.

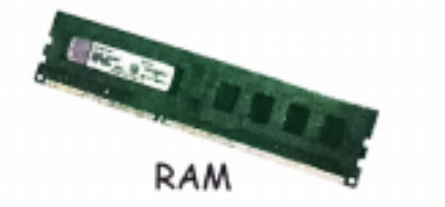
Primary Memory :

- ✓ It is often called the working memory or the **main memory** of a computer system.
- ✓ **RAM** and **ROM** are two major types of primary memory.

RAM (Random Access Memory)

- ✓ It is capable of sending and receiving data at a very high speed.

- ✓ It is **temporary** in nature.
- ✓ i.e. data stored is lost when the computer is switched off. So, it is also called the **volatile memory**.


RAM

ROM (Read Only Memory):

- ✓ It holds instructions put by the manufacturer to operate the computer.
- ✓ It is a permanent memory. So, it is also called the **non-volatile memory**.

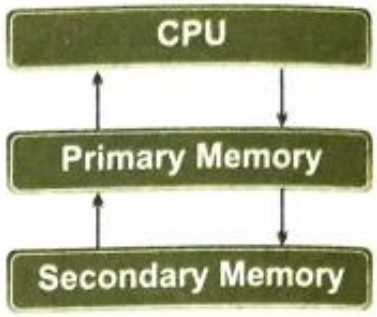

ROM

Secondary Memory

- ✓ It is used to store data for a long time.
- ✓ It operates at a slower rate than primary memory.
- ✓ Secondary memory is **permanent** in nature, i.e. data stored in secondary memory is not lost when the computer is switched off.
- ✓ So, it is also called the **non-volatile memory.**
- ✓ It is cheaper than primary memory.
- ✓ Examples of secondary memory are hard disk, compact disk and pendrive.

Accessing Computer Memory

- ✓ **Primary memory** can be directly accessed by the CPU but **secondary memory** cannot be accessed directly.
- ✓ Data from the secondary memory is first transferred to the primary memory and then to the CPU.



SOFTWARE

- ✓ Software relates to a set of programs, that controls the computer hardware parts and makes them operational.
- ✓ In other words, it governs the operations of a computer system.

Software is classified into **two** broad categories

- ❖ System Software
- ❖ Application Software

System Software

- ✓ It performs the basic functions that are necessary to operate a computer system.
- ✓ It controls the various resources of a computer system.
- ✓ The operating system (OS) is an example of system software.
- ✓ The various editions of **Windows** are the most commonly used operating system.

Windows 7

Norton AntiVirus


Linux

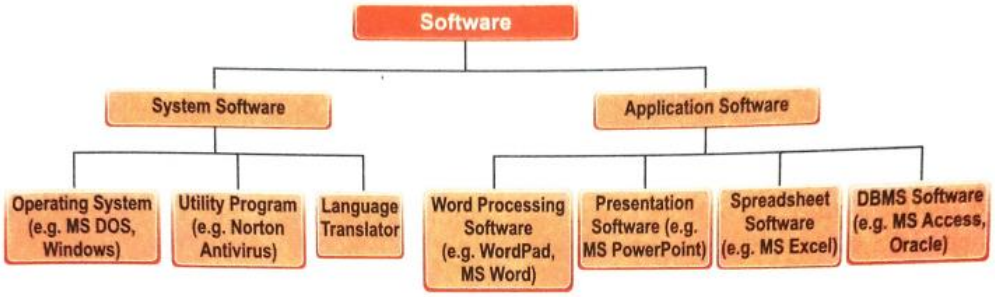
Application Software

- ✓ It consists of programs that are designed to do specific tasks, such as payroll, inventory, word processing, graphics, spreadsheets and desktop publishing.

MS Word

MS PowerPoint


Adobe Photoshop



RELATIONSHIP BETWEEN HARDWARE AND SOFTWARE

- ✓ The hardware and software together make a computer software system.
- ✓ Both are essential components of a computer system .
- ✓ Hardware is the physical component of a computer system, and software are the instructions or commands that make the hardware components operational.
- ✓ The software is the driving force of a computer.
- ✓ You may use any software and use the hardware.

- ✓ For example, you make a picture in Paint and give the print command to get a printout.

- ✓ Here, **Paint** is the **application software** which helps to create the picture and give the print command.
- ✓ The **operating system** is the **system software** which instructs the **hardware**, **printer** to print the picture.

DATA HIERARCHY

- ✓ You know that data refer to raw facts and figures that may consist of alphabets, numbers, sounds, pictures and images.
- ✓ A computer system processes data and gives information that is used for various purposes.
- ✓ The data is stored in the form of bits and bytes in a computer database.

Bit

- ✓ A **bit** is the short form of **binary digit**.
- ✓ A computer system represents data using the digits 0 and 1.
- ✓ These digits show whether the computer circuits are OFF or ON.
- ✓ A bit is therefore represented by an electronic circuit that is either OFF or ON.

Byte

- ✓ A **byte** is the collection of **8 bits**.
- ✓ A byte of information is stored by using several bits in a predefined combination called **bit patterns**.
- ✓ Two such bit patterns are ASCII and EBCDIC.

The descending order of data hierarchy

Do You Know?

- The full form of ASCII is American Standard Code for Information Interchange and that of EBCDIC is Extended Binary Coded Decimal Interchange Code.
- A byte represents a character such as A, B, 1, 2.

Field

- ✓ A **field** is a collection of bytes that contain information about an item.
- ✓ For example, the name of a student, his/her age and his/her class.

Record

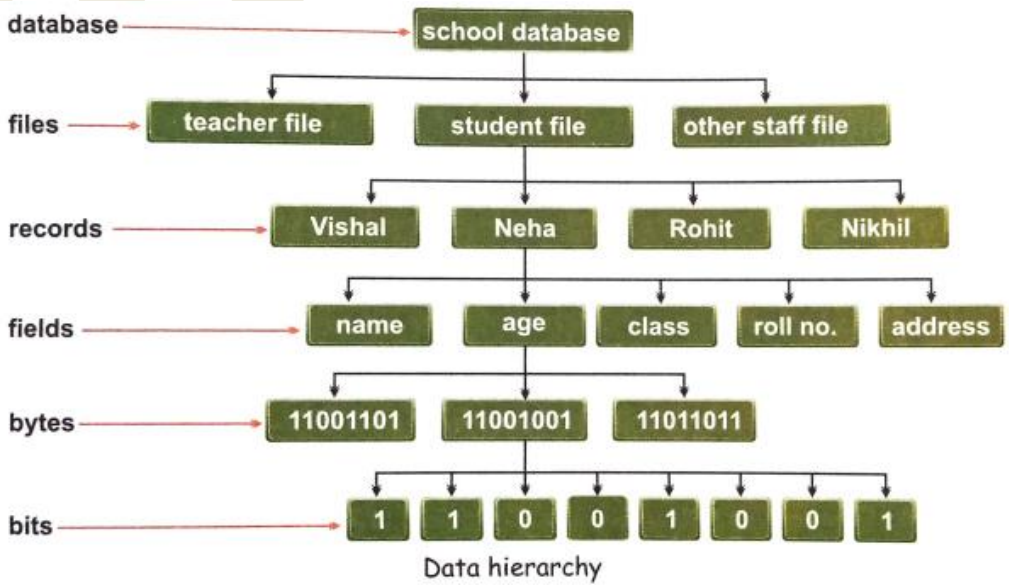
- ✓ A **record** is a collection of inter-related fields.
- ✓ For example, a student's record may contain fields such as name, age, class and subjects.

File

- ✓ A **file** is a collection of related records.
- ✓ For example, a collection of all the records of all the students in your class is **class** file.

Database

- ✓ A **database** is a collection of all the files in an organisation.
- ✓ For example, files of students, teachers and other staff members of your school make the **school** database.



Data hierarchy

MULTIPLE CHOICE QUESTIONS

Tick (✓) the correct option.

1. ALU, CU and MU are parts of the ..... .
   (a) software ☐ (b) CPU ☐ (c) RAM ☐
2. Software are a set of ..... .
   (a) programs ☐ (b) files ☐ (c) data ☐
3. A computer represents data using digits ..... .
   (a) 1 and 2 ☐ (b) 0 and 2 ☐ (c) 0 and 1 ☐
4. A file is a collection of related ..... .
   (a) fields ☐ (b) databases ☐ (c) records ☐

1)CPU

2)Program

3)0 and 1

4)records