ONLINE
SUPPROT SERVICES

CERTIFICATE IN
INFORMATION TECHNOLOGY

Run & Managed by NASO

IGNOU SC-2281

Jakhepal-Ghasiwala Road, Sunam

For more information visit us at: nirmancampus.co.in

Call us at: 9815098210, 9256278000

MEMORY

A memory is just like a human brain. It is used to store data and instructions. Computer memory is the storage space in computer. The memory is divided into a large no. of small cells. These cells define the memory location of data. Each location has a unique number. This number is called its address. We can view the memory as shown in figure

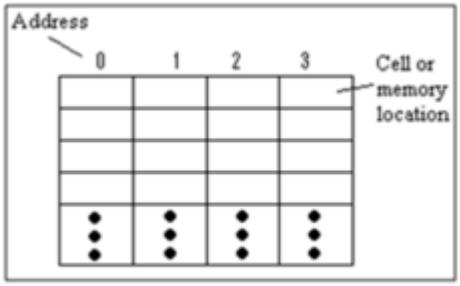


Figure: Cells of Memory

Memory Units:

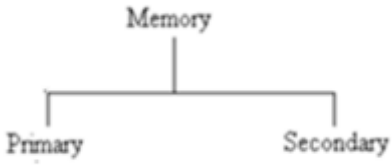
Memory units are used to measure the size of memory. Following units are used to measure the memory:

a. **Bit (Binary Digit)** : A binary digit: 0 or 1
b. **Nibble** : A group of four bits is called nibble (1010).
c. **Byte** : A group of 8 bits (11001010) is called byte.
d. **Kilobyte (KB)** 1KB = 1024 Bytes
e. **Megabyte (MB)** 1 MB = 1024 KB
f. **Gigabyte (GB)** 1GB = 1024 MB
g. **Terabyte(TB)** 1TB = 1024GB

TYPES OF MEMORY:

There are two basic types of computer memory:

1. Primary Memory
2. Secondary/Auxiliary Memory



PRIMARY/MAIN MEMORY

Primary is also known as **Main Memory**. This type of memory is also known as **internal memory**. Primary memory is an important memory for computer to work. Computer cannot start without this memory. It is very fast memory. But, it has a limited capacity. This memory consists of some **Integrated Circuit** (IC) chips. Modern Main Memories are semi-conductor memories. These memories use the flip-flops on a silicon chip. A Flip-flop can store either 1 or 0.

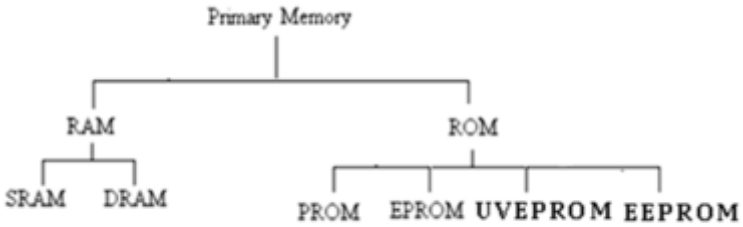


Fig: Types of Main Memories

Types of Main Memories:

Main Memories can be divided into two categories:

- Random Access Memory (RAM)
- Read Only Memory (ROM)

RANDOM ACCESS MEMORY (RAM):

RAM stands for Random Access Memory. When CPU executes the program, its instructions and data reside in this memory. It is used for storing data, program and result. It is a read/write memory. But, data cannot be stored permanently in this memory. It is a **volatile memory**. It means data stored in this memory is lost when we switch off the computer.

Types of RAM: There are two types of RAM. These are explained below:

a. DRAM:

It is the **Dynamic Random Access Memory**. In DRAM, each cell consists of one transistor and one capacitor. Transistor works as a switching device. It gives two states on and off. Capacitor is used to store charge in it. When transistor is on, current is passed and capacitor gets charged. But this charge gets reduced with time. So, the capacitor has to be charged again. This process is called **Regeneration of Charge**. This process happens again and again. So, it is called Dynamic RAM. The circuit of DRAM is simple and less costly.

b. SRAM:

It is the **Static Random Access Memory**. It contains more than one transistors and capacitors. Therefore, it is more expensive. But it does not lose its charge with time. So it is better than DRAM. But its circuit is complicated. So they are used for some special purpose.

ROM (READ ONLY MEMORY):

ROM stands for **Read Only Memory**. This memory contains instruction that helps computer to start. These instructions are referred to as **bootstrap program**. The combination of ROM chip and software is known as **Firmware**.

We can only read data from this memory. We cannot change the contents of this memory. It has factory made contents. This is a **non-volatile** memory. The information is stored permanently in this memory.

Types of ROM:

There are many types of ROM. These are explained below:

a. PROM (Programmable Read Only Memory):

The PROM is a Programmable Read Only Memory. The user buys a blank PROM. He can enter the software in this ROM using a PROM burner (software). It can be programmed only once. After that we cannot erase the contents of this memory.

b. **EPROM (Erasable Programmable-Read Only Memory)**:

This is another type of ROM. We can erase the contents of this type of ROM. So, we can make the ROM reusable.

c. UVEPROM (Ultra Violet Erasable and Programmable Read only memory):

This type of ROM can be erased by exposing it to ultra violet light. After erasing, we can program it.

d. EEPROM (Electrically Erasable and Programmable Read only Memory):

This type of ROM is erased electrically. After erasing, we can program it.

SECONDARY MEMORY:

This type of memory is also known as **external memory or non-volatile**. These are slower than main memory. These are used for storing data permanently. Secondary Memory has large storage capacity. CPU cannot access this type of memory directly. Contents of secondary memories are

first transferred to main memory, and then CPU can access it. Examples of secondary memory are: Magnetic Tape, Hard Disk, Floppy Disk, CD-ROM, DVD etc.

Types of Secondary Memory:

Secondary Memory can be classified into two types:

a. **Sequential Access Memory**: These storage devices allows only sequential access of data. For example: Magnetic Tape.

b. **Direct Access Memory**: These storage devices allows direct access of data also. For example: Floppy Disk, Hard Disk, Optical Disks etc.

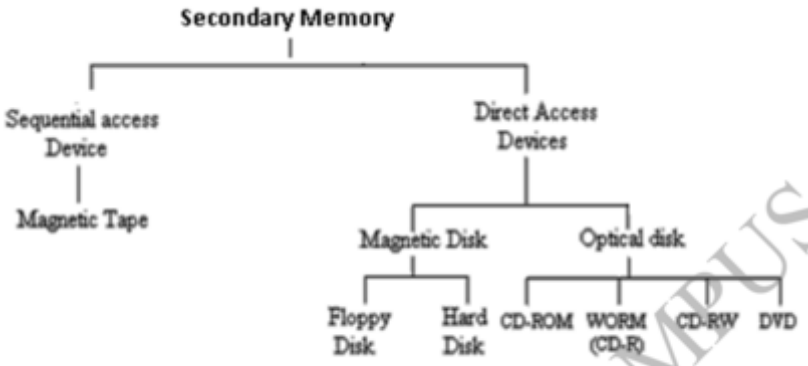


Fig: Different Tyopes of Secondary Memory

Commonly used Secondary storage devices are explained below:

HARD DISK:

Hard Disk is the secondary storage device. We can read, write and store data permanently in the hard disks. It allows direct access of data. It can store large amount of data. Its memory size is measured in Gigabytes (GB) and Terabytes (TB). It is fixed in CPU. It is faster than floppy disk.

Hard Disk is made up of aluminum material. Hard Disk consists of one or more metallic platters (rapidly rotating disks). These platters are coated with magnetic material. These platters are sealed inside a container. Sealed container has a motor for rotating disk. It also contains an access arm and read write head.

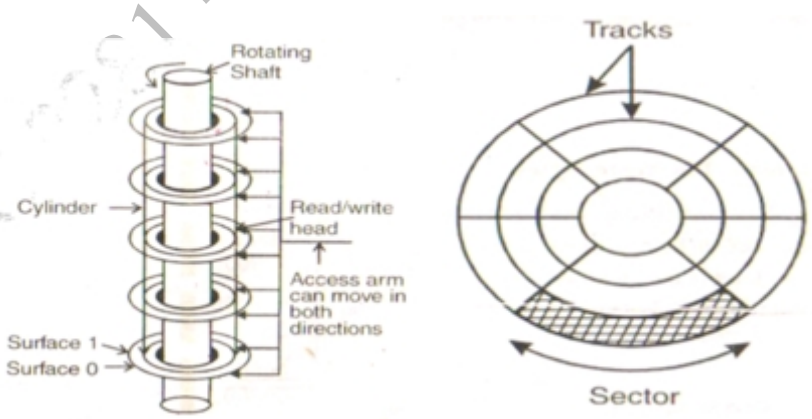


Fig: Internal View of Hard Disk

The platters are mounted on a spindle. This spindle is connected to a motor. Motor rotates it at a very fast speed. This speed is usually 7200 rpm (rotations per minute). Each disk/platter is divided into number of tracks (circular). Each track is further subdivided into sectors.

COMPACT DISK (CD):

CD is the secondary storage device. It is an Optical Disk. It is commonly known as Compact Disk Read Only Memory (CD-ROM). It allows direct access of data. It uses laser technology. It can store

large amount of data as compared to Floppy disk. It can be used to transfer data from one computer to another.

CDs are commonly used to store data, information and software. Its contents cannot be changed or erased. CD-ROM drive is used to read data from CD. Compact disks can store 700 MB of data. There are many variations of CDs. These are:

WORM (Write Once Read Many times) is a type of compact disk. It can be recorded only once. After that it cannot be erased.

CDRW (CD Read Write) is another type of compact disk. It can be recorded and erased many times.

Advantages of CD-ROM

1. It has large storage capacity as compared to floppy disk.
2. It has low price.
3. It is fast as compared to floppy
4. It is suitable for backup storage.

Disadvantages of CD-ROM

1. It is read-only and data cannot be changed.
2. It is slower than magnetic disk drives.

DVD

DVD stands for **Digital Versatile Disc** or **Digital Video Disk**. It is a secondary storage device. It is also an Optical Disk. It allows direct access of data. It allows storage of data in the form of many layers. It is mainly used to store and distribute movies. It becomes a very popular storage media. It has low price and large storage capacity.

There are two types of DVDs:

Single-layer DVD: It has storage capacity of approx. 4.7GB.

Double layer DVD: It has storage capacity of approx. 8.5GB.

FLOPPY DISK (DISKETTE):

Floppy disk is also known as **Diskette**. It is a secondary storage device. It allows direct access of data. Floppy Disk is a portable storage device. It was usually used to transfer data from one computer to other. It is a smaller and cheaper disk unit. It has a very small storage capacity (1.44MB).