

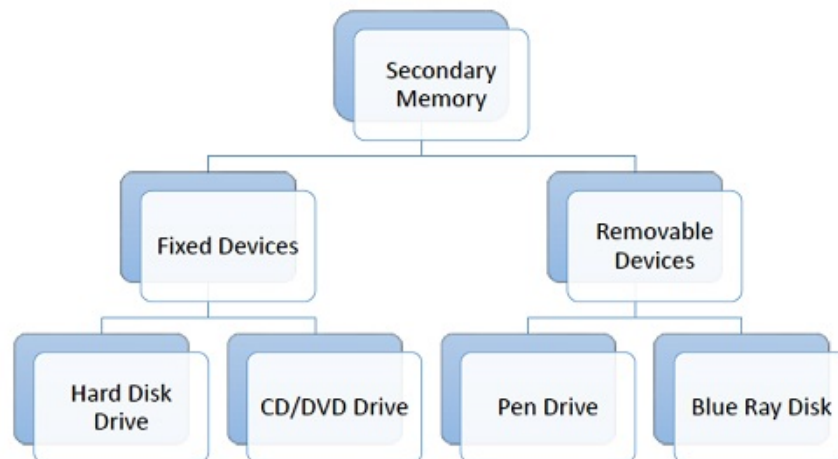
## Secondary Memory

### Introduction:

1. Secondary memory (or secondary storage) is larger storage, where programs and data are kept on a long-term basis.
2. It cannot be processed directly by the CPU.
3. Secondary memory providing permanent storage of data and in bulk quantity.
4. It is the slowest memory.
5. It is non-volatile, i.e. it retains data when power is switched off
6. It is cheaper as compared to primary memory.
7. Secondary memory devices include magnetic disks like Hard Disk Drives and floppy disks; optical disc such as CD, DVD and Blue Ray Disc; and magnetic tapes.
8. Storage medium that are portable and can be taken outside the computer are termed as removable storage media.

### Type of Secondary Memory:

There are two types of secondary memory – fixed and removable.



### Fixed Storage-

A Fixed storage is an internal media device that is used by a computer system to store data, and usually these are referred to as the Fixed Disks drives or the Hard Drives.

Fixed storage devices are literally not fixed; obviously these can be removed from the system for repairing work, maintenance purpose, and also for upgrade etc. But in general, this can't be done without a proper toolkit to open up the computer system to provide physical access, and that needs to be done by an engineer.

### Removable Storage-

A Removable storage is an external media device that is used by a computer system to store data, and usually these are referred to as the Removable Disks drives or the External Drives.

Removable storage is any type of storage device that can be removed / ejected from a computer system while the system is running. Examples of external devices include CDs, DVDs and Blue Ray disc drives, as well as diskettes and USB drives. Removable storage makes it easier for a user to transfer data from one computer system to another.

## Secondary Storage Media Examples

<b>Magnetic storage media</b>	Floppy Disk
	Hard disk
<b>Optical storage media</b>	Compact Disc(CD)
	Digital Versatile Disc(DVD)
	Blue Ray Disc
<b>Solid State Memories</b>	Pen Drives
	SSD - HDD
	flash Memory (Memory chips or Micro Card)

Difference between Primary Memory and Secondary Memory:

<b>Primary Memory</b>	<b>Secondary Memory</b>
Primary memory is directly accessed by the Central Processing Unit(CPU).	Secondary memory is not accessed directly by the Central Processing Unit(CPU). Instead, data accessed from a secondary memory is first loaded into Random Access Memory(RAM) and is then sent to the Processing Unit.
RAM provides much faster accessing speed to data than secondary memory. By loading software programs and required files into primary memory(RAM), computer can process data much more quickly.	Secondary Memory is slower in data accessing. Typically primary memory is six times faster than the secondary memory.
Primary memory, i.e. Random Access Memory(RAM) is volatile and gets completely erased when a computer is shut down.	Secondary memory provides a feature of being non-volatile, which means it can hold on to its data with or without electrical power supply.

### Exercise:

- 1: What is Secondary Memory?
- 2: How Many Type of Secondary Memory?
- 3: Difference between Primary and Secondary Memory?
- 4: Write examples of Removable Storage.