

Difference Between Primary and Secondary Memory

The difference between primary and secondary memory is that primary memory, stores data temporarily while secondary memory preserves data over time. We will now explore the difference between Primary and Secondary Memory. The major differences between these two memories are explained in the table below.

Primary VS Secondary Memory	
Primary Memory	Secondary Memory
This memory is temporary memory.	This memory is permanent memory.
This memory is directly accessible by the computer's Processor/CPU.	This memory is not directly accessible by the computer's CPU.
The nature of Parts of this Primary memory varies because RAM- is volatile in nature while the ROM- Non-volatile.	This memory is always Non-volatile in nature.
The devices of primary memory are more expensive than secondary storage devices.	The devices of secondary memory devices are not more expensive as compared to primary memory devices.
The memory devices used for primary memory are semiconductor memories.	The secondary memory devices are magnetic and optical memories.
This memory is known as a device's main or internal memory.	This memory is known as external memory or auxiliary memory of a device.
Example: RAM, ROM, Cache memory, PROM, EPROM, Registers, etc. are Examples.	Examples: Hard Disk, Floppy Disk, Magnetic Tapes, etc. are Examples.

What is Primary Memory?

The Primary Memory is the main memory of the computer system. Because primary memory is an internal memory of the computer, accessing data from this memory is faster. This memory is the most volatile because the data in primary memory does not reside if data is not saved when a power cut occurs. Primary memory is costlier as compared with secondary memory. Its capacity is very much limited and is smaller than the secondary memory.

There are two types of Primary Memory:

- **RAM (Random Access Memory):**- This memory is known as the computer system's main memory. It is also called temporary memory or cache memory. The data stored in this memory is suddenly lost when the PC is switched off.
- **ROM (Read Only Memory):**- This memory is a permanent type of memory. Its data is not lost when the PC is switched off suddenly. The device manufacturer decides the information of this memory, and this memory is permanently stored at the time of manufacturing and can not be reset by the user.

What is Secondary Memory?

All devices/computers capable of storing high-volume data are secondary memory. These types of memories are slower than primary memory. However, it can save a large amount of data, from gigabytes(GB) to terabytes(TB). Backup storage or mass storage media are the other names for Secondary memory.

Types of Secondary memory

- **Mass storage devices:** The magnetic disk is a mass storage device that provides cheap storage and can be used for both small and large devices. There are two types of magnetic disks one is Floppy disks second is Hard disks.
- **Flash/SSD:** SSD stands for Solid State Drive that provides a persistent flash memory that is very fast compared to Hard Drives. These drives are frequently found in Mobile phones, laptops, and Mac.
- **Optical drives:** This drive is a secondary storage device from which data is read and written with the help of lasers. It can contain data up to 185TB. Examples: CD, DVD, Blue-Ray
- **USB drives:** These are the most popular secondary storage devices that are removable, rewritable, and very small in size.
- **Magnetic tape:** These devices are serial access storage devices that have the storage of a very high volume of data, and they are usually used for backups.

Key Difference Between Primary and Secondary Memory

The key difference between primary and secondary memory is given below.

- While secondary memory is often referred to as backup memory or auxiliary memory, primary memory is also known as internal memory.

- The data bus can access primary memory, whereas I/O channels can access secondary memory.
- Data in secondary memory cannot be accessed directly by the processor, whereas data in primary memory can be accessed immediately by the processing unit.
- When comparing the prices of primary and secondary storage options, primary storage is more expensive than secondary storage, while secondary storage is less expensive than a primary storage option.
- While secondary memory can be either volatile or nonvolatile, primary memory is always nonvolatile.

