Difference Between Primary Memory and Secondary Memory

Rashmi Karan ✅
Manager - Content

Updated on Feb 9, 2024 12:32 IST

Computer memory is simply the computer's brain where data and information are stored for easy retrieval. Memory is the computer's storage space that temporarily or permanently stores data or programs. Learn what primary and secondary memory is, their types, and the difference between primary and secondary memory. The article covers the concepts of primary memory and secondary memory, along with the difference between both.

Explore – Operating System Online Courses

Content

- Difference between Primary and Secondary Storage
- What is Primary Memory?
    - Types of Primary Memory:
- What Is Secondary Memory?

Difference between Primary and Secondary Memory – Comparison Table

Primary memory is used for temporarily storing data that is actively being used by the computer's CPU, while secondary memory (storage) is used for long-term data storage, such as files and programs that are not currently in use. Listed below are some other primary and secondary memory differences.

Comparison Parameters	Primary Memory	Secondary Memory
Storage validity	Primary memory is the main memory and stores data temporarily.	Secondary memory is the external memory and stores data permanently.
Access	The CPU can directly access the data.	The CPU cannot directly access the data.
Volatility	Primary memory is volatile. It loses data in case of a power outage.	Secondary memory is non-volatile; data is stored even during a power failure.
Storage	Data is stored inside costly semiconductor chips.	Data is stored on external hardware devices like hard drives, floppy disks, etc.
Division	It can be divided into RAM and ROM	They do not have such a classification. Secondary memories are permanent storage devices like CDs, DVDs, etc.
Speed	Faster	Slower
Stored data	It saves the data that the computer is currently using.	It can save various types of data in various formats and huge sizes.

shiksha
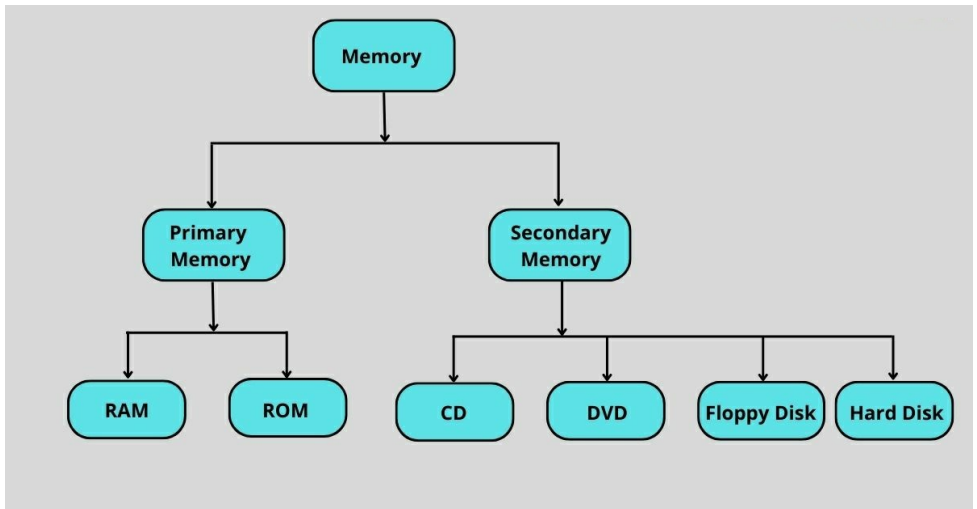
Now that you know how to differentiate between primary and secondary memory let us understand their basic concepts.

Explore the fundamentals of operating systems. Explore our top OS programmes offered by the best colleges in India and online Operating system Courses, and advance your career.

What is Primary Memory?

Primary memory is the internal memory of a computer system. It stores and retrieves data, instructions, and information. The CPU directly and randomly accesses primary memory; hence primary memory is also referred to as Random Access Memory or RAM. It is a volatile memory and loses data and instructions when the power turns off.

Difference Between Static and Dynamic Memory… Allocation

This article includes the difference between static and dynamic memory allocation with examples and applications

Memory Management Techniques in Operating System

Memory management is very important aspect of operating system performance.In this article we have covered different memory management techniques like paging,swapping,compaction and segmentation. This article covers different topics related to**...read more**

Types of Primary Memory:

RAM (Random Access Memory)

Random Access Memory or RAM is usually provided as the computer system's main memory. It is also regarded as temporary or cache memory constantly being written to and read. You will lose information saved in primary memory when the power supply of the computer or laptop turns off. Simply put, RAM is a primary memory from which you can only read information.

Must Read – [What is Operating System?](#)

ROM (Read-Only Memory)

ROM is a non-volatile memory containing data that we cannot change. In this case, information is not lost when the power supply is turned off. The computer manufacturer determines ROM information. It is permanently stored at the time of manufacture so that the user cannot overwrite it.

Different Types of Memory in Computer

For a system to function properly, it is important to have different types of memory in computer. It stores information that the CPU uses for processing and completing instructions. There**...read more**

Difference Between Volatile and Non-Volatile Memory

There are two primary types of hardware-based memory, volatile and non-volatile. The main difference between both is that volatile memory is any data storage that does not retain its information**...read more**

Primary Memory Characteristics

- The computer cannot function without primary memory.

- Primary memory is also known as the main memory.

- You may lose data in case the power is off

- Also known as volatile memory

- It is the working memory of the computer.

- It is faster as compared to secondary memory.

- Examples: RAM, ROM, cache, PROM, EPROM, registers, etc.

Types of Operating Systems

There are different types of operating system.This article includes imporant types of operating systems with diagrams. This article covered types of operating systems multiprogramming, multiprocessor, distributed, batch, time-sharing, and multitasking**...read more**

Process Scheduling: Operating System

Have you ever wondered how your computer juggles multiple tasks simultaneously? To know that, you must read this blog on process scheduling in the operating system! This article includes**...read more**

What is Secondary Memory?

Secondary memory is a storage device that the CPU cannot access directly. It is a permanent storage device.

The CPU accesses these devices through an input/output channel. The data first transfers to primary from secondary storage before its assessment. Modern computers often use hard drives and optical storage devices (CDs, DVDs) as secondary storage devices.

Difference Between Paging And Segmentation

The main difference between Paging and Segmentation is that Paging divides memory into fixed-size blocks called pages, while Segmentation divides memory based on data type or function into variable-sized segments.

Operating System Interview Questions

In this article you will find important operating system questions which are likeable to be asked in interview.

A secondary storage device organizes data into files and directories based on a file system. It also allows the user to access or use additional information like access permissions, owner, last access time, etc. Also, secondary memory keeps less used data temporarily when primary memory gets full.

Secondary memory devices are less expensive and can store vast amounts of data, audio, video, and multimedia files. Organizations can store the equivalent of a roomful of data on disks that consume dramatically and significantly less physical space.

Your Career Awaits: Discover the Best Government Job-Oriented Courses After 10 & Online Government Certification Opportunities

Types of Secondary Memory

- Solid-state storage devices, such as USB memory sticks.
- Optical storage devices, such as CDs, DVDs, and Blu-ray discs.
- **Examples**: Magnetic storage devices include zip, floppy, and hard disk drives.

Secondary Memory Characteristics

- These are magnetic and optical memories.
- It is a type of non-volatile memory.
- Data is permanently stored even when the computer is turned off

shiksha

- It helps store data on a computer

- The computer can function without secondary memory

- Slower than primary memory

- **Examples**: magnetic tapes, optical discs, floppy disks, flash memory [USB drives], paper tape, punched cards, etc.

What is Private Cloud Storage? – Private Cloud Examples

This article explains what private cloud storage is – its capabilities, benefits, and challenges along with some use cases.

All About Secondary Storage Devices

Secondary storage devices are any non-volatile storage device that is either internally or externally present within the computer. These can be an7 device that helps provide permanent data storage.

Comparison Between Primary And Secondary Memories

- Primary memory is the computer's main memory and stores data temporarily.

- Secondary memory is external memory and saves data permanently.

- Data stored in primary memory can be directly accessed by the CPU, which cannot be accessed in secondary memory.

- Primary memory is lost during a power outage, while secondary memory saves the data.

- Secondary memory is non-volatile, while primary memory is volatile.

- Primary memory is stored on semiconductor chips, while secondary memory is stored on external devices.

- Primary memory is classified into cache and random access memory, while secondary memory has no such categories.

- Secondary memory can save data in various formats that can be accessed anytime, while primary memory uses the computer's current data.
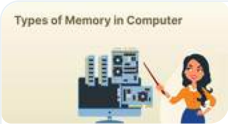
- Primary memory is faster.

shiksha

Conclusion

Both types of memory have several differences. Although different, they work together for the computer to run smoothly. Primary memory itself can't save more than a few gigabytes of data, but secondary memory fills that gap by providing up to a terabyte of space. While the latter lags in processing data, the primary memory is faster and easily accessible.

Both primary and secondary memories are crucial for a computer's effortless and efficient functioning, and they complement each other. I hope this article helped you to differentiate between primary and secondary memory, or we can say understand the difference between primary and secondary storage.

Recommended Reads

Different Types of Memory in Computer

For a system to function properly, it is important to have different types of memory in computer. It stores information that the CPU uses for processing and completing instructions. There**...read more**

DVD Full Form

Learn the full form of DVD. Delve into the fascinating world of DVDs, which brought high-quality video and audio into homes worldwide. Learn about the rise, evolution, and enduring relevance**...read more**

Working of Cache Memory in Computer

This article is focussed on cache memory and its different types.It also explains the working of cache memory in computer.Cache memory in computer is a small amount of random-access memory**...read more**

Examples of Computer Hardware: Understanding the… Components that Power Your PC

Explore the fascinating world of computer hardware with our comprehensive guide, delving into various examples from processors to peripherals. Discover the building blocks of modern technology!

What are Examples of Microcomputers?

Microcomputers are compact computing devices primarily designed for individual use. Examples include desktop computers like Apple's iMac, portable laptops like Dell's Inspiron series, and single-board computers like Raspberry Pi. They**…read more**

Exploring the Evolution of Generations of Computers

Computers have gone through many changes over time. The first generation of computers started around 1940 and since then there have been five generations of computers until 2023. Computers evolved**…read more**

ROM Full Form: Read Only Memory

What is ROM (Read Only Memory) –It is the type of computer memory that stores data that can only be read, not written. In simple terms, it's like a book**…read more**

FAQs

How is primary memory different from secondary memory in terms of speed?

Can programs be directly executed from secondary memory?

What is the capacity difference between primary memory and secondary memory?

Can primary memory be upgraded or expanded?

Which memory type is more expensive: primary or secondary?