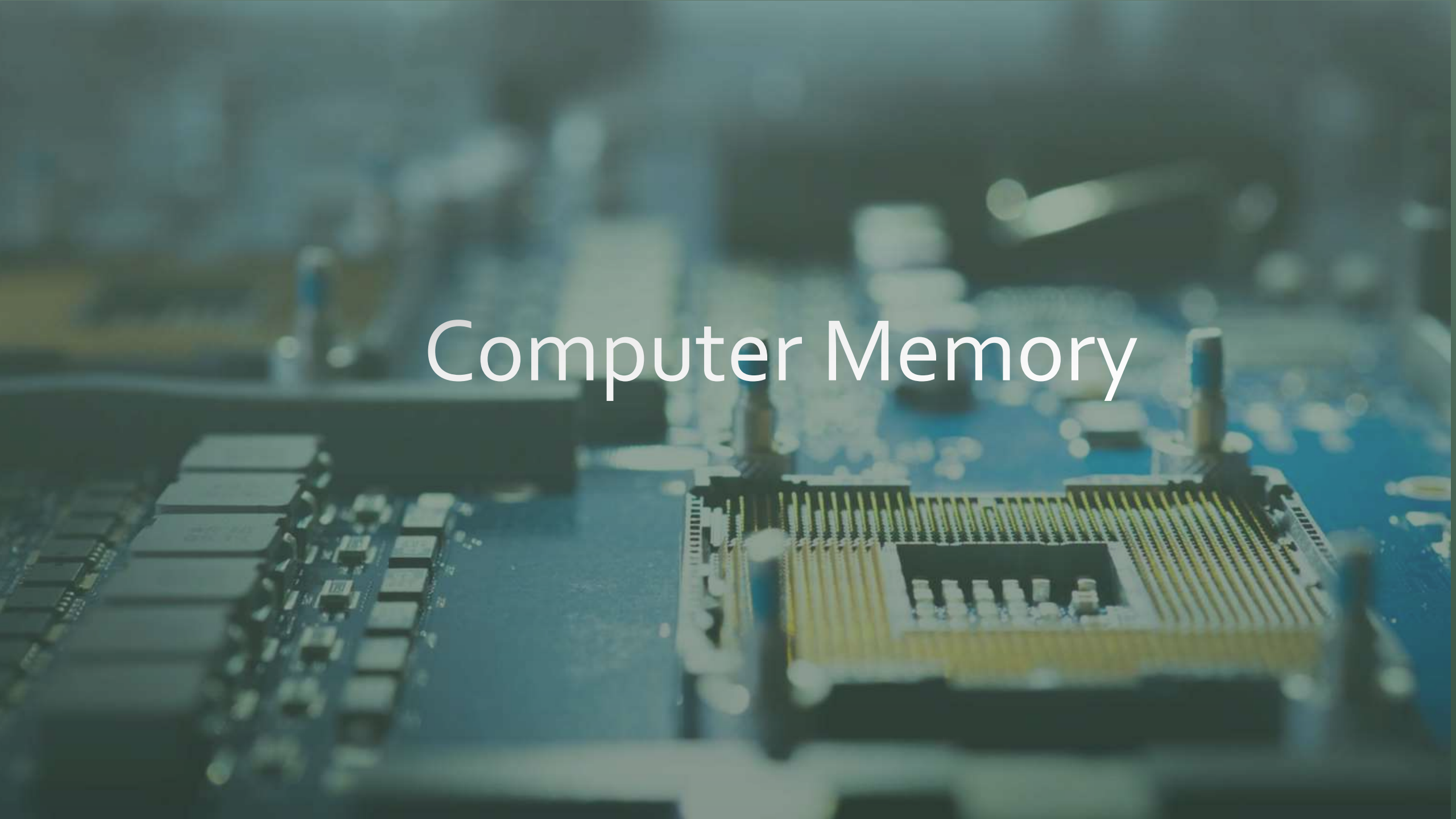


Computer Memory



Content of Table

- ★ Computer Memory
- ★ Memory Units
- ★ Types of Memory
- ★ Primary Memory
- ★ Types of RAM & ROM
- ★ Cache Memory
- ★ Secondary Memory

Memory

As the word implies “memory” means the place where we have to store anything, this is very essential part of human being just like this memory is also very important for computer system because in computer system we have to store some data or information and for storing these items we need some memory or space.

So that’s why we can say that memory is very important part of computer system

Computer Memory is any physical device, used to store data, information or instruction temporarily or permanently. It is the collection of storage units that stores binary information in the form of bits.

Why do we need a computer memory?

In the computer system, we need computer memory to store various types of data like text, images, video, audio, documents, etc. We can retrieve it when the data is required. For example, when we write and execute any computer program, it is initially stored in primary memory. If the processor does not need particular items for a longer time, the program or data is automatically saved into the permanent or secondary memory. Then the data is called from secondary memory to main memory and performs the execution of codes.

Features of Memory

Following are the different features of the memory system that includes:

1. Location

2. Capacity

3. Access Methods



DMA

Sequential Access Method

Random Access Method

Associative Access Method

4. Unit of transfer

5. Performance



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graph LR; A[5. Performance] --- B[Access Time]; A --- C[Memory Cycle Time]; A --- D[Transfer rate]
```

Access Time

Memory Cycle Time

Transfer rate

6. Physical types

7. Organization

8. Physical characteristics

Types of Memory

There are basically two types of computer memory

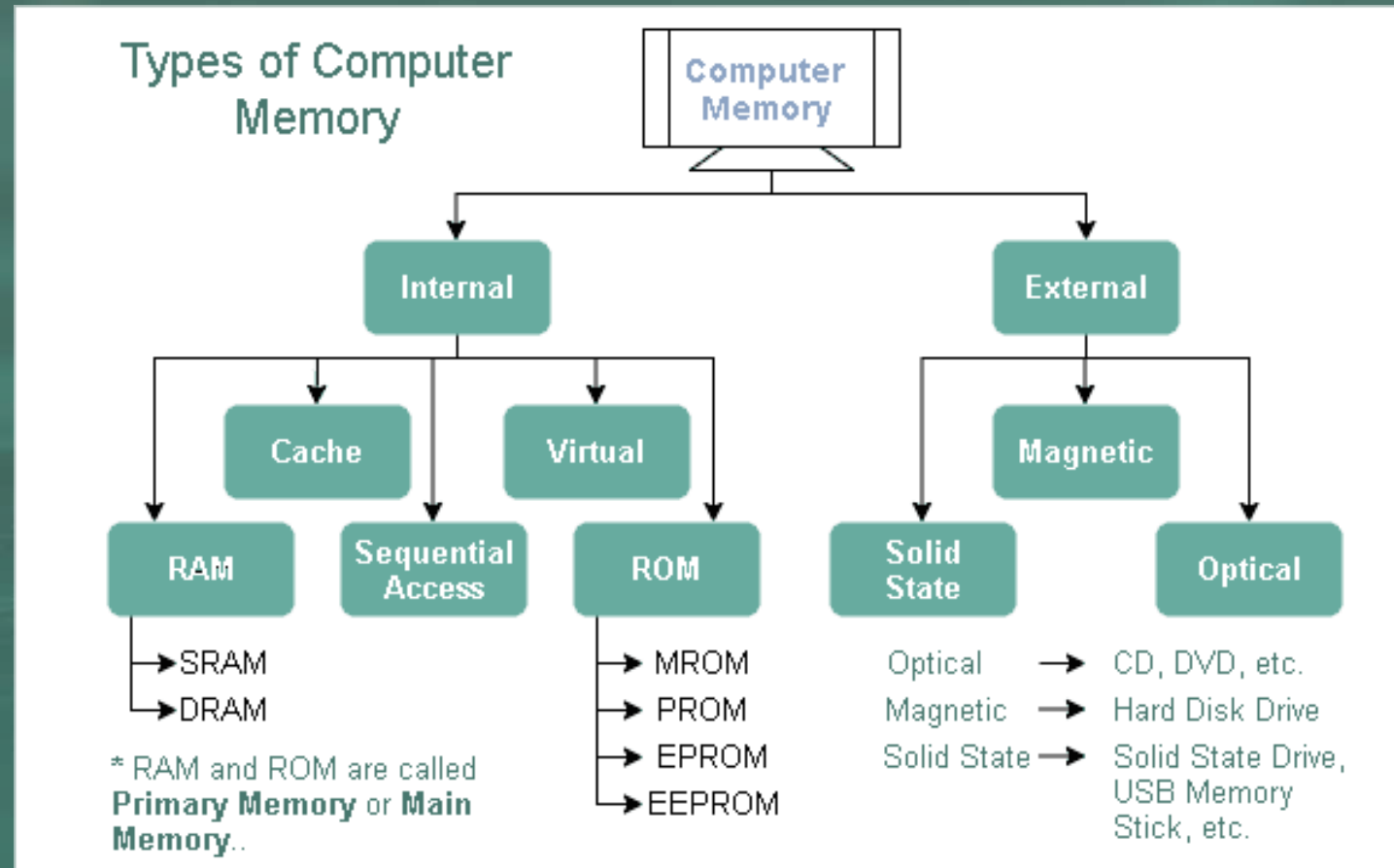
Internal Memory

- Internal memory usually refers to the chips or modules that are directly connected to the motherboard . Internal memory also knows as “primary memory”

External Memory

- External memory is usually a kind of memory that is attached to the computer system separately . External memory is also knows as “Secondary memory” or Auxiliary memory

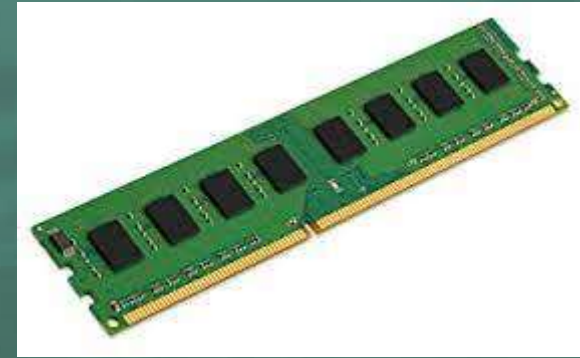
Hierarchical Representation of computer memory



RAM

• Primary Memory

RAM : It stands for Random Access Memory. Here data can be stored temporarily, so this type of memory is called as temporary memory or volatile memory because when power fails the data from RAM will be erased.



Two types of RAM

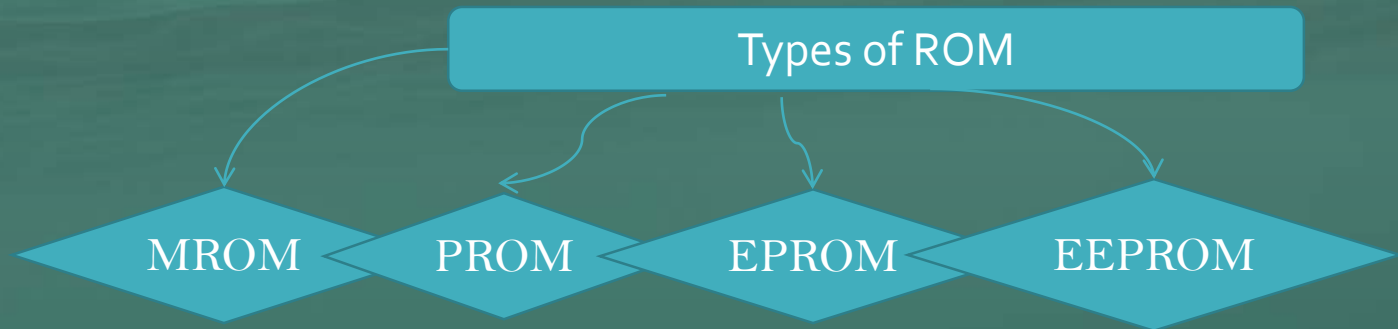
1. **SRAM** Static Ram

2. **DRAM** Dynamic Ram

ROM

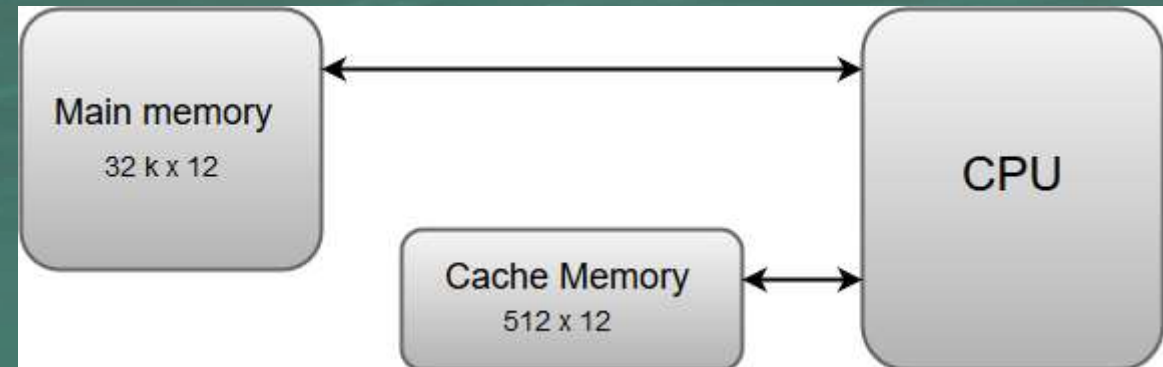
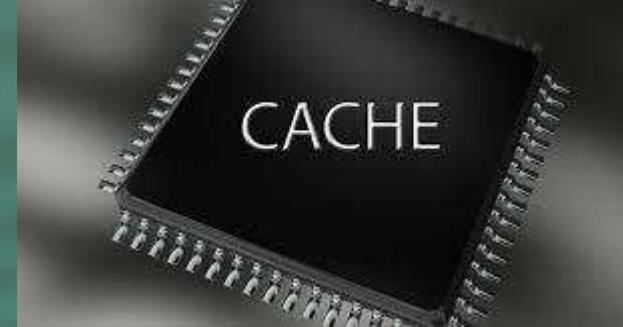
Primary Memory

ROM : ROM (Read only memory) is a memory device or storage medium that is used to **permanently** store information inside a chip. It is a read-only memory that can only read stored information, data or programs, but we cannot write or modify anything. A ROM contains some important instructions or program data that are required to start or boot a computer. It is a **non-volatile** memory; it means that the stored information cannot be lost even when the power is turned off or the system is shut down.



Cache Memory

It is a small-sized chip-based computer memory that lies between the CPU and the main memory. It is a faster, high performance and temporary memory to enhance the performance of the CPU. It stores all the data and instructions that are often used by computer CPUs. It also reduces the access time of data from the main memory. It is faster than the main memory, and sometimes, it is also called CPU memory because it is very close to the CPU chip.



Secondary Memory

Secondary Memory is a **permanent storage** space to hold a large amount of data. Secondary memory is also known as external memory that representing the various storage media (hard drives, USB, CDs, flash drives and DVDs) on which the computer data and program can be saved on a long term basis. However, it is cheaper and slower than the main memory. Unlike primary memory, secondary memory cannot be accessed directly by the CPU.

Hard disk



Floppy Disk



CD/DVD



Magnetic Tape



USB



Summary / सारांश

उपरोक्त टॉपिक के माध्यम से आपने निम्नलिखित बिन्दुओं का अध्ययन किया

As we have discussed , there are several advantages and disadvantages of computer and computer memory is one of the most important amongst them. Because of a computer memory, we can save our data for as long as we want. Additionally, it is one of the important factors for improving the overall speed of the computer system.


Links for further Reading / आगे पढ़ें

To know more about Computer memory and its utility in computer click on the following link.

- <https://youtu.be/VAC6v7zTg5k>
- <https://www.tutorialsmate.com/2020/04/types-of-computer-memory.html>
- https://studymafia.org/download-computer-memory-ppt-pdf-presentation/#google_vignette
- <https://www.geeksforgeeks.org/random-access-memory-ram-and-read-only-memory-rom/>
- <https://www.javatpoint.com/classification-of-memory>

Assessment/ मूल्यांकन

1. Whai is the full form of RAM?

- (a) Read Access Memory
- (b) Random Access Memory 
- (c) Readable Access Memory
- (d) Random Accumulator Memo

2. What is the full form of ROM?

- (a) Read-Only Memory 
- (b) Random Only Memory
- (c) Register Only Memory
- (d) Readable Only Memory

3. RAM is _____ and _____.

- (a) volatile, temporary
- (b) non-volatile, temporary
- (c) volatile, permanent
- (d) non-volatile, permanent



4. Which of the following memory is non-volatile?

- (a) RAM
- (b) ROM
- (c) Cache
- (d) ROM and Cache



5. Which of the following is fattest memory?

- (a) Secondary memory
- (b) Cache memory
- (c) Auxiliary memory
- (d) None of the above



References / संदर्भ

1. <https://www.tutorialsmate.com/2020/04/types-of-computer-memory.html>
2. https://www.uobabylon.edu.iq/eprints/publication_12_21274_1610.pdf
3. <https://www.studocu.com/row/document/jomo-kenyatta-university-of-agriculture-and-technology/introduction-to-computer-systems/computer-memory-lecture-notes-3/1992143>
4. Text book of Computer Fundamentals by P.K. Sinha BPB publication

END

