RGPV PYQ

Memory is a physical device or component in a computer system that stores data either temporarily or permanently.

It is an integral part of the overall performance and functionality of a computer. Different types of memory are present in any normal computer system, each type having a different function.

The major types of memory are as follows:

1. Primary Memory (RAM Random Access Memory):

Function: Volatile memory that the computer uses to store data and machine code it is currently using and processing. It makes it possible to read from and write into this location with speed.

Characteristics:

- Volatile: information is lost when power is switched off.
- Quick access times.
- Used for running programs and the operating system.

Examples: DDR4 RAM, DDR5 RAM.

2. Secondary Memory (Storage Devices):

Function: It provides non-volatile memory for storing data and programs unlike the RAM

where data is retained even when power is turned off.

Characteristics:

- Non-volatile: Data is retained even when the power is off.
- Slower access times compared to RAM.
- Used for long-term storage of files, applications, and the operating system.

Examples: Hard Disk Drives (HDD), Solid State Drives (SSD), Flash Drives, Optical Discs (CDs, DVDs, Blu-rays).

3. Cache Memory:

Function: Cache memory is a type of volatile computer memory that is small in size and enables the processor to get to frequently used computer programs, applications and data quickly.

Characteristics:

- Faster access times than RAM.
- Acts as a buffer between the CPU and slower main memory (RAM).

Examples: L1 cache, L2 cache, L3 cache.

4. FLASH MEMORY:

Function: Flash memory is a type of non-volatile storage technology that can be electrically erased and reprogrammed hence making it commonly used in memory cards, USB flash

drives, and solid-state drives.

Characterstics:

- Non-volatile.
- Faster than traditional hard drives.
- Used for data storage in portable devices and as an SSD in computers.

Examples: NAND Flash, NOR Flash.

5. VIRTUAL MEMORY:

Function: Virtual memory is a memory management capability of an operating system that uses hardware and software to allow a computer to compensate for physical memory shortages by temporarily transferring data from random access memory to disk storage.

Characterstics:

- Extends the usable memory capacity of a computer.
- Slower than physical RAM.
- Helps prevent out-of-memory errors.

Examples: Managed by the operating system.

6. Read-Only Memory (ROM):

Function: ROM is a non-volatile memory used mainly in the booting up process of a computer; where it contains firmware or software which are written permanently during the

manufacturing process.

Characteristics:

- Non-volatile
- It is typically used to store the BIOS/UEFI firmware.

Examples: PROM (Programmable ROM), EPROM (Erasable Programmable ROM), EEPROM (Electrically Erasable Programmable ROM).

7. Registers:

Function: Registers are small, high-speed storage locations within the CPU that hold and manipulate data required for immediate processing.

Characteristics:

- Fastest type of memory in a computer system
- Limited capacity
- Being used as a temporary storage area for data during CPU operations.

Examples: Program counters, Memory address registers

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