
Basic Computer Science

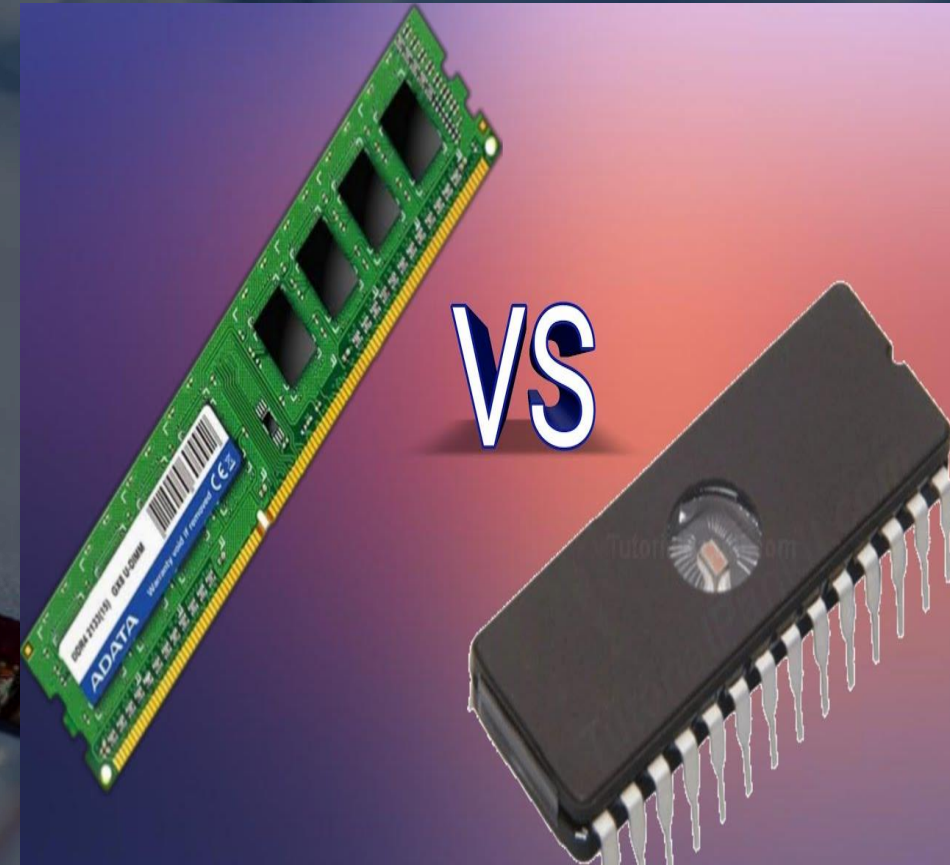


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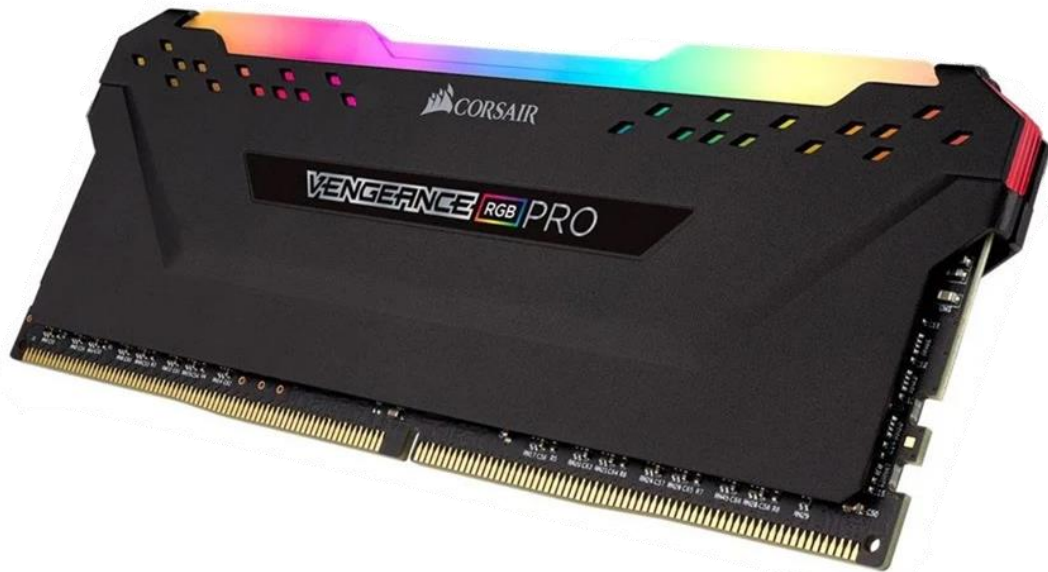
Internal Memory (RAM and ROM)

RAM and ROM are used to store computer data and this can be directly accessed by the CPU.

RAM and ROM are sometimes referred to as 'Primary Storage'.



RAM (Random Access Memory)



RAM is used to temporarily store information

that is currently in use by the computer.

This can include anything from word documents to videos.

RAM can be read from and written to and so the information stored in RAM can change all the time (it depends what tasks you are using the computer for). RAM is a fast memory

Internal Memory (RAM and ROM)

. Data can be written to and read from RAM very quickly. RAM is generally measured in GB (Gigabytes). RAM is Volatile Memory. This means that information stored in RAM is deleted as soon as the computer is turned off.



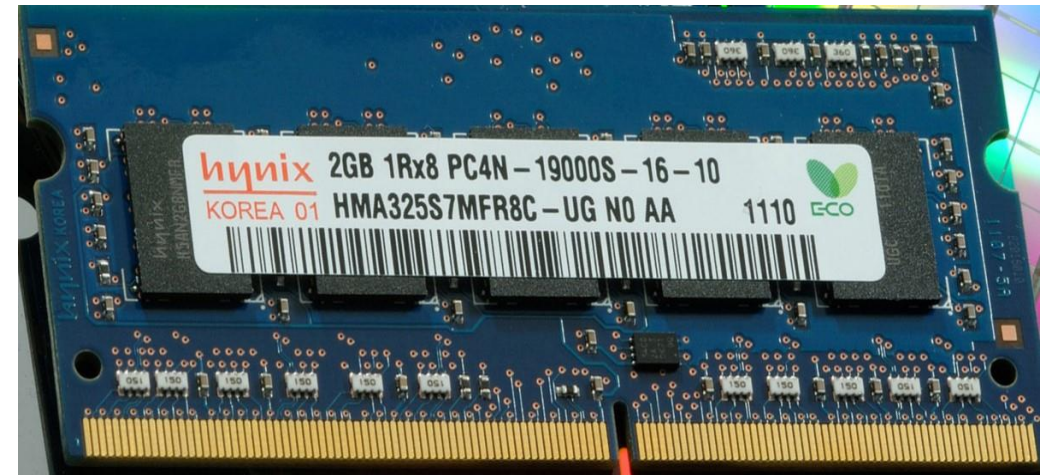
Kinds of RAM



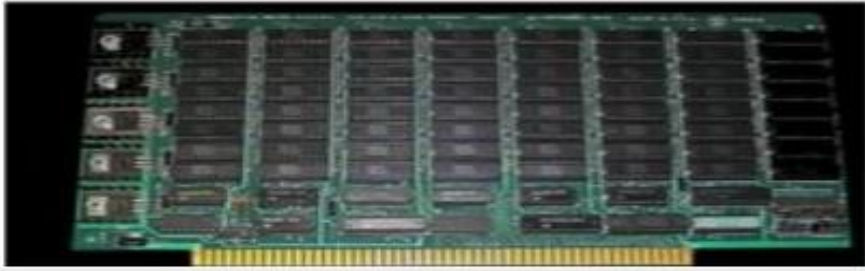
1. **Static RAM (SRAM):** The word static indicates that the memory retains its contents as long as power is being supplied. However, data is lost when the power gets down due to volatile nature. SRAM chips use a matrix of transistors and no capacitors. Transistors do not require power to prevent leakage, so SRAM need not have to be refreshed on a regular basis.

Kinds of RAM

2. Dynamic RAM (DRAM): it's unlike SRAM, must be continually refreshed in order to maintain the data. This is done by placing the memory on a refresh circuit that rewrites the data several hundred times per second. DRAM is used for most system memory because it is cheap and small. All DRAMs are made up of memory cells which are composed of one capacitor and one transistor.



SRAM – Static RAM



- ✓ It has long life
- ✓ There is no need to refresh
- ✓ Faster
- ✓ Used as cache memory
- ✓ Large size
- ✓ Expensive
- ✓ High power consumption

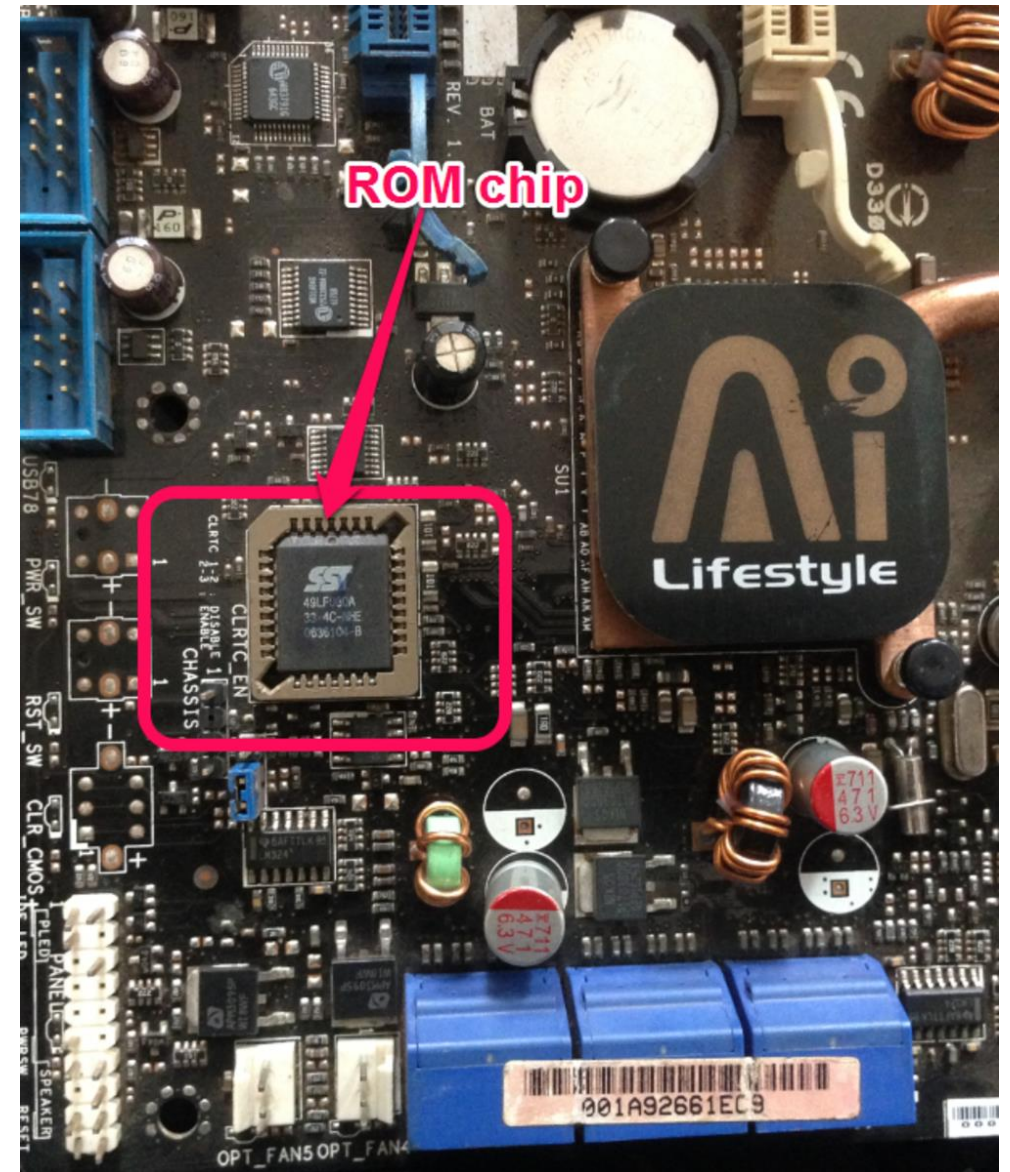
DRAM – Dynamic RAM



- ✓ It has short data lifetime
- ✓ Need to refresh continuously
- ✓ Slower as compared to SRAM
- ✓ Used as RAM
- ✓ Lesser in size
- ✓ Less expensive
- ✓ Less power consumption

ROM (Read Only Memory)

ROM is used to permanently store instructions that tell the computer how to boot(start up). It also loads the operating system (e.g. Windows). These instructions are known as the BIOS (Basic input/output system) or the boot program. Information stored in ROM is known as READ ONLY. This means that the contents of ROM cannot be altered or added to by the user. ROM is fast memory. Data stored in ROM can be accessed and read very quickly. ROM is Non-Volatile memory. This means that stored information is not lost when the computer loses power.



RAM

- It is read and write memory.
- It is temporary memory.
- It is volatile memory.
- The user can read and write data and programs into it at any time during data processing.
- It has large storage capacity.
- It has two types SRAM & DRAM

ROM

- It is read only memory.
- It is permanent memory.
- It is non-volatile memory.
- The manufacturer of the ROM can only write data and programs into it at its manufacturing time.
- It has small storage capacity.
- It has three types PROM, EPROM and EEPROM

Storage Devices (secondary storage)

Secondary storage devices are used to store data that is not instantly needed by the computer. Secondary storage devices permanently store data and programs for as long as we need. There are two categories of storage devices: Internal Storage Internal Hard Disk Drives External Storage External Hard Disk Drive, Memory Stick etc.

