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RAM (Random Access Memory): RAM is a memory storage that is connected to the motherboard of the PC. RAM is blazingly fast and stores element temporarily, so it is a volatile memory storage. The reason that we call it “Random … “is its ability in accessing memory directly and not sequentially. We have 2 types of RAMs: SRAM and DRAM

SRAM (Synchronous RAM) is a memory that is faster and uses less energy than DRAM, but they are very small memory since they are expensive. In the images below demonstrate the reason behind this since SRAM has 6 transistors in each of its cells and DRAM has only 1 transistor and 1 capacitor. In a DRAM chip the charge on individual memory cells must be refreshed periodically in order to retain data. This is because of the charge leak in DRAM memory cells more specifically because of capacitors leak. Therefore, we have a memory refresh cycle in a DRAM.

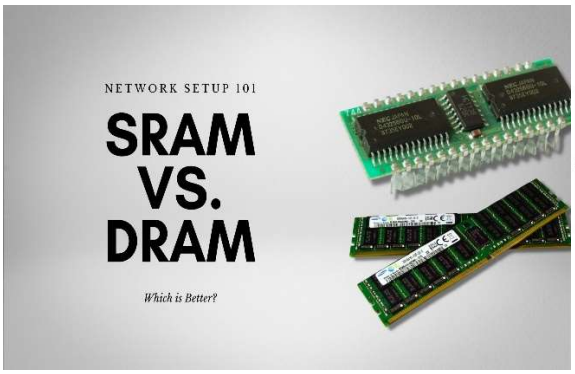
“In short, RAM is used for any task that requires fast access to computing resources”

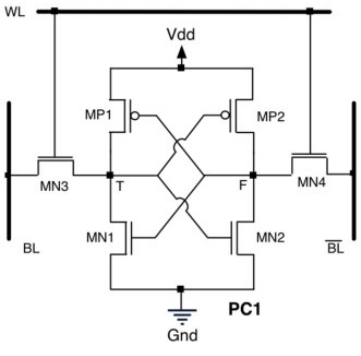
ROM (Read-Only Memory): ROM is a type of non-volatile memory used in computers. This memory can note be modified electronically we usually use it for storing softwires that are rarely modified also referred to as firmware such as BIOS. ROM is made of diodes. Different type of ROMs: PROM, EPROM, EEPROM.

PROM (Programmable ROM): the main difference is that you can program it for once.

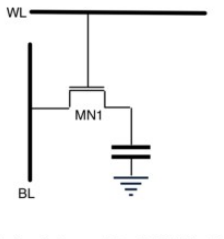
EPROM (Erasable Programmable ROM): You can program it and again erase it so you can program it for many times this (erasing) is best accomplished using UV lights.

EEPROM (Electronic Erasable Programmable ROM): Same as EPROM although you erase using electric fields, you don’t have to erase it all to reprogram it and you don’t need any special tool to do so.





(A) 6-transistors SRAM cell



(B) single-transistor DRAM cell

CAM (Content Addressable memory): Content Addressable Memory is used to search the address by providing the data. In this, CAM is designed and analyzed using CMOS technology, CNTFET technology and SOI technology. Content addressable memory is designed by using SRAM cell and XNOR matching circuit.

1. It is used in the database management
2. It is also called associative memory
3. CAM is more expensive than RAM
4. It returns the list of data word address that was located
5. A query of a section in CAM can be performed in a solitary clock cycle.
6. CAM is accurate