

NIELIT GORAKHPUR

Course Name: O Level (2nd Sem)
Topic: Random Access Memory

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Random Access Memory



Introduction:

- Random Access Memory (RAM) is referred to as main memory, or primary memory, or system memory.
- RAM is a hardware device that allows information to be stored and run programs on a computer.
- RAM is a volatile memory which stores data until the machine is working and lost when we switch off the computer or if there is a power failure.
- RAM is faster than secondary memory.
- A RAM device allows data items to be read or written in almost the same amount of time irrespective of the physical location of data inside the memory.

Type of RAM:

Random Access Memory is of two types. They are -

1. **Static RAM (SRAM)**–
2. **Synchronous Dynamic RAM (SDRAM)** –

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 6-transistors and no capacitors. Transistors do not require power to prevent leakage, so SRAM need not be refreshed on a regular basis.

There is extra space in the matrix, hence SRAM uses more chips than DRAM for the same amount of storage space, making the manufacturing costs higher. SRAM is thus used as cache memory and has very fast access.

Characteristic of Static RAM:

1. Long life
2. No need to refresh
3. Faster
4. Used as cache memory
5. Large size
6. Expensive
7. High power consumption

Synchronous Dynamic RAM (SDRAM)

SDRAM, 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. SDRAM is used for most system memory as it is cheap and small. All SDRAMs are made up of memory cells, which are composed of one capacitor and one transistor.

Characteristics of Synchronous Dynamic RAM

1. Short data lifetime
2. Needs to be refreshed continuously
3. Slower as compared to SRAM
4. Used as RAM
5. Smaller in size
6. Less expensive
7. Less power consumption

Exercise:

- 1: What is RAM?**
- 2: How many type of RAM?**
- 3: what are different between SRAM and SDRAM?**
- 4: Write the characteristics of SDRAM.**