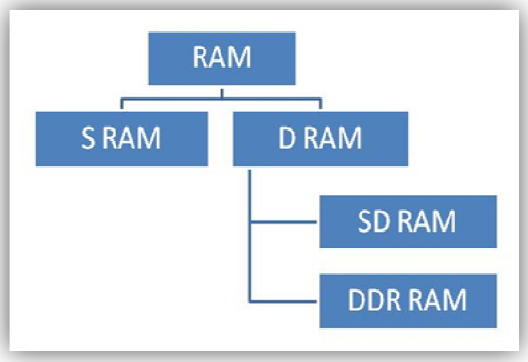
Course Name: A Level (1st Sem) **Subject: CO**

Topic: RAM **Date: 02-04-20**

RAM: RAM (random access memory) is the place in a computer where the operating system, application programs, and data in current use are kept so that they can be quickly accessed by the computer's processor. RAM is much faster to read from and write to than the other kinds of storage in a computer.

However, the data in RAM stays there only as long as our computer is running. When we turn the computer off, RAM loses its data. When we turn our computer on again, our operating system and other files are once again loaded into RAM. This property of RAM is called VOLATILITY.

Classification of RAMs:



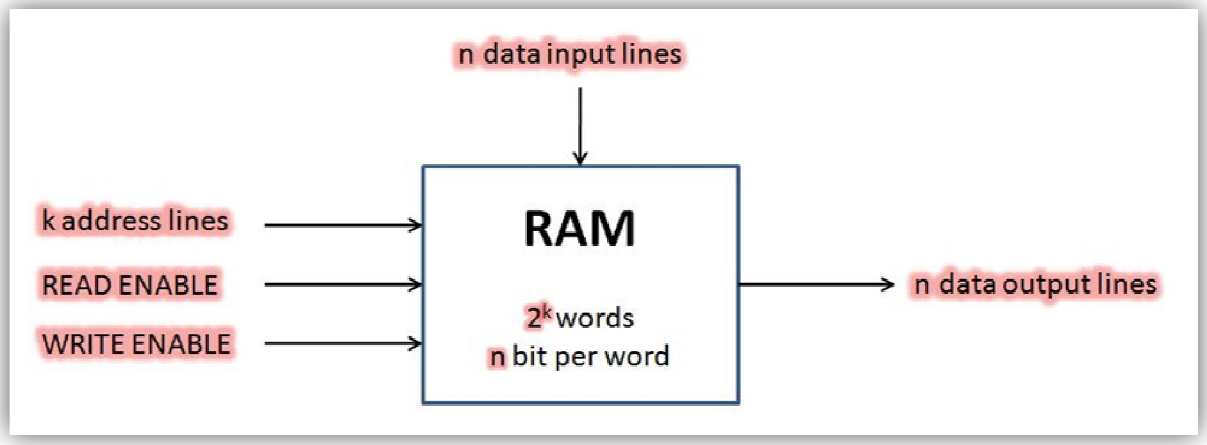
1. S RAM (Static RAM)
2. D RAM (Dynamic RAM)

Static Random Access Memory (S RAM): This kind of RAM is based on Flip-Flop Circuits and hence is well synchronized. These RAMs retain their previous states until the content of their Flip-Flops is not changed by control. Thus they need not to be refreshed periodically. This ability makes them comparatively faster than D RAMs.

Dynamic Random Access Memory (D RAM): D RAMs are based upon basic Capacitor technology. Since capacitors are suspicious for storage because charges stored in them can get diffused after some time hence D RAMs need periodic refreshment. This extra overhead makes them slower than S RAMs.

RAM Architecture: A RAM is a memory of size 2^k x n bits with 2^k words each of n-bit size. For proper READ or WRITE operations, a RAM is equipped with five important connections. These are:

- n-data input lines.
- n-data output lines.
- k-address lines.
- One READ ENABLE.
- One WRITE ENABLE.



Write Operation to RAM: Write operation in a RAM is accomplished by the following steps:

1. Put the address on ADDRESS LINES
2. Put the data on INPUT LINES
3. Enable WRITE ENABLE LINE

Read Operation from RAM: Read operation from a RAM is accomplished by the following steps:

1. Put the address on ADDRESS LINES
2. Enable READ ENABLE LINE

Assignments:

1. Differentiate between S RAM and D RAM.
2. Draw a clear-cut diagram of RAM architecture.