Lab – 1

1. Desktop (6-8 pages): Describe the components of the desktop, the individual parts like motherboard, the cards, memory chips CPU etc. You may add pictures of the individual parts to help you describe the individual

This is the inside of a cabinet which was understood my most of us to be the CPU of the computer is actually just a small chip housed in the motherboard which in-turn in housed inside the cabinet. Alongside the motherboard components like the graphic card, cooling fans, hard disk, etc. are also present inside the cabinet.

Here are some of the major components inside a desktop and their uses :-

- Motherboard – It is the most important of a desktop as it houses the most essential components of a computer system including the CPU, RAM, the Chipset, connections to the Hard Drive and a lot more.

The various components connected to are motherboard are –

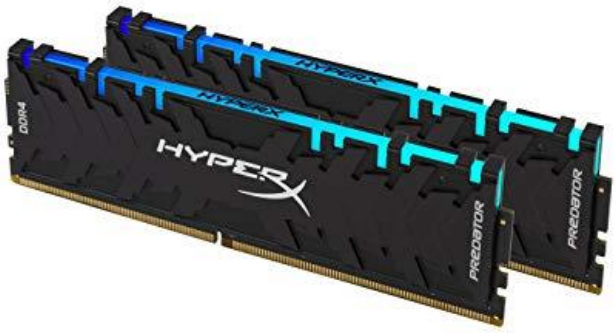
- BIOS (Basic Input Output Settings) – It is the software stored inside a computer chip which as its name suggests instructs the computer how to perform functions like booting up. It is also used to configure hardware connected to the computer in desired ways.

- CMOS – It is like a RAM chip which stores BIOS settings which is constantly powered by a battery so that it does not lose the settings. When a computer is powered up, the BIOS retrieves the settings stored on it which performs the required operation.

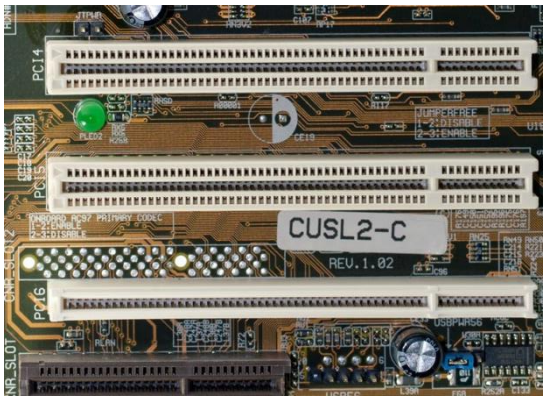
- CPU (Central Processing Unit) – It is a tiny silicon chip also called the "Brain of the Computer", it is capable of performing basic logical, arithmetic and various input and output operations specified by the user. Some of its components include ALU, Registers, Buffer, Program Counter and the Control Unit.

    - ALU (Arithmetic Logic Unit) – Performs all logical and arithmetic operations
    - Registers - Memory locations within the CPU where all the computation happens.
    - Control Unit – It identifies memory locations from where to fetch instructions.
    - Buffer – System Cache Memory

- RAM (Random Access Memory) – It is a computer memory which loses its contents as soon as it's powered off. It generally holds data of running applications and system cache.



- PCI (Peripheral Component Interconnect) – It is a card which contains slots which are used to connect the motherboard to devices like video card, network card, etc.



- HDD (Hard Disk Drive) – It is the permanent data storage device in a computer. From the operating system to all our files and applications are stored on the HDD. It is connected to the motherboard thought SATA/PATA cables. It is slower than an SDD.

- SATA/PATA – They are used to connect mass storage devices to the motherboard. Nowadays, SATA is commonly used in the majority of computers.

Some differences between them are-

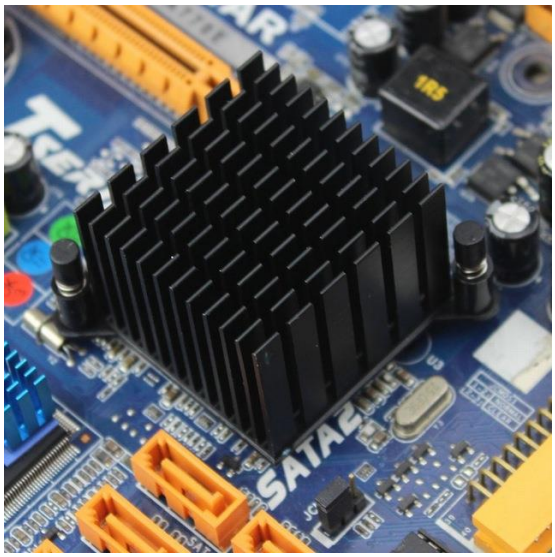
SATA	PATA
Faster Transfer Rate	Slower Transfer Rate
Longer Cable Length	Shorter Cable Length
Better Airflow	Poor Airflow
Requires special device driver	Does not require special device driver

- SDD (Solid State Drive) – The data is stored on microchips unlike using magnetism in HDD's. And instead of having a mechanical arm data is directly accessed from the microchips. This makes the SDD's significantly faster than the HDD's but is also expensive which limits its storage capacity.

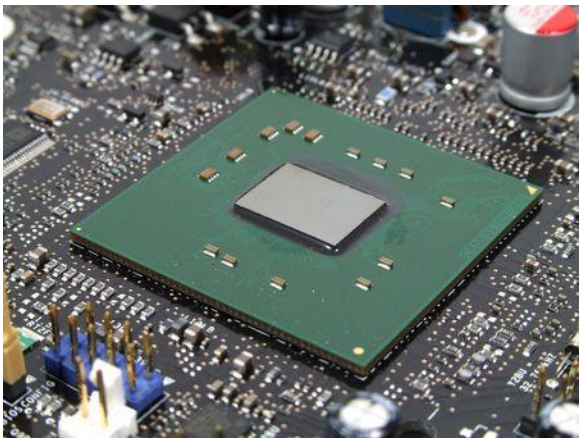
SSD Top Side

SSD Bottom Side

- Northbridge – It is an integrated circuit responsible for communications between the CPU and the memory. It is directly connected to the components and helps the Southbridge chip to communicate with the CPU, the RAM and the graphics controller. It is responsible for high performance tasks.



- Southbridge – It is an integrated circuit and acts as the hard drive controller, I/O controller, Integrated hardware controller (sound card, video card, Ethernet, USB, etc.). It is not directly connected to the CPU.

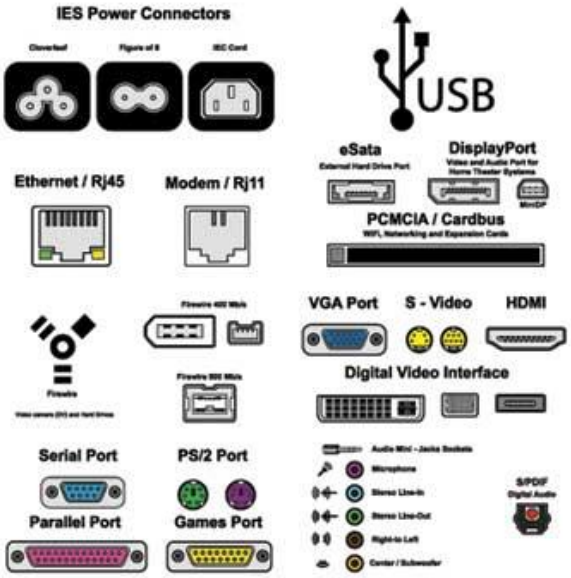


The northbridge and the southbridge combined control the motherboard, and the various peripheral connectors and slots. They are also package components to generate clocks, interrupt handlers and I/O port controllers.

- PSU (Power Supply Unit) - It converts AC power to DC which can be used by the components of the desktop and supplies them with the same.

Cooling Fans – They are required to maintain airflow inside the cabinet and also to prevent overheating of the other components thus maintain proper functioning of the computer.

Additionally, we can add Graphic Cards, extra fans and hard drives to our desktop to increase performance. Furthermore, components can be removed and upgraded on the basis of our needs which make a desktop far more future proof than a laptop which provides limited upgradability.
Also, there are a variety of ports present in our desktop which allow us to connect to external storage devices or other gadgets.



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