

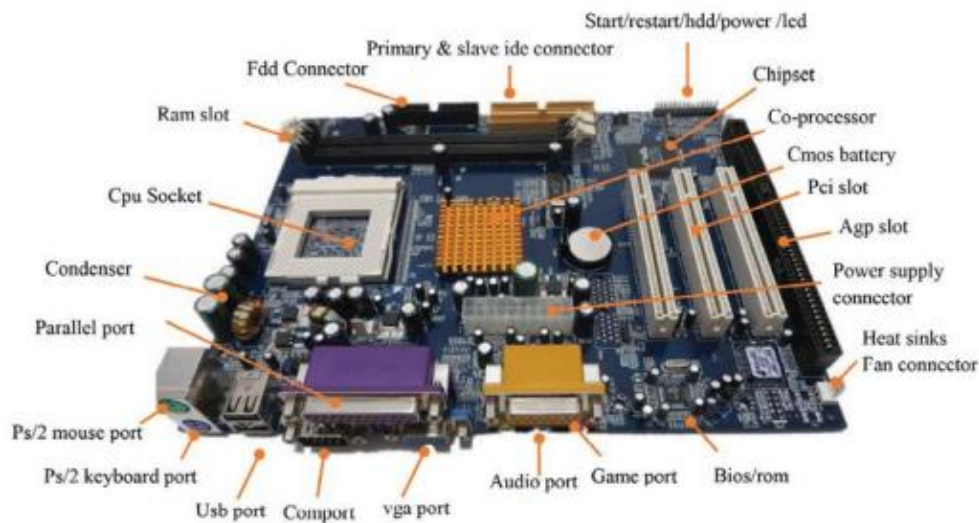
LAB CYCLE 1

DATE:10/3/2023

EXPERIMENT NO: 1

AIM : Familiarization of computer hardware.

a) MOTHER BOARD



The motherboard serves as a single platform to connect all of the parts of computer together. It connects the CPU, memory, hard drives, optical drives, video card, sound card, and other ports and expansion cards directly or via cables. It can be considered as the backbone of a computer.

The motherboard is mounted inside the case and is securely attached via small screws through pre-drilled holes. Motherboard contains ports to connect all of the internal components. It provides a single socket for CPU, whereas for memory, normally one or more slots are available. Motherboards provide ports to attach the floppy drive, hard drive, and optical drives via ribbon cables. Motherboard carries fans and a special port designed for power supply.

There is a peripheral card slot in front of the motherboard using which video cards, sound cards, and other expansion cards can be connected to the motherboard. On the left side, motherboards carry a number of ports to connect the monitor, printer, mouse, keyboard, speaker, and network cables. Motherboards also provide USB ports, which allow compatible devices to be connected in plug-in/plug-out fashion. For example, pen drive, digital cameras, etc.

b) RAM MODULE

RAM stands for Random Access Memory. It is also called the main memory. RAM is a temporary data storage device in computers and other devices. SRAM, DRAM, SDRAM, DDR etc are the various types of RAM available. A memory module or RAM stick is a narrow printed circuit board that holds memory chips (RAM chips)



SRAM (static RAM) is random access memory (RAM) that retains data bits in its memory as long as power is being supplied. You can lose data if your SRAM is not powered. SRAM does not offer to refresh programs. SRAM has a low storage capacity (about 1MB). Dynamic random access memory (DRAM) is a type of semiconductor memory that is typically used for the data or program code needed by a computer processor to function.

The advantage of a DRAM is it only requires a single transistor compared to around six in a typical static RAM, SRAM memory cell. The costs of DRAM are much lower than those for SRAM, and they are able to provide much higher levels of memory density (about 1GB). SDRAM (synchronous DRAM) is a generic name for various kinds of DRAM that are synchronized with the clock speed that the microprocessor is optimized for. That is, same external clock pulse can be used to operate both SRAM and processor. This tends to increase

the number of instructions that the processor can perform in a given time. DDR Stands for "Double Data Rate."

It is an advanced version of SDRAM, DDRSDRAM can transfer data twice as fast as regular SDRAM chips. This is because DDR memory can send and receive signals twice per clock cycle. DDR operates about 2.5 V and DDR2 averages about 1.8 V, with DDR3 the voltage is reduced to 1.5 V. DDR3 has transfer rates between 800MT/s and 1600MT/s. DDR4 is the latest generation of DDR. It has the lowest operating voltage of 1.2 V and has higher transfer rates than previous generations. DDR5 launch speeds delivery nearly double the bandwidth of DDR4. It also enables scaling memory performance without degrading channel efficiency at higher speeds under real-world conditions. Crucial DDR5 memory will operate at 4800MT/s at launch, which is 1.5x the maximum standard DDR4 speed

c) DAUGHTER CARDS

A daughterboard (daughter card) is a type of circuit board that plugs in or attached to the motherboard or similar expansion card to extend its features and services.



A daughterboard is connected directly to the motherboard. Like a motherboard, a daughterboard has sockets, pins, plugs and connectors to be attached to other boards. Today, these boards are not found or used in desktop computers. They were replaced with ISA card, PCI card and onboard options. With the rise of connective USB ports and other technology, it has become less necessary to upgrade devices with daughtercards or daughterboards.

d) BUS SLOTS

An expansion slot is a socket on the motherboard that is used to insert an expansion card, which provides additional features to a computer such as video, sound, advanced graphics, Ethernet or memory



PATA stands for Parallel Advanced Technology Attachment and SATA stands for Serial Advanced Technology Attachment both are two bus interfaces used for connecting secondary storage devices like hard disks, optical drives.

Serial refers to the fact that data is sent one bit at a time down a single connection in each direction. There's a separate connection for data going in to and out of the device. Parallel refers to the fact that data is sent 16 bits at a time through a single 16-bit connection, which is used for data traveling in both directions. SCSI stands for Small Computer System Interface is a set of standards for physically connecting and transferring data between computers and peripheral devices.

IDE stands for Integrated Drive Electronics is a standard interface for connecting a motherboard to storage devices such as hard drives and CD/DVD drives. PCI (Peripheral Component Interconnect) is a bus standard that connects the computer motherboard and external devices. PCIe (peripheral component interconnect express) is an interface standard for connecting high-speed components. Every desktop PC motherboard has a number of PCIe slots.

e) SMPS

SMPS stands for Switched-Mode Power Supply. It is an electronic power supply that uses a switching regulator to convert electrical power efficiently. It is a power supply unit (PSU) generally used in computers to convert the voltage into the computer acceptable range. Technically briefing, an SMPS in a desktop system that converts 220V AC and 50HZ into +5V, -5V, +12V and +3.3 V DC at various electrical components in the computer.



f) INTERNAL STORAGE DEVICES

A storage device is an integral part of the computer hardware which stores information or data to process the result of any computational work. Internal storage is a storage device that's internal (inside the case) and is not a removable storage or external storage. For example, the hard drive inside your computer is an example of internal storage.

HDD (Hard Disk Drive) also known as fixed disk uses magnetic tape for the storage of data. HDD has a moving read/write head to access data from storage like a gramophone player and slower to read and write. Unlike HDD, SSD (Solid State Drive) has no moving parts, and it obtains data from storage instantly. SSD can give faster performance than traditional magnetic-based computer storage devices. Although both of them perform the same task.



HDD



SSD

Specifications of Desktop and server class:

Desktop

Processor	Core i5
Processor speed	3.90 GHz
Number of cores	4
Typical Memory	32GB
Cache size	L1:8KB -1MB, L2:256KB - 3MB
memory type	DDR4

Web Server

Processor	Intel® Xeon® Bronze 3206R Processor(Multiple Processors)
Processor speed	1.90 GHz
Number of cores	8
Typical Memory	512GB
Cache size	L1:1-2MB, L2:8MB, L3:32-64MB
memory type	DDR4