NETWORKING & SYSTEM ADMINISTRATION LAB

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Batch:RMCA-A

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Experiment No.: 1

Aim

Identify major components of a computer system such as

Motherboard

Ram modules

Daughter cards

Bus slots

SMPS

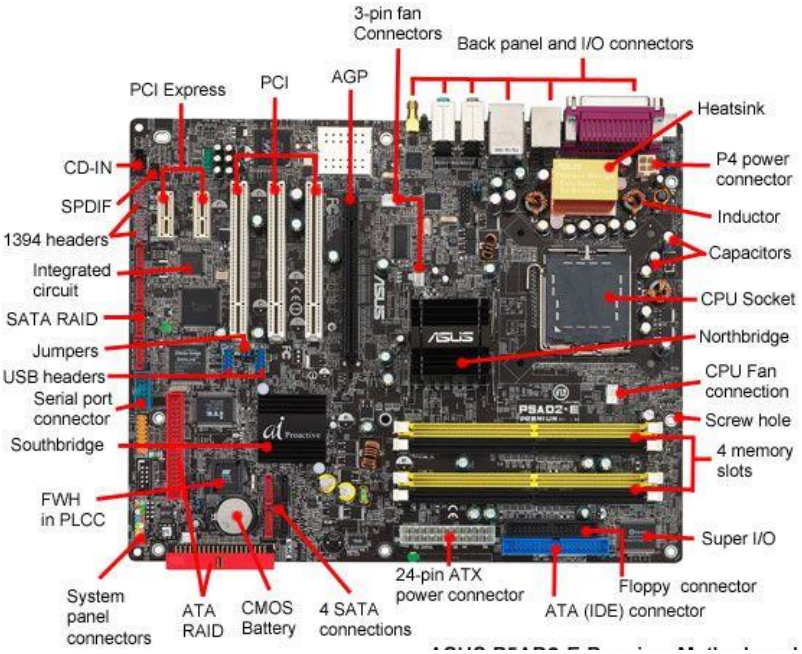
Internal storage devices

Interfacing ports

Procedure

Motherboard

The computer is built up around a motherboard. The motherboard is the most important component in the PC. It is a large Printed Circuit Board (PCB), having many chips, connectors and other electronics mounted on it. The motherboard is the hub, which is used to connect all the essential components of a computer. The RAM, hard drive, disk drives and optical drives are all plugged into interfaces on the motherboard. The motherboard contains the processor, memory chips, interfaces and sockets, etc.



Ram Modules

RAM

A RAM constitutes the internal memory of the CPU for storing data, program and program result. It is read/write memory. It is called random access memory (RAM).

Since access time in RAM is independent of the address to the word that is, each storage location inside the memory is as easy to reach as other location & takes the same amount of time. We can reach into the memory at random & extremely fast but can also be quite expensive.

RAM is volatile, i.e. data stored in it is lost when we switch off the computer or if there is a power failure. Hence a backup uninterruptible power system(UPS) is often used with computers. RAM is small , both in terms of its physical size and in the amount of data it can hold.

RAM is of two types

- Static RAM (SRAM)
- Dynamic RAM (DRAM)

Static RAM (SRAM)

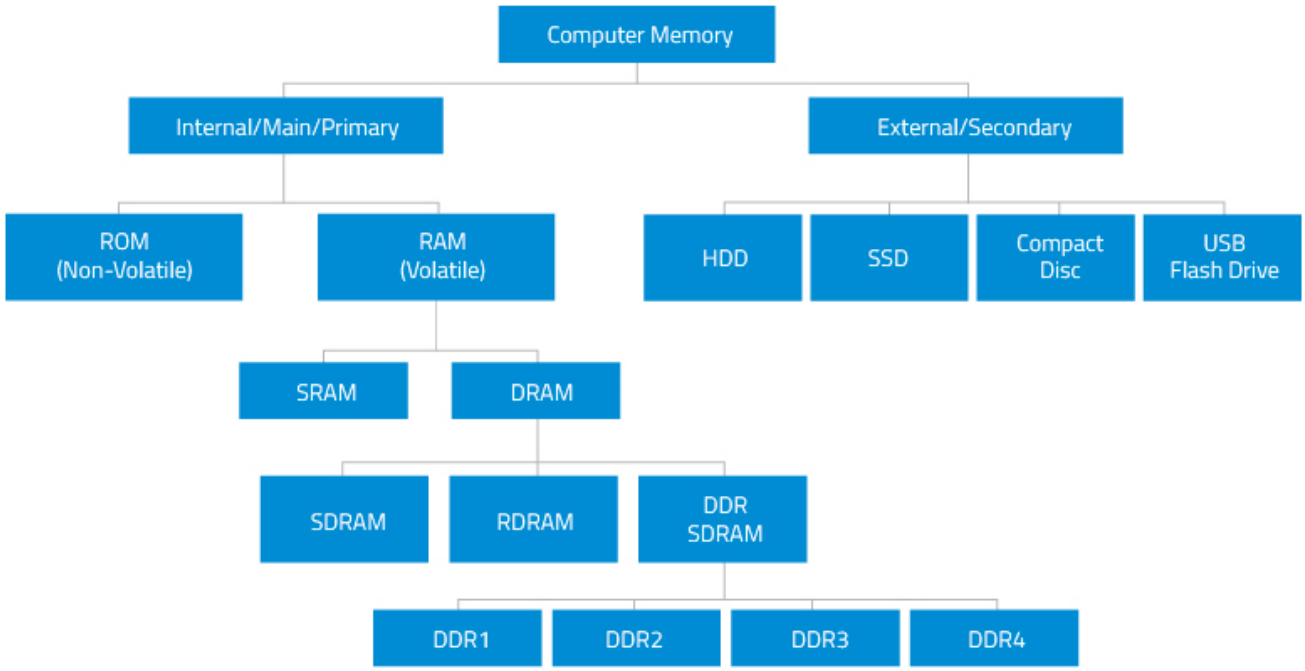
The word static indicates that the memory retains its contents as long as power remains applied. However, data is lost when the power gets down due to volatile nature. SRAM chips use a matrix of 6-transistors and no capacitors. Transistors do not require power to prevent leakage, so SRAM need not have to be refreshed on a regular basis.

Because of the extra space in the matrix, SRAM uses more chips than DRAM for the same amount of storage space, thus making the manufacturing costs higher.

Static RAM is used as cache memory needs to be very fast and small.

Dynamic RAM (DRAM)

DRAM, unlike SRAM, must be continually refreshed in order for it to maintain the data. This is done by placing the memory on a refresh circuit that rewrites the data several hundred times per second. DRAM is used for most system memory because it is cheap and small. All DRAMs are made up of memory cells. These cells are composed of one capacitor and one transistor.



Daughter Cards

A daughterboard (or *daughter board* , *daughter card* , or *daughtercard*) is a circuit board that plugs into and extends the circuitry of another circuit board. The other circuit board may be the computer's main board (its motherboard) or it may be another board or card that is already in the computer, often a sound card. The term is commonly used by manufacturers of wavetable daughterboards that attach to existing sound cards.

A mezzanine card is a kind of daughterboard that is installed in the same plane as but on a second level above the motherboard.

Bus Slots

Bus slot is also known as a expansion port, an expansion slot is a connection or port inside a computer on the motherboard or riser card. It provides an installation point for a hardware expansion card to be connected.

Expansion slots help users to add new devices to their computer.Most common expansion slot is PCI Express expansion slot.

SMPS

SMPS stands for Switched Mode Power Supply . It is an electronic device or module that comprises a combination of inductors,capacitors and semiconductor devices like diodes and mosfets . It is used to convert a particular DC voltage to another DC voltage level .It is used instead of linear or ohmic coverters because of higher efficiency . It is a key part an in almost all home electronic equipments(like mobile chargers,PC power supplies,etc).

It works by using a semiconductor switch like MOSFET to switch on-off the supply voltage at a particular switching frequency to control the output voltage.Varying the switching frequency will change the output voltage.

Magnetic storage devices

Magnetic storage is one of the most common types of storage used with computers. This technology is found mostly on extremely large HDDs or hybrid hard drives.

Floppy diskette

Hard drive

Magnetic strip

Compact Disc or CD

Optical storage devices

Optical storage uses lasers and lights as its method of reading and writing data.

Blu-ray disc

CD-ROM disc

CD-R and CD-RW disc.

DVD-R, DVD+R, DVD-RW, and DVD+RW disc.

Solid-state storage devices

Solid-state storage (flash memory) has replaced most magnetic and optical media as it becomes cheaper because it's the more efficient and reliable solution.

USB flash drive

Memory card

MMC

SDHC Card

SD card

SSD

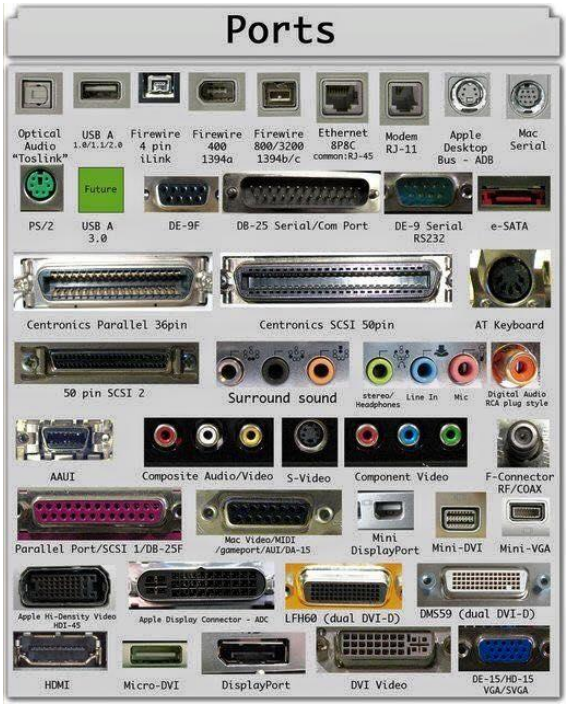
Interfacing ports

A port is a physical opening point using which an external device can be connected to the computer. It can also be programmatic docking point through which information flows from a program to the computer or over the Internet.

Characteristics of Ports

A port has the following characteristics −

- External devices are connected to a computer using cables and ports.
- Ports are slots on the motherboard into which a cable of external device is plugged in.
- Examples of external devices attached via ports are the mouse, keyboard, monitor, microphone, speakers, etc.



Serial Port

- Used for external modems and older computer mouse
- Two versions: 9 pin, 25 pin model

- Data travels at 115 kilobits per second

Parallel Port

- Used for scanners and printers
- Also called printer port
- 25 pin model
- IEEE 1284-compliant Centronics port

PS/2 Port

- Used for old computer keyboard and mouse
- Also called mouse port
- Most of the old computers provide two PS/2 port, each for the mouse and keyboard
- IEEE 1284-compliant Centronics port

Universal Serial Bus (or USB) Port

- It can connect all kinds of external USB devices such as external hard disk, printer, scanner, mouse, keyboard, etc.
- It was introduced in 1997.
- Most of the computers provide two USB ports as minimum.
- Data travels at 12 megabits per seconds.
- USB compliant devices can get power from a USB port.

VGA Port

- Connects monitor to a computer's video card.
- It has 15 holes.
- Similar to the serial port connector. However, serial port connector has pins, VGA port has holes.

Power Connector

- Three-pronged plug.
- Connects to the computer's power cable that plugs into a power bar or wall socket.

Firewire Port

- Transfers large amount of data at very fast speed.
- Connects camcorders and video equipment to the computer.
- Data travels at 400 to 800 megabits per seconds.

- Invented by Apple.
- It has three variants: 4-Pin FireWire 400 connector, 6-Pin FireWire 400 connector, and 9-Pin FireWire 800 connector.

Modem Port

- Connects a PC's modem to the telephone network.

Ethernet Port

- Connects to a network and high speed Internet.
- Connects the network cable to a computer.
- This port resides on an Ethernet Card.
- Data travels at 10 megabits to 1000 megabits per seconds depending upon the network bandwidth.

Game Port

- Connect a joystick to a PC
- Now replaced by USB

Digital Video Interface, DVI port

- Connects Flat panel LCD monitor to the computer's high-end video graphic cards.
- Very popular among video card manufacturers.

Sockets

- Sockets connect the microphone and speakers to the sound card of the computer.