Computer Hardware And Maintenance

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- **Hardware :-**

All physical part of the computer system or everything that we can touch.

e.g :- keyboard, mouse, monitor cpu etc.

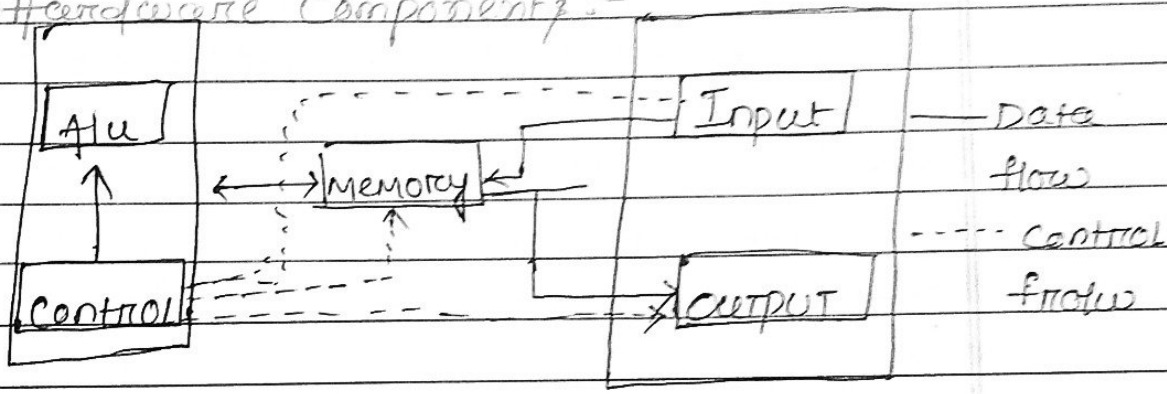
Software :-

Software is a collection of data set of instructions are to operate computer hardware and execute specific task.

→ Application software - ms office, Browser

→ System software - operating system

Hardware Components :-



cpu/Processor I/O units

Input unit :-

→ Data are encoded by the input devices.

→ The standard i/p device is a keyboard. whenever a key is pressed, keyboard controller. Sends the code of pressed key to cpu/ memory. e.g mouse, joysticks, Scaner etc.

Output unit :-

→ The componets by which computer provides. data or information to external world.

→ After computation the computed result or error messages is sent via output unit.

eg :- LCD/ TFT display, printes, etc.

• CPU:-

→ It is the brain of computer. Its primary function is to execute programs.

→ Besides executing the programs, the CPU also controls the operation of all other components such as memory and I/O devices.

→ It comprises of ALU, control unit and some registers.

(a) ALU (Arithmetic and Logic unit):-

→ The function of ALU to perform operations such as addition, subtraction, multiplication, division and logical operations (AND, OR, NOT, EX-OR).

(b) Control unit:-

→ It controls the entire operations in the computer. Control unit co-ordinates activities of all units by issuing control signal (Read, Write, try etc).

(c) Memory unit:-

→ It stores the program instructions, data and results or any kind of information. Memory unit basically classified as:-

(a) primary memory / main memory
(b) Secondary memory.

(a) Primary memory:-

→ It stores run time program instructions, intermediate result and operands.

→ Main memory is classified as Rom and RAM.

RAM :-

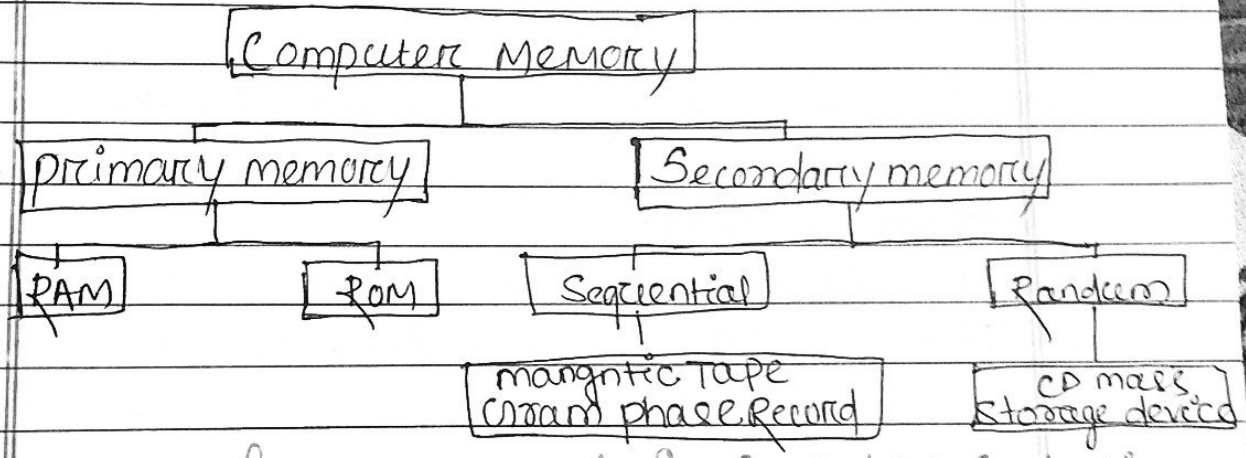
- It holds routines that are required to manage the all hardware components of computer.

ROM :-

- It holds runtime program instruction and data and directly accessed by the CPU.

Secondary Memory :-

→ It stores OS, datafiles, compiles, assemblers and application programs.



of Management in Computer Centre :-

Service planning :-

Know customers and their expections.

→ Define level :-

Determine what can be done for customers Computer Center manager need to understand what is excepted by customers and draft out Service level Agreement for further discussion with customers.

Make agreement with customers :-

It's needed to tell customers the truth regrading what computer center can deliver.

Provide Services to customers:-
(a) organic staffs to provide agreed Services
(b) prepare people and resources for such Services.
(c) Assist customers when system is down i.e. to recover the system within the pre agreed period.
→ Collect information about the service provided i.e - usage period, usage information, etc.
→ Measure provided services :- Analysis of Services provided.
→ Improve Services to bette Satisfy Customers needs.

~~Types of Jobs:-~~
~~= Carried out Computers in a~~
* Types of Job carried out in Computer in an organization:-

(1) Bigdata Engineers:-
Spend their work days communicative with bussiness users data Scientest with the goal of translating bussiness object in to workable data processing work flows.

(2) web developers:-
A web developer it is a person responsible for the building and maintance of a ~~website~~ website.

(3) Application architect:-
Digital prose who leads a ~~person~~ position Like application architect are required to maintain a high level technical expertise while also excelling in area planing

Coordination, communication and teamwork.

(4) Data administrator :-

It is used specialized software to securely store and organized data, ensuring that data is both available to users and secure from ~~available or~~ unauthorized access.

Computer Hardware Engineers :-

Computer engineers tasked with designing, developing and supervising the production of computer hardware.

Like: keyboard, modem, mouse

Computer Software Engineers :-

Computer Software engineer focused their work on designed and developing software used to control computers by utilizing the principle of computer science and mathematical analysis.

- Need of training staff :

(1) Succession Training :-

On growing employ~~ee~~ training helps develop employee and increasing their ~~experience~~ experiences which can make them valuable candidates for senior roles when they become available. Training that is useful for this purpose includes leadership people management decession make and more.

(2) Increasing value :-

Employ training can teach new skills or improve existing skills, This helps to provide more expertise and in their value to be perform more than are job.

3. Reduced Attrivition:-
Investring your employes can reduce attrivition rates by providing carrier path ways. They won't have to seek next level opportunities somewhere else and you can also save on requirement costs.

4. Enhanced efficiency:-
Training can increase productivity and efficieny. It can also provide greater consistency and maye it easier to meet organizational goals and projet out comes.

5. Exceeting standards:-
Trainzing employes on industry. Standard practices can give you a ley up on the competition. Small things obtan set your business apart from your competitors, so having employees that are knowledgeable and happy can improve interactions with customers very fast and will process information at about 10 mips.

Mini Computer:-
→ Smaller and less expensive than mainframe Computer.
→ Run at several mips and can support 5-20 users.
→ Low cost and high performance.

Microcomputer:-
→ used for home computing
→ Advance in technology have improved micro-Computer capacites, resulting in the explosive growth of personal computer in industry.

- Based on mechanism:-

Analog Computer:-

→ The analog computers accept input data in continous form and output is obtained in the from of graphs.

→ eg:- voltage, current, Sound, speed, temperature

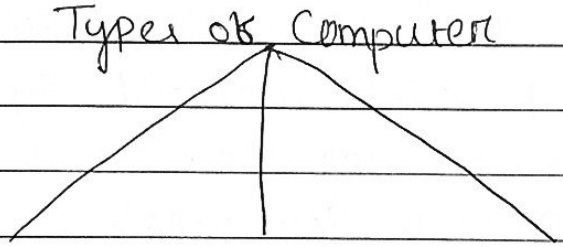
→ The analog computers are used to measure the continous values.

→ eg:- thermometer.

Digital Computer:-

Digital data consist of binary data represented by off (low) and on (high) electrical beats.

✓ Types of Computer:-



Based on Size

- Super main frame mini micro
  - Desktop
  - Laptop
  - palm top

Based on Mechanism

- Analog digital Hybrid

Based on purpose

- General purpose
- Special purpose

Super Computer:-

→ They are very fast and powerful machines.

→ Run at the speed of 10 mips (million instruction per second)

→ Very expensive.
→ Not used for general applications.
→ I.g Cray and CDC cyber.

Mainframe Computers:-

→ They are built for general computing to digital Computer operate by security form
eg- calculators, digital watches

Hybrid Computers:-

→ They combine the features of both analog and digital computers.
→ These are very fast and accurate.
→ These are used in Scientific fields.

Based on purpose:-

Special purpose Computers:-

→ These are designed to perform a specific task Such Computers task Flexibility.
eg - Air craft, Control System, missile guidance System etc.

General purpose Computers:-

→ A general purpose Computer is one that can be used for variety of applications.
→ It Creativity enables execution of programs of almost anytime. These are used in business applications.

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SITE PREPARATION AND INSTALLATION:

For designing and autobilding a computer centre we need creativity and the collaboration of a host of different parties, it is very important to find out the vendor's specifications so that the requirement of the party can be fulfilled. managing the development of a new upgraded Computer centre is a primary and vital straight forward project management function. when designing a computer centre / Lab one has to consider the following parameters in detail.

1. Space
2. Flooring
3. Loading Considerations
4. Ceiling
5. Room layout
6. Air conditioning
7. Duct free
8. cleanliness
9. Power and lighting.

Computer Centre layout:-

→ The Computer Centre Common Space is an unpartitioned computing area with over 50 The T-bar Surface.

→ Computer with mac and windows machines. The Centre also features multiple lounge areas and large tables for collaborative use or individual study.

→ A computer room should not have window. If the windows are exposed to the Sun, a solar Control film may be applied on the glass.

→ Curtains are not recommended to be used in the Computer Centre.

→ Venetion blinds can be fitted to prevent direct glare from Sun. Emphasis is baised on the thickness and weight.

• Flase Roofing :-

→ A flase Roofing is essential to reduce the volume of area to be air-conditioned.

→ The flase ceiling may be provided with an anodized . T-bar self-interlocking ceiling system with a modular grid.

→ The Tiles (or) panels used should be the lay in type which can be easily removed and re-fixed.

→ The most recommended and suitable panel could be a 19mm thick particle board tile with reheated edges . faced with pvc wall-paper keeping the Tile 6mm below the T-bar surface.

→ As an alternative , a dish type aluminium panneal plain (or) perforated could be used.

Air Conditioning :-

→ Every computer centre required an air conditioning space.

→ The inout and output devices, electric motor present in them tend to increase the power consumption and consequent waste heat output.

→ To avoid relative humidity airconditioning is necessary.

Dost proofing :-

→ The computer room has to be kept clean in order to avoid excessive vibrations, air pollution dust, noise, electromangetic radiations etc. Dust caught in between

the magnetic tapes may cause reading and writing errors and. That may damage the tape permantely In order to prevent this problem we can fix dust filters. Dust producing surfaces can be prevented by applying a rubber based paint. epoxy. paint (or) sodium silicate.

Power and lighting:-

→ The power requirements for a computer room are based on the quantity and types of equipment installed.

→ The designer must consider requirement for lighting, heat, air conditioning, convenient outlets. and administrative office equipment etc. systemes are improperly matched to the power system required at the location.

→ we may go with the requirement like constanet voltage Transformer (CVT). Motor generator. ups along with the computers to diagonse power related problems at regular intervals of time.

CVT Constant voltage Transformer:-

The CVT is simply a magnetic transformer of a special construction that has a capacitor connected across the Secondary winding of the transformer.

- Ups (uninterruptible power supply):-

The ups is known as a battery backup. provides backup power when regular power Source Fails or voltage drops to an unacceptable level.

Isolation Circuit:-

Isolation is the electrical or magnetic separation between two circuits and often used to separate two distinct sections of a power supply. The isolation provides a barrier across which dangerous voltages can not pass in the event of a fault or component failure.

Principles of functioning of CVT:-

→ Although simple in concept the CVT is very difficult to explain ending to some electronics experts to describe it as magic.

→ Effectively the aim to keep the iron core of the secondary saturated which keeps the voltage on the output winding constant.

→ The primary winding needs to be unsaturated to prevent unacceptable high losses.

→ This effect is achieved in two ways.

→ Firstly the two magnetic circuit are separated but inter-linked allowed the transfer of energy from primary to secondary.

→ Secondary the secondary circuit has a deliberate inductance introduced and is connected to a resonating capacitor. This lc circuit is tuned to resonating at the desired transformer frequency.

→ This consequence is that secondary part of transfer runs saturated and output voltage constant.

Principle of functioning ups:-

→ The primeramary functions of ups is to provide battery backup when the electrical power fails or drops to an unacceptable voltage level. It ensures that your electrical equipment gets consistent current. so damage such as data loss corruption can be avoided.

→ For input connect to the main for output connect to the devices you want to protect the battery in the ups will charge while the electricity is on. when the electricity is failure. your computer will be powered by ups through batteries. The backup time is decided by the batteries you choose.

→ The sockets on the back of the uninterruptible power supply. not only can be directly connected with the devices, but also can be connected to the power strip. so you can expand your home's connectivity. although it supplies power to multiple device. it can't be overloaded, otherwise. products service life would be reduced.

→ After the battery is low. it should be change in time to avoid damage to the battery due to excessive discharge.

Isolation transformers:-

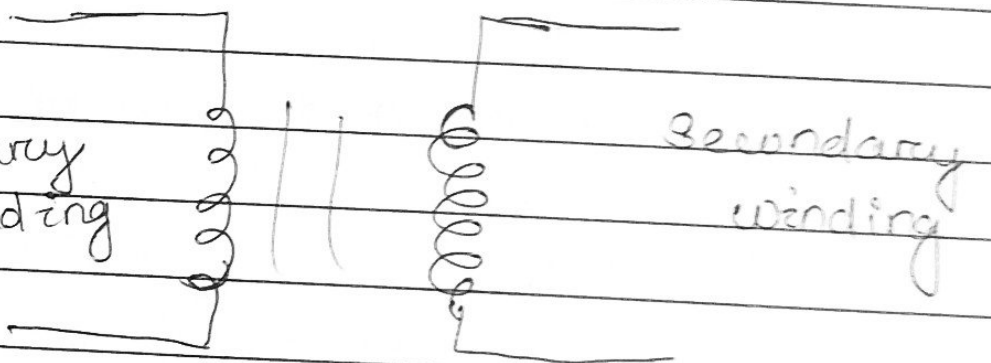
→ Transformers are electromagnetic device which transform alternating current electrical energy from primary to secondary side. The energy is transformed with equal frequency and approximately equal power by means of the transformers core magnetic field.

→ Thus they provide galvanic isolation in the electrical system.

→ The isolation transformers operate in the same way as other transformer types. But the main task is to provide the galvanic isolation in the electrical system.

→ The can work as stepup transformer or step down transformer but often operate with turns ratio. $N_1/N_2 = 1$

→ The isolation transformer are used in many electrical devices as computer, measurement devices or specific industry power electronic devices.



Mother Board And Components:-

Components and slots:-

→ The computer motherboard connects all the parts of a computer together.

→ Computer motherboard is single platform to connected all of the parts of a computer together. Hence it considered as the backbone of a computer.

The processor socket:-

It is a connector into which the processor is mounted. The basic i/o system and complementary metal-oxide semiconductor are present on the motherboard.

Memory slot:-

A memory slot or RAM ~~is~~ slot is what allows computer memory (RAM) chip/stick to be inserted in to the computer. Depending on the motherboard, there will usally be 2 to 4 memory slots.

Chip sets:-

It is a circuit which is used to controls the resources such as the bus interface with the processor, cache memory and RAM. expansion cards, etc. It is used to coordinate data transfers bet^n various components of computer.

Cache memory:-

It is called cache, supplementary memory system that temporarily stores faequently used instruction and data for quicker processing by the central processing unit of a computer. The cache augments, and is an extension of, a computer's main memory.

BIOS:-

The Basic input output System, or BIOS is a very small piece of code contained on a chip on your system board. When you start your computer, BIOS is the first software that runs. It identifies your computer's hardware, configures it, test it, and connects it to the operating system for further instruction. This is called the boot process.

Clock Generators:-

A clock generator is an electronic oscillator that produces a clock signal for use in synchronizing a circuits operation. the signal can range from a simple symmetrical square wave to more complex arrangements. The Basic parts that all clock generators share are a resonant circuit and an amplifier.

Real-Time clock (RTC):-

A realtime clock (RTC) is a computer clock usually in the form of an integrate circuit that is solely built for keeping time. Naturally, it counts hours, minutes, seconds, months, days and even year. RTC can be found running in personal computers, embedded systems and servers, and are present in any electronic device that may require accurate time keeping. Being able to still function even when the computer is powered down through a battery or independently from the system's main power is fundamental.

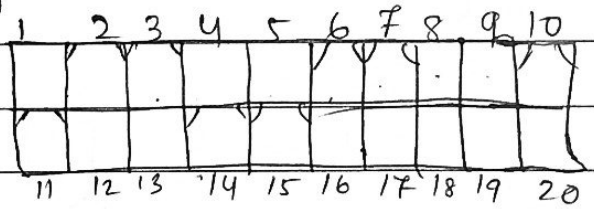
I/O Controller:-

I/O controller are a series of microchips which help in the communication of data. Between the central processing unit and the motherboard. The main purpose of this system is to help in the interaction of peripheral devices with the control unit (cus) it is usally installed on the motherboard of the computer.

I/O ~~Computer~~ controlls are also known as channel I/O, DMA controllers, peripheral processors or I/O processors.

Power Connector:-

The connector provides the necessary electrical power to make the computer system operate. The power supply takes standared 110-v Ac power and converts in to +/- 12-volt, +/-5-volt, and 3.3-volt Dc power. The power supply connector has 20-pins, and the connector can go in only one direction.



Mouse/Keyboard Connectors:-

There are two types of Keyboard and mouse connectors first typle is called ps/2 and second one is called USB.

Ps/2:- A personal System/2 (ps/2) Connector is a 6pin connector used to connect peripheral devices, usally a mouse or Keyboard, with a Computer. The ps/2 connector is the relacement of an order standard, DEQRS-232, used for

mouse and keyboard connections.

Normally ps/2 connectors are available in two different size or shape. one is 1/4 of an inch in diameter and other is 3/8 of an inch.

USB port:-

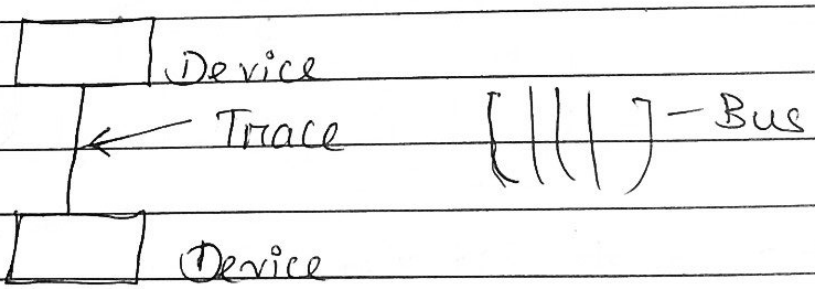
A USB port is a standard cable connection interface for personal computers and consumer electronics device. USB stands for universal Serial Bus, an industry standard for short distance digital data communications. USB ports allow USB devices to be connected to each other with and transfer digital data over USB cables. They can also supply electric power across the cable to devices that needed it.

Motherboard Architecture and Block Diagram.

Motherboard:-

→ Motherboards connect all devices in a computer.

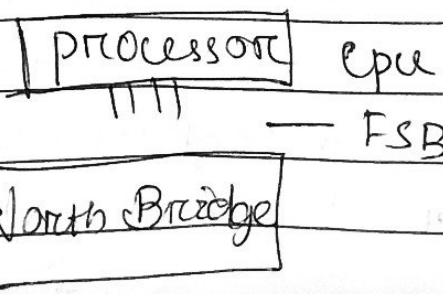
→ Comprised of many individual circuit traces grouped together to from busses.



→ System Bus:-

- The System bus is also called the front side bus (FSB)

→ The higher the FSB, the faster the machine



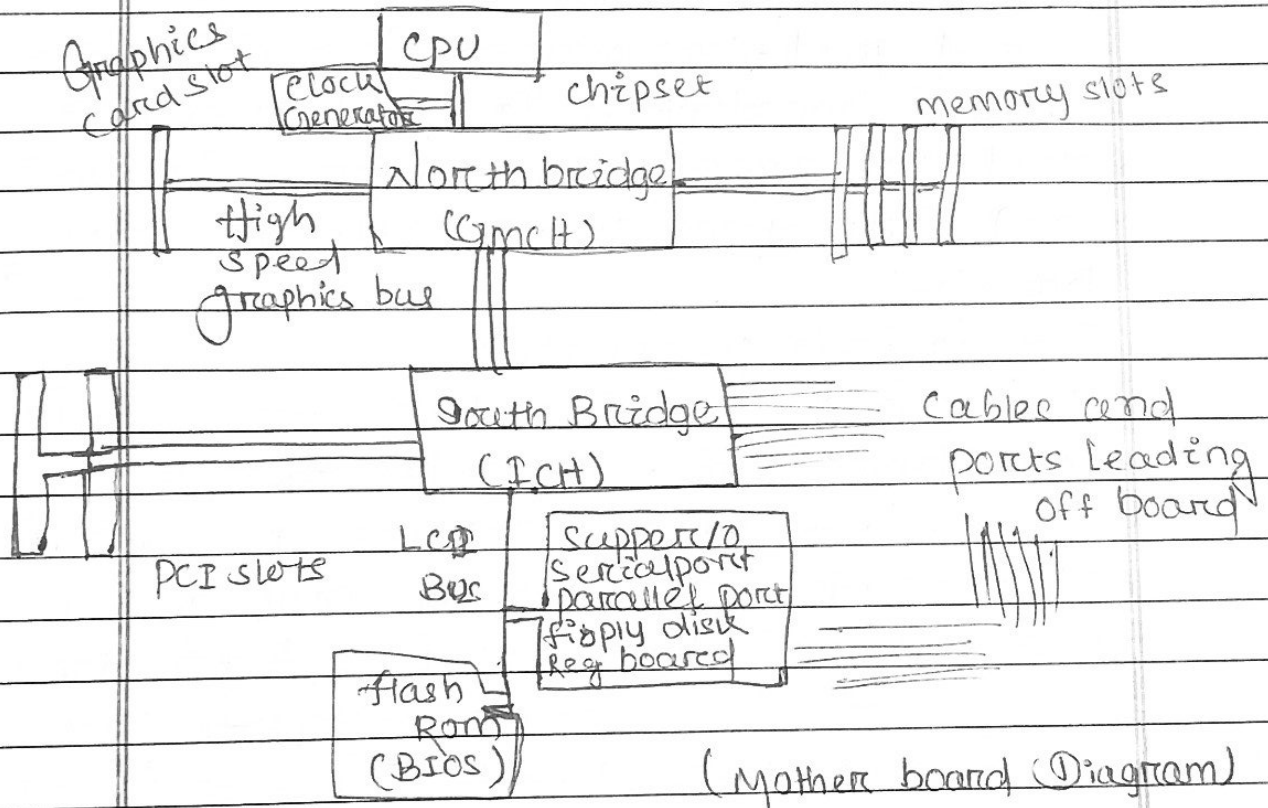
→ The chipset is a combination of the North and South Bridge.

North Bridge :-

It is also known as GMCH (Graphics memory Controller Hub). It handle highspeed (i.e cpu)

South Bridge :-

It is also known as ICH (Input Control Hub). It handles slow speed (i.e keyboard)



(Mother board Diagram)

processor :-

A processor is the Logic circuit that responds to and processes the basic instructions that drive a Computer. The CPU is seen as the main and most crucial integrated circuitry (IC) chip in a computer, as it is responsible for interpreting most of computers commands. CPUs will perform most basic arithmetic, logic and I/O operations, as well as allocate commands for other chips and components running in computer.

Duo processor:-

Core 2 Duo processor (also known as Core 2 (2)) note book processor is a 64 bit dual core processor. This means two processor cores works inside a Core 2 Duo in parallel.

- The Core 2 Duo, which was introduced on July 27, 2006, is the direct successor of the Core Duo.

Quad-Core processor:-

A quad-core processor is a chip with four independent units called cores that read and execute central processing unit (cpu) instructions such as add, move data, and branch.

Core i3, i5, i7 processors:-

Core i3 processor have two cores, Core i5 cpus have four and core i7 models also have four. Some core i7 extreme processors have six or eight cores. Generally speaking we find that most applications can't take full advantage of six or eight cores, so the performance boost from extra cores ~~. So the performance~~ is not as great.

UNIT-5

Computer Hardware & Maintenance:-

Display power supply and bios:-

Displays and graphics card:-

A graphics card also called a video card, display card, graphics adapter, video adapter, or display adapater is an expansion card which generates a feed out or output images to a display device (such as a computer monitor).

→ The graphics card and responsible for rendring an image to your monitor, and it does this by converting data in to a singal your monitor can understand.

→ The better your graphics card the better and smoother an image can be produced.

→ This is naturally very important for gamers and ~~devices~~ video editions.

→ There are two types of graphics card:- Integrated and dedicated.

→ An integrated graphics card, usually by intel to use in their computers, is bound to the mother board and shares RAM (Random Access memory) with the cpu, reducing the total amount of RAM avilable.

Advantages of graphic card:-

1. performance:-

A graphic card tends to increase the System performance to a greater extent. It has its own graphic processing unit (Gpu) which does the work of graphics processing.

Therefore, it does not depend on the cpu for its functioning. A cpu with less load means that it can impact that whole System performances.

1. Graphics
2. Gaming:-
The main purpose of graphics card is to allow playing graphically demanding games.
3. Memory usage:-
A computers builtin graphics card shares a part of system memory for their functioning.
4. Video Experience:-
Besides gaming a graphics card can definitely enhance your video experience.
5. Driver Support:-
Better driver support, so that users can downloaded them from the respective website.

Disadvantages:-

1. Cost:- It is generally expensive.
2. Speed:- whenever there is high resolutions colors, there is always a performance effect.
3. Overheating:- It consumers more power.
4. weight:- Computers, laptops become heavy if it is having a dedicated graphics.
5. power Consumption:- A graphics card consumes more power than any other device on your computer.

LCD, PLASMA, TFT, LED Displays:-

LCD (Liquid crystal Display) is a type of flat panel display which uses Liquid Crystals in its primary form of operation.

→ LCD Consume much less power than LED and gas ~~display~~ displays because they work on the principle of blocking light rather than emitting it.

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How LCD works :-

A display is made up of millions of pixels. The quality of a display commonly refers to the number of pixels.

- A pixel is made up of three subpixels, a red, blue and green - commonly called RGB. When the subpixels in a pixel change color combination a different color can be produced.
- All the pixels on a display working together, the display can make millions of different colors.
- When a pixels are rapidly switched on and off a picture is created.

Types of LCDs :-

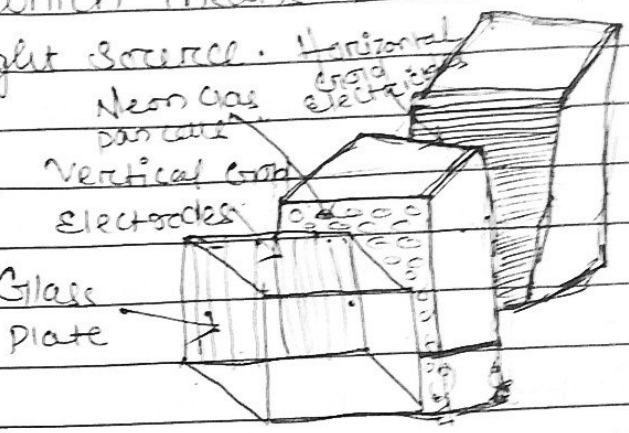
→ Twisted Nematic (TN) :-

which are in expensive while having high response times. TN displays have low contrast ratios, viewing angles and color contrasts.

- panel switching displays (IPS panels) - which boast much better contrast ratios, viewing angles and color contrast when compared to TN LCDs.
- Vertical Alignment panels (VA panels) → which are seen as a medium quality between TN and IPS displays.
- Advanced fringe field switching (AFFS) - which is a top performer compared IPS displays in color reproductions range.

Plasma Display :-

Plasma display panel are an emissive display which means that the panel itself is the light source.



→ Plasma Display panel are composed of two parallel sheets of glass which enclose a mixture of discharge gases composed of helium, neon and xenon.

Advantages :-

→ Plasma Display panel are thin light weight and take up less space than other displays which makes them easy to install anywhere.

→ It offers uniform brightness.

→ It are suitable for multimedia usage bcz they can display computer images as well as full-color, full-motion pictures.

Disadvantages :-

→ plasma display panel use more electricity, can overlay than as an LED TV.

→ A more expensive "plasma compatible" sensor needs be used.

TFT Display :-

A thin-film-transistor liquid-crystal display (TFT LCD) that uses to improve image qualities.

LED displays:

→ LED display (Light-emitting diode display) is a screen display technology that uses a panel of LED as the light source.

→ Currently, a large number of electronic devices, both small and large, use LED display electronic devices as a screen and as an interaction medium between the user and the system.

→ Modern electronic devices such as mobile phones, TVs, Tablet, computer monitors, laptops screens, etc use a LED display to display their output.

SMPS:- (Switched-Mode power supply)

A switched mode power supply is an electronic circuit that converts power using switching devices that are turned on and off at high frequency and storage components such as inductors or capacitors to supply power when the switching device is in its non-conduction state.

→ Switched-mode power supplies are classified according to the type of input and output voltages. The four major categories are

→ Ac to DC → DC to Ac

→ Dc to Dc → Ac to Ac

A basic isolated Ac to dc switched mode power supply consists of

→ input rectifier and filter

→ inverter consisting of switching devices such as MOSFETS

→ Transformer

→ Output rectifier and filter
→ Feedback and control circuit

Advantages:-

→ Higher efficiency of 68% to 90%
→ Small size and lighter
→ Flexible technology
→ High power density

Disadvantages:-

→ Generates electromagenetic interference.
→ Complex circuit design.
→ Expensive. Compared to linear supplies switched-mode-power supplies are used to power a wide variety of equipment such as computers, Sensitive electronics, battery-operated devices and other equipment requiring high efficiency.

BIOS:- (Basic input output System)

The BIOS provide instructions for loading basic computer hardware.

→ This also requires ~~for~~ a test called a post (power-on self Test) to verify whether the device meets the needs of booting correctly.
→ The BIOS provides a variety of services that allow user to configure and get direct information from hardware components inside computers.
→ The BIOS serves as a mediator between the input / output devices.

Types:-

There are two different types of BIOS:-

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* UEFI :- (unified Extensible firmware interface)

Can accomodate 2.2 TB or Larger drives by using the master Boot Record (MBR).

→ Although Intel pcs migrate away from Legacy Bios and towards UEFI Firmware. BIOS has never been used by Apple's mac pcs.

* Legacy Bios :-

Older motherboards have Legacy firmware on the BIOS the turn the pc on. Although it governs how the cpu and the components communicate Like UEFI, Legacy bioses have other limitations.

→ These can't identify drives bigger than 2.1 TB and their setup programs have text-only menus.

Which were the First BIOS?

Gary Kildall developed the first BIOS, and in 1976 it was used in the CP/M operating system.

Function :-

The BIOS is responsible for Loading the os and it contains various instructions that are required to load the hardware.

1- POST :- (power-on-self-check)

If the POST test is passed then it continues to boot. If test fails, the computer produces different forms of beeps to show the error type.

2- Booting :- upon successfully running POST, the BIOS Locates and recognizes the operating system. The BIOS then transfers access to operating system when it detects one.

This is called Booting.

3- BIOS drivers:-

BIOS drivers are a set of programs that are stored in the erasable memory chip which are non-volatile. The BIOS Drivers supplies basic computer hardware information.

4- BIOS setup:-

Configuration software that allows you to configure hardware settings including the device settings, computer passwords, time and date.

Advantages:-

→ Hardware updates
→ Security updates
→ increased stability

Common producers of BIOS

→ Dell → phoenix Technologies
→ IBM → BYSOFT
→ Gateway

POST:-

→ Find, size, and verify the system main memory.
→ initialize BIOS.
→ Identify, organize, and select which devices are available for booting.
→ verify cpu registers.
→ verify some basic components like DMA, timers, interrupt controllers.

The AMD A10-4655M is a mobile quad-core processor based on the Trinity architecture. The processing unit is manufactured in 32nm SOI and integrates a 2.3GHz CPU (up to 3.2GHz w/ Turbo Core) with a relatively fast Radeon HD 7660G GPU alongside a dual channel memory controller, video encoder and a northbridge.

Xeon processor:-

An Intel Xeon processor is one of Intel's Intel's state-of-the art central processing unit. The Intel Xeon processors are definitely power processors. They have a large number of cores. They have special features that make them great for running intensive programs and mission-critical tasks.

Chipset:-

- An electronic chipset manages the flow of data betn components on a motherboard. It's the traffic controller betn CPU, CPU, RAM, storage, and peripherals. Experts have referred to it as the "glue" of the motherboard.
- Most importantly, the chipset determines compatibility betn all of these other components.

Bus standards:-

→ Bus carry signal betn the components.
→ Bus is a common pathway in which data can travel with in computer.

PCI :-

PCI, stands for "peripheral component interconnect". PCI is a hardware bus used for adding Internal components to a desktop computer.

AGP :-

Short for accelerated graphics ports, AGP is an advanced port designed for vedio Cards 3D accelerators. Developed by intel and introduced in August 1997. AGP introduced a dedicated point-to-point channels that allows the graphics controller direct access to the system memory.

② USB :-

USB is an interface that connects a device to a computer with this connection, the computer sends or retrieves data from the devices. USB gives developers a standard interface to use in many different types of application. A USB device is easy to connect and use because of a systematic design process.

Colour codes for Devices / ports :-

→ Keyboards (PS/2) - purple
→ mouse (PS/2) - Green
→ Serial - cyan
→ printer - Violet
→ monitor (VGA) - Blue
→ monitor (DVI) - white
→ Line out (headphones) - Lime Green
→ Line in (micro phone) - pink
→ Audio in - Grey
→ Gaming - Yellow.

Memory speed, Access time :-

→ The amount of time that it takes RAM to receive a request from the processor and ~~receive~~ then read or write data.

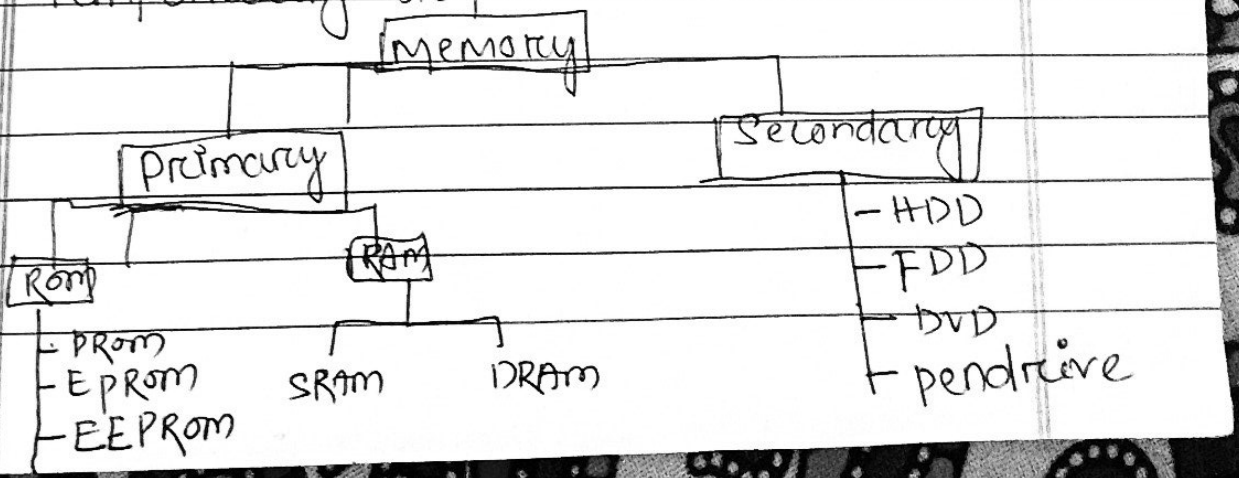
→ Generally, the faster the RAM, the faster the processing speed. with faster RAM, you increase the speed at which memory transfers information to other components.

→ Accestime is how long it takes for a character in RAM to be transferred to or from the cpu. fast RAM chip have an access time of 10 nanosecond (ns) or less.

→ Disk access time is how long it takes to obtain the first data character after initiating a request. It includes the time to move the read/write head to the track (seek-time) and time to rotate the platter to the sector. Disk access time is always given as average because seek time and Latency vary depending on the current position of the head and platter.

Memory :-

Memory is a storage part in a computer system. It is used to store the data, information and program at the time of processing on the computer. It stores data either temporarily or permanet.



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Primary Memory :-

It is called the internal memory of the computer. And it is also known as main memory or Temporary memory. It holds the data and instructions that are present working on the system or by the cpu, primary memory because when power is switched off it loses all the data.

Secondary Memory :-

It is an External of the computer. It is alsoknown as Auxiliary memory or permanent memory. It is used to store different programs and the information permantly. we call it a non-volatile memory that means the data is stored permantly even if power is switched off.

* The Secondary storage devices are as follows :-
  - → floppy devices.
  - → magnetic Disk.
  - → Magnetic Tales.
  - → pen drive.