Unit ⇒ 1 PC components and System Board :—

Hardware :—

Hardware → The physical device that make up the computer are called hardware.

Such as :— Case, central processing unit [CPU], random access memory [RAM] and mouse which processes the input according to the set of instruction provided to it by the user and gives the desired output.

The hardware units are responsible for input, storing and processing of the given data and the responsible for displaying the output to the user.

Some basic hardware unit of a computer are keyboard, mouse, CPU, memory, monitor & pointer.

- Among these hardware units keyboard & mouse are used to input data into the computer.
- Memory is used to store data, CPU is used to process the input data and monitor & pointer are used to display the processed data to the user.

Computer Hardware parts

These hardware components are further divided into the following categories which are :—

(i) Input Devices (ii) output Devices
(iii) Storage Devices (iv) Internal Components

(i) Input Devices

These devices which are used by the user with the computer to interact with the computer.

These information or data is accepted by the input devices and converted into a computer-acceptable format, which is further sent to the computer System for processing.

Some input devices :—

• Keyboard, • mouse, • Scanner, • Track-ball, • Light pen, • Microphone • optical character Reader, • Bar code Reader.

(ii) Out devices

These are the devices that are used to display the output of any task given to the computer in human-readable form

Some out put devices :—

• monitor • plotter
• Printer • Speaker

(iii) Storing Devices:

Some devices that are used for storage purposes are known as Secondary Storage devices.

Some storing devices are:-

(a) CD (compact disc)

- A CD is circular in shape and made up of thin platted glass and plastic poly-carbonate material.
- It has capacity of 600MB to 700MB of data. storage.
- It ~~Stand~~ has a standard size of 12cm with a hole in the center of about 1.5cm and 1.2mm in thickness.

There are basically 3 types of CDs which are

(1) CD-ROM [CD- Read only Memory] It is used for commercial purposes like a music album or any application package by a software company.

(2) CD-R [CD- Recordable] In this, content or data can be stored once. After that, they can be read many times but the data or content cannot be written or erased.

(3) CD-RW [CD Rewritable]:

As the name suggests, this type of CD is used to rewrite the content or erase previous content and again write new content many times.

(b) DVD (Digital video/versatile Disc).

- A DVD is same as a CD but with some more features.
- A DVD comes in single or dual-layer formats.
- It has much greater storage capacity in comparison to CD.
- The storage capacity of DVD with

one sided single layer → 4.7GB
one sided double layer → 8.5GB
double-sided single layer → 9.4GB
and double-sided double layer → 17GB

There are also some type of in DVDs which are:-

1] DVD ROM

DVD cannot be written on or erased by the user. DVD ROM is used

for application and database for distributing them in large amounts.

2) DVD-R / DVD+R (minus R / plus R)
There are two different kinds of discs and they are once recordable format. Also, they have no different virtually.

3) DVD -RW / DVD +RW:
This is kind of rewritable disc and it allows up to 1000 rewrites.

4) DVD-RAM
DVD Ram is accessed like a hard disk. It provides high data security and storage capacity.
This is a kind of rewriable disc and it allow up to 1,00,000 rewrites.

(C) Hard Disk :—

- A hard disk is a non-volatile storage device that uses its read/write heads to store digital data on a magnetic surface of a rigid plate.
- It is generally 3.5 inches in size for desktop and 2.5 inches in size for laptops

A hard disk can be classified further into 3 types, which are:

1) Internal Hard Disk
2) External cartridges

3) Hard Disk Pack:—

Hardware used for I/P and O/P :—

- Hardware is the physical parts of a computer.
- A compiter system usually contains the following hardware components :

(I) Motherboard
(II) CPU [central processing unit]
(III) Memory such as (a) RAM (b) ROM
(IV) Video graphic array port
(V) power supply
(VI) cooling fan
(VII) Secondary Storage, such as — HD drive, CD
(VIII) I/O Devices
(IX) communication Devices.

Motherboard (aka System board)

- It is main circuit board inside a computer and it contain most of electronic component together.
- All the components of the computer are directly or indirectly connected to the motherboard.

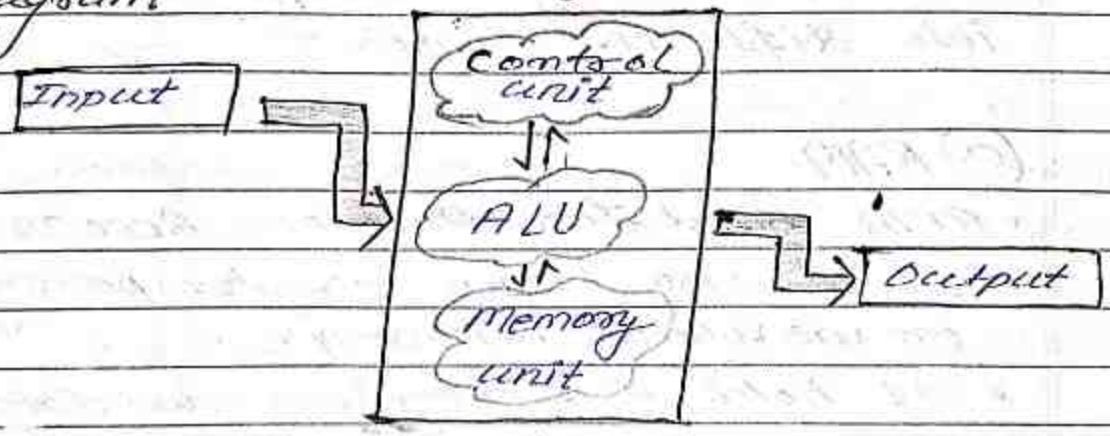
It Includes: → System (chipset etc
→ RAM slots
→ controller

CPU

- CPU stands for standard central processing unit which is also known as the heart of the computer.

- It consists of three units, generally known as control unit, Arithmetic Logical unit [ALU] and memory unit.

Diagram



- There are various part of the CPU: The ALU and Control Unit also memory unit.

→ ALU performs arithmetic operation (such as addition, substraction, multiplication, division, logical operation etc.

→ control unit decides what to do with the input or instructions and transfers it to ALU.

After that, the final result get stored in memory and finally passed to output device to give the output. So, this how CPU works.

Memory (a) RAM (b) ROM

- Memory is a device which is used to store the data temporary and parmently. Therefore it categories into different types —

(a) RAM

- RAM stand for Random Access Memmory.
- It is also known as temporary, primary or vas volatile memory.
- It hold the program and data, which are currently in process or processing.
- All the data gets is erased as soon as as the computed is turned off or in case of a power failure.
- Data stored in the memory can be changed.

There are two types of RAM

(1) SRAM (STATIC Ram)

- SRAM basically consists of a flip-flop using a transistor or Mosfet (MOS)
- It is fast and less access time.

• In this refreshing circuit are not required are not required.

But it is costly and requires more space. Cache memory is an example of static memory.

(ii) DRAM (Dynamic RAM)

• DRAM consist of capacitors and the data is stored in the form of capacitors.

• capacitors charge when data is 1 and don't charge if data is 0.

• It requires refreshing circuits, as leakage of current in the capacitor can occur, so they need to be refreshing to the data.

• It is slower and has a higher access time.

• It is cheaper in comparsion with SRAM. main memory is an example of dynamic memory.

(b) ROM

• ROM stand for Read only Memory.

• It is also known as Secondary & non volatile memory.

• It is used in computers and other electronic devices for storing data that should not be modified or can only be modified slowly or with difficult.

There are several types of ROM

(i) PROM :-

- It stands for programmable Read only memory.
- It is a type of non-volatile memory that can be programmed only once by the user.
- Once programming is complete, the data is locked and cannot be changed.

(ii) EPROM :-

- It stands for Erasable programmable Read only memory.
- It is type of non-volatile memory that can be erased and re-programmed multiple times.
- This is typically achieved through exposure to ultraviolet light for a specified period, which erases the data, allowing the memory to be reprogrammed with new data.

(iii) EEPROM :-

- It stands for Electrically Erasable programmable read only memory.

• It is type of non-valatile memory that can be erased and reprogrammed electrically without the need for exposure to ultraviolet light.

→ EEPROM are widely used in various electronic devices for storing small amount of data that need to be stored when the power is turned off.

(iv) Flash memory :—

• Flash memory which is a type of EEPROM

• Flash memory is a type of non-volatile memory that can be electrally erased and reprogrammed.

• It is commonaly used in memory card, USB flash drives, solid-state drive and similar devices.

• Flash memory is known as for its fast read and write speeds, high storage capacity, and durability, making it a popular choice for portable electronic devices and storage solution.

(v) Mask ROM :—

→ It is a type of memory (ROM) where the integrated circuit is manufactured with the data already stored in it during the fabrication process.

→ Once the data is marked onto the chip, it cannot be changed or modified.

→ Mask ROM is commonly used when large quantities of a specific, unchangeable set of data or instructions need to be produced at a low cost.

Slot :—

In computer, a slot typically refers to an expansion slot on a computer's motherboard where additional hardware components can be connected.

These slots allow users to add various devices such as graphic cards, soundcards, network cards and other expansion card to enhance the capabilities of their computer.

Chipset :-

A chipset is an integrated set of electronic components in an integrated circuit that manages the data flow between processor, memory and pheripherals.

It plays a crucial role in determining the capabilities and performance of a device, such as computer, smartphone or other electronic gadgets.

It is non-vostile memory.

common chipset manufacturers includes companies like Intel, AMD, Qualcomm and MediaTek, among other.

Clock synchronization :-

Clock synchronization refers to the process of coordinating the timing of multiple clocks in a distributed system to ensure that they are all showing the same time.

→ It receive electorical power distributed into CPU, chipset, memory etc.

→ Network Time Protocol (NTP) is commonly

used for clock synchronization in computer networking to ensure that devices maintain accurate time, facilitating smooth data exchange and network operation.

Types of motherboard :-

(i) Integrated motherboard
(ii) Non-integrated motherboard

Integrated motherboard

An integrated motherboard, also known as a system board.

→ An integrated motherboard is a type of motherboard that incorporates various essential components such as processor, memory, and input/output interfaces a single board.

→ Integrated motherboards are commonly found in laptops, tablets and other compact computing devices where space and power efficiency devices are crucial consideration.

→ They often includes integrated graphics, sound and network capabilities reducing the need for additional expansion cards.

→ The major advantage of this type is that it contain all the major fuction can be perform in it.

→ Disadvantage of motherboard —

- It break the componet of old mother-board.
- It is costly and can't be add in new variation or further update can't be possible.

Non-Integrated motherboard

A non integrated motherboard also known as discrete motherboard.

→ It refer to a type of motherboard that does not some essential component such integrated onto the board itself.

→ This allows for greater flexibility in term of customization and upgrading, as user can add or replace individual components according to their specific requirements.

→ Non integrated motherboards commonly support separate expansion cards for graphics, sound, networking and other functionalities providing users with option to choose higher performing or specialized components based on their needs.

There are several type of motherboard to design it.

(a) ATX :-

ATX stand for Advanced Technology Extended.

→ ATX is a widely used form factor for computer motherboards and computer cases.

→ ATX motherboards typically offer multiple expansion slots, including PCI and PCIe slots and provide various ports for connecting peripherals and other device.

→ It is basically specifies the dimension mounting hole locations and other physical characteristics of the motherboard and its components.

→ This standard has evolved over the years, with variation such as

micro ATX

mini ATX - ITX to accommodate different sizes and feature sets for various computing needs.

(b) BTX

BTX standard for Balanced Technology Extended.

→ It is a form factor for computer motherboards and computer cases that was introduced as an alternative to the ATX standard.

→ It aimed to improve the airflow and cooling with in the computer case by reorganizing the layout of components.

→ BTX motherboard typically position the CPU closer to the front of the case, while allows for more efficient cooling.

(c) LPX

LPX stand for low profile extension

→ LPX is a form factor for computer memory modules, primarily used in older computer systems.

→ LPX modules typically used in desktop computers and were designed to fit into low profile desktop cases.

→ LPX modules are known as for their compact size, which allows them to fit into smaller cases and provide better airflow with in the system.

→ LPX modules have become less common, a newer form form factors have taken their place in modern computing system.

(e) Micro ATX

→ It is an evolution of ATX.

→ It measures are 9.6 X 9.6 inches.

→ It is a smaller form factor for computer motherboards.

→ Micro ATX motherboards are smaller than standard ATX boards, usually featuring fewer expansion slots and ports, which makes them suitable for building smaller desktop system.

→ The micro-ATX supports up to four expansion slots that can combine freely with ISA, PCI, PCI/ISA shared and AGP.

⑦ Mini ITX motherboard

Mini ITX is a low-power consumption motherboard format of 6.7 * 6.7 inches.

It dimension are the most characteristic factor of this type of from factor.

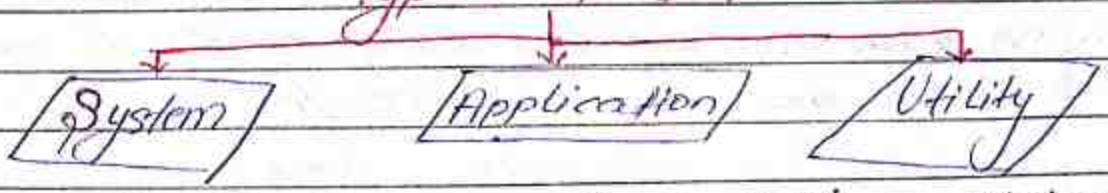
Although this type of motherboard was designed with the aim of empowering teams of low consumption.

Software :-

A system software is a collection of program that enables a computer to perform a specific task according to given instruction.

Example :- MS word, MS-Excel, PowerPoint, window, chrom etc.

Types of Software



- Opearting System	- Power Point	- Disk managment
- Interpreter	- MS Word	- Disk formatting
- Compiler	- MS Excel	- Scan Disk
- Assemblem	- Photoshop	- virus Scanner
- Loader	- MS paint	- Data Stection
		- Disk checker.

① System Software

→ The system software is a software that manages and controls the hardware

* ⇒ It is an essential part of the computer system because it create an interface between the user and the hardware and provide a platform to execute the application software.

→ It is alike an interface b/w hardware and user applications, it helps them to communicate with each other. because hardware understands machine language (0 and 1) whereas user application are work in human readable language like english, Hindi, German etc.

So, the system software converts the human readable language into machine language and vice versa.

It has three subtype of system software :—

(a) operating system
(b) language processor
(c) Device driver

(a) Operating System :-

→ OS is an interface between user and computer hardware

→ OS provide a graphic user interface (GUI)

→ OS is a system software which manages hardware as per users requirement.

(b) Language Processor :-

→ As we know that system software converts the human-readable language into a machine language and vice versa.

→ So, the conversion is done by the language processor.

→ It converts programs written in high-level programming language like Java, C, C++, Python etc.

(c) Device Driver :-

→ A device drive is a program or software that controls a device and help that device to perform its functio

→ Every device like a printer, mouse, modem etc. need a driver to connect with the computer system eternally.

Feature of System Software

→ System software is closer to the computer system.

→ System software is written in a low level language in general.

→ System Software is difficult to design and understood.

→ System Software is fast in speed (work speed).

→ System software is less interactive for the user in comparison to application software.

(2) Application software

→ Application Software is designed to perform a specific task for end user.

→ Application Software is also known as end user Software.

→ It is a type of software that is used for special purpose.

* Word processors, spreadsheets, power-point.
* web browser. (Google chrome, IE, opera Mini etc) Media player, photoshop etc.

There are different types of application software and those are :-

(a) General Purpose Software

→ This type of application software is used for a variety of task and it is not limited to performing a specific task only.

Example :- MS word, MS Excel, power-point etc.

(b) Customized Software

→ This type of application software is used or designed to perform specific task or functions or designed for specific organization.

Example :- railway reservation system, airline reservation system, invoice managment System etc.

Key features of application software:

→ Application software is usually written in high-level languages.

→ They are larger, hence need more storage space.

→ They are comparatively easy to built than system software and look more interactive.

→ Each application software is used to perform a specific task.

Utility Software

→ utility software is also known as a service program

→ It is a computer system software that is designed to help organize computer hardware, operating system, and application software.

→ It also help to configure and monitor or maintain a computer.

→ Antivirus, backup Software, file manager and disk compression tool all are utility Software.

Example (I) Antivirus Software
- → AVG
- → AVAST
- → MCAFEE

(II) file management Tools are
- → file manager in window.
- → Mac OS Finder
- → Directory opus
- → Dolphin in KDE

(III) Compression Software
- → Winc Ace
- → Win RAR
- → Win Zip
- → 7-Zip
- → PKZIP

(IV) Disk Management Tool
- → Mini Tool Partition Wizard
- → paragon partition Manager
- → EaseUS partition Master
- → SMART Monitoring Tools
- → AOMEI Partition Assistant

(V) Disk cleanup Tool
- → Iolo System mechanic
- → Iobit Advanced SystemCare
- → pirifom ccleaner
- → Razer Cortex

Types of Utility Software :-

(I) Antivirus Software
(II) Disk cleaners
(III) Backup and recovery software
(IV) System optimizers
(V) Disk defragmenters
(VI) file compression software
(VII) Disk encryption software.

Why Need Utility Software?

(I) System maintenace
(II) Security
(III) Efficiency
(IV) Data Recovery
(V) User experience

Advantages of utility Software

(I) Improved system performance
(II) Enhanced Security
(III) Data backup and recovery
(IV) Time - saving
(V) Customization
(VI) Cost - effective

Disadvantages of Utility Software

(i) System instability
(ii) False positives
(iii) Resource consumption
(iv) Compatibility issuse
(v) Cost
(vi) User error

⇒ BIOS, function of BIOS

BIOS → BIOS stands for Basic Input output System.

→ It stored in non-volatile memor like (ROM) or flash memory that allow you to set up and access your computer system at the greatest basic level.

→ It is found on motherboards that are a pre-installed program on window-based computers that executes when a computer is powered up.

Before an OS is loaded, the CPU access as the BIOS.

→ Then, the next function of BIOS is to examine all the hardware connections and detects all your devices.

→ The main function of BIOS is to set up hardware and starts an OS, and it contains generic code that is needed to control display screens, the keyboard and other functions.

→ A BIOS software is available in all modern computer motherboards.

As the BIOS is a part of motherboard, therefore the BIOS's access and configuration on PCs are independent of any type of OS.

Boot process :-

→ Booting is the process of starting a computer. It can be initiated by hardware such as button press or by a software command.

→ BIOS checks the CMOS settings after starting the computer.

→ They read the setting of the CMOS to check whether everything is functionally correctly.

→ After checking BIOS setting & of the CMOS BIOS load computer drawer which work as interface b/w OS and connected device.

Function of BIOS

→ The main function of BIOS is to boot the operating system of the computer.

→ When the computer is on then BIOS does this tasks given below:—

(I) For the custom setting, we can check the CMOS setup.

(II) To load the interrupt handlers and device drive.

(III) To conduct Power-on-self-test (POST)

(IV) For display system settings

(V) To decide from which device system is the boot.

Difference b/w BIOS & CMOS

BIOS	CMOS
→ Stand. Basic Input output system	Stand for complomentary Metal Oxide semiconductor
→ BIOS configure the i/p & o/p of the computer	CMOS work is in the form of battery and to secure all settings of BIOS
→ BIOS is known as Computer Boot Process start-up	CMOS is known as Real Time clock (RTC), Non Volatile RAM (NVRAM).
→ BIOS software are installed in motherboard's EEP-ROM is stored on the ROM chip.	The CMOS battery is small shaped cell on the motherboard.
→ This work is incomplete without eachother is CMOS is damaged, the BIOS still works.	If BIOS is damaged, then CMOS stop responding.
→ BIOS gets power from CMOS	CR2032 cell battery gives power to CMOS which is also cell called cell Battery.

Post :-

↳ Post stand for Power ON self-Test

↳ The POST is a collection of test programs

↳ The function of these programs is testing the various functional units in the PC and verifying whether they are working or not.

↳ If the computer passes the POST the computer will have a single beep as the computer start & and the computer will continue to start normally.

↳ However, if the computer fails the POST, the computer will either not beep at all or will generate a beep code, which tells the user the source of the problem.

What is beep code ?

→ A beep code is the audio signal from a computer when its power on to give the POST result.

Variation of beep code are following.

No beep → This is usally mean that the POST process complete Sucessful and their is no critical error.

1 short beep → Normal post – system is OK.

2 short beep → POST error – error code shown on screen.

continous beep → power supply, system board and keyboard problem.

1 long beep, 1 short beep → System board problem

1 long, 2 short beep → Graphics card & Display adapter problem (MDA, CGA)

1 long, 3 short beep → problem with System memory (RAM)

continous and hard sound beep → Overheating & power supply server.

connectors :-

→ A connector is a device that terminates a segment of cabling or provides an entry points for networking devices such as computers, hubs and routers.

Classification of connectors Based on connector level :

① Box-to-Box or I/O
→ wired-to-board
→ chip-to-package
→ package-to-board
→ PC board-to-bard

Classification of connectors Based on connector fuctions :-

→ Terminal block
→ Binding Post
→ Plug and Socket
→ Rack and Panel
→ Blade
→ Ring and spade

classification of connectors Based on connector level Termination :

→ Insulation Displacement
→ Crimping .

Crimping :- Crimping creates a connection b/w connectors and wires which can be separated later.

Insulation displacement :-
This connectors connects insulated wire and do not use any pre stripping of insulation.

CPU form factors :-

→ In computers, the form factor is the size, configuration, or physical arrangement of a computing device.

The form factor of the CPU describes its general shape, what sorts of sockets and slots used and how heat sink is arranged, and its physical organization.

CPU slots and Sockets

Slot or socket is the physical ~~connect~~ connection used to connect a device (CPU) to the system board.

The type of slot or socket supplied by the system board for the processor must match that required by the processor.

Buses :-

→ Buses are communication paath way with in the computer system that allow various hardware component to transmitted data and information b/w each other.

→ The computer system consists of number of internal and external components.

→ These components are physically interconnected & communication with each other through a network of wires, these wires are called computer bus.

computer Buses used to send
- data
- addresses
- control signals
- power to the various components.

→ In simple computer buses are electrical wires that connect hardware components of computer system.

Types of Buses

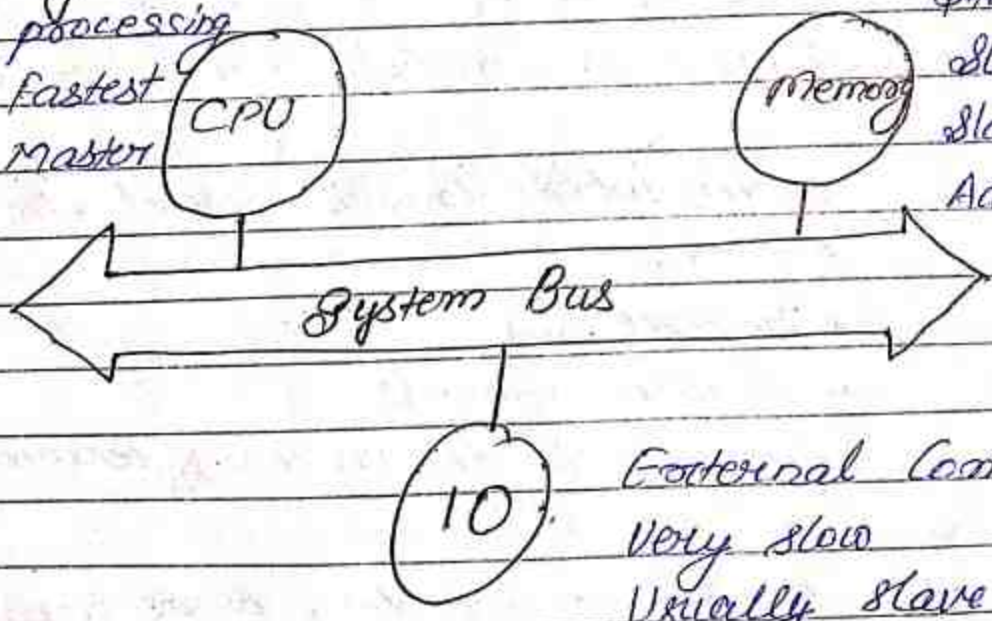
There are three types of Buses

(I) System buses
(II) Expansion buses
(III) Input / output Bus

(I) System Buses

A bus used to communicate b/w the major components of a computer is called a system bus.

Diagram



System bus contain three categories of lines

(I) Address line
(II) Data line
(III) Control lines.

(11) Expansion buses

The expansion buses connects most important internal system components CPU and EPI PCI.

→ The PCI slots are used to add card such as graphics card and sound card.

→ These cards are installed to enhance the system performance

→ Buses are classified by their shape, number of connector pins and type of signals

What do you mean by IAS Bus?

→ IAS stand for Industry Standard Architecture.

→ An ISA bus is a computer buse that allows additional expansion cards to be connected to a computer's motherboard.

→ An ISA Bus that appeared in 1981 is an 8-bit with a clock speed 4.77 MHz.

→ In 1984, the bit was expanded into a 16-bit bus and the clock speed 6 to 8 MHz

8-bit ISA Connector

16-Bit ISA Connector

MCA BUS

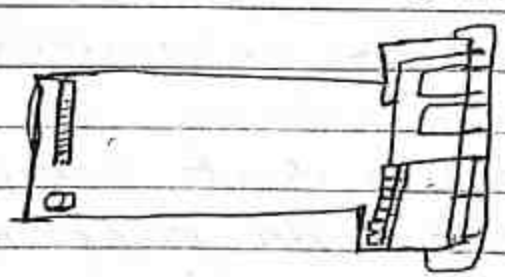
→ MCA Stand for Micro channel Architectu

→ It is an improved bus designed by IBM in 1987.

- IBM Stand for International Business Machines.

→ The MCA bus was designed to upgrade IASA features, including:

- Slow speed complex configuration
- Limited hardware option etc.



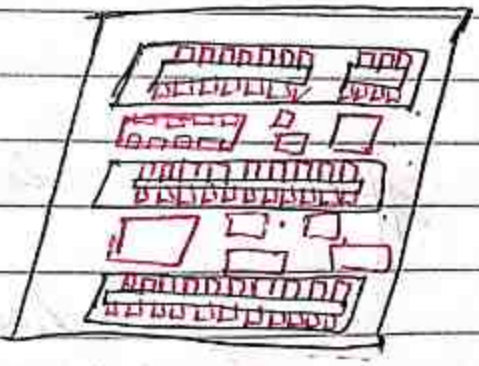
What is an EISA BUS?

→ EISA stands for Extended Industry Standard Architecture.

→ It was developed in 1988 as an expansion to the prior ISA.

→ EISA was created by a consortium of nine companies, including Compaq, HP, and IBM

→ EISA given quicker information exchange rates, more memory capacity, and superior execution for peripherals such as design card and hard drives.



Features of EISA

- 32-bit data bus
- Expanded memory capacity
- progressed performance for peripherals
- Backward compatibility
- plug and play support
- Industry wide standard

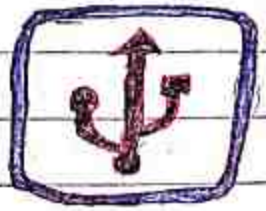
What is an USB

⇒ USB stand. for Universal Serial Bus.

→ USB is the bus standard for connecting cables b/w computers and devices.

⇒ USB is used for data tranfore from one device to another and power supply.

⇒ It connects pherpheral devices such as digital camera, mice, keyboard, printers, scanner, media etc.



what is ~~Firmware~~ Firewire

→ Firmware is a small software that is written to Hardware devices in non-volatile memory.

→ Firewire is a high speed computer data transfer interface that was

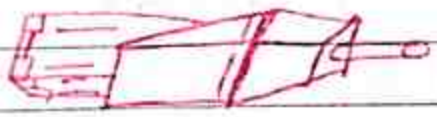
used to connect personal computers, audio, and video devices and other professional and consumer electronic.

→ Firewire also called IEEE-1394

→ It is also used for digital cameras, camcorders and scanners.

→ It is Bi-directional communication.

→ Firewires is peer-to-peer, meaning that two firewire cameras can talk to each other.



What is AGP?

AGP stand for Accelerated Graphics Port (AGP)

→ An AGP is a point to point channel that is used for high-speed video output

→ This port is used to connect graphic cards to a computer's motherboard

→ The primary purpose of an AGP is to convey 3-D images much more smoothly than is possible on a regular PC.

AGP develop in A 1996 launched in Socket 7 Intel P5 Pentium and Slot 1 P6 Pentium II processor.

→ Early boards used graphics processors built around Peripheral Component Interconnect (PCI) and were simply bridged to AGP.

AGP version comparison Table

Interface	clock speed	Speed	Transfer Rate
AGP 1.0	66 MHz	1x and 2x	266 MB/s and 533 MB/s
AGP 2.0	66 MHz	4 x	1066 MB/s
AGP 3.0	66 MHz	8 x	2,133 MB/s

Characteristics of AGP

- It has high quality and very fast performances.

- It has a direct path to the PC's main memory.
- It connects to the CPU and operates at the speed of the processor bus.
- It uses the main memory to hold 3D images.
- It sends video information more quickly to the card for processing.
- The port is identified by its brown colour.

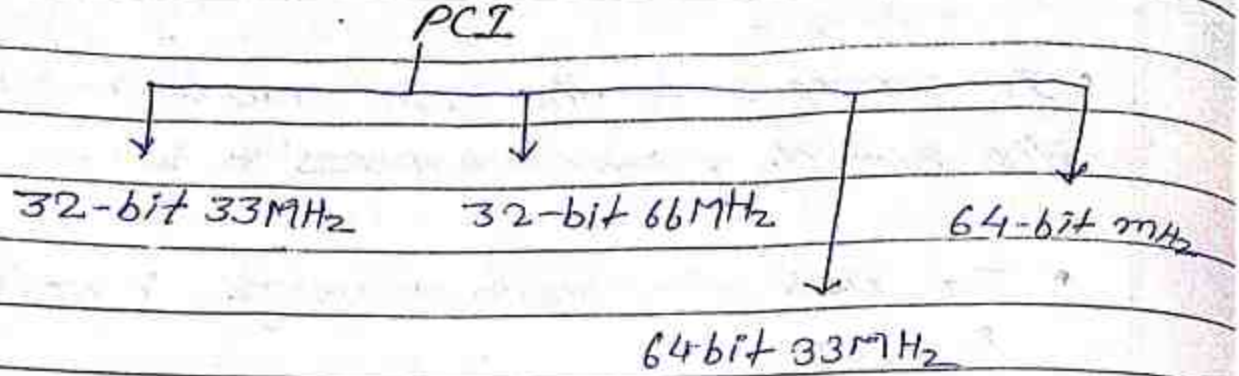
What is PCI

→ PCI stand for peripheral component interconnect

→ PCI is a local computer bus for attaching hardware devices in a computer and is part of the PCI local Bus standard.

→ PCI is an expansion bus standard developed by Intel that became widespread around 1994.

Types of PCI



- PCI 32 bits have a transport speed of 33 MHz and work at 132 MBps.
- PCI 64 bits have a transport speed of 33 MHz and work at 264 MBps.
- PCI 32 bits have a transport speed of ~~66~~ MHz and work at 512 MBps
- PCI 64 bits have transport speed of 66 MHz and ~~at~~ work at 1 GBps.

CMOS setup

CMOS :-

⇒ CMOS stand for A complementary metal-oxide semiconductor.

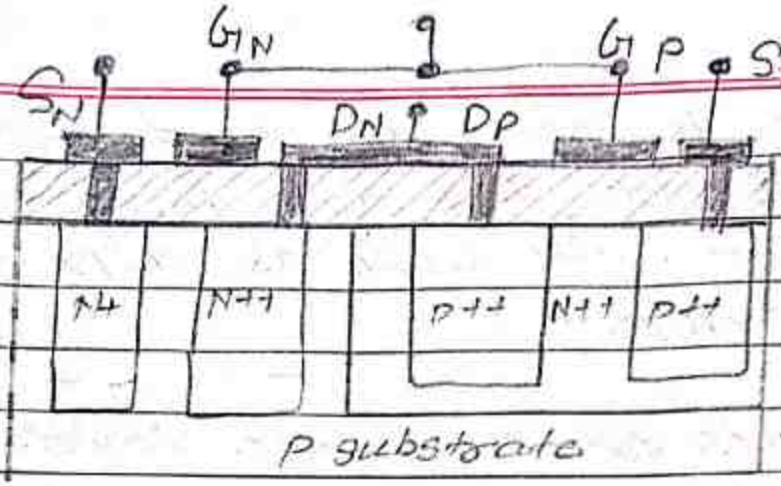
→ CMOS is the semiconductor technology used in most of today's integrated circuits (ICs) are also known as chips and microchips.

→ CMOS transistors are based on metal-oxide semiconductor field-effect transistor (MOSFET) technology.

→ MOSFET serve as switches or amplifies that control the amount of electricity flowing between source and drain terminal, based on the amount of applied voltage.

→ CMOS setup is also known as BIOS stepup which refer to software interface by BIOS form where to configure various hardware system.

→ CMOS technology is widely used in the production of chips and microchips which are made up of silicon and a mix of other conductivity metal which conduct electricity.



Data protection :-

In the cemos setup involves safe garding the setting stored in CMOS system which can involves information detail for your computer.

These are following process occure in CMOS setup.

(a) Access control :-
Access to CMOS setup should be control and restricted by setting BIOS password.

(b) Back System :-
Some BIOS allow we to save or export our CMOS setup setting creating back up of our setting is essential in case they are

accidentally altered.

(c) Password protection
We can setup a password for our CMOS setup.

This add an additional layer and make it difficult for someone to access and modify our system setting.

(d) CMOS Battery

It is powered by small battery on the motherboard this battery is essential to retain setting when the computer is turned ON.

(e) System Security :-

Protect our computer from, virus and thread.

(f) Documentation
It is help to restore setting or truple issues in future.

(3) write protect jumper

Some motherboard have some JMP that can be enables to prevent CMOS setting.