

Computer :-

Computer is an electronic device (i.e., works under a specific range) which is used to perform arithmetic and logical operations. Arithmetic operations:  $+$ ,  $-$ ,  $\times$ ,  $\div$  & logical operations:  $>$ ,  $<$ ,  $=$

Root level definitions :->

- Computer does not process intelligence as it is dependent on the user for performing a task.
- It understands only binary language i.e. '0 & 1's'.
- Charles Babbage is k/as. The father of computer.
- Operating system is the intermediate b/w user and computer.
- Computer system is made up of 3 units

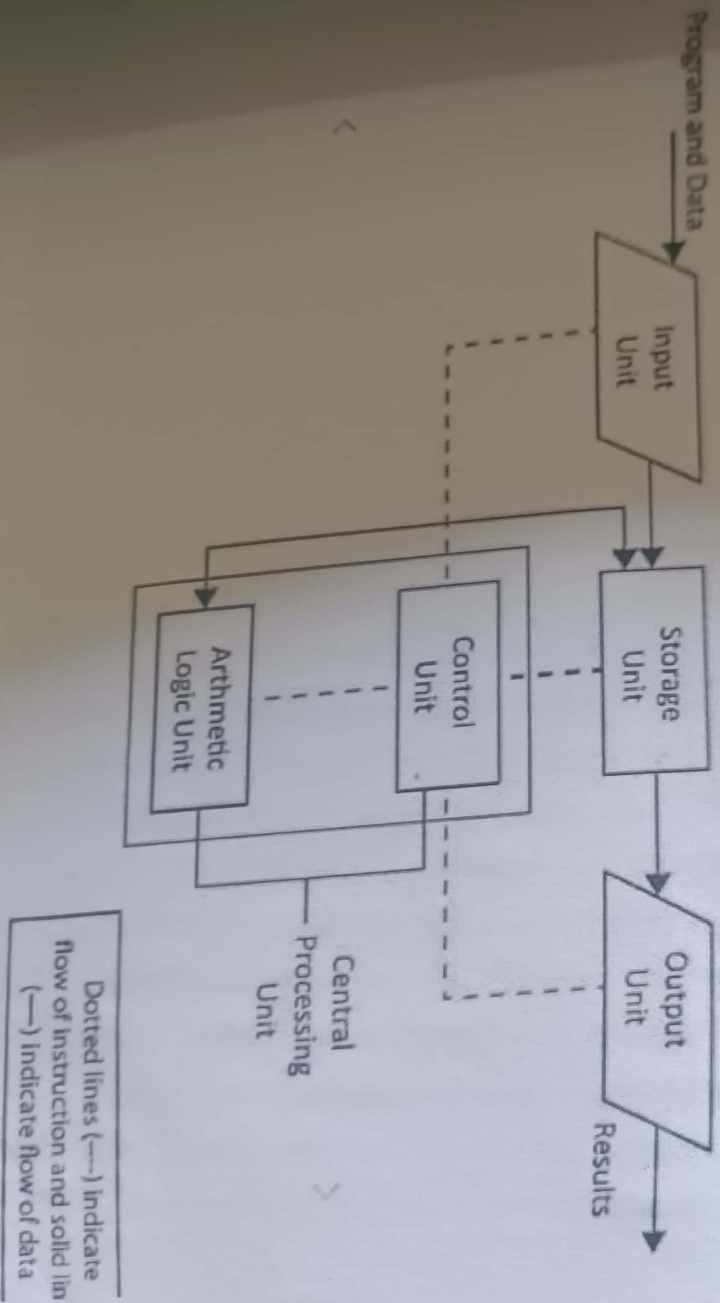
- Physical unit
- logical unit
- User.

All computer system perform the following five basic functions for converting raw input data into useful information and presenting it to R user:

1. Inputting: → It is the process of entering data and instructions into a computer system.
2. Storing: It is the process of saving data and instructions ~~into~~ or to make them readily available for initial or additional processing ~~as~~ and when required.
3. Processing: Performing arithmetic operations (add, subtract, multiply, divide etc). Logical operations. Comparisons like equal to, less than, greater than, etc on data to convert them into useful information is known as processing.
4. ~~Output~~ Outputting: It is the process of

producing useful information or results for a user, such as printed reports or visual display.

5. Controlling: Directing the manner & sequence in which the above operations are performed is known as controlling.



## Block Diagram of Computer process:

In this fig solid lines indicates flow of instructions and data and dotted lines represent control exercised by control unit. Functions of each of these units are:

1. Input unit: An input unit performs the following functions:
  - It accepts (or reads) instructions and data from outside world.
  - It converts these instructions and data in computer acceptable form unit called Input interfaces accomplish this task.
  - It supplies the converted instructions and data to the CPU. Storage and further processing.
2. Output units: An output unit performs following functions:

- It ~~is~~ ~~can~~ accepts the produced results which are in coded form. we ~~can~~ cannot understand the coded result easily.
- It converts these coded ~~results~~ to human acceptable (readable) form. Units called output Interface accomplish this task.
- It supplies the converted structure to outside world.

3. Storage unit: A storage unit holds (stores):  
The data and instructions received for processing (received) from input units

Intermediate results of processing.

Final results of processing before the system releases them to an output unit.

4. Arithmetic logic unit (ALU): A computer performs all calculations and comparison (decision - making) operations in the ALU. ~~It~~  
During processing of a job. The computer transfer data and instructions stored in its

primary storage to ALU as and when needed. ALU does one processing and the computer temporarily transfer the intermediate results generated there back to primary storage until needed later. Hence, data may move back and forth several times between primary storage & ALU before processing of the job is over.

All the ALU's are designed to perform 4 basic arithmetic operations (+, -,  $\times$ ,  $\div$ ) and logical operations (<, >, =).

5. Control unit: A computer's CU acts as the central nervous system for other components of the computer system. It manages and coordinates the operations of all other components. It obtains instructions from a program stored in main memory, interprets the instructions and issues signals causing other units of the system to execute them.

6. Central processing unit (CPU):  
(CU) and ALU of a computer system

are together. It is the central processing unit (CPU). It is the brain of a computer system. The CPU performs all major calculations and comparisons and also activates and controls the operations of other units of the computer system.

## Types of Memory Chips:

### 1 Random Access Memory (RAM):

When we talk about computer memory, we usually mean the volatile RAM memory. Physically this memory consists of some integrated chips (IC's) either on motherboard or on a small circuit board attached to motherboard. RAM chips are of two types:

• DRAM: Dynamic RAM uses an external circuit to periodically "regenerate" or refresh storage charge to retain the stored data.

• SRAM: Static RAM does not need any

Special regenerator circuit to retain the stored data.

## 2. Read only Memory (ROM):

A special type of RAM called Read-only-memory (ROM) is a non-volatile memory chip in which data is stored permanently. Storing data permanently into this kind of memory is called "burning in of data" because data in such memory is stored by using fuse-links. Once we burn fuse-links for some data, it is permanent we can only read and use data stored in Rom chip (we cannot change them). This is the reason why it is called Read only memory (ROM). A Rom chip does not lose its stored data in case of power off or interruption of power. This is unlike a Volatile RAM chip. Roms are also known as field stores, Permanent stores, or dead stores.

## 3. Programmable Read only Memory (PROM):

A user programmed Rom is one in which a user can load and store "fixed

only" programmes and data. That is, it is possible for a user to "customize" a system by converting higher programs to micro-programs & stores them in a user programmed Rom chip. Such a Rom is known as programmable Read-only-memory (PROM) because a user can program it. PROM is also non-volatile storage i.e. information stored in it remains intact even in case of power off.

#### 4. Erasable Programmable Read only memory (EPROM):

Once an information is stored in a Rom or PROM chip, a user cannot alter it. EPROM chip overcomes this problem by allowing the user to reprogram it easily to store new information. When an EPROM is in use, the user can only "read" the information restored in it, and the user erase it.

EPROM chips are of 2 types.

- Ultraviolet EPROM
- Electrically EPROM.

## 5. Cache Memory

We saw that use of main memory helps in ~~minim~~ minimizing the disk-processor speed mismatch to a large extent because the rate of data fetching by CPU from main memory is about 200 times faster than that from a high-speed secondary storage like disk. Still the rate at which CPU can fetch data from memory is about 10 times slower than the rate at which CPU can fetch data from memory is about process data. Performance of processors often mismatch. Cache memory (Pronounced "cash" memory) is commonly used for this purpose. It is an extremely fast, small memory between CPU & main memory whose access time is closer to the processing speed ~~but~~ buffer b/w CPU & main memory and system use it to store temporarily very active data and instructions during processing. Since cache memory is faster than main memory, systems performance improves considerably when the system makes those data and instructions

available in cache memory that process need during their present processing.

Q What is computer hardware and software?

Ans Computer hardware is any physical device used in or with your machine, where as software is a collection of programming code installed on your computer's hard drive. In other words, hardware is something you can hold in your hand, whereas software cannot be held in your hand. You can touch hardware, but you cannot touch software. Hardware is physical, and software is virtual.

Q What is cabinet or computer case?

Ans A computer case also known as a computer chassis, tower, system unit or cabinet, is the enclosure that contains most of the components of a personal computer (usually excluding the display, keyboard and mouse).

## Q Types of Computer case or Chassis

There are three types of Computer cases.

1. Full tower
2. Mid tower
3. Mini tower

1 Full Tower: Full tower are generally big with a ~~too~~ height that is about or more than 30 inches (more than 76cm). The number of internal drive bays inside these cases can be between 6 and 10.

2. Mid tower: Another case that might be a step down. would be classified as a mid tower case. Mid tower cases are the most widely used computer cases. Mid tower cases are about 18 to 24 (45 to 60cm) inches high and ~~they~~ they usually contain 2 to 4 internal drive bays and a similar number of external bays (For CD/DVD) readers and similar).

3) Mini tower: Mini tower usually have



Up to 2 or sometimes 3 internal drive bays. Mini cases normally stand at a height of 12 to 18 inches (30 to 45cm). Expandability is a problem with these cases.

→ Panels: These are two panels in computer case.

1. Front Panel
2. Back Panel.

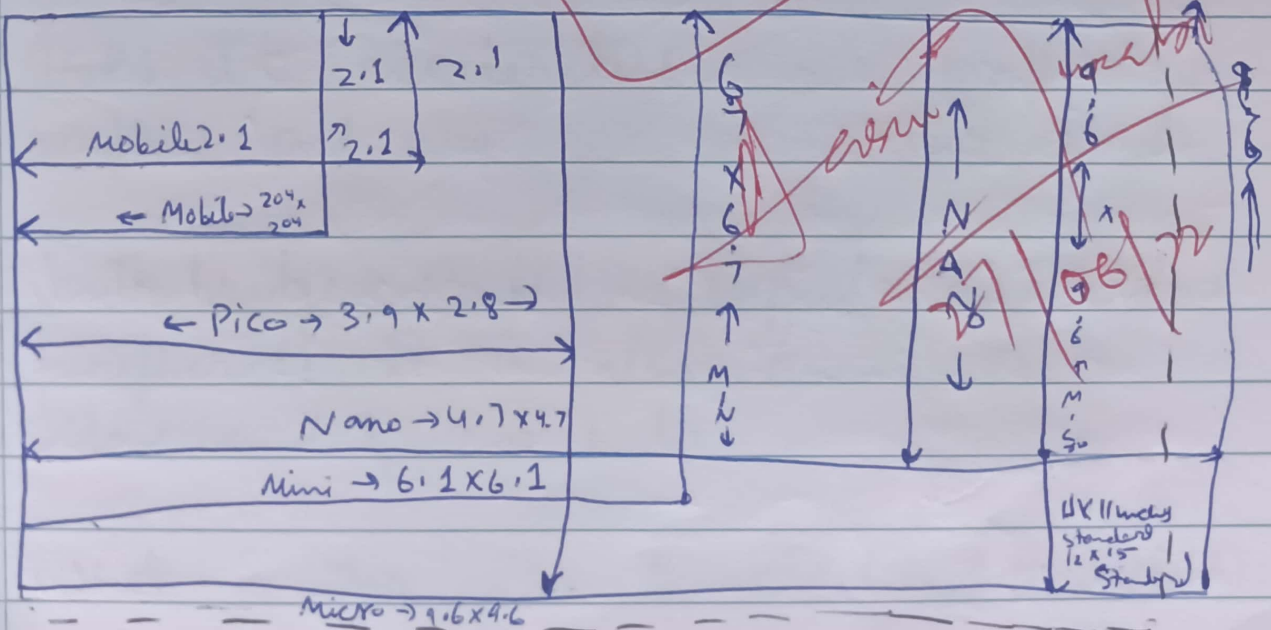
Q What is a mother board?

Ans A mother board (also called main board, main circuit board, system board, baseboard, planer board, logical board and mobo) is the main printed circuit board (PCB) in general purpose computers and other expandable systems. It holds and allows communication between many of the crucial electronic components of a system, such as the central processing the chipsets input/output and other components integrated for general use.

→ ~~Complete~~ Complementary Metal Oxide Semi Conductor Battery it is 3-volt battery through which gives supply to RTC - (Real time clock).

Q Brief Comparison of the mother board (or) type of M.B

	Form factor/type	Manufacturers/ Date	Dimensions	Applications
1	Standard	Intel 1995	12 x 13 inch	working/ Desktop
2	Micro	Intel 1997	9.6 inch x 9.6	Small form factor
3	Mini	VIA 2001	6.7 x 6.7 inch	Small form factor
4	Nano	VIA 2003	4.7 x 4.7 inch	Embedded system
5	Pico	VIA 2007	3.9 x 2.8 inch	Embedded system
6	Mobile	VIA 2009	2.4 x 2.4 inch	Embedded system



Q What is chipset?

Ans In a Computer System, a chipset is a set of electronic components is an integrated circuit that manages the data flow between the processor memory and peripherals. It is usually found on the motherboard. Chipsets are usually designed to work with a specific family of microprocessors. Because it controls communication's between the processor and external devices, the chipset plays a critical role in determining system performance.

North bridge: It creates graphics it is also known as fast end of the hub.

AGP: It accelerates our graphics when graphics card are in this part.

South bridge: Controls input and output peripherals. It is also known as the slow end of the hub.

Q What is the use of RTC (Real time clock)?

Ans A real time clock is a computer clock (most often in the form of an integrated circuit), that keeps track of the circuit time.

Although the time often refers to the device in personal computers, servers and embedded systems, RTCs are present in almost any electronic device which needs to keep accurate time.

Q What is the use of (IC) integrated circuit?

Ans An integrated circuit (IC) sometimes called a chip or microchip, is a semiconductor wafer on which thousands or millions of tiny resistors, capacitors and transistors are fabricated. An IC can function as an amplifier, oscillator, timer, counter, computer memory or microprocessor. A particular IC is categorized as analog or linear (analog) or digital depending on its intended application.

Oscillator:

An oscillator is a mechanical or electronic

devices that work on the principles of oscillation, a periodic fluctuation between two things based on changes in energy. Computers, clocks, watches, radios and musical detectors are among the many devices that use oscillations.

A clock pendulum is a simple type of mechanical oscillator. The most accurate time in the world, the atomic clock, keeps time according to the oscillation within atoms. Electronic oscillators are used to generate signals in computers, wireless receivers and transmitters and audio-frequency equipment. Particularly music synthesizers. There are many types of electronic oscillators, but they all operate according to the same basic principle.

Clock generator :->

A clock generator is an electronic oscillator (circuit) that produces a clock signal for use in synchronizing a circuit's operation. The signal can range from a simple symmetrical square wave

to more complex arrangements. The basic parts that all clock program generators share are a resonant circuit and an amplifier

~~Amplitude Modulation~~  
04/07/22

## Disassemble & Assemble of A System Unit

- 1) System unit: Also called 'chassis' or 'Computer case' or 'cabinet'.  
It is the main part of a personal computer.  
It is the case of other main interior components of a computer.

### Antistatic wrist strip:-

- 2) Antistatic Mat :- is a floor or table MAT that reduce the risk of electro-static discharge (ESD) while working with electro-static sensitive equipment.

If antistatic mat is not available, you can aluminium foil as alternative.

3. Before opening the system can be sure to turn off the system until, Turn off and unplug the AVR from the wall socket as well.

- Disconnect the power cord and all other

cables from the system unit.

- After, cleaning all the connect cable put the system unit on the table.
- Remove the screws of the side cover and put the screws in the container to avoid misplacing it.
- Gently slide the case cover.
- Dis connect the system far from the cable that connects to power supply.
- Turn it ~~to~~ side down where the open side face upward.
- 4 To ~~as~~ disassemble the components parts inside the system unit, unplug first ~~first~~ the cables that connects to power supply, HDD, ODD and Motherboards.
- Disconnect all the cables that are connected from power supply.

- Remove the ~~SATA~~ SATA from disk drives ~~CDD &~~ (CDD & HDD) and mother board.

- After disconnecting all cables, remove the main components parts of a System unit

5. Using Philip screw driver, looser the screw that holds power supply.

Remove the power supply from the case.

- Power supply unit: It converts (120 A.V) → Ac voltage into Dc voltage that are used by other component in the Pc.

6. Remove the RAM from the memory slot by opening the white catches on both ends of the sockets.

Always hold the RAM on both sides. Do not touch the golden pins

## Random Access Memory (RAM)

It is the working storage space that

holds data, ~~at~~ Instruction for processing & processed data (information) waiting to be sent to secondary storage.

7. This time remove ~~the~~ the disk drive from the cases

Remove the hard disk from the cabinet (unscrew).

H.D.D :-

Hard disk drive is a magnetic storage device that is used as permanent storage for data.

→ Un Screw to remove the Optical Disk drive (ODD) from the case.

8) ODD :- Optical Disk Drive is a storage device that uses lasers to read data on the optical media.

9. Mother Board :-

Remove the heat sink with fan from the motherboards.

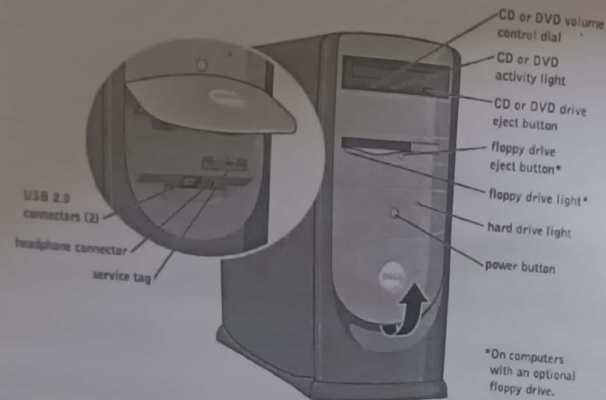
Place the motherboard on the static foil.

## ASSEMBLING

The assembly of a system unit is exactly the opposite of disassembly operation.

1. Pull the processor to insert in the socket.
2. Put the motherboard to insert in the cabinet and arrange the ~~not~~ motherboard by inserting each port to its designated holes from behind & screw the motherboard to the computer cases.
3. Line up the components parts that connect to motherboard.
4. Align the RAM to its socket.  
*extra work*
- Push ~~down~~ down evenly with a thumb until the white latches raise to the closed position.  
*or*
5. Put the heat sink on the top of the processor and fix

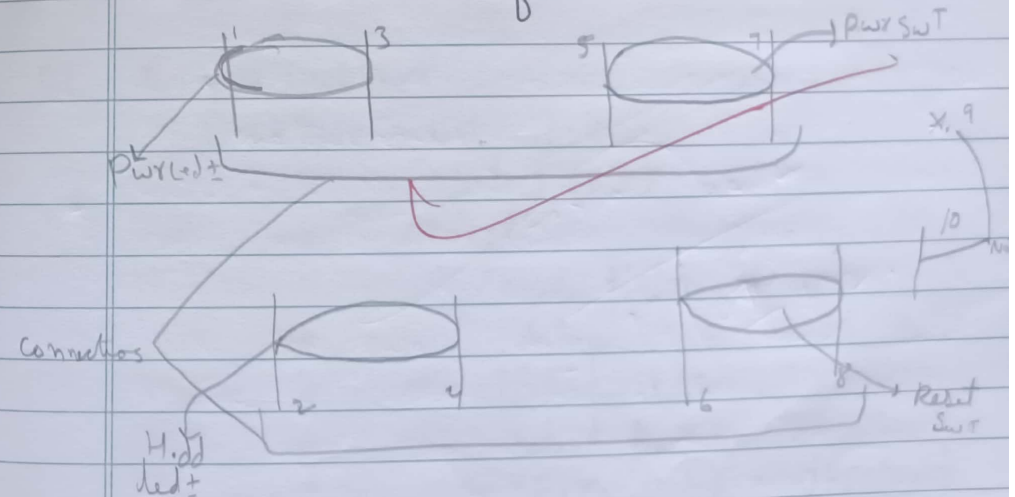
## Dell™ Dimension™ 4550 Series



it in the mother board.

6. Install the (ODD), (HDD) and power supply inside the computer case.
7. Connect the SATA to HDD and ODD and to its other end, the motherboard.
9. Connect the front panel cables to the motherboard and connect the power supply (ATX24)
10. Connect the system fan to the cable which is connected to the power supply.

### Q Connectors of Front Panel.



Full Connector → Audio & USB

Central Front  
Panel Audio

CFPA,  
E-Audio

USB<sub>1</sub>, USB<sub>2</sub>

Name Identification of

Front panel connectors on PCB/MB →

Name  
Identification  
on  
mother board

- 1 F-Panel
- 2 Front-Panel
- 3 CFP
- 4 Jw-Fe
- 5 FP

Q How to make a bootable pendrive in MS Dos ?

Sol C:\> Diskpart

Diskpart > list - disk

" Select Disk 1

" clean

" Create partition primary

" Active

" list - partition

" Select partition 1.

" Format FS = ntfs quick.

1. Assign

Before/After Assigning Copy  
the Operating System in pendrive  
& then mount & unmount  
the pendrive to check  
whether pendrive is bootable  
or Not (It's icon are  
changed)

~~Assign~~ ~~needs~~  
18/07/22

# How to Install An Operating through [USB / CD / DVD Rom]

Step 1 Turn your Computer on then press Del or F12 to enter the system Bios (ROM). (Depend on your computer's Main board)

Step 2 Insert Pendrive ~~Pen~~ Firstly & then Go to Boot menu and choose Boot from USB pendrive (select boot priority and select ~~1st~~ 1st Boot device as usb pendrive).

Step 3 Press F10 to save the configuration and exit Bios then reset your computer.

Step 4 After Reset your computer, Press Any key to boot from USB → (Show on Monitor & press any key).

It is the second phase of Booting process (Running of boot file on temporary memory).

apsara  
Date: \_\_\_\_\_  
Select these part : languages to install, time & currency format, keyboard & input method. then click Next.

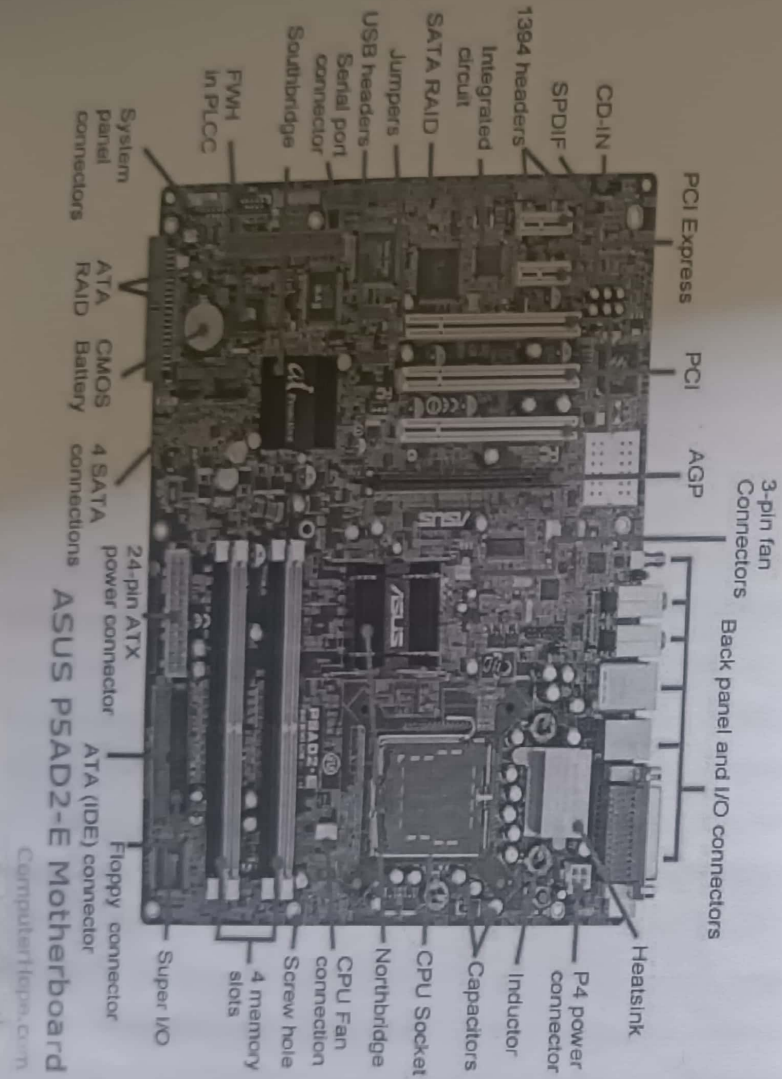
Step 5 Choose Install now. if you want to install window & then go to next step by click on install now.

Step 6 Select the operating system you want to install. Here we choose windows 7 ultimate (architecture x64 bit) and then click next. (depending on your windows)

Step 7 Click "I accept the license terms" in 'Please read the license' then click 'Next'.

Step 8 Choose 'Upgrade' in which type of installation do you want if you want to upgrade from an older windows version or custom (advance) if you want to install a new version / copy of windows.   
25/01/20

Step 9 Choose partition for installation. if your computer has only one hard disk, it will be easy for selection but if it has some partitions, you will have



to consider which partition to choose

Step 10 wait for installing windows to progress your computer might be restarted during the process

Step 11 After that it will automatically restart after 15 seconds and continue the setup. You can also click 'Restart now' to restart without any delays. This time windows setup is updating registry setting.

Step 12 After restarting for the first time, it will continue the setup. This is the last step so it will take the most time that the previous steps.

Step 13 It will now automatically restart again and continue the ~~step~~ setup.

Checking of video performance are available in only GUI (Graphical user Interface)

Step 14 Type your user name and computer name.

After that click Next.

Step 15 If you want to set a password, type it in the text-boxes and click Next.

Click 16 Choose how to protect your windows. Here we choose "use recommended setting".

Step 17 Set up your time zone as (Kolkata, Mumbai, Delhi) and then click on Next.

↳ After that, windows is finalizing your settings. This time windows is preparing your desktop for first use.

Step 18 And there you have a fresh copy of windows installed.

~~Arjun~~  
~~07/08/22~~

# SMPS

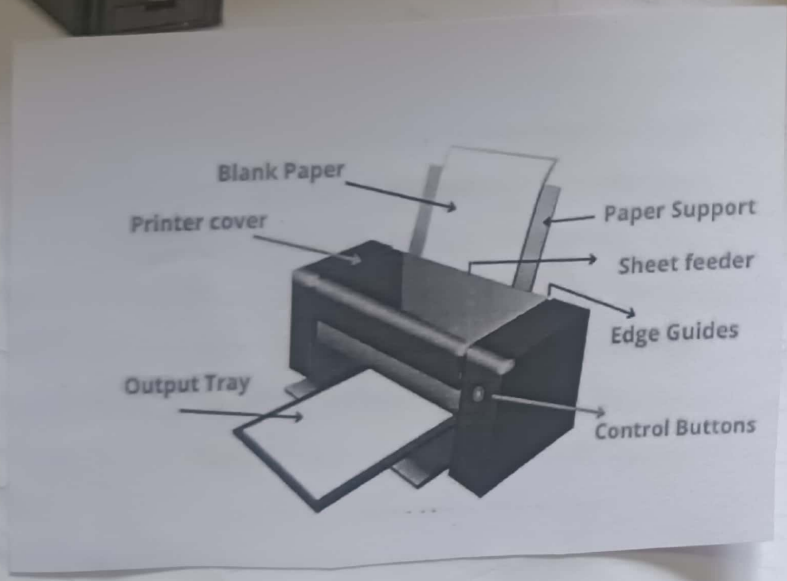
- S - Switch
- M - Mode
- P - Power
- S - Supply

SMPS is like a power station in our computer system. It converts the ~~alternating~~ AC into direct current.

To check the DC voltage of SMPS

In different wires through multimeter.

Wires color codes	Voltage
Green → Pwr Supply	V. 5.00
Blue →	-12V / 11.46V
Orange →	5V P <sub>5</sub>
Purple →	5V Stand by
Red →	5V
Yellow →	1.2V
White →	-5V → In old sys
Orange →	3.3V
Black wire →	Ground



## World-Class Quality

Best in class quality for highly accurate performance.



Mother board diagnostic card or 'post card' is used to test & diagnose motherboard Problem

This universal Diagnostic card is a powerful diagnostic tool for technician is a administrator to troubleshoot various problems.

We identify the problem through led's & coding.

There are different types of led's in MIB Diagnostic

- 12V, + 12V, + 3.3V, + 5V, clock led Frame/RAT  
for Data  
Clock transmission  
IC led's

Reset  
System working  
led

Asim  
27/08/22

1. When we use to press (Pow swt) of our cabinet, the reset led as blinked (on/off)

we called it the reset is coming. In short our system is working normally.

2. If 4-pin ATX is removed, the reset led is not blinked but it's glowing, or ~~connects~~ continuously & this glowing is called "reset High" which means there was a problem in south-bridge and oscillators.

3. The clock led is not glowing, this is because of removing of 4-pin ATX that means clock IC is not working.  
~~Connect~~ Connect the 4-pin "ATX" & the problem will be solved.

4. When Frame & RDY led is not working, then clean your mother board and check 'Pwr' supply repeatedly (70% is problem in ATX's).

Coding status;

1. If code is ~~changed~~ changed only 2 times & display EOFs that means, problem is in the RAM check the RAM.

2. If code is changed in several times, that means system is working normally (No-problem found)
3. If code is changing only 3-4 times, then check the resistors around the clock IC and check the liquid-Flux in north bridge & heatsink (80% problem in between north bridge and heatsink).
4. If code is not changed and showed firstly (0000) or (D000) or (FFFF) ~~that~~ That ~~(D000)~~ ~~(FFFF)~~ ~~(C1C1)~~ or ~~(0000)~~ ~~(FFFF)~~ ~~(C1C1)~~ ~~(0000)~~ is corrupted

Superintendent  
AFCPL (PVT.) Ltd  
Rambagh, Shimoga  
Reg. No: PU0100005

Assum  
24/08/22

checked & verified by  
on 10/10/2022