Lab Report
Of
Introduction to Information Technology
TITLE: INTRODUCTION TO COMPUTER HARDWARE

Submitted To

VEDAS COLLEGE

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Submitted By

Ujjwal Puri

University Registration Number:
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Table of Content

INTRODUCTION TO COMPUTER HARDWARE:

Hardware are tangible parts of a computer which can be touched. This means that all the devices that you can see on your computer can be characterized as computer hardware. There are multiple hardware associated with a computer and each and every hardware has a unique operation which helps in the smooth running of the computer.

TYPES OF COMPUTER HARDWARE:

Generally, Hardware can be further classifies into two groups:

• Internal Computer Hardware
• External Computer Hardware

They are described in short below:
i) Internal Hardware:

Internal components collectively process or store the instructions delivered by the

program or operating system (OS). These include the following:

• Motherboard : A circuit board that holds the central processing unit (CPU) with the ALU(Arithmetic logic Unit) and other essential components is called a motherboard. A motherboard is essential for every kind of computer as it acts as a connecting circuit.
• CPU: The CPU is the brain of the computer that processes and executes digital instructions from various programs; its clock speed determines the computer's performance and efficiency in processing data.
• RAM: RAM which stands for Random Access Memory is a temporary data storing system which is also called the volatile memory as it helps to store information as long as the device is supplied with electricity. It provides quicker access to information.
• Hard drive: Hard Disk Drives are physical storage devices that store both permanent and temporary data in different formats, including programs, OSes, device files, photos, etc. Hard drives are non-volatile in nature.
• Solid-state drive (SSD): SSDs are solid-state storage devices based on NAND flash memory technology; SSDs are non-volatile, so they can safely store data even when the computer is powered down.
• Optical Drive: Optical drives typically reside in an on-device drive bay; they enable the computer to read and interact with nonmagnetic external media, such as compact disc read-only memory or digital video discs.
• Heat sink: Heat sink is important piece of hardware which is generally incorporated in areas where heat generation is typically high. Typically, a heat sink is installed directly atop the CPU, which produces the most heat among internal components.
• Graphics Processing Unit: This chip-based device processes graphical data and helps the CPU provide graphical output to output devices like monitors.
• Network Interface Card (NIC): A NIC is a circuit board or chip that enables the computer to connect to a network; also known as a network adapter or Local Area Network adapter, it typically supports connection to an Ethernet network.

ii) External Hardware:

There are components outside of the CPU which we call external hardware. These are the items that are the most well known components of the computer hardware system. External hardware components, also called peripheral components, are those items that are often externally connected to the computer to control either input or output functions. These hardware devices are designed to either provide instructions to the software (input) or render results from its execution (output).
Common input hardware components include the following:
• Mouse: A mouse is a well known input device which has the capability to move the pointer which we can see the output monitor. Mouse is one of the most widely used input devices and a very common example of external hardware.
• Keyboard: A keyboard is by far the most important external hardware and an output devices which provides the users with the ability to write texts and messages in the

computer. Keyboards are equipped to QWERTY standards which means that keyboards are almost same everywhere and the proper knowledge of keyboard commands come handy is every aspect of the computer application.
Microphone: A microphone is a device that translates sound waves into electrical signals and provides the users with the ability to communicate using our own sound.
Camera: A camera is used for applications such as day to day photography and video conferencing. Cameras can come both in-built or externally.
Track pad: A track pad or touch pad is an input device, external or built into a laptop, used to control the pointer on a display screen. It is typically an alternative to an external mouse.
USB: A USB flash drive is an external, removable storage device that uses flash memory and interfaces with a computer through a USB port.
Memory Card: A memory card is a type of portable external storage media, such as a Compact Flash Card, used to store media or data files.

BUILDING A COMPUTER

We are going to discuss the concept of assembling various different parts to make a functioning computer under this topic. The basis of assembling is according to the discussion we had in the lab.

IMAGE SHOWING DIFFERENT PARTS TO BE ASSEMBLED

Step 1: Unscrewing the frame

i. The first part on assembling a computer would be to unscrew the frame where we will essentially put all the parts in. The CPU frame can come in different sizes and each frame can provide with a unique texture. With a unique texture, the frames might help in better cooling and making the CPU lightweight and prone to physical damages.

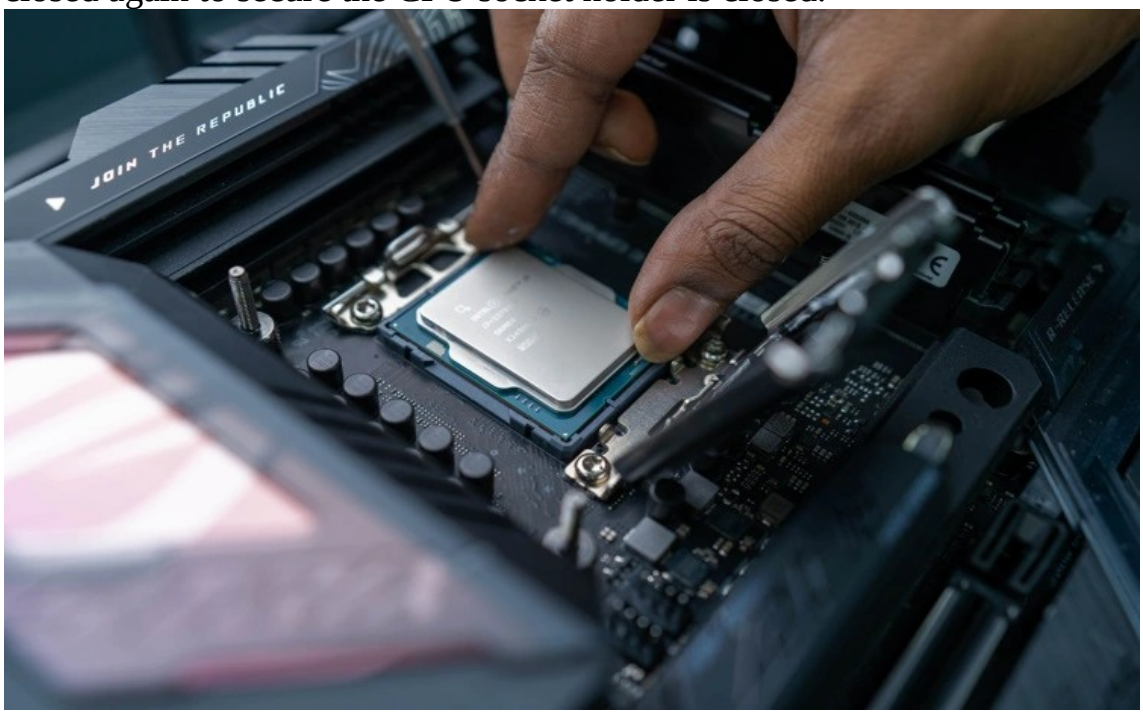
ii. The side cover is required to be removed by unscrewing.

Step 2: Mounting Motherboard

i. The motherboard standoffs were screwed in the frame.
ii. The rear I/O plate from the case is punched out and replaced with the motherboard I/O plate.
iii. Fasten the motherboard in place on top of the mounting standoffs.

Step 3: Mount the Processor (CPU)

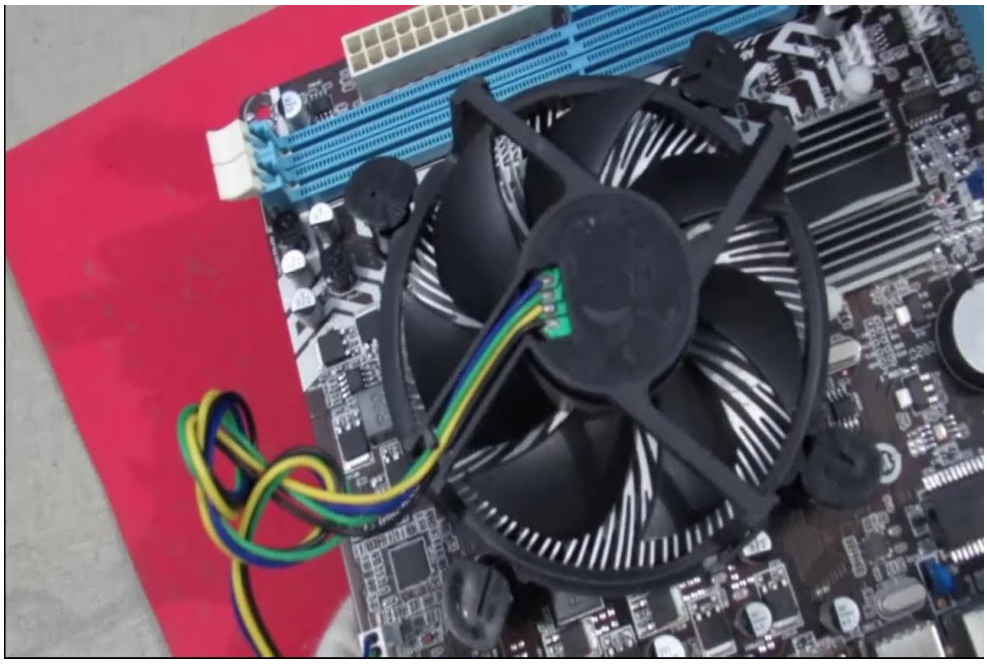
i. The CPU socket holder on the motherboard has to be located at first.
ii. The latch lever is lifted up to release and hinge open the CPU socket cover.
iii. The CPU is held by its sides, any alignment notches is aligned up or the triangle marked on the corner of the CPU to the triangle marked on the motherboard. Then, it is placed down gently into the motherboard socket to seat the CPU.
iv. The CPU socket cover is lined up over the CPU and the latch lever is lowered and closed again to secure the CPU socket holder is closed.



The pins have to be connected for proper functioning.

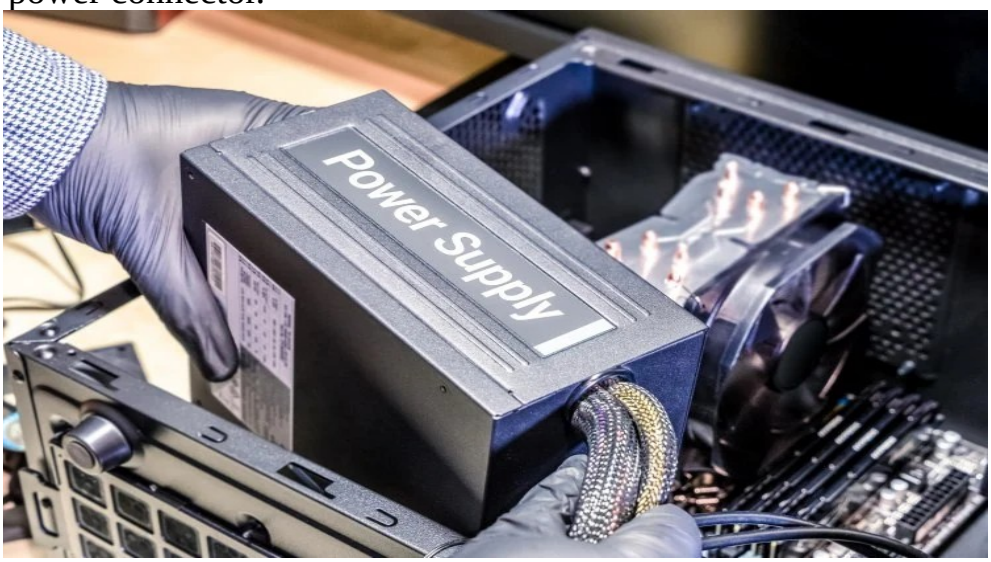
Step 4: CPU cooler installation

i. A thermal paste can be applied to better insulate or cool the CPU if required in any condition.
ii. The CPU cooler is fixed properly, in order for it to cool the heating processor.
iii. The power cable of the fan is connected with the motherboard.



Step 5: Installing Power Supply

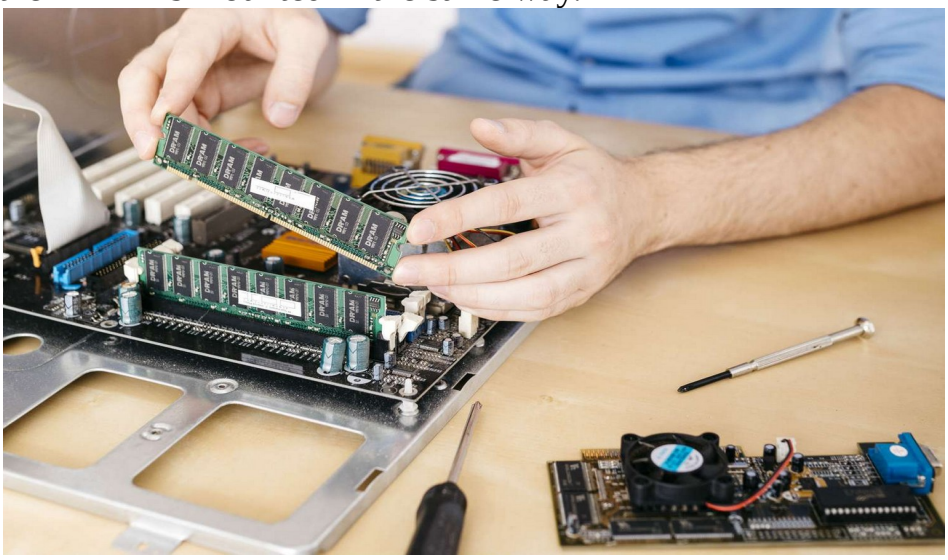
i. The power supply is mounted and fastened with screws to the case mounting points.
ii. The largest cabling connector was plugged in from the power supply cabling into the motherboard power connector.
iii. The 8-pin cabling connector from the power supply cabling was plugged into the CPU power connector.



Step 6: Mount Memory (RAM)

i. The clips are pressed to open at both ends of the RAM mounting slots.
ii. The notch is lined up on the RAM stick with the mounting slot.
iii. RAM is seated and pressed firmly down into the slot. The tabs automatically latch
iv. closed as you press the RAM down, securing the RAM in place.

v. Any other RAM is mounted in the same way.

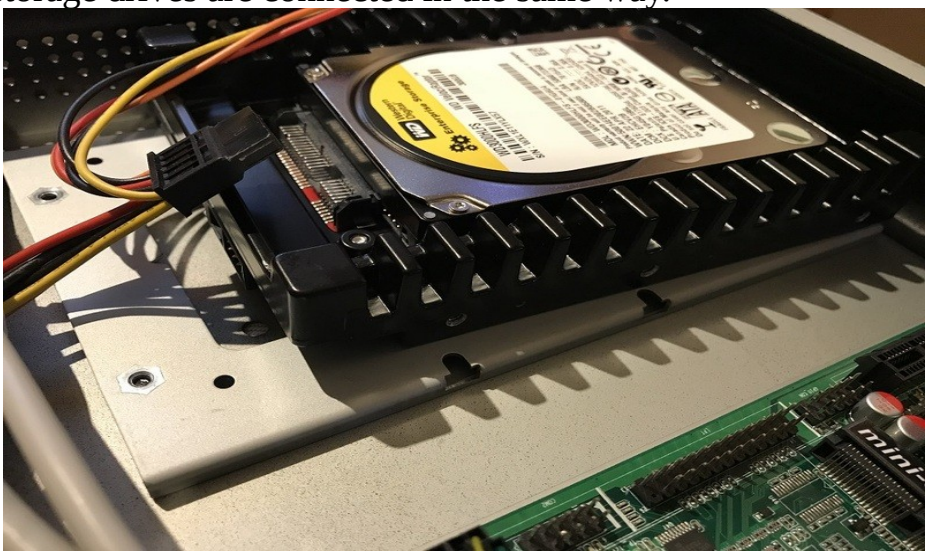


Step 7: Install Graphics Card

i. Not all computers have a dedicated graphics card. This step can be skipped if you are using and you have a preinstalled graphics card.
ii. The expansion slot covers are removed from the rear of the case where the graphics card sit.
iii. The graphics card is slotted into a PCI expansion slot on the lower half of the motherboard. Line it up and press down firmly to seat the card.
iv. The screws is put to hold the graphics card in place.
v. The power connector cables is plugged from power supply into the graphics card power
vi. connector (if existing – not all graphics cards required external power).

Step 8: Mounting Storage Drives

i. Storage drives is mounted in the case drive bays. The drive in place is fixed with screws through the case frame into the case mounting holes located on the storage drive.
ii. The drive is connected to the motherboard using a SATA cable.
iii. Power is plugged in cabling to the storage drive.
iv. Other storage drives are connected in the same way.

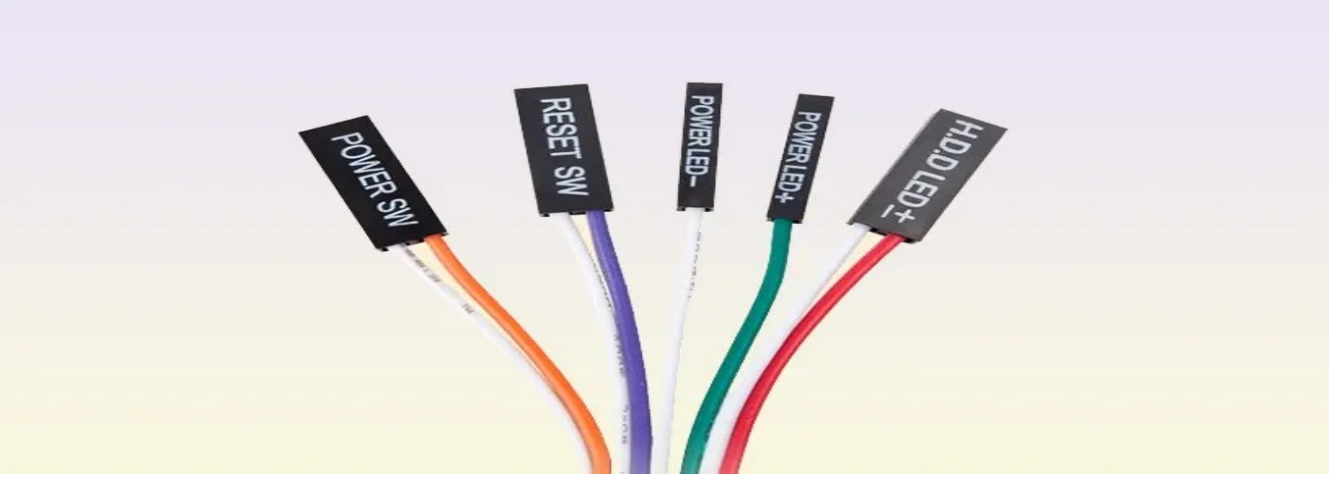


Step 9: Mount Optical Drive

i. Front panels is removed from the computer case where the optical drive will sit.
ii. Optical drive is mounted in the case by fixing with screws through the case frame into the case by mounting holes located on the optical drive.
iii. the optical drive is connected to the motherboard using a SATA cable.
iv. Power cabling is plugged in from power supply to the optical drive.

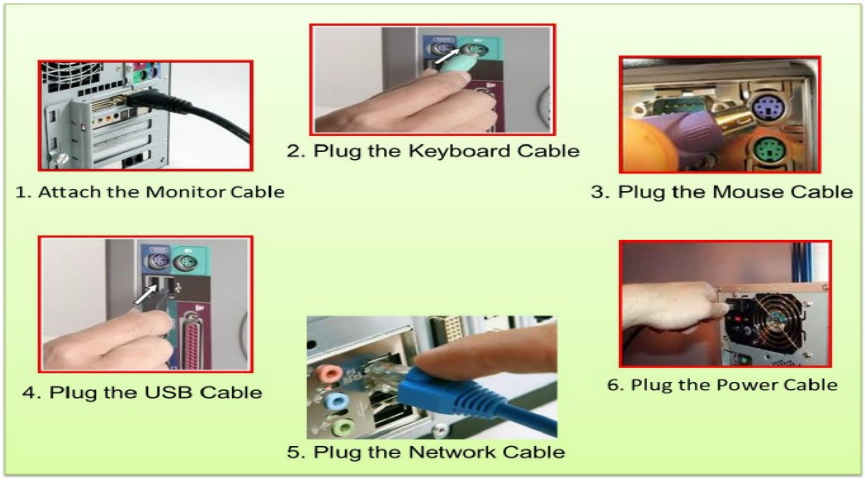
Step 10: Connect case fans and front panel connectors

i. Case fans are mounted within case as required using the supplied screws or clips.
ii. Case fan power connectors is connected to the multiple fan headers located at various places on the motherboard.
iii. The cabling from the front panel ports of your PC is identified at first. These front panel connectors are plugged into the motherboard so that buttons and inputs/outputs (I/O) work.
iv. Front panel audio connectors are also connected to the the motherboard front audio header.
v. Front panel case connectors are finally connected to the motherboard front panel I/O headers.



Step 11: Close Case and Connect Peripherals

i. The side cover is again placed.
ii. Side panel is secured with case screws.
iii. Peripheral devices are connected including mouse, monitor, keyboard, speakers.



CONCLUSION

Here, it can be concluded that various hardware parts, whether they are peripherals or items inside CPU, they all are combined to form the modern day computers. So, this practical project was really helpful to learn how these modern days computer operate and what we can do to optimize their performance. The performance of a computer depends on the hardware used on it and learning to assemble these hardwares can be essential to understand about these machines themselves.