UTM UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

Semester I 2020/2021

Subject : Technology and Information Systems (SECP1513)

Section : 07

Assignment : Step by step PC Assembly

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PART A – Tools needed

1.0 Screwdrivers

The screwdriver is hand-operated tools which have many types of unique heads to screw or unscrew the components in PC and can attach the small screw by using magnetic screwdrivers to allow it drop into PC.

2.0 Needle-nose pliers

Needle -nose pliers can grip, cut, bend for wiring and has long nose to reach the smaller area which the area cannot reach by finger.

3.0 Anti-Static Wrist Strap

Anti-Static Wrist Strap is an anti- static device which is wearable to protect us when assemble the PC to avoid static electricity.

4.0 Zip Ties

Zip Ties is a fastener to bind the electrical cable together and can be cut at the end to avoid the internal PC look messy.

5.0 Flashlight

Flashlight is a light resource to illuminate the darker corner in PC to make the assemble work simple and faster.

PART B – Sketch of a mother board layout

1.0 Mother board layout

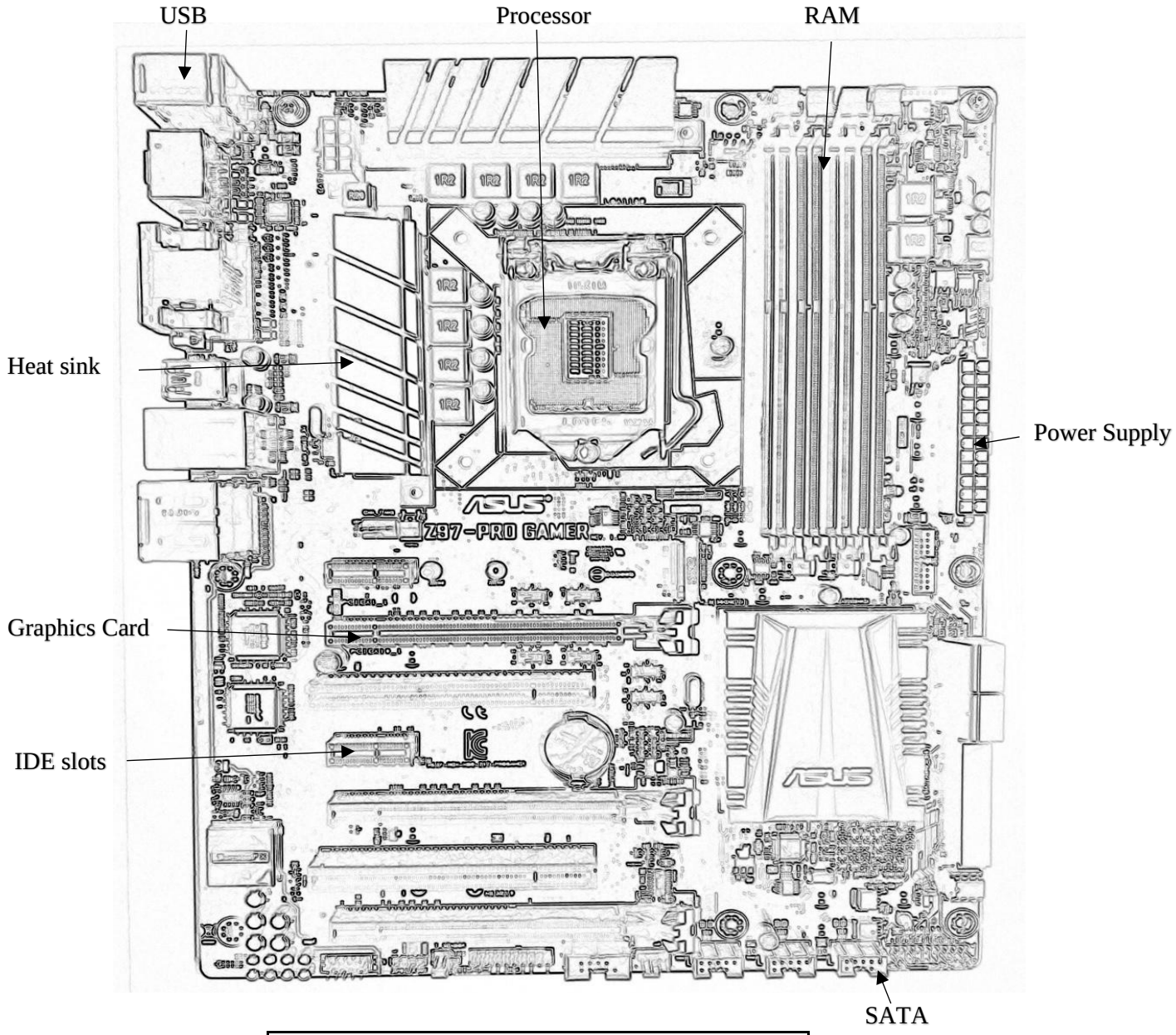


FIGURE: SKETCH OF A MOTHERBOARD

2.0 Explanation of Models

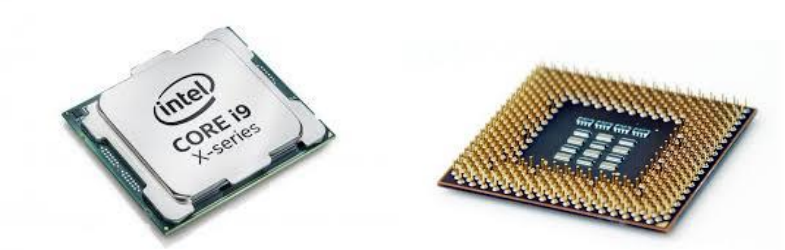
1.Graphics Card:

i. A Graphics Card is a piece of computer hardware that produces the image you see on a monitor.

ii. The Graphics Card is responsible for rendering an image to your monitor.

Example:

- AMD Ryzen Threadripper Graphics Card Video.
- PowerColor Devil Graphics Card Video.
- GeForce GTX 1080 Ti Graphics Card Video.
- GeForce GTX 980 Ti Graphics Card Video.
- SAPPHIRE NITRO+ Graphics Card Video.
- ASUS Graphics Card Video.
- GeForce GTX TITAN Z Graphics Card Video.
- NVIDIA TITAN X Graphics Card Video.



2.Processor:

The four primary functions of a processor are:

a) Fetch
b) Decode
c) Execute
d) Write back.

Example:

- AMD A8-8600P and Higher.
- AMD A9-9410 and Higher.
- AMD A10-8700P and Higher.
- AMD A10-9600P and Higher.
- AMD A12-9700P and Higher.
- Intel Core i3-6100U and Higher.
- Intel Core i3-7100U and Higher.
- Intel Core i5-6200U and Higher.

3.Heat sink:

A **heat sink** is a component that increases the **heat** flow away from a hot device.

Example:

- Passive Heat Sink.
- Active Heat Sink. ...
- Aluminum Heat Sink. ...
- Copper Heat Sink. ...
- Solid Metal Heat Sink. ...
- Pumped Liquid Heat Sink. ...
- Two-Phase Heat Sink. ...
- CNC Machined Heat Sink.

4.CD ROM:

It functions as a compact disc that stores computer data of graphics, text, and audio.

Examples:

- Standard manufactured CDs (CD-DA)
- CD-R recordable
- CD-RW rewritable.

5.SATA CABLE:

SATA cables are used to connect a mass **storage** device to a host bus adapter such as a **motherboard**.

Example:

- SATAII.
- SATAIII
- eSATA.
- mSATA
- SATA Express.

6.IDE CABLE:

IDE refers to the types of cables and ports used to connect some hard drives and optical drives to each other and to the **motherboard**.

Example:

- 34-pin cable
- 40-pin cable

7.USB CABLE

USB cables are used mostly to connect computers to peripheral devices such as cameras, camcorders, printers, scanners, and more.

Example:

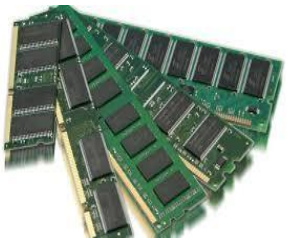
- USB type-A
- USB type-B
- USB type-C
- USB type-D

8.Hard Disk:

Stores and retrieves digital data using magnetic storage and one or more rigid rapidly rotating platters coated with magnetic material.

Example:

- HDD
- SSD



9.RAM:

RAM gives applications a place to store and access data on a short-term basis.

Example:

- DRAM
- SRAM

10.SLOTS:

An expansion slot for increasing capability in PC in connection pinholes form.

Example:

- PCI Express
- Accelerated Graphics Port (AGP)
- Industry Standard Architecture (ISA)

11.POWER SUPPLY:

Convert electric current from a source to the correct voltage, current, and frequency to **power** the load.

Example:

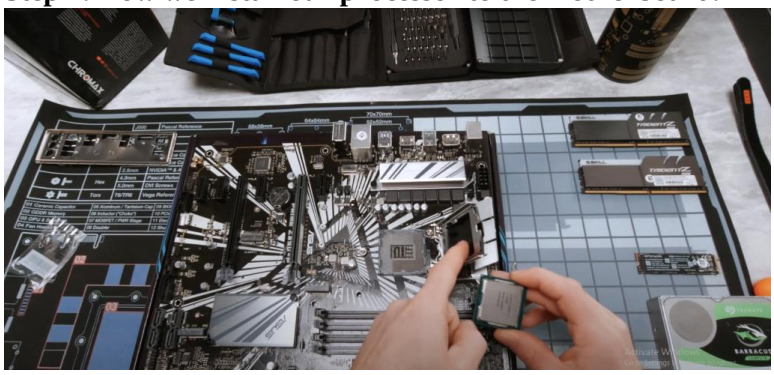
- ATX Power Supply Unit

PART C - “Step by Step PC Assembly”

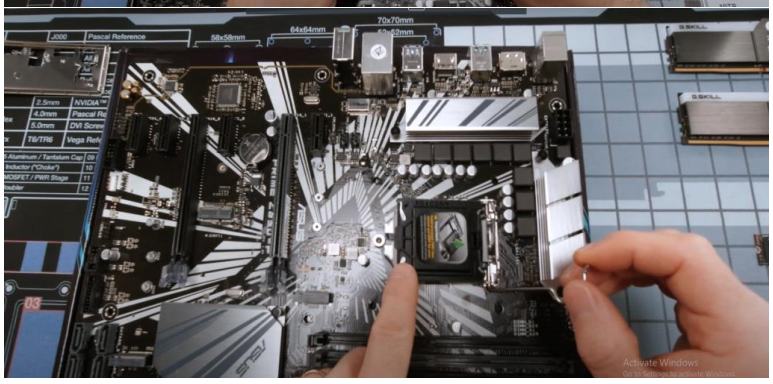
Step 1: Choosing the motherboard.

Here we have taken ASUS prime z390-p as our motherboard

Step 2: Now we install our processor to the motherboard.

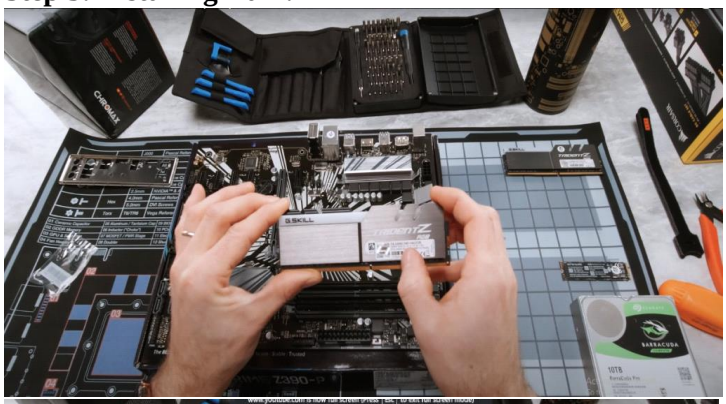


We have to make sure to put the processor onto the motherboard's processor socket,



Now we have to drop the plate down close the socket plate slowly and carefully. The tension plate will come off after closing it.

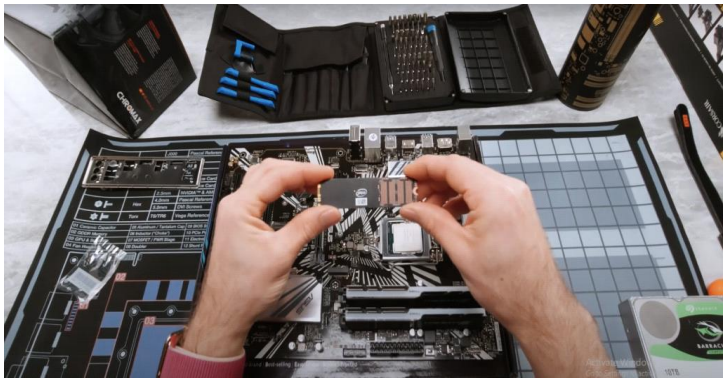
Step 3: Installing Ram.



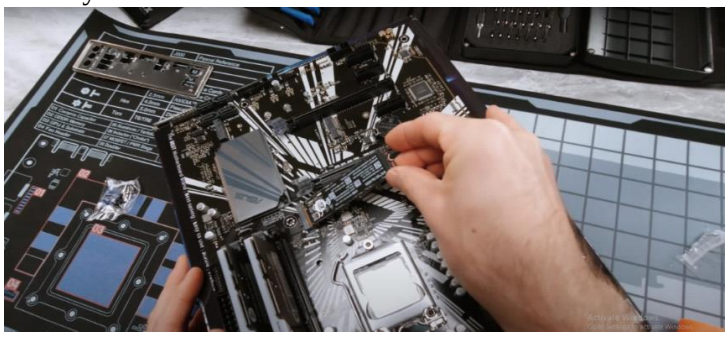
When we are aligning the memory, we have to see which side the notch is and install it accordingly.

Step 4: Mounting the SSD.

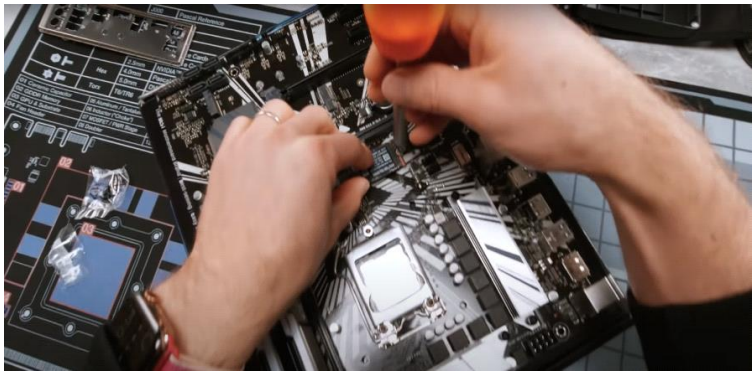
For SSD We have Intel 760P.



Now we need to find the m2 slots where we are going to put our SSD. On this motherboard we actually have two slots.



After finding it we carefully put it in the slot by going up an angle and slightly push into the slot.

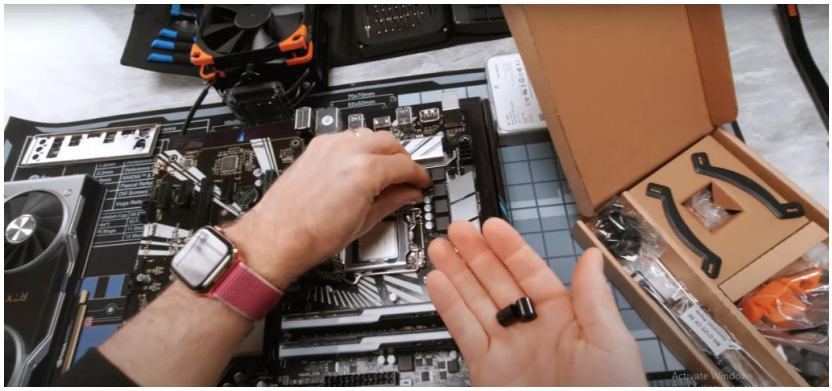


now hold it down with your finger and screw it in.

Step 5: Mounting Processor Cooler/ Heat sink.

First, we add the Heat Sinks back plate onto the motherboard.

We check where the center hole is and align it like so.



Now we add some spacers for mounting pressures.

After that we will install mounting bar for mounting the Heat Sink

Now we will use thermal compound.

We will carefully apply a little thermal compound but make sure not to apply too much as to cover the entire processor.

Now we put the cooler exhaust on the processor to see if everything spread evenly or not.

Now we month the cooler exhaust on the processor and hand screw some bolts.

Then we screw the bolts tightly but not too tight.

Now we add the cooler fan to the exhaust.

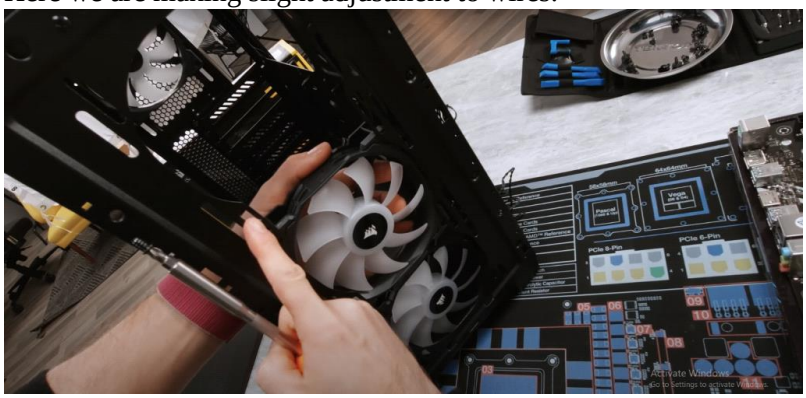
And we have finished with the cooler.

Step 6: Choosing the CPU case and wire management and others.

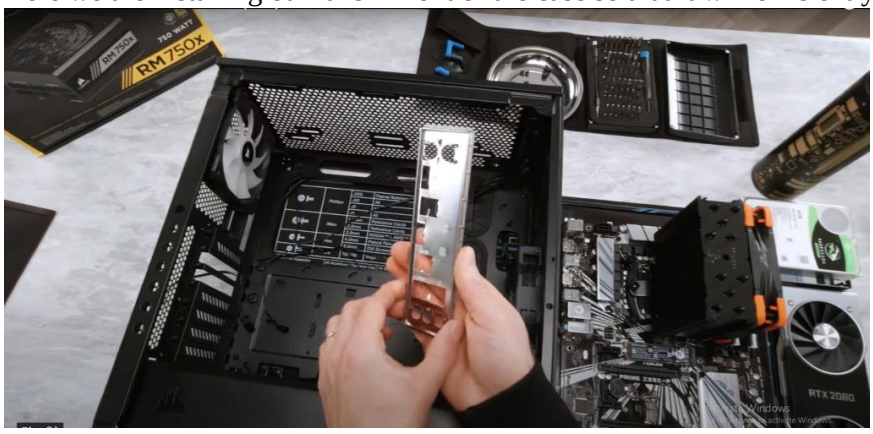
Here we see if the case is perfect for our CPU.

Now we manage our CPU case wire such as coolers and their USB and RGB cables so that the wires do not get in your way.

Here we are making slight adjustment to wires.



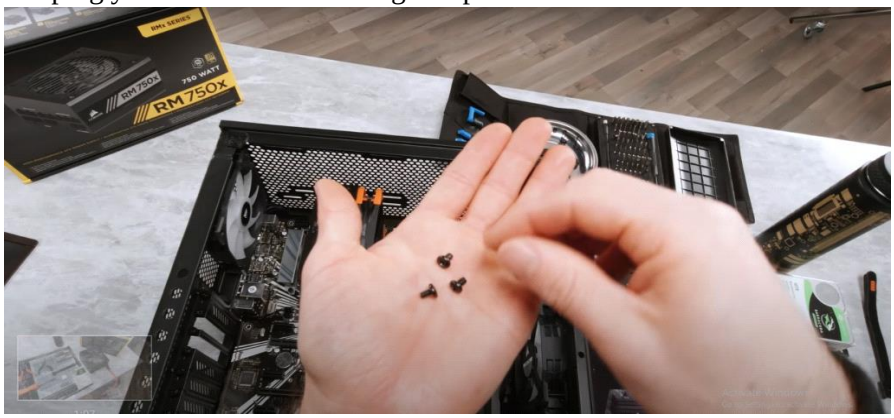
Here we are installing our fans Infront of the case so that it will efficiently keep our CPU cool.



Now we will add the IO shield. But we should check this weather the tabs back of the shield are bent enough.

Step 7: Mounting the motherboard in the CPU case.

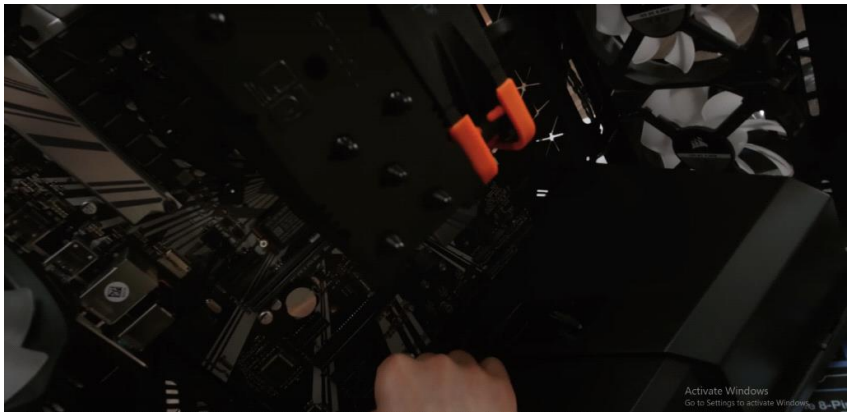
Now we slowly Put our motherboard in our CPU case. By sliding it back of our case and avoid scraping your motherboard during this process.



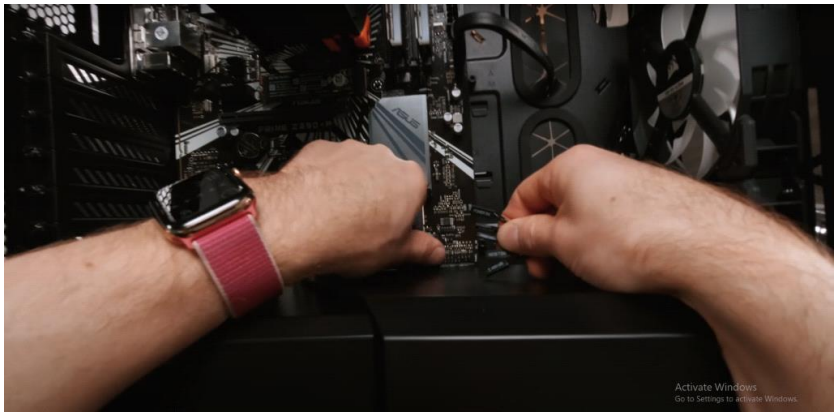
We will use standard screw for motherboard.

First, we will hand thread the screw and see whether it fits in or not.

Then we screw our bolts with our screwdriver and make sure not to apply too much force.



Now we plug all the necessary wires such as USB cables and more to the motherboard.



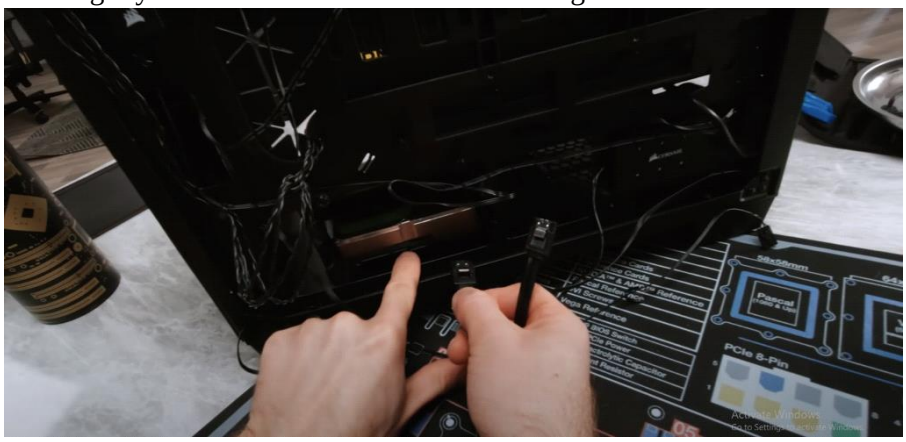
We have to check whether the wire is plugged into the right path in the motherboard. So, we check the wires and the names on it than we plug it to the right section.

Step 8: Installing Hard disk.

Now we will month our HDD.

We will put the HDD in the case

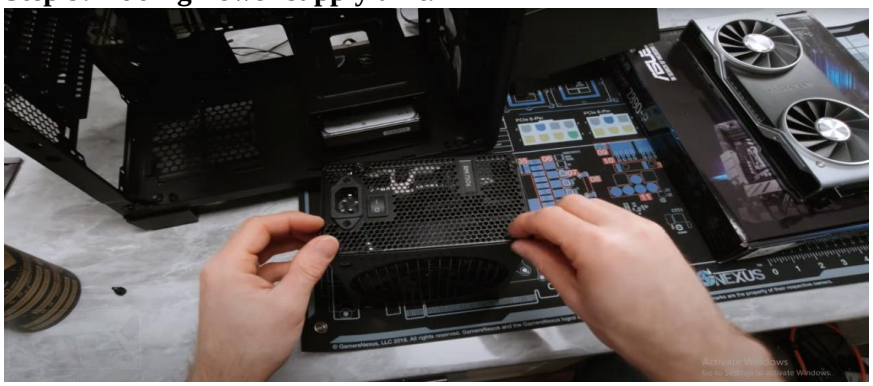
And slightly slide it in and we are done mounting hard disk.



Now we plug the hard drive to the motherboard using the sata cable. We will plug one end of the sata cable to the hard disk

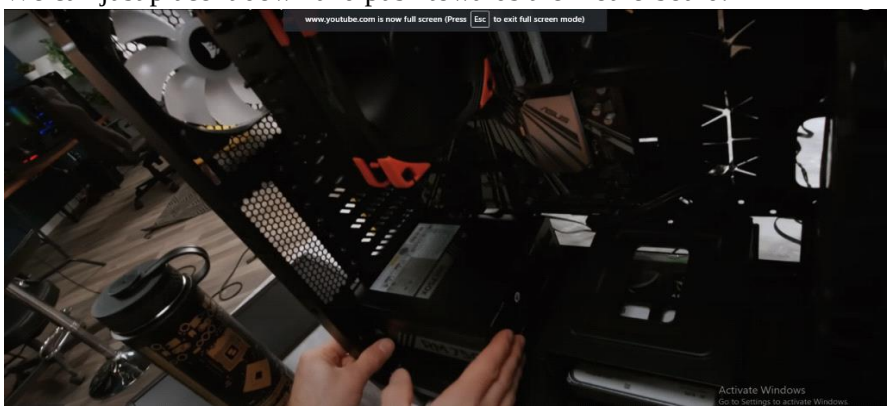
And the other corresponding cable end to the motherboard.

Step 9: Adding Power supply unit.

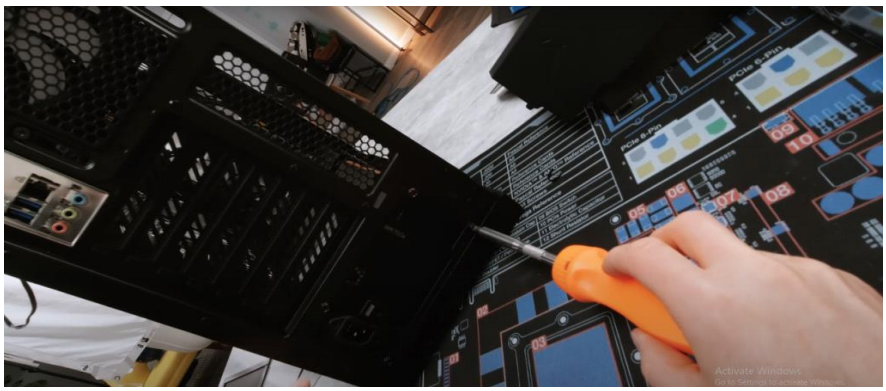


Now we will add one of the most important part of a computer.
First, we make sure there are not any screw or other things added to the power supply. If there are any screws attach to it than we will remove the screws.

We can just place it down and push towards the motherboard.



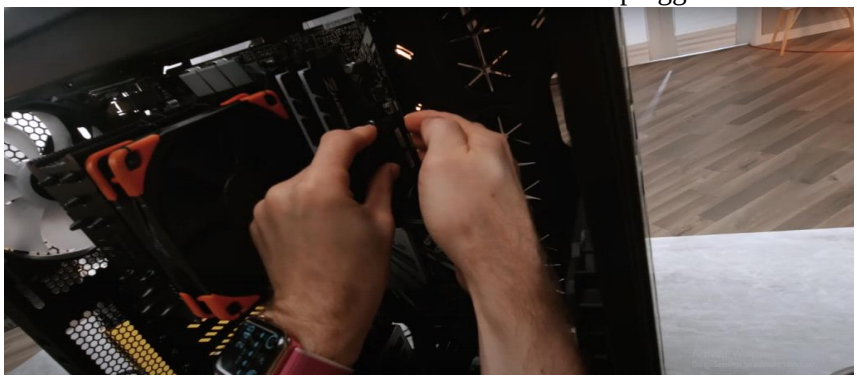
And slide into the back of the CPU case.



Now we use the screwdriver and tighten the mounting screw.

Now we plug all of the Power Supply Unit cables.

PSU cables consist of various cables that need to be plugged to the motherboard in certain slots.



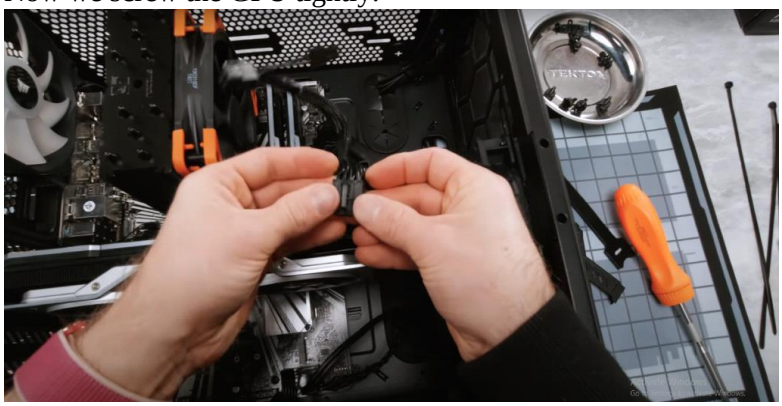
Make sure to plug all the wire nice and neatly so that cables do not interfere with CPU coolers.

Step 10: Mounting the GPU, CD ROM/DVD ROM

Modern Graphics cards are quite heavy and power hungry and can get hot really fast so we will month it where it can get most amount of air flow.

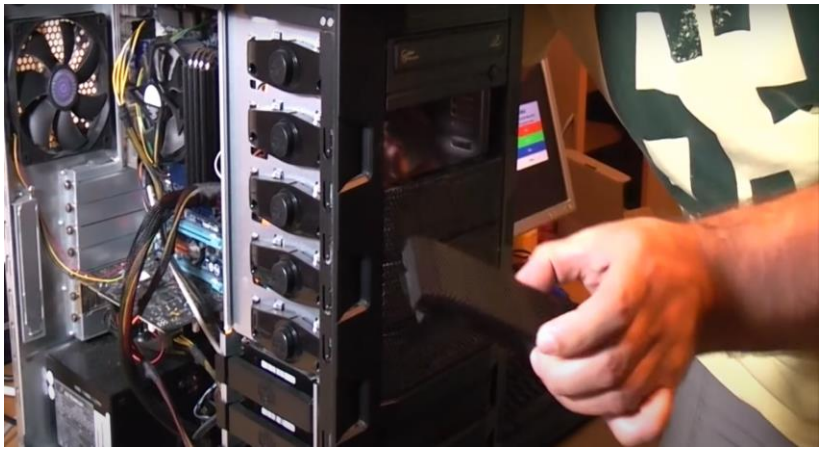
First, we will hold the GPU with our both hands and apply even pressure as we are pushing it down into the case. Second, we will align the GPU with IO first then we will Plug it to the motherboard slot.

Now we screw the GPU tightly.



Now we Plug our GPU to the power supply unit by bring the PSU cable from the back of the case through motherboard and plug it to the GPU.

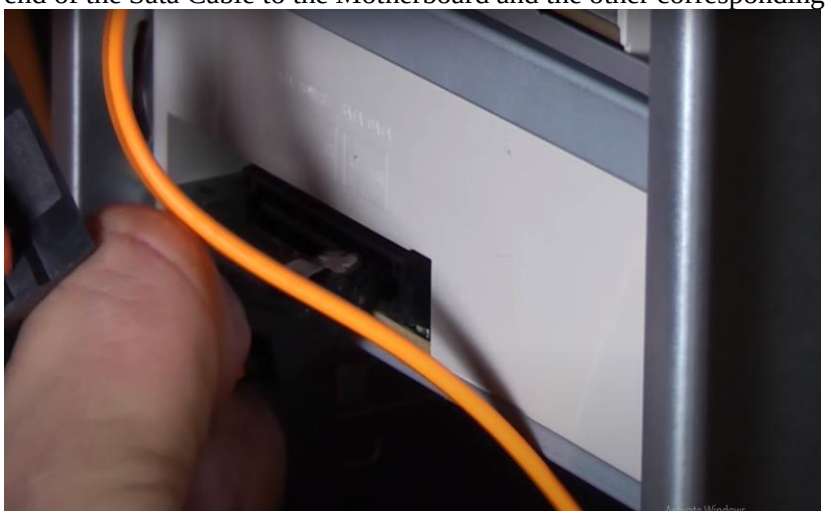
Then, we take a CD ROM/DVD ROM and open a space in the CPU case. Not all CPU case has CD ROM space so in this case he has to make **one.**


We will pull the blanking plate out so that we can make a space for the CD ROM.

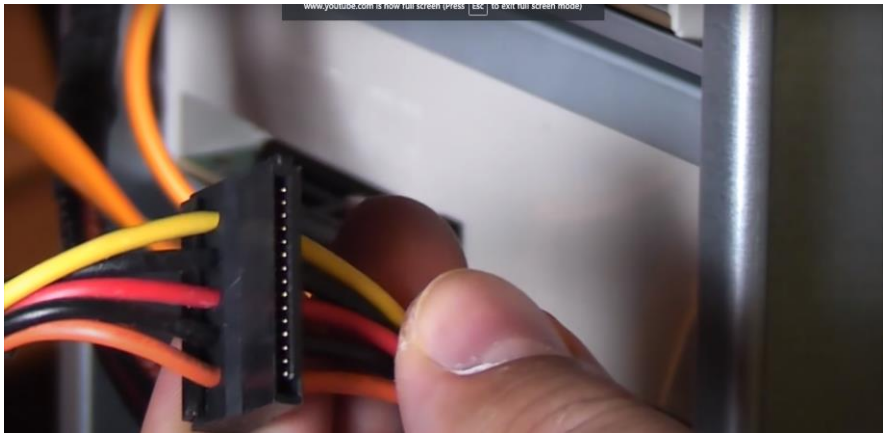
Then we put the CD ROM drive into the front space of the case. we have to push it towards the case space and when we hear the click sound the CD ROM is installed.

In some case we have to screw the CD ROM to the case. But in this particular situation we can just push the button by the CD ROM and it will mouth itself to the case.

Then we will use the Sata cable to connect the CD ROM to the Motherboard. First, we connect one end of the Sata Cable to the Motherboard and the other corresponding end to the CD ROM.



Here we are connecting the other end of the Sata Cable to the CD ROM.

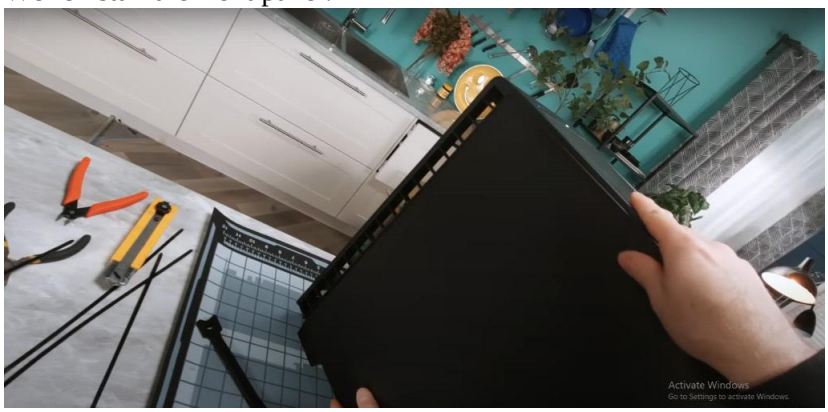


Now we will connect the Power Cable of the CD ROM.

Now we have connected the CD ROM/DVD ROM.

Last Step: Closing the Case and Connecting the Peripherals.

We reinstall the front panel.



Then the side panel

Then we tightly screw the panels to the CPU.
That’s it we have assembled an entire Gaming CPU.

Reference:

Linus Tech Tips YouTube channel- First Person View PC BUILD Guide!
Ultimate Handyman YouTube channel- Install a CD drive.