



POWERING  
GREAT  
MINDS

# ICS - Course Work Report

CW1

Report Title:

Basic knowledge of computers

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- Batch: KUDSE24.3F
- Index: KUDSE24.3F – 011
- Date: February 27, 2025
- Module Name: **Introduction to Computer Science (ICS)**
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**National Institute of Business Management  
School of Computing and Engineering  
Course work**

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# LET'S SEE WHAT ARE THE BASIC SAFETY PRECAUTIONS TO FOLLOW WHEN DISASSEMBLING A COMPUTER.

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**Usually, when disassembling a computer, we should think about its safety. Because when disassembling a computer, the components of the computer can be damaged or destroyed. Therefore, it is important to prioritize safety when working with computer hardware. Now let's look at the equipment needed and the basic steps to follow when disassembling a computer.**

## ❖ What are the main essential tools used for this?

There are several tools required when disassembling a computer. They are:

- A set of screwdrivers (Phillips and flat head) - These are used to unscrew and remove the screws that hold components together.
- Anti-static wrist strap (if necessary) - This is used to prevent static electricity discharge.
- A brush or piece of cloth - used to clean and remove dust and other dirt.
- Protective gloves (take them if necessary)

These are the only tools needed for disassembly. However, several other tools are used for reassembly. We will discuss them later.



❖ **What steps should be taken for safety? Now let's talk.**

**There are several safety precautions that we must follow first when disassembling a computer. We will now discuss them step by step.**

• **Step One.**

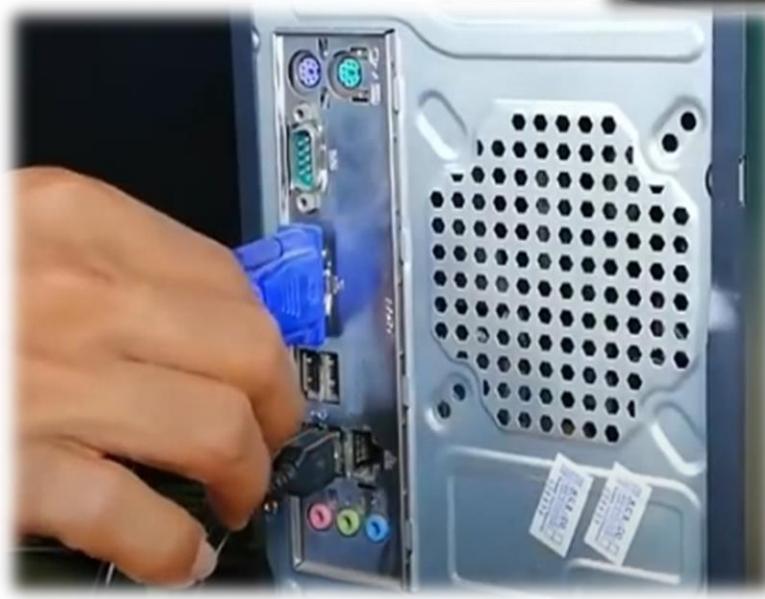
The first step is to unplug the power cord that supplies power to the computer and remove the power cable from the back panel of the computer's system unit.



- Step Two.

Next, you need to remove the VGA cable, mouse keyboard and other components connected to the computer. After that, after removing all the externally mounted devices, you can disassemble the computer.

VGA cable, mouse keyboard and  
other components removing



- Step Three.

Then you need to open the side panel opposite the back panel,



Next, we will remove the screws on the side panel.

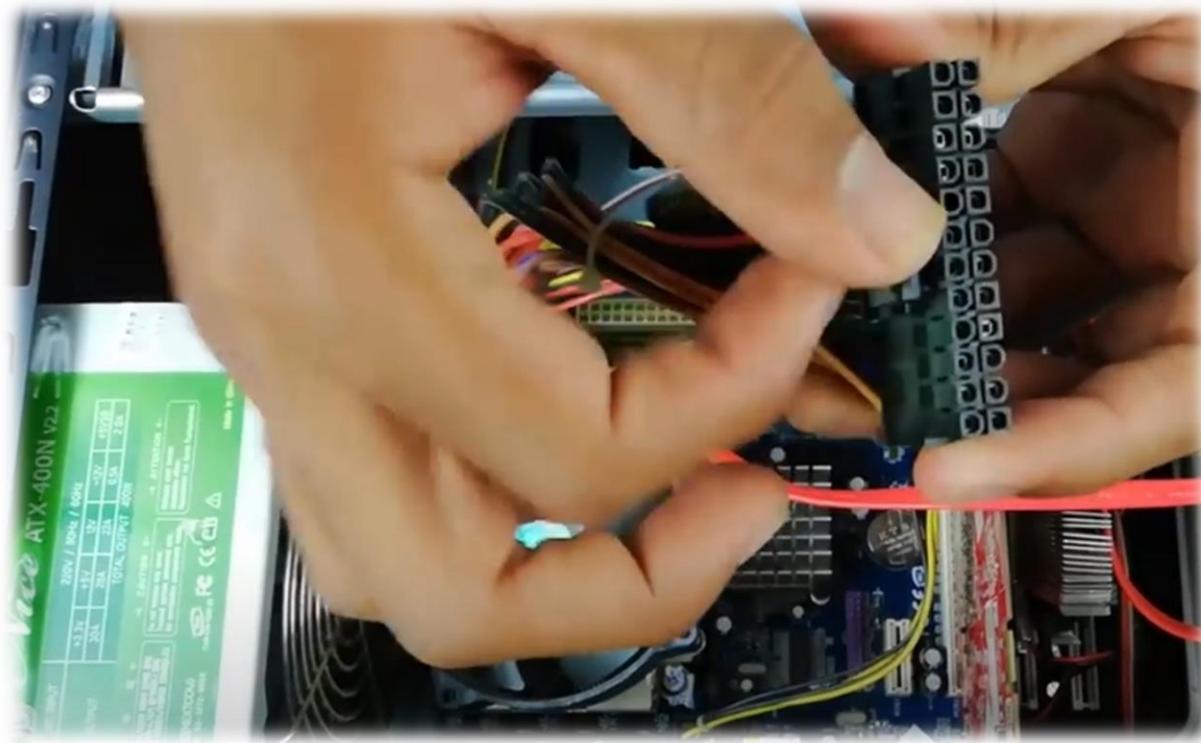


Next, after opening the side panel, set  
the side panel aside.



- Last Step.

In the final step, first disconnect and remove the power supply cable connected to the motherboard in the system unit.



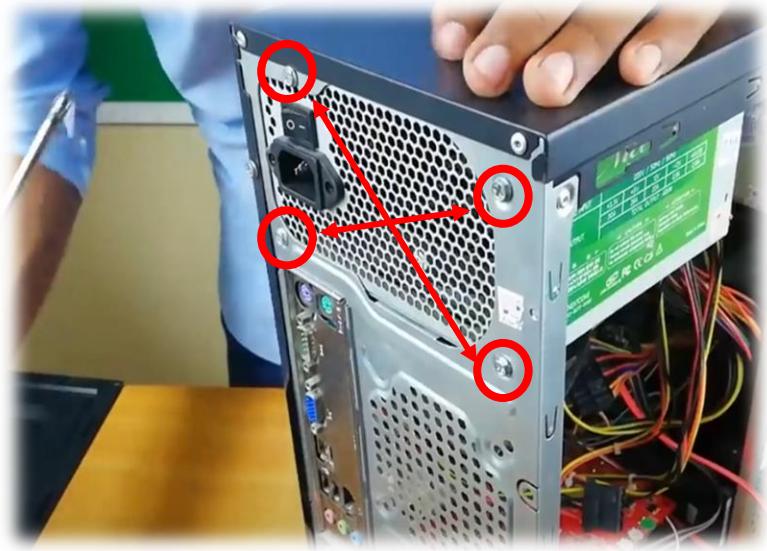
## ATX Power Connector



Okay, now that the motherboard, CPU, RAM, storage drives (HDD/SSD), and expansion cards have been removed, we'll remove the screws on the power supply unit.

Follow these steps together,

First, the power supply unit must be unscrewed in an 'X' shaped manner when removing the screws.





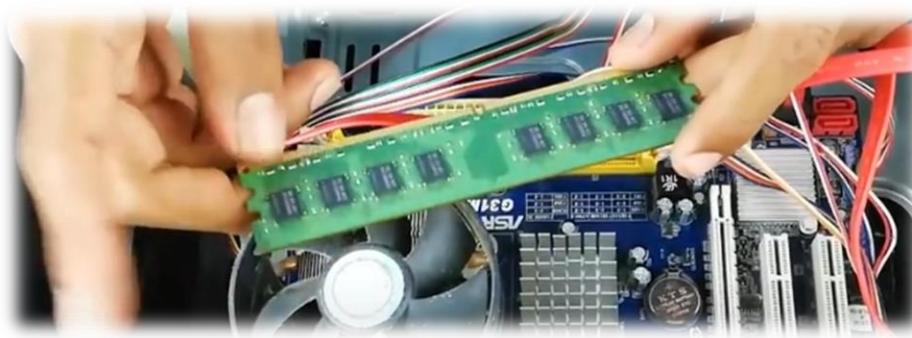
## **Remove The power supply**

**Gently remove the power supply by lifting it up.**



## **Remove The Video Card**

**Gently remove the video card by lifting it up.**



### Remove The RAM

Gently remove the RAM by lifting it up. And Handle components by the edges, not by the pins or circuits.

### Remove The HDD/SSD

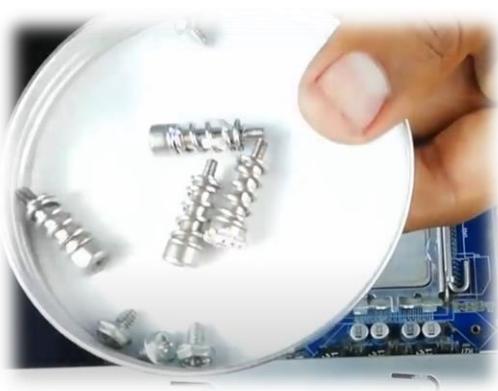
Gently remove the (HDD/SSD) by lifting it up.

Remove the needle safely and slowly.



### Remove The USB and CPU Cooling Fan

Remove the USB and CPU/FAN cables from the motherboard.



### Remove The Processor

After removing the cooling fan mounted on the processor, remove the processor without damaging the pins. (This must be done very carefully.)

We have now discussed the problems that arise when removing and installing these computer components, as well as how to do it safely.

Next,

**Okay, now that we have covered all the basics, let's talk about computer components in the next section.**

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# WHAT ARE COMPUTER COMPONENTS? LET'S IDENTIFY THEM.

**Components are the parts that a computer needs to perform a certain task. They are divided into software and hardware. Let's talk about hardware components now.**

**Let's talk about the main components of a computer.**

- **Motherboard**
- **CPU – Central Processing Unit**
- **RAM – Random Access Memory.**
- **GPU – (dedicated GPU) Graphics Processing Unit**



**Now here that any peripherals.**

**So, things like a mouse, a keyboard, a monitor. those are not part of the actual computer. Those are going to plug into the input or output devices of motherboard and allow viewing.**

**What's happening on the computer So just want to make that clear. ,**

**something like monitor or screen, even if it is on a laptop, that's not really a part of the actual computer.**

**The computer is simply the components that just listed there may be a few other things. It depending on the build that have , but those are the main and kind fundamental ones.**

**So, with that said, let's start going through each component take about the importance of them and which ones you really want to look out for when actually a computer,**

**All right, so let's begin with arguably one of the most important components which is the CPU.**

## • **CPU – CENTRAL PROCESSING UNIT**

A lot of people like to think of this as the brains of the computer. This is one of the most important part. Its speed is really going to dictate how fast computer is it's going to be responsible for doing all of the arithmetic, all of the math and pretty much all of the heavy lifting of the computer.



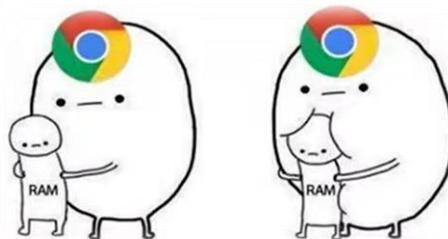
**So now let's talk about RAM , which is random access memory.**

## • RAM – RANDOM ACCESS MEMORY.

RAM is a temporary storage location. Now this means if you turn off your CPU, anything in RAM is going to disappear. It's going to be gone . Now the point of RAM is to store data that need to be readily available to the CPU or the computer. So that it can very quickly be accessed and very quickly be changed.



So any programs that you're running a computer will utilize as much amount of RAM, or if you're talking about something like google chrome a large amount of RAM because they're going to be storing all of their program data in RAM so it's very quick to access.



**So now let's move on to Motherboard,**

## • MOTHERBOARD

Now the Motherboard is going to be the bridge or the connection between all different pc components. Do the Graphics Card, CPU , RAM , all to that is going to go directly on the motherboard and the way they're going to communicate is though the bus on the Motherboard.

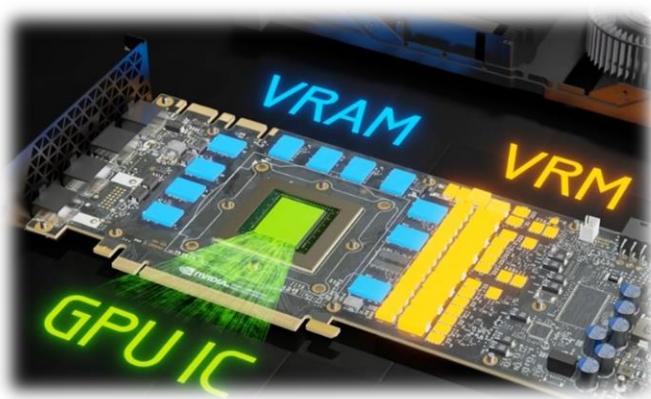


The motherboard is also going to deliver power to the components unless the components have their own separate kind of power connection.

**All right , So let's go to GPU which is a graphics processing unit.**

## • GPU – GRAPHICS PROCESSING UNIT.

Now , this is very important if doing anything graphics intensive like 3D Rendering , video editing , playing video games. if that's the case, you're going to want to get something known as a dedicated GPU (stand-alone card graphic intensive stuff.)



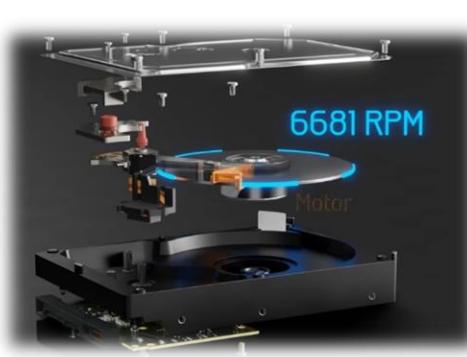
**So now let's talk about persistent storage devices. SSD and hard drives. Let start with Hard Drive.**

## • HARD DRIVE

So, a hard drive is actually a physical spinning magnetic disk that has a read write head that's able to read magnetic charges off the disc. That means that, first of all, if you bring a magnet near the hard drive erase all of the data because it is magnetically chartered.



It also means it is lot slower than a solid-state drive because you actually physically need to read magnetic bits right from the hard drive right from the hard drive.



get into all of the kind of mechanical aspects of it but the thing is this is actually mechanical, have moving parts, which means it's more prone to failure But the over advantage of hard drives is the are a lot cheaper and they have a huge storage capacity.

Getting one single hard drive is kind of their data drive where they saw things like files , images, videos, stuff their they're not loading frequently. operating system from a hard drive it's going to be very, very slow.

**Next, let's talk about a few more COMPONENTS.**

## • MONITOR

The monitor is used to see the input or output we give. It is a very important component for those who do video editing and playing games.



## • POWER SUPPLY

The power supply provides electricity to the entire computer. It is the basic part of the computer, but many people don't pay much attention to it. It is the reason why the other Components of the computer exist.



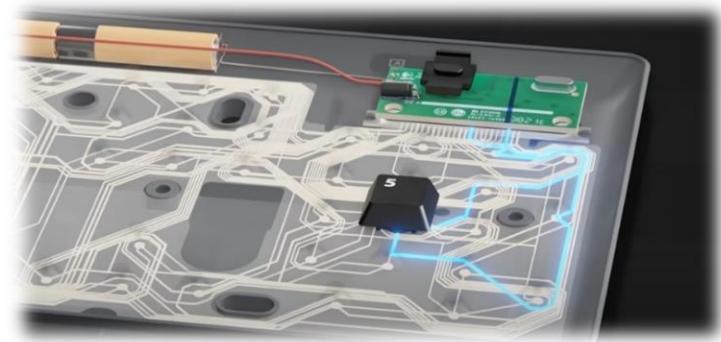
## • CASING

This is used to protect and store the basic important components of the PC.



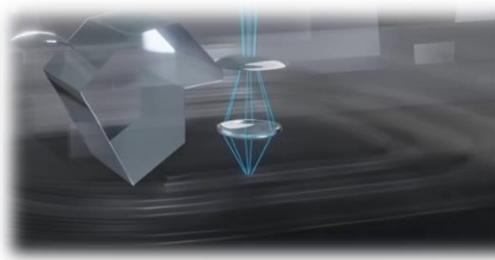
## • KEYBOARD

The keyboard is used primarily for input.



## • MOUSE

The mouse is used to do the same thing as the keyboard. It is important for working and moving windows around.



**Okay, now that we've talked about all the components, let's talk about reassembling the computer.**

## **HOW DO YOU REASSEMBLE COMPUTER? LET'S TALK ABOUT THAT.**

**Okay, so now let's see how to reassemble a PC. First, let's see how to reassemble the same computer that we disassembled.**

**Let's look at it in steps.**

**Two other tools are used when reassembling: thermal paste or thermal interface material (TIM) and an anti-static wrist strap.**

- ❖ **Installing the motherboard**

**First, the motherboard should be properly secured to the casing. After installing the motherboard, check whether the pins are correctly positioned on the motherboard. It is also essential to check whether the connectors on the back panel are correctly positioned. Then, pin them correctly and install them.**



#### ❖ **Installing the processor**

**After the motherboard is properly installed in the casing, the processor should be installed. The previous heat sink compound (thermal paste) should be carefully removed using a piece of cloth. (When handling the processor, be careful not to touch the pins.)**





**When installing the processor, there are two slots on each side. The processor is connected according to those two slots. The processor should be connected to the motherboard accordingly.**



**Then apply heat sink compound and attach the cooling fan to the processor.**

**Remove any heat sink compound from the cooling fan before attaching it. Also attach the plastic knob that connects the cooling fan to the motherboard.**





### ❖ **Installing the Random Access Memory (RAM)**

**Installing the Random Access Memory (RAM)** When installing the RAM, there is a small groove in the area with the pin. Look carefully at that groove and connect it to the RAM slot correctly. (Avoid touching the pin when holding the RAM.) After connecting, a small sound will be heard, confirming that the RAM is connected correctly.



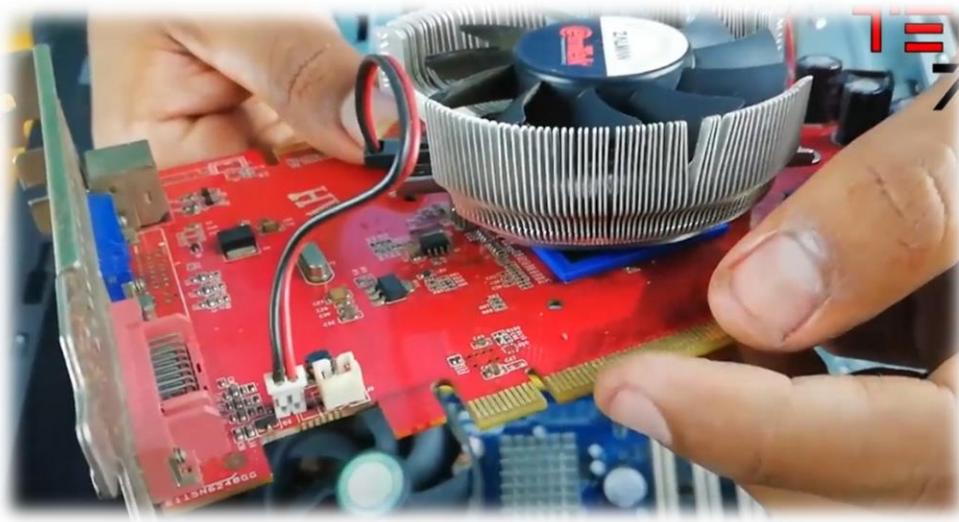
❖ **Installing the Hard Drive**

**Next, connect the hard drive. Then connect other things like DVD Rom.**



## ❖ Installing the Video Graphics Array (VGA)/GPU

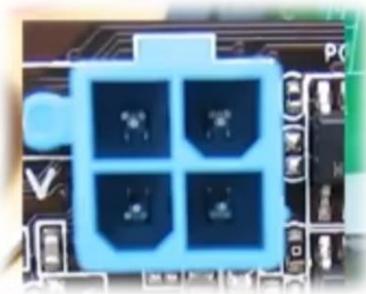
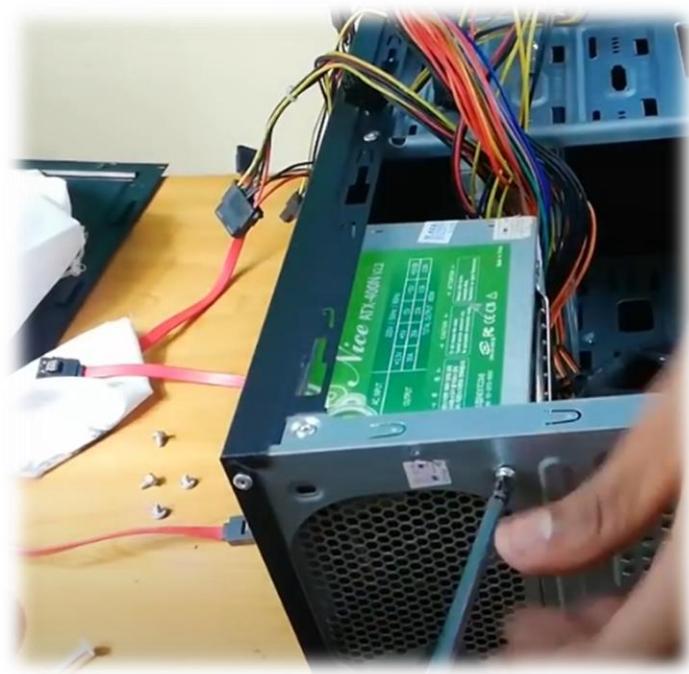
**After that, connect the separate VGA correctly. There is a small groove when connecting the VGA, so install it accordingly.**



## ❖ Installing the Power Supply

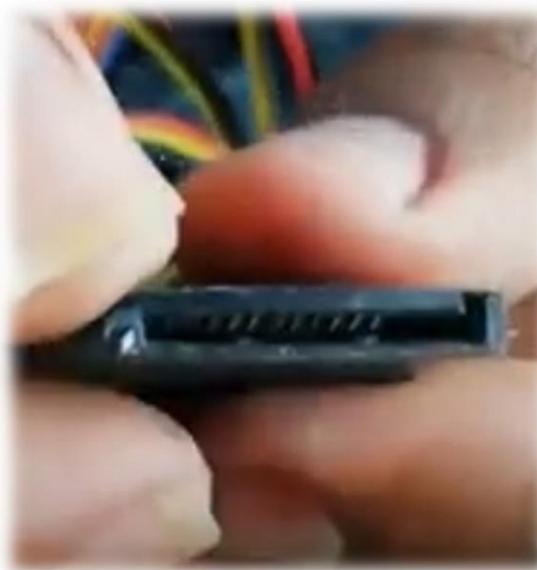
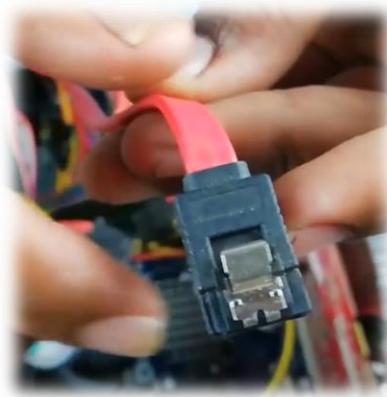
**After connecting all of that, the power supply is installed. Now, the ATX connector, which supplies the main power to the motherboard through the power supply, is installed. When connecting the ATX connector, install it correctly according to its shape. Install the connector that supplies 12V power to the motherboard.**

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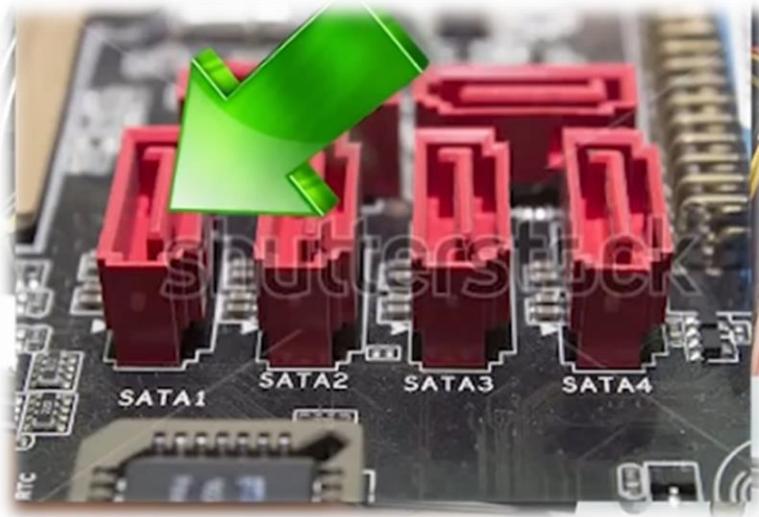
## ❖ Installing the Other Connectors

**Then, install the SATA connector that supplies power to the hard disk. Install the DVD Rom in the same way.**

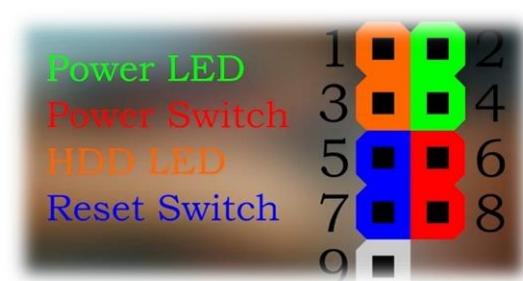


**Then, connect the SATA cable that connects these components to the motherboard.**

**When connecting the hard drive, connect it to the SATA 1 port on the motherboard.**



**Then connect the USB and Audio Connector.**



**If necessary, use a Type Cable to organize the messy wires. After connecting all the connectors, connect the side panel.**



**After that, the installation of externally mounted devices is carried out.**

**Finally, connect the power cable.**

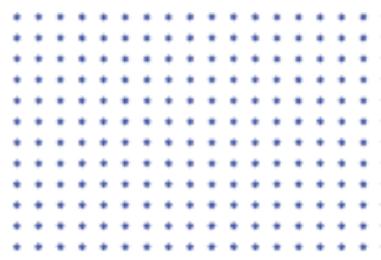


**IMPORTANT POINT:** When connecting these, practice using nails in an 'X' shape and avoid tightening the nails too tightly.

**Okay, now that we're finally done, let's see how to install an OS or Operating System.**

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# ADJUSTING BIOS SETTINGS AND SOFTWARE INSTALLATION



**Before we do BIOS settings and software installation, we need to troubleshoot and see if the performance is working properly. Now let's see.**

1. Check to see if the Power-On Self-Test (POST) process is running. See if the computer beeps and the BIOS/UEFI display appears. (If there is a beep, there is a problem with the CPU, RAM, or GPU.)
2. If the basic functionality is working correctly, it will boot into BIOS/UEFI correctly.
3. Check if the hardware is working properly.
4. Check for issues such as OS installation failures and driver issues, Blue Screen of Death (BSOD) from manufacturer websites.
5. Benchmarking and Real-World Usage, Monitor Metrics (Task Manager)

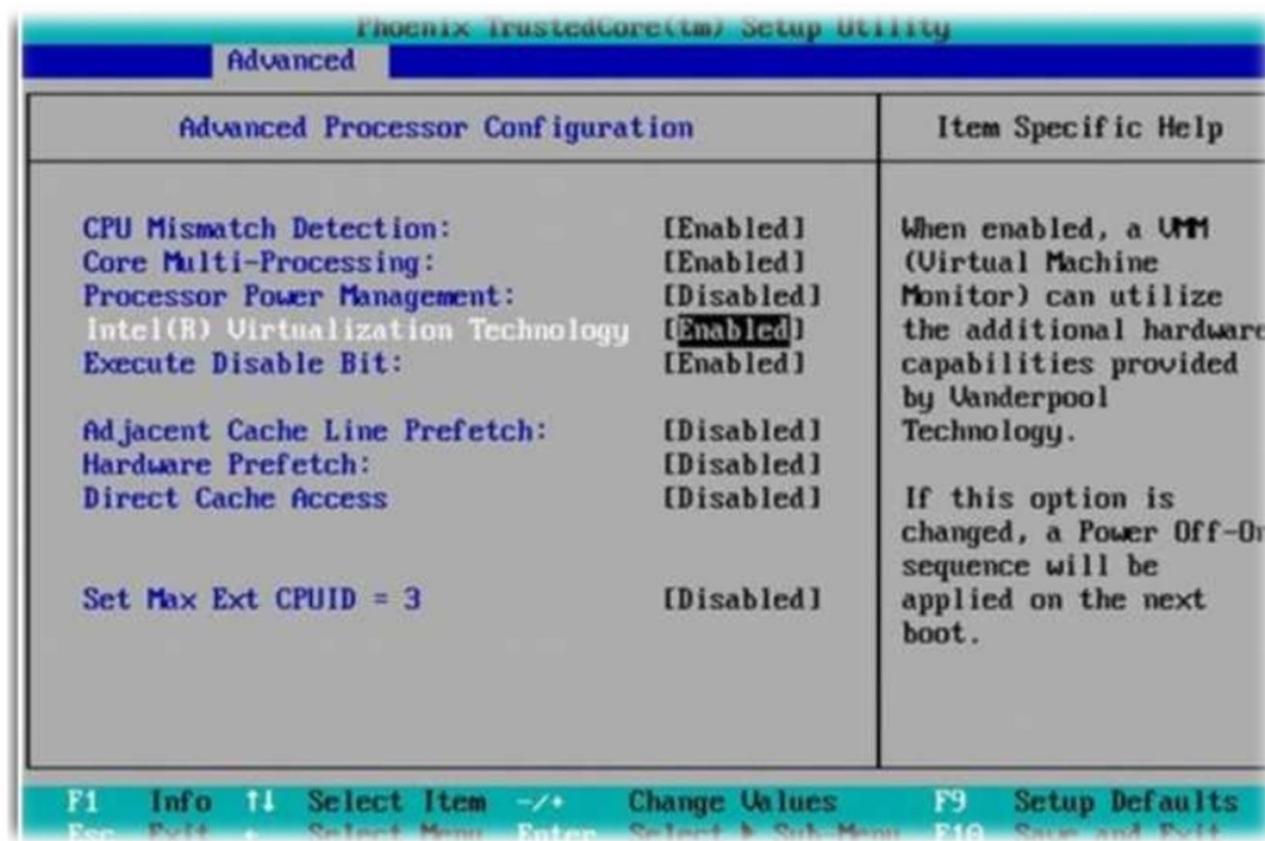
**If these are working correctly, the computer will run smoothly.**

**Now let's install the OS and configure the BIOS on the computer.**

## ❖ BIOS settings

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1. After powering on the PC, you can access the computer's BIOS by pressing (Delete) (Delete), F2, F10, F1, F12 or Esc).
2. Now you can do the Basic Configuration, they are,
  - Set the Date and Time
  - Boot Order
  - Secure Boot (UEFI Systems)
  - Power Settings
  - SATA Configuration
  - CPU and Memory Settings
3. You can change these as desired. After configuring them, use Save and Exit to reboot the computer. The system will reboot. Then install the operating system (OS) on the computer.



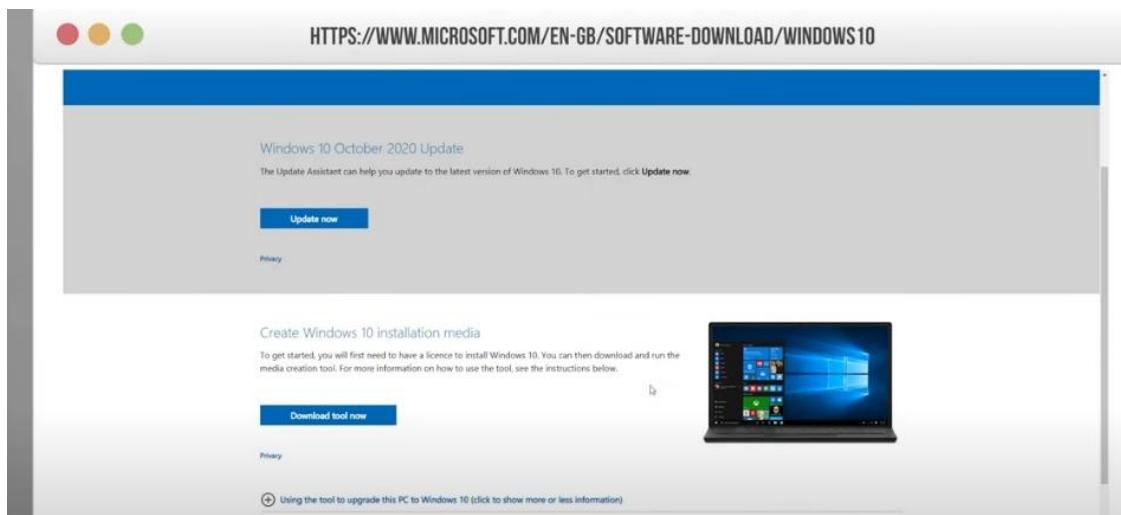
**Some of the things here will vary from computer to computer. They can be found using Google.**

**Next, let's install the operating system (OS).**

### ❖ software installation

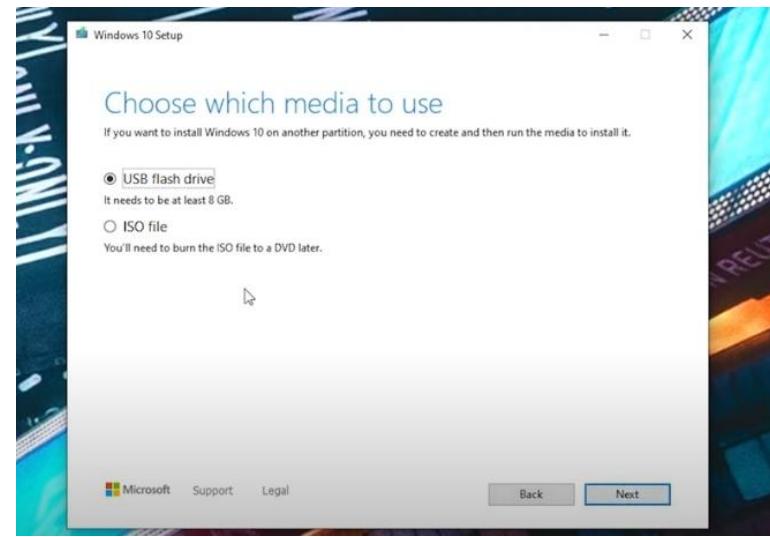
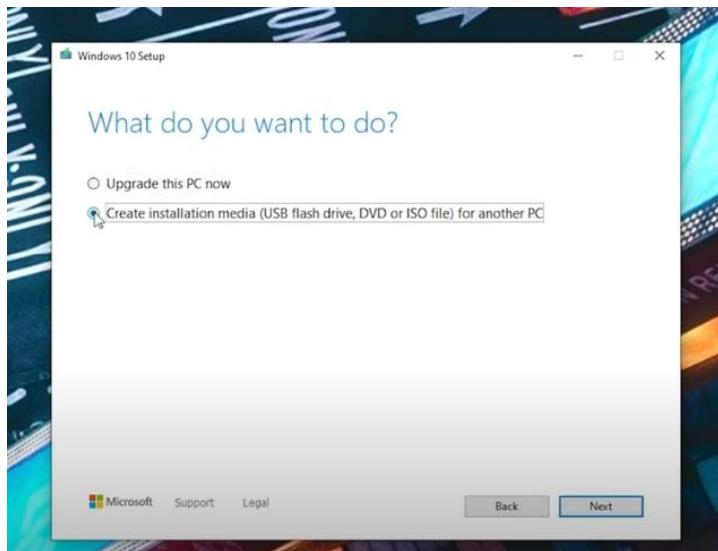
**Okay, now when installing the OS on the PC, you first need to Setup the BIOS and then make the ISO bootable on another PC using software like Rufus. If you want to do it, you can do it from Windows installer itself. You can install any Operating System you want (Windows or Linux, another OS)**

- First download the windows installer.**



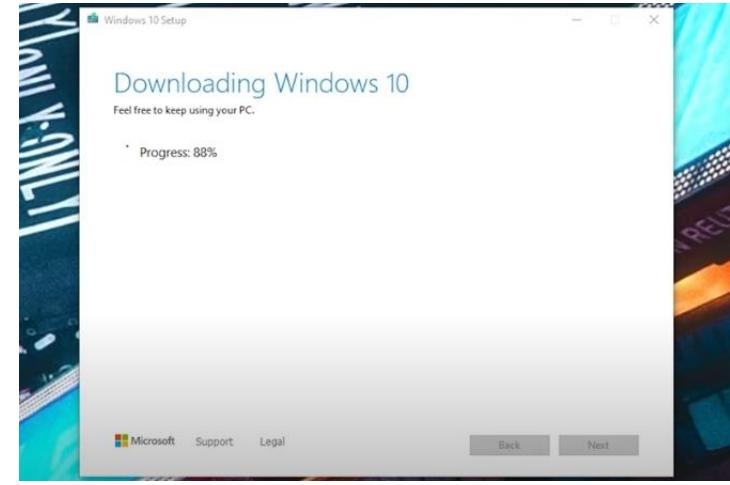
- Then run the windows installer, connect the USB Pen Drive and make the iso bootable.**

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### Step 1

### Step2



### Step3

### Step4

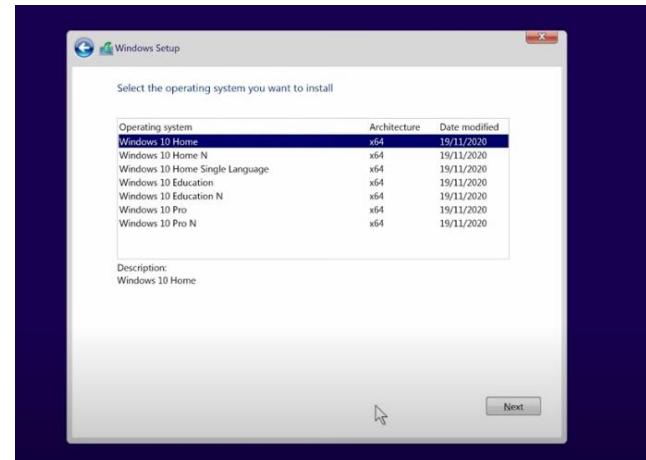
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- Once all that is done, connect the Pen Drive/DVD(CD) to the reassembled PC and install Windows on the reassembled PC.

### Installer Setup



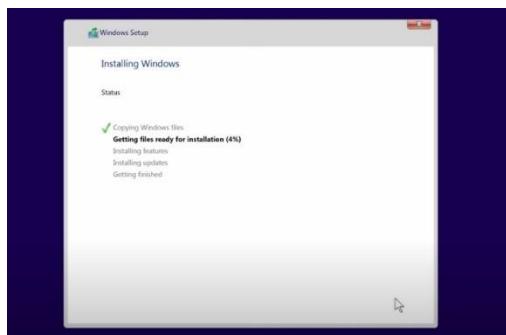
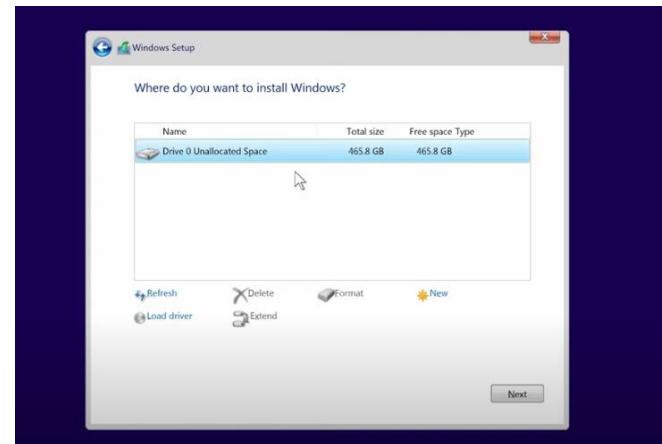
### Verify OS



### Install Button



### formatting disks



### OS installing

Let's start with region. Is this correct?

U.S. Minor Outlying Islands

U.S. Virgin Islands

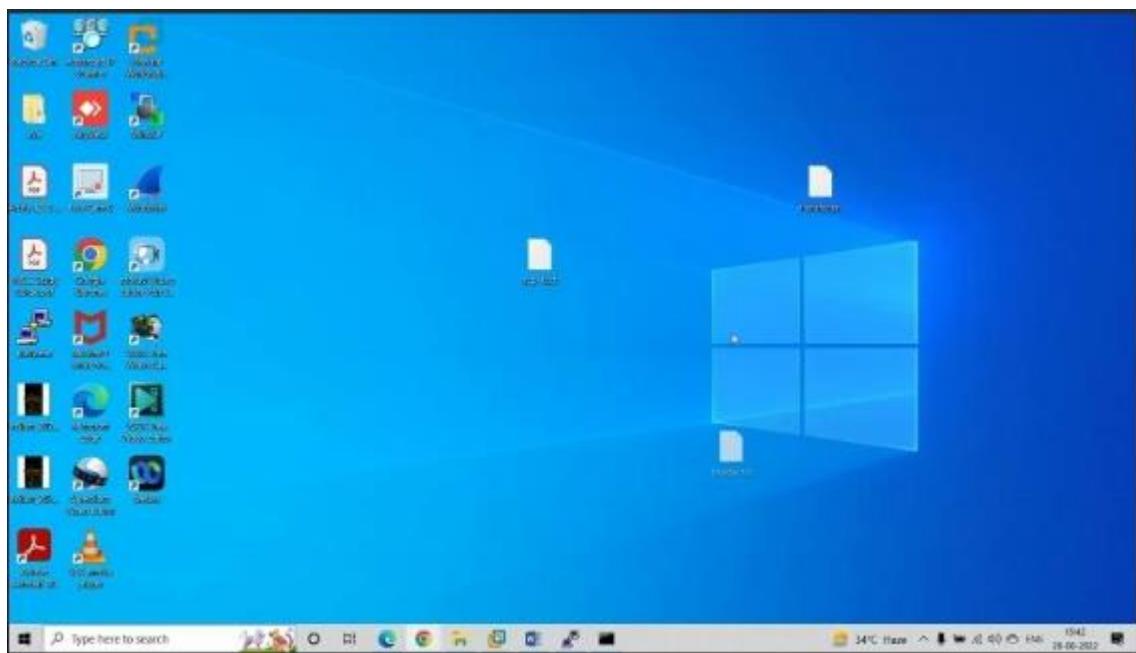
Uganda

Ukraine

United Arab Emirates

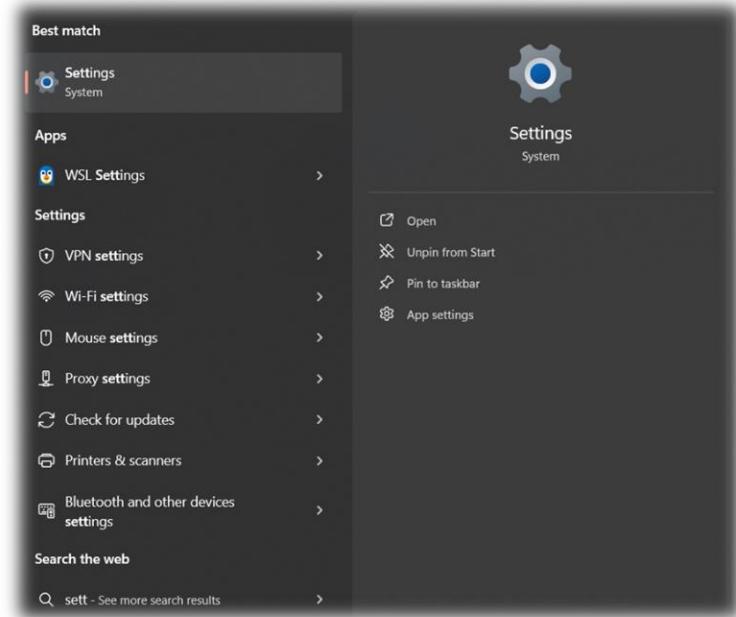
United Kingdom

- Now, if you have done all these steps correctly, you will have an interface like this.

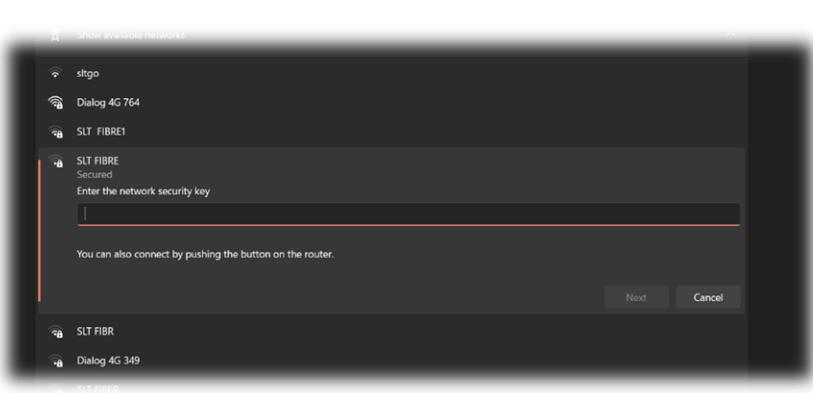


- Okay, everything is done, but there is one more thing to do connect the network to the PC and configure devices.

First, you need to connect to an Ethernet (Wired Connection) or Wi-Fi (Wireless Connection). First, you need to go to Settings > Network & Internet > Wi-Fi from the Windows Search Bar.



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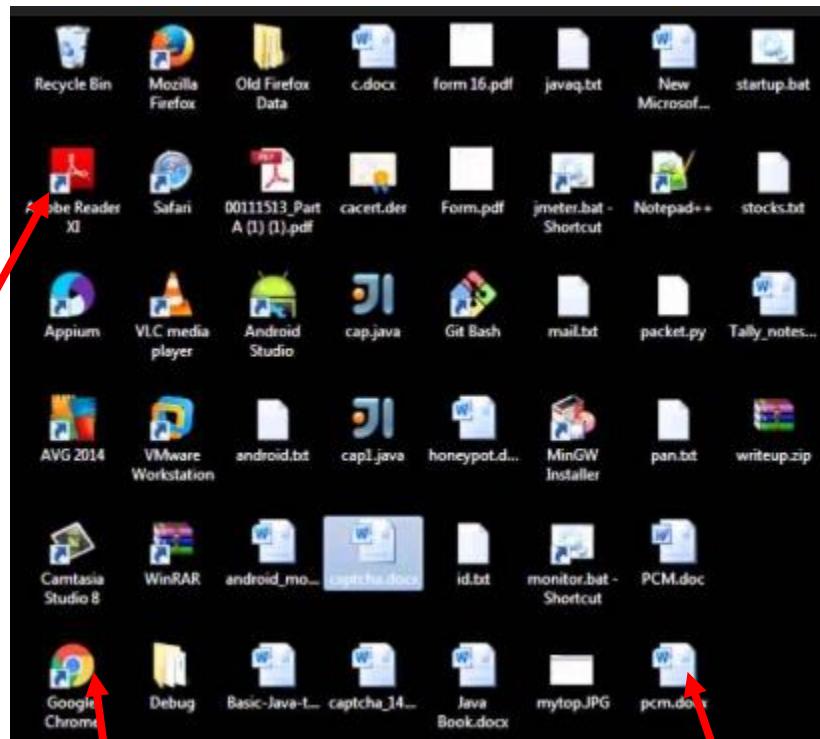


**Then use the relevant Wi-Fi from the available networks and use the password.**

**Then use the computer's default browser to run a speed test or go to a web page and use the internet.**



Well, you can install essential software as you wish. (Eg: MS Office, a web browser, and a PDF reader and everything)



PDF Reader

web browser

MS Office



**Okay, now everything is successfully completed. In this report, we talked about everything from disassembling a computer to reassembling it, and then about the Operating System and the Internet.**

===== END =====

**THANK YOU!**

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