UTM UNIVERSITI TEKNOLOGI MALAYSIA
SCHOOL OF COMPUTING
Faculty of Engineering

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Subject : Technology and Information Systems (SECP1513)

Section : 04

Assignment : Step by step PC Assembly

GROUP
NUMBER: 10

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PART A

1.0 Screwdrivers

The most important tool which needed to set up a computer is screwdriver. This is because, most of computer are attached together by different type of screw. There are two suitable screwdrivers which used for assemble a pc such as Phillips-Head and flat-bladed screwdriver. Phillips-head screwdriver which looks like cross in shape is often used to turn or return back screws. Moreover, we also can use small screwdriver when works in tight space so that it can prevent the head of screw from damaging. Flat-bladed is used to tight down while other screws inserted into them.

2.0 Anti-static wrist strap

The second tool is anti-static wrist strap. It is necessary to use in critical situation. For example, there is some metal objects which will remove most dangerous electro-static discharge. Therefore, we can clip the strap to grounded object or socket so it can neutralize static electricity. The importance of this device is to protect the person who work with electronic equipment.

3.0 Flash light

Torch light is also needed to set up the computer cases properly. The function of this tool is to provide source of light. As we know the computer case contain most of components and it covered by dark shadows. Hence, if any problem occurred in that case, then flashlight is important to identify the problem and can help to fix error like adjusting screw.

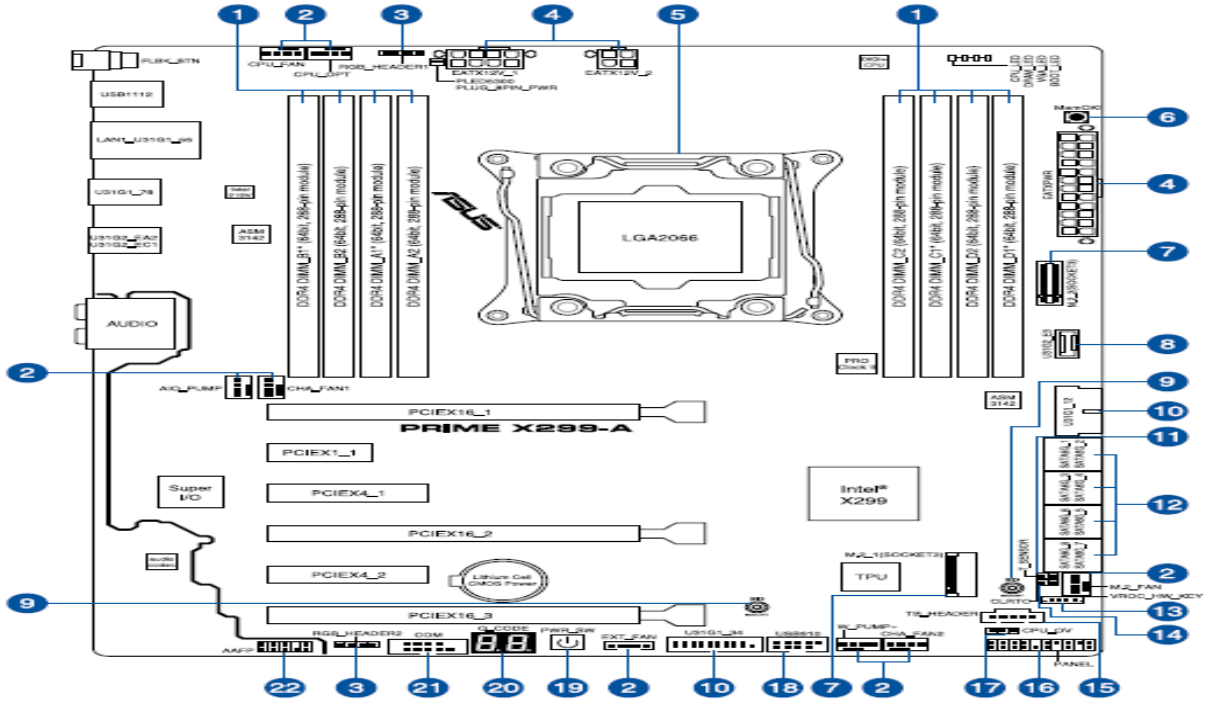
4.0 Cable ties

The next tool that can contribute in assembling a computer is cable ties. It is because, nowadays computer connected with other device through a lot of wires. This causes the place dirty and hot due to high accumulation of dust and no airspace. So that, we can use zip ties to tie up the wires into one bundle. This is important because later on we feel easy to change unwanted wires.

5.0 Plier

Plier is also an important tool. The main function of this tool is to cut excess wire and cable ties. This make the environment look nice and we feel comfortable when using computer.

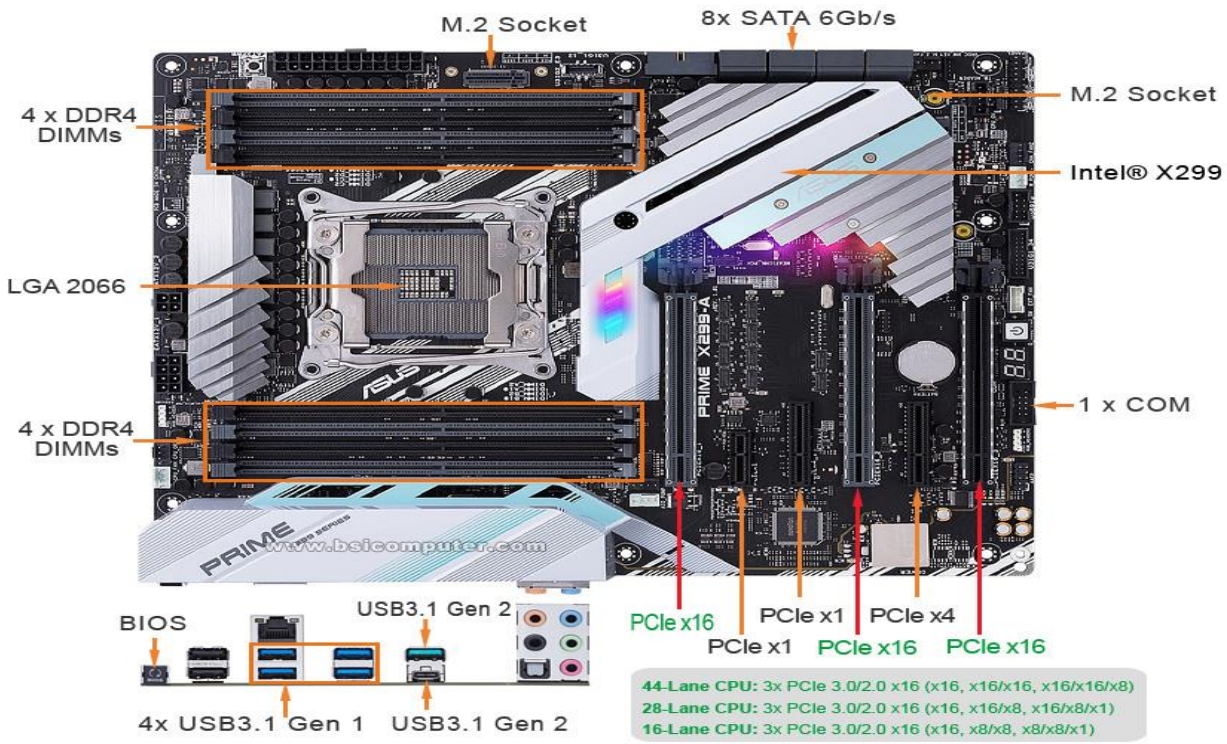
PART B 1.0

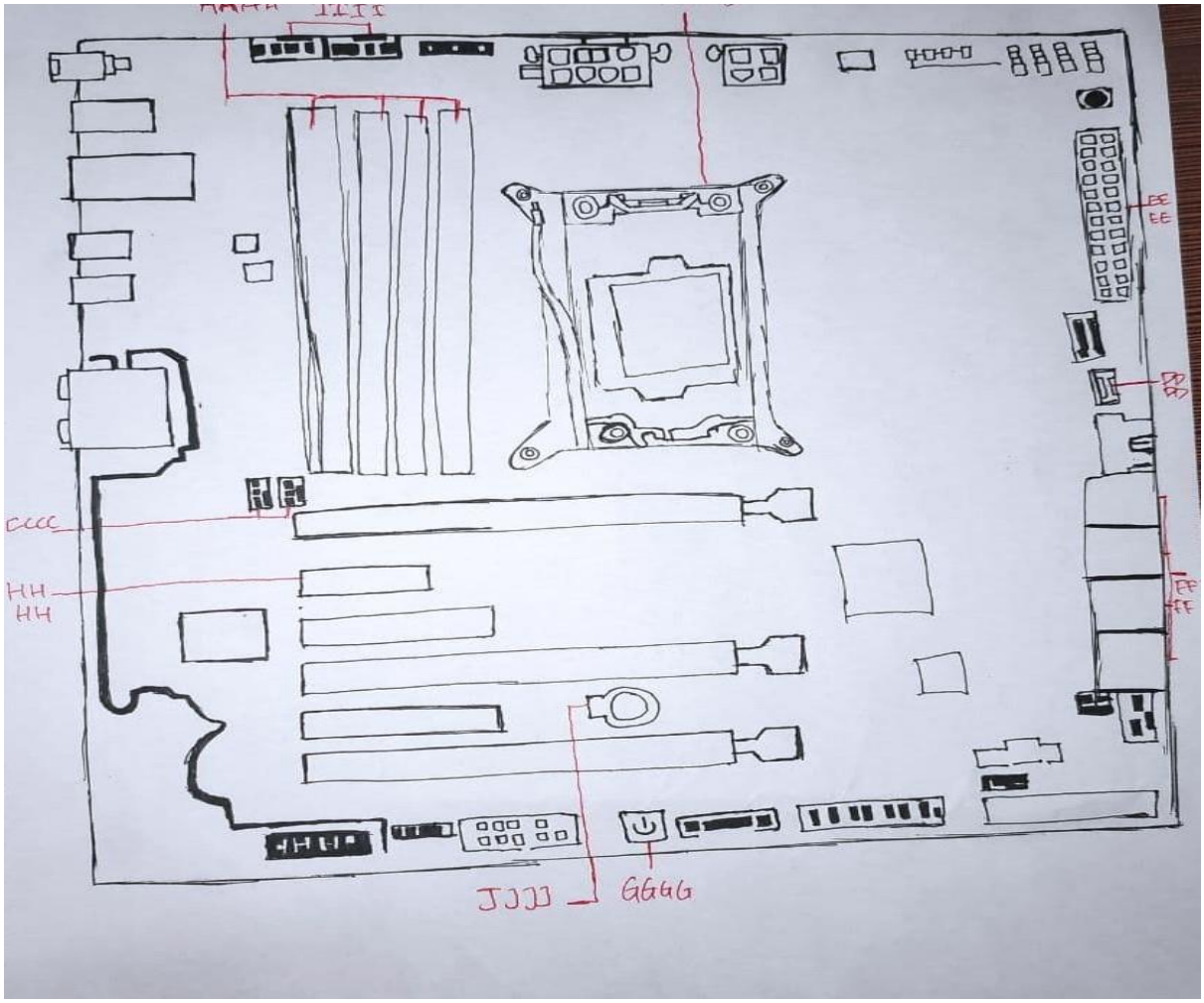


	Connectors / Jumpers / Buttons / Switches / Slots
1	DDR4 DIMM slots
2	CPU, CPU optional, AIO pump, water pump+, extension, M.2, and chassis fan connectors (4-pin CPU_FAN, 4-pin CPU_OPT, 4-pin AIO_PUMP, 4-pin W_PUMP+, 4-pin M.2, 5-pin EXT_FAN, 4-pin CHA_FAN1-2)
3	RGB header (4-pin RGB_HEADER1-2)
4	ATX power connectors (24-pin EATXPWR; 8-pin EATX12V_1; 4-pin EATX12V_2)
5	LGA2066 CPU socket
6	MemOK! button
7	M.2 Sockets (M.2_1 (Socket 3); M.2_2 (Socket 3))
8	USB 3.1 Gen 2 front panel connector (U31G2_E3)
9	3D Mount
10	USB 3.1 Gen 1 connectors (20-1 pin U31G1_12, U31G1_34)
11	Thermal Sensor connector (2-pin T_SENSOR)

12	Intel® Serial ATA 6 Gb/s connectors (7-pin SATA6G_12, SATA 6G_34, SATA 6G_65, SATA 6G_87)
13	VROC_HW_KEY connector (4-pin VROC_KEY)
14	Clear RTC RAM jumper (2-pin CLRTC)
15	Thunderbolt header (5-pin TB_HEADER)
16	System panel connector (20-8 pin PANEL)
17	CPU Over Voltage jumper (3-pin CPU_OV)
18	USB 2.0 connector (10-1 pin USB910)
19	Power-on button
20	Q-Code LEDs
21	Serial port connector (10-1 pin COM)
22	Front panel audio connector (10-1 pin AAFP)

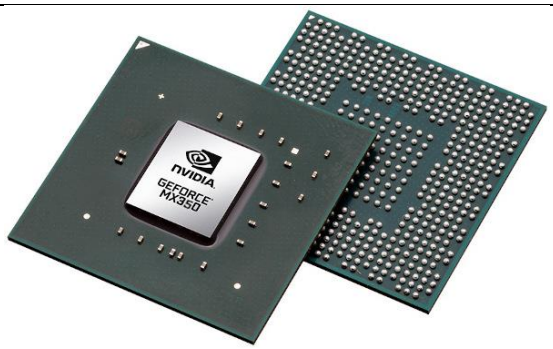
Asus Motherboard Components





PART B 2.0

COMPONENT	FUNCTION	EXAMPLE OF MODEL
GRAPHICS CARD	Graphics card is a computer hardware that renders image and graphics to the monitor. Every graphics card has its own processor which is the Graphics Processing Unit(GPU). Graphics card connects to motherboard and also monitor so it can receive information from the Central Processing Unit and send the output to the monitor	 Nvidia GeForce RTX 3080

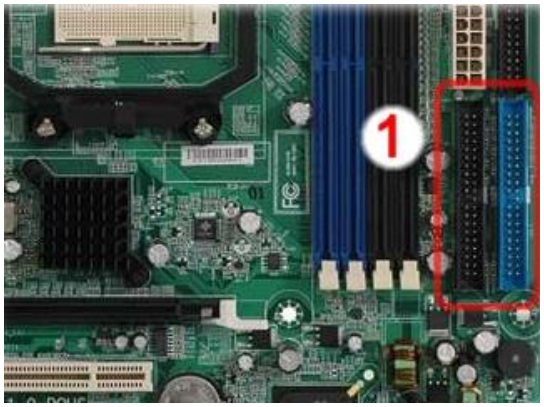
		 Nvidia GeForce MX350
CPU	Central Processing Unit(CPU) is simply a brain of the computer because that is the most crucial IC chip in a computer.It is also known as processor. It manages dan coordinates all the units of computer. It is responsible for regulate and integrate all the processes and operations of the computer. Input/Output (I/O) devices makes communication with CPU to transfer data from storage.	 Intel Core i7-7700K

		 AMD Ryzen 9 5950X
Heatsink	Heatsink is a component that will transfers heat produced by a component to a fluid medium. Usually it is used for the computer CPU, GPU, and RAM. This helps for the thermal management of the computer which will contribute to stable performance.	 Noctua NH-D15  Cooler Master Masterair MA410M

CD-ROM	CD-ROM stands for Compact Disc-Read Only Memory. It is a compact disc that used to store data files and programs. This type of CD can only read the data and it cannot be changed or erased.	 Microsoft Windows 98 Installation CD  CD-ROM for Elementary Statistics Using Excel

CD-ROM Drive	CD-ROM Drive is used to read data in the CD,for purpose such as play music, open document and install software. This type of drive cannot burn data to the CD because it is read only type of drive.	 Asus BC-12B1ST  HP 356963-B21 SCSI CD-ROM Drive
USB Cable	Universal Serial Bus(USB) cable is a cable that used to transfer digital data from a device to another. It is also used as a power supplier that allows the receiver device to charge.	

		Remax RC-080a cable (USB Type A and USB Type C)  Ugreen U-CAB-60149-12V (USB Type A to MicroUSB)
PCI slot	Peripheral Component Interconnect(PCI) slot is a hardware that allows the hardware devices attach to it such as network card, sound card, and other peripheral devices.	 Dell Precision T7500 PCI slot

IDE slot	Integrated Drive Electronics(IDE) is a standard interface that used to connect motherboard to the storage devices such as hard drives	 HP Pavilion 500 Desktop IDE slot
RAM	Random Access Memory (RAM) is a short-term memory of a computer that stores data temporarily. This active data in RAM is accessed quickly that helps to boost the system performance.	 Kingston HyperX IMPACT DDR4 SODIMM RAM

		 Dell 8GB 2Rx8 DDR3 UDIMM 1600MHz
Power Supply	A power supply is a device that converts Alternating Current(AC) to usable Direct Current(DC) for another electronic device. AC adapter is normally used for laptops to charge the device and also supply power to run the laptop.	 Corsair CV550  Armaggeddon Voltron Bronze 300FX

Hard disk	Hard disk is a non-volatile memory hardware device which permanently store and retrieve computer data or information. In older hard disks, there is something called jumper which is not connected anything at the pins that found at the back of the hard drives. The jumper has 2 types which is master and slave. Newer model of hard disk does not have it.	 Western Digital Blue WD5000AZRZ  Seagate Barracuda 1TB Internal SATA Hard Drive ST1000DM010
SATA cable	Serial Advanced Technology Attachment (SATA) cable is cable that used to enable motherboard to communicate with device such as hard drive. In SATA data transfer	

	speed ranges from 150 MB/s for SATA I and 300 MB/s for SATA II.	 BENFEI SATA Cable III  Warmgo 15 Pin SATA Male to SATA Female 1:2 Y Splitter Power Cable
IDE Cable	Integrated Drive Electronics(IDE) cable is a cable that connect from the motherboard to the hard drive and optical drives. In IDE data transfer speed ranges from 100 MB/s to 133 MB/s.	 ASUS 40 wire IDE Ribbon Cable 3x 40 Pin Female Sockets 48cm.

		 Dell/Foxconn ATA66/IDE 40-pin Cable 3828D

PART 3

Step 1 - Install CPU

Figure 1. Lift metal rod of socket. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Figure 2. Open the CPU socket. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Lift the metal rod next to the socket and open the CPU socket on the motherboard

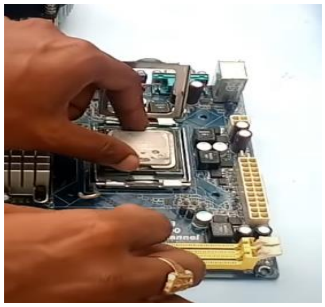


Figure 3. Install CPU into socket. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Install the CPU into the socket.

Figure 4. Close the CPU socket. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Figure 5. Lower the metal rod next to the socket. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Close the CPU socket and lower the metal rod next to the socket

Figure 6. Apply thermal paste. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Apply thermal paste onto the CPU.

Step 2 - Install heatsink and fan

Figure 7. Install heatsink and fan onto motherboard. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Install heatsink and fan onto motherboard.

Figure 8. Install mounting bracket onto rear of motherboard. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Install mounting bracket onto rear of motherboard.

Figure 9. Tighten the screws on the heatsink and fan. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Tighten the screws on the heatsink and fan.

Step 3 - Mount motherboard and power supply into case

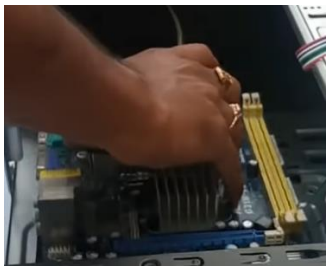


Figure 10. Mount motherboard into case. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Mount motherboard into case.

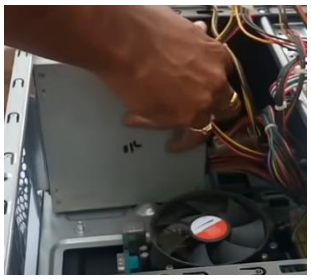


Figure 11. Mount power supply into case. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Mount power supply into case.

Figure 12. Secure power supply to case with screws. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Secure power supply to case with screws

Figure 13. Install Input Output Shield into case. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Install Input Output Shield into case.

Figure 14. Adjust motherboard to the Input Output Shield. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Adjust motherboard to the Input Output Shield.

Figure 15. Tighten the screw of motherboard. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Tighten the screw of motherboard.

Step 4 - Install graphic card onto motherboard.

Figure 16. Unscrew bracket next to PCIe slot. From *How to install a graphics card.* (https://www.build-gaming-computers.com/how-to-install-graphics-card.html, accessed 11/12/2020)

Unscrew bracket next to PCIe slot.

Figure 17. Unlock retention clip and remove cover of graphic card. From *How to install a graphics card.* (https://www.build-gaming-computers.com/how-to-install-graphics-card.html, accessed 11/12/2020)

Unlock retention clip and remove cover of graphic card.

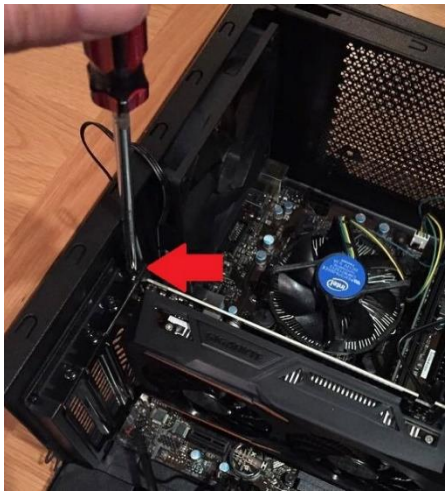


Figure 18. Insert graphic card into PCIe slot and secure it with screws. From *How to install a graphics card.* (https://www.build-gaming-computers.com/how-to-install-graphics-card.html, accessed 11/12/2020)

Insert graphic card into PCIe slot and secure it with screws.

Step 5 - Install hard disk onto case

Figure 19. Mount hard disk into case. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Mount hard disk into case.

Figure 20. Secure hard disk with screws. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Secure hard disk with screws.

Step 6 - Install RAM

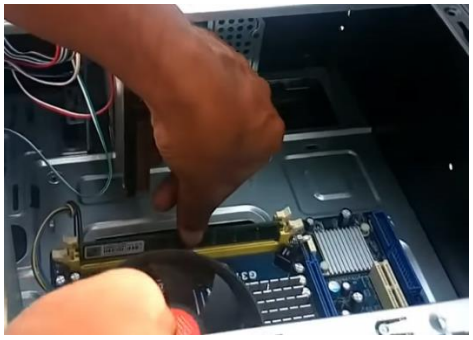


Figure 21. Unlock the slot on motherboard and insert RAM into the slot. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Unlock the slot on motherboard and insert RAM into the slot.

Step 7 - Install CD ROM

Figure 22. Unlock the slot on motherboard and insert RAM into the slot. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Remove drive bay cover

Figure 23. Slide CD ROM into drive bay until the screw holes are lined up. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Slide CD ROM into drive bay until the screw holes are lined up.

Figure 24. Secure the optical drive with screws. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Secure the optical drive with screws.

Step 8 - Connect the cables

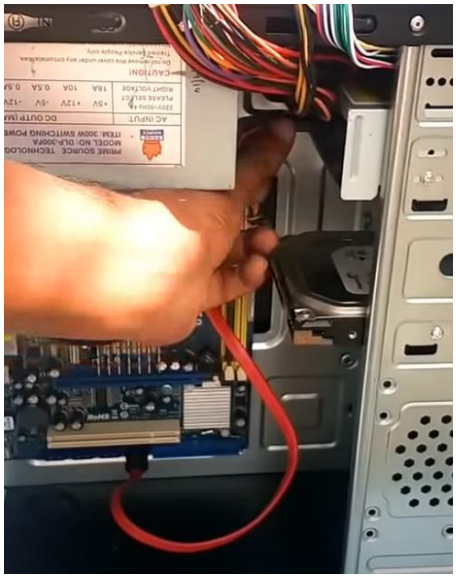


Figure 25. Connect SATA cable to motherboard and CD ROM. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Connect SATA cable to motherboard and CD ROM.

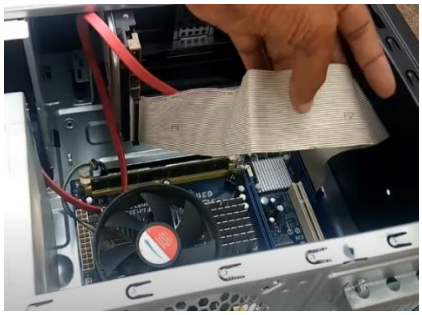


Figure 26. Connect IDE cable to IDE slots of motherboard and hard disk. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Connect IDE cable to IDE slots of motherboard and hard disk.

Figure 27. Connect power cable to motherboard, hard disk, graphic cards and accessories. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Connect power cable to motherboard, hard disk, graphic cards and accessories.

Figure 28. Connect USB cable and audio cable to motherboard headers. From *How to Make or Assemble Desktop CPU Step by Step At Home | How to Build a Computer with used Parts*. (https://www.youtube.com/watch?v=m_-G9Cacx2U, accessed 11/12/2020)

Connect USB cable and audio cable to motherboard headers.

Last STEP - CLOSING THE CASE AND CONNECTING THE PERIPHERALS

Figure 29. Place the side cover back on. From *Asas Pemasangan Sistem Komputer (ESS207)* (https://www.youtube.com/watch?v=ctK58A71DTs, accessed 11/12/2020)

Figure 30. Secure the side panels with case screws. From *Asas Pemasangan Sistem Komputer (ESS207)* (https://www.youtube.com/watch?v=ctK58A71DTs, accessed 11/12/2020)

Place the side cover back on and secure the side panels with case screws.

Figure 31. Connect peripheral devices. From *Setting up a computer*. (https://edu.gcfglobal.org/en/computerbasics/setting-up-a-computer/1/, accessed 11/12/2020)

Figure 32. Connect peripheral devices. From *Setting up a computer*. (https://edu.gcfglobal.org/en/computerbasics/setting-up-a-computer/1/, accessed 11/12/2020)

Connect peripheral devices which include keyboard, mouse, wireless network dongle, printer and webcams with your CPU by plugging into USB port

Figure 33. Connect speakers and microphone into 2.5 mm sockets. From *Setting up a computer*. (https://edu.gcfglobal.org/en/computerbasics/setting-up-a-computer/1/, accessed 11/12/2020)

Then, connect speakers and microphone into 2.5 mm sockets.

Figure 34. Connect the CPU with monitor by plugging into display ports. From *Setting up a computer*. (https://edu.gcfglobal.org/en/computerbasics/setting-up-a-computer/1/, accessed 11/12/2020)

Finally connect the CPU with monitor by plugging into display ports

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Part A

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Part B 1.0

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Part B 2.0

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Part C

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