UTM UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

Semester I 2020/2021

Subject : Technology and Information Systems (SECP1513)

Section : 01

Assignment : Step by step PC Assembly

GROUP NAME / NUMBER : 4

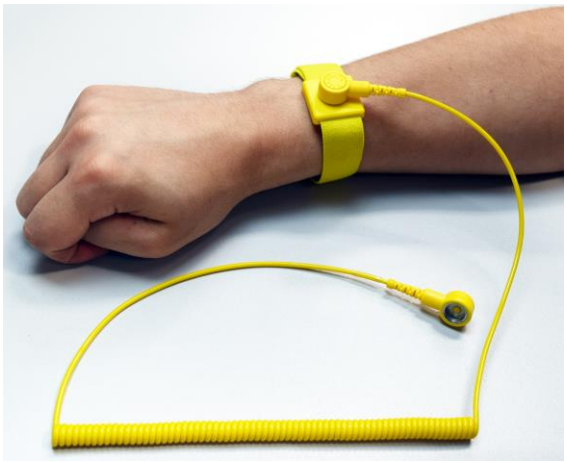
1		Name : Nik Syahdina Zulaikha Binti Badrul Hisham Matric Number : A20EC0108 Phone Number : 011-55076185 E-mail : niksyahdinazulaikha@graduate.utm.my
2		Name : Lee Jia Yee Matric Number : A20EC0063 Phone Number : 011-11998731 E-mail : yee00@graduate.utm.my
3		Name : Muhammad Aiman Bin Abdul Razak Matric Number : A20EC0082 Phone Number : 011-11254714 E-mail : aiman-01@graduate.utm.my
4		Name : Chong Kah Wei Matric Number : A20EC0027 Phone Number: 018-9604219 E-mail : chongwei@graduate.utm.my

PART A – List at least FOUR tools needed to assemble a PC. For each tool, Provide picture(s), explanations of its functions and its importance.

1.0 Screwdrivers

The screwdrivers are for screwing the screws and mount components inside. The importance of the screwdriver is to tighten the screws to hold the components securely in place.

2.0 Anti-Static Wrist Strap

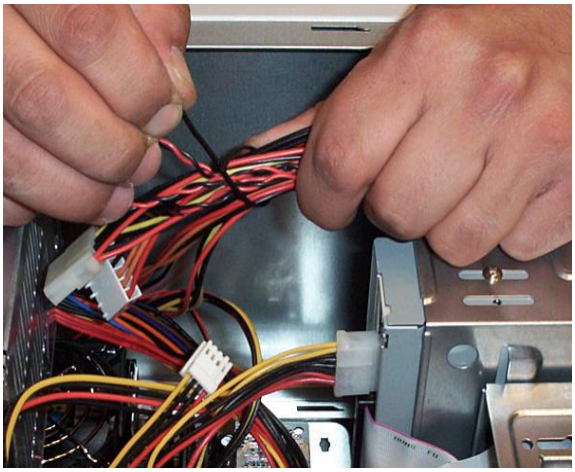


An anti-static wrist strap is a bracelet-type device that connects to an electric socket. The importance of an anti-static wrist strap is to safely discharge static build up and the charge is safety dissipated through the socket.

3.0 Light Source

The light source such as headlamp is to point in in the right direction on the component. Another light source such as torchlight can also be use but it will be difficult to handle the hardware and the torchlight at the same time. The importance of the light source is to exactly see what you do when working within the case.

4.0 Cable Ties

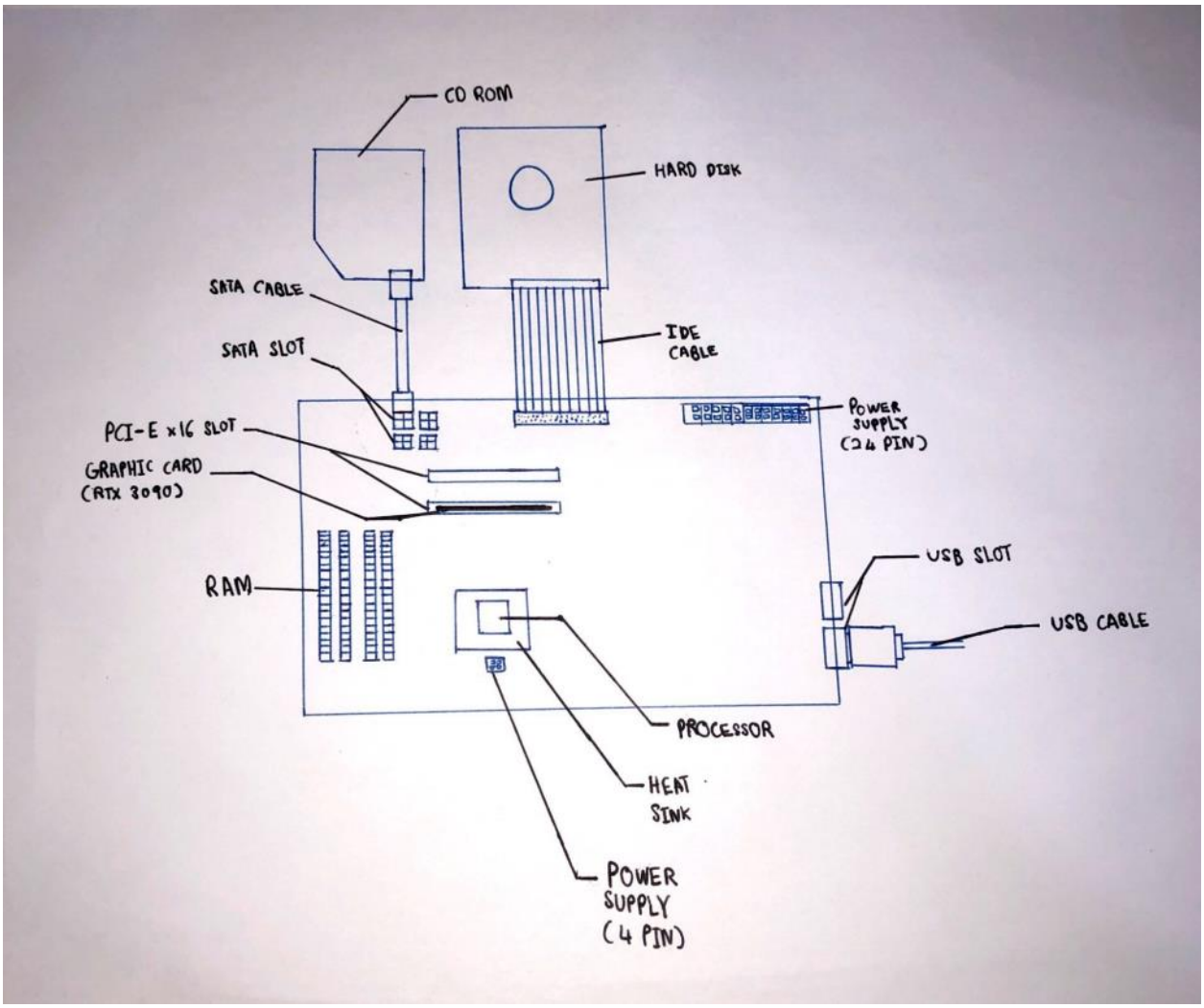


The cable ties are used for holding the cables or wires together. The importance of the cable ties is to make things look neat and nice and cable management is essential to keep dust accumulation low and airflow high.

5.0 Pliers

Pliers are used when the heads of screws get stripped, for loosening up screws that are super tight or picking up screws that may drop in the case. The importance of the pliers is to remove the loose screws in the case.

PART B – Sketch of a mother board layout

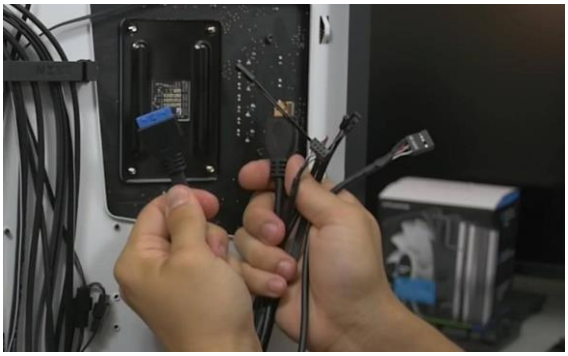


2.0 For each keyword in Table 1.0. Provide picture(s), explanations of its functions and example of models.

1) Graphic card


A Graphic Card is used to generate graphics and images to a display device such as a computer monitor. It accepts the data from the CPU on the motherboard and converts the data into images which ready to be displayed on the screen. For examples, Nvidia GeForce and AMD Radeon could be two of the most popular graphic cards nowadays. Some examples of graphic card model are Nvidia GeForce RTX 2070 Super, MSI GeForce RTX 2080 Gaming X Trio and AMD Radeon RX 5700 XT and these graphic cards can actually deliver excellent performance especially for gaming use.

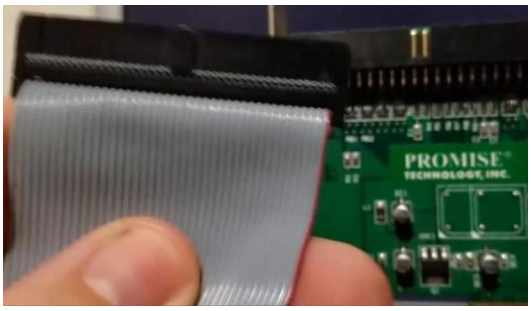
2) USB Cable



A USB (Universal Serial Bus) Cable is used to connect the peripheral devices such as mobile phones, cameras and printers to the computer units. It used to gather and transfer data from one device to another in a quick and effective way. There are several types of USB cable with different

shapes of the USB connector. For example, USB Type-A, USB Mini A, USB Micro-B, USB Mini-B, USB Micro-B Super Speed and USB Type-C.

3) IDE Cable

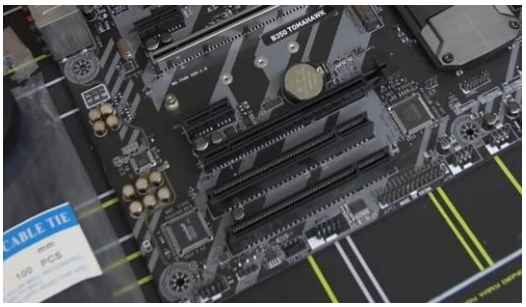


An IDE (Integrated Development Environment) Cables is used to connect from the motherboard of a computer to hard drive, CD drive or floppy drive. The most common IDE cables are the 34-pin floppy drive cable and 40-pin ribbon cable. In this case, the 34-pin floppy drive cable connects from the motherboard to the floppy drive while the 40-pin ribbon cable connects from the motherboard to the hard drive or the optical drive.

4) CPU/Processor

A CPU or a processor is like brain of a computer. It is used to carry out the instructions of a computer program by performing several operations. It also sends and receives signals to attached devices to keep the computer running. It stores data, intermediate results and program instructions as well as controls the operation of all parts of the computer. The most common processor we can see nowadays could be Intel and AMD. Some of the examples of the model are Intel 7 and AMD Ryzen 9 processors with up to 12 cores which will be often featured by some of the top end gaming computers.

5) Slots (IDE, PCI)

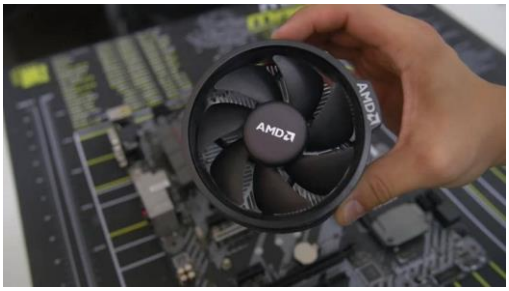


There are different types of slots on the motherboard and each of them have different uses and connect to different devices. IDE (Integrated Drive Electronics) is a standard type of connection for storage devices in a computer. It is referred to the types of cables and ports used to connect some hard drives and optical drives to each other and to the motherboard. On the other hand, PCI slot is a built-in slot on a device that allows for the attachment of various hardware components such as network cards, modems, sound cards, disk controllers and other peripherals. Slot is also known as expansion slot since it is used to expand the capabilities to a computer. Some of the other slots of computer are AGP, AMR, CNR, EISA, ISA and VESA.

6) Power supply

A power supply is used to provide power to computer for running. It converts main alternating current (AC) to low-voltage regulated direct current (DC) power to the internal components of a computer. This type of power supply is called AC-DC power supplies and it is widely used. Some of the model of power supply with great performance can be Corsair RM850x, FSP Dagger 500W, Gamdias Astrape P1-750G and Seasonic Prime 1000 Titanium.

7) Heat sink



A heat sink is used to absorb and separate the heat away from a hot device such as computer processor, video card and power supply. It is usually ready with built-in fans to increase the amount of low-temperature fluid that moves across the devices and aid to keep both the CPU and heat sink at an appropriate temperature. Some of the models of heat sink are the Intel CPU Cooler Fan Heatsink 1150, Intel CPU Cooler Fan Heatsink 1155, Intel CPU Cooler Fan Heatsink 1156, AMD Wraith Stealth CPU Cooler, AMD Wraith Spire CPU Cooler and AMD Wraith Max CPU Cooler.

8) RAM

RAM (Random Access Memory) is used to store data, program and program result which is currently being processed for short-term use. It is a read/write memory which stores data until the computer is working. Since RAM is volatile, the data stored in it is lost when we switch off the computer or if there is a power failure. Some of the model of RAM are Ripjaws V, G.Skill Trident Z RGB, Corsair Vengeance LPX, Kingston HyperX Fury and Adata Spectrix D80.

9) Hard disk



A hard disk is a non-volatile data storage device. It is secondary storage of a computer. Unlike RAM, it provides long-term storage of information. It is used to store programs and very large data files. Hard disk saves files by altering the magnetic charges of the disk's surface to represent 1s and 0s. It retrieves data and programs by reading these charges from the magnetic disk. Some of the examples of hard disk drive's model are Seagate BarraCuda, Seagate FireCuda, Seagate Iron Wolf NAS, Toshiba X300 and WD Velociraptor WD1000DHTZ.

10) CD ROM


CD ROM (Compact Disc Read-Only Memory) is a pre-pressed optical compact disc that contains data which only can be read but cannot be altered or erased. It is a CD which can only be read by a computer with an optical drive. It is usually used to distribute large databases, references, and software application packages. There are some examples of optical drive model, which are ASUS DRW-24B1ST, SEA TECH 1 Archgon, Pioneer BDR-XD058 and Liteon 24X.

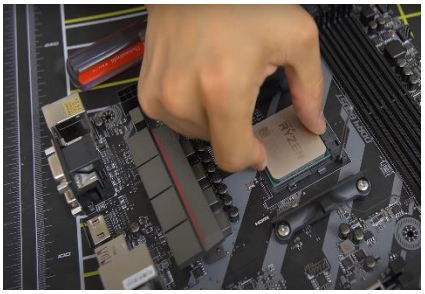
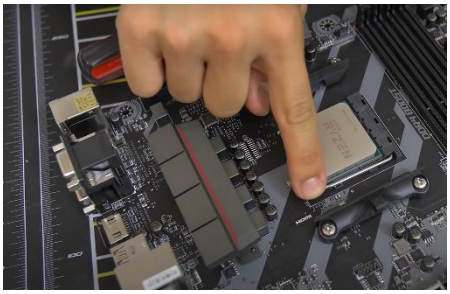
11) SATA Cable


SATA (Serial ATA) cable is used to connect a hard drive (HDD), solid-state drive (SSD) or optical drive to a computer motherboard. It can transfer data at high rates from 1.5 to 6 GB per second. For instance, there are SATAII, SATAIII, eSATA, mSATA and SATA Express.

Part C- "Step By Step PC Assembly"

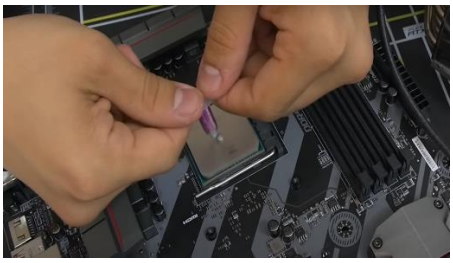
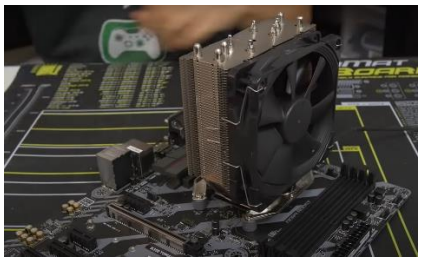
Step 1: Processor (CPU) Installation

- Lift up the spring-loaded retention arm.
- Gently place the CPU on the top of socket correctly by matching the small golden triangle of CPU with triangle on socket bracket.
- Lower down the spring-loaded retention arm to lock CPU in place.
- Tips: 1. Do not touch the CPU's surface and backside with pin.
  2. Do not apply pressure when placing the CPU on its socket.

Step 2: Mounting CPU Cooler

- CPU Cooler is a combination of a heat sink and fan.
- Apply the thermal compound to the CPU.
- Place the CPU cooler on the CPU (with mounting tabs aligned).
- Connect the CPU cooler's power connector to the motherboard.
- Tips: 1. Apply appropriate amount of thermal compound.

Step 3: Memory (RAM) Installation

- Push the latches on either end of RAM slots on the motherboard.
- Line up the notch of memory with the notch in RAM slot.
- Gently push both sides of memory into the slot.
- Tips: 1. Don’t mixed up RAM slots with PCI slots which are usually wider.

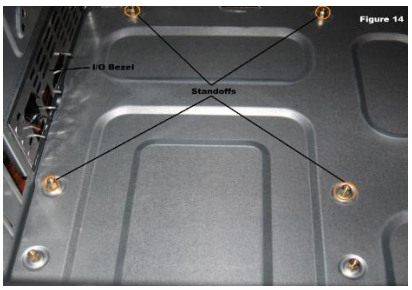
Step 4: Power Supply Unit (PSU) Installation

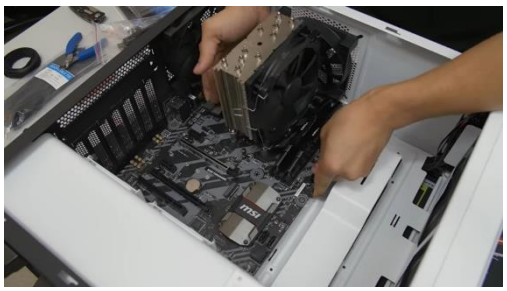
- Open the bracket from the back of case.
- Place the PSU in position where its exhaust is blowing out of the case.
- Put the bracket back and screw it in place.

Step 5: Motherboard Installation

- Install the I/O shield by pushing its edges into the slots found in case’s back.
- Install standoffs in the case
- Lower and lay the motherboard on the top of standoff screws in the case.
- Tighten the screws

- Tips: 1. Make sure motherboard is line up with ports and holes in the I/O shield.
  2. Don’t tighten the screws too much on the motherboard.





Step 6: Graphic Card (GPU) installation

- Gently push the graphic card into the PCIe slot until click sound is heard.
- Screw the PCIe slot cover.

Step 7: Optical Drive (CD ROM) Installation

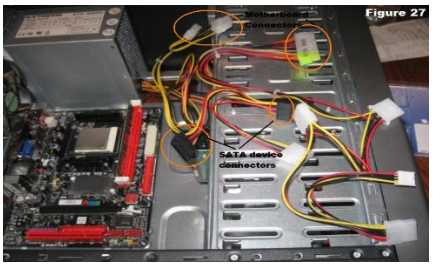
- Slide the drive into the drive bay until the screw holes are lined up.
- Install the screws.
- Tips: 1. Make sure the CD ROM is orientated correctly.
  2. Make sure the CD ROM is fixed in the position.

Step 8: Hard disk Installation

- Find a 3.5 inches drive bay to install the hard disk.
- Slide the drive into place until the screw holes on the sides are lined up with case's holes.
- Install the screws.
- Tip: 1. The wide is important so can access the cable connection on the back.
  2. Make sure the hard disk is fixed in the position.

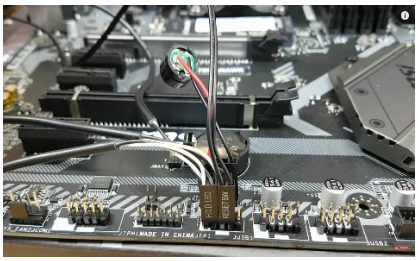
Step 9: IDE cable, SATA cable and electric connection

- Connect IDE cable to CD ROM.
- Connect SATA cable to Hard Disk.
- Connect the 8-pin EPS from PSU to the EPS connector on the motherboard through cable routing hole.
- Connect the 24-pin cable from PSU to 24-pin ATX port of motherboard through cable management hole.
- Connect PCIe 6-pin connector from PSU to graphic card through cable management holes.
- Tips: 1. Make sure all the connection of cable is correct.
  2. Make sure the cable connection is in arrangement.



Step 10: USB Cable and Switch Cable Connection

- Connect USB cable to the USB connectors on the motherboard.
- Connect switch cable to the case switches on the motherboard.
- Tip: 1. Make sure the cable connection is correct.



Step 11: Close the Computer Case

- Place the side panel back to the case.
- Install screws.
- Tips: 1. Be careful when holding the case because it may have sharp edges.

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

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

Then, connect speakers and microphone into 2.5 mm sockets.

Finally connect the CPU with monitor by plugging into display ports