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

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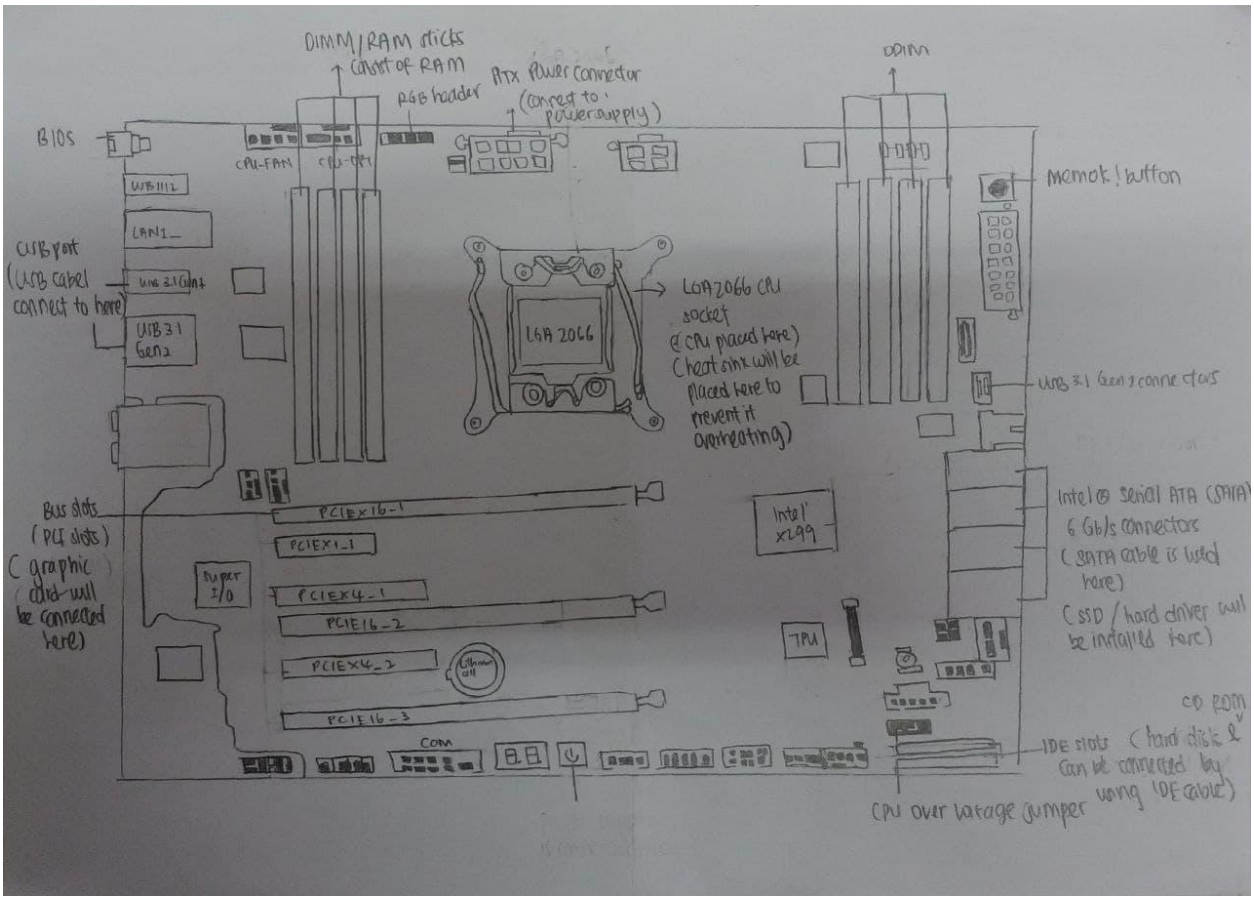
PART A: TOOLS NEEDED TO ASSEMBLE A PC.

TOOLS	EXPLANATION OF ITS FUNCTION AND ITS IMPORTANCE
1.0 SCREWDRIVERS 	The screwdrivers have many types that are small and medium-sized Phillips and flat screwdrivers. The functions of screwdrivers are to tighten or loosen slotted and cross-headed screws. The importance of screwdrivers is to attach all types of components easily to the motherboard.
2.0 PLIERS 	The function of pliers is to hold small parts and accessories on the hard disk of the computer. The importance of pliers is it useful when inserting jumpers on motherboards and hard drivers.
3.0 CUTTER 	The function of a cutter is to strip and cut wires. It is useful at any time when the user needs to cut cables or power cords.
4.0 TWEEZERS 	The tweezer is a small instrument like a pair of pincers. The function of tweezers is to manipulate small parts. The tweezer is useful to pick up small parts that fell and got stuck inside narrow ports and openings. It can also be utilized to keep wires properly managed.
5.0 WIRE STRIPPER 	The wire stripper is a small, hand-held device. The function of a wire stripper is to remove the electrical insulation from electric wires. The wire stripper is useful when you need to twist wires to other wires or crimped to connectors to make a cable.

6.0 CRIMPER 	The function of a crimper is to attach the connector to wires. The crimper is useful when you need to build a cabling system.
7.0 ANTI ELECTRICITY STRAPS 	Anti-electricity straps is a device that reduces, dampens electrostatic discharge. The function of an anti-electricity strap is to safely ground a person working on pc assembly. In other words, it is to prevent the build-up of static electricity on the user's body.

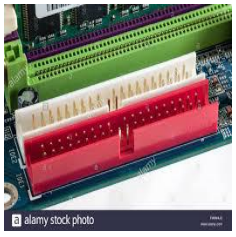
PART B 1.0 - SKETCH OF MOTHERBOARD LAYOUT

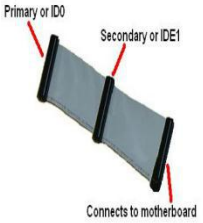
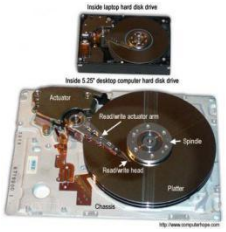


ASUS PRIME X299-A

PART B 2.0 EXPLANATION OF THE KEYWORKS IN TABLE 1.0

COMPONENTS	FUNCTION	EXAMPLE OF MODEL
GRAPHICS CARD 	A Graphics card is computer hardware that produces the image on the monitor by converting data into a signal that the monitor can understand. Better graphics cards can display smooth and high-quality images.	1. Nvidia 2. AMD
CPU 	Central Processing Unit (CPU) is an electronic circuit in computers that executes instructions of a computer program by performing several operations such as logical, controlling, arithmetic, and input/output operation according to the instructions. Another way to express the meaning of CPU is the "brain" of the computer system. There are four basic functions a CPU carries out that are fetching the data by using the input devices, decoding it into binary expression, executing one or more actions, and storing to give the output after executing the data.	1. Intel 2. AMD
HEAT SINK 	A heat sink is a device that absorbs heat generated by electronic components or chips and removes the heat from a hot device to extend the lifetime of the device. It is made of aluminum alloy with fins that provide a large surface area to dissipate the heat and cooling both the heat sink and processor.	1. Finned Heat Sinks 2. Pinned Heat Sinks
CD ROM 	A Compact Disc Read-Only Memory(CD ROM) is a device that uses photodiodes to detect reflecting lights on optic discs and uses a laser to read or write data. So, the CD can be read by computer but the data on the disc cannot be altered or erased, it can only be read.	1. HP CD-ROM LTN-4891S-CT2 P/N: 390847-001

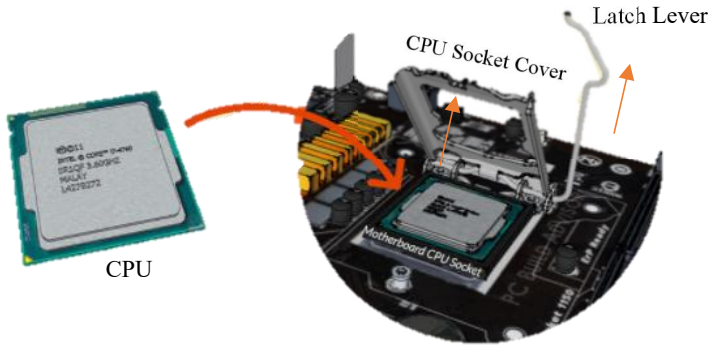
		2. Acer 50x IDE Internal CD-ROM (650P-002) - AS IS
USB CABLE 	USB cables are connected to the PC directly to peripheral devices like smartphones, cameras, camcorders, and printers or scanners. The function of these cables is to gather or transfer data from one device to another effectively, quickly, and properly. USB cable also can be used in the power bank to charge devices like a mobile phone.	1. USB Type-C 2. USB Type-A
PCI SLOTS 	Peripheral Component Interconnect (PCI) slots are used to connect an additional extension card to a PC for the additional function to the system. For example, sound cards, TV tuners cards, and LAN card.	1. PCIEX4_2 2. PCI3
IDE SLOTS 	Integrated Drive Electronics (IDE) slots are a standard interface for connecting a motherboard to storage devices like DVD drives and hard drives.	1. 34-pin IDE SLOTS 2. 40-pin IDE SLOTS
RAM 	Random Access Memory (RAM) is temporary storage which provides a short term storage space for data and program code while the computer is on. RAM is a read or writes memory that will be erased when the power is off.	1. Static RAM 2. Dynamic RAM

SATA CABLE  IDE CABLE 	The function of the Serial Advanced Technology Attachment (SATA) Cable is to connect a mass storage device to a computer motherboard. For instance, hard disk drives, and solid-state memory drives. It enables the drives to exchange data with the computer through the motherboard. SATA Cables transmit data at higher rates (from 1.5 to 6 GB/second). Integrated Drive Electronics Cable is a standard type of connection for storage devices to a motherboard. IDE Cable is to connect hard drives and optical drives and to the motherboard.	1. SATA2 1. Esata 2. SATA 6G_87 3. 34-pin IDE cable 4. 40-pin IDE cable
POWER SUPPLY 	A power supply is an electrical device that supplies electric power which converts AC from a source to DC. It provides DC voltage to the motherboard, peripheral current, and adapter. Not only that but also provide cooling and facilitate airflow through the case	1. Linear Power Supply 2. Switched Power Supply 3. Model 1901B 4. BK1696B
HARD DISK 	The hard drive provides permanent storage for data and applications within a computer. Four components inside its casting are a platter to store data, a spindle to spin the platters, a read or write arm to read and write data, and an actuator to control the actions of the read.	1. Seagate Hard Disk 2. Western Digital SATA Hard Disk

PART C- STEP BY STEP PC ASSEMBLY

Step 1 - Install Processor (CPU).

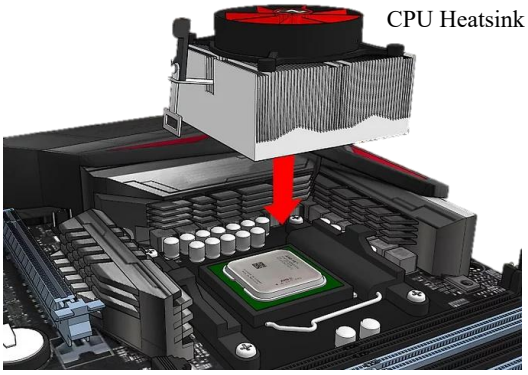
1. Locate the holder of the CPU socket on the motherboard.
2. Lift the latch lever to open the CPU socket cover.
3. Hold the CPU by its side and place it on the CPU socket in the correct orientation (the triangle on the corner of the CPU to the triangle marked on the motherboard).
4. Close the CPU socket cover and lower the latch lever to secure the CPU socket holder.



PRECAUTIONS: As any residue from hands will destroy the heat transfer, avoid touching the back of the CPU with fingers. When the CPU is seated, do not apply force.

Step 2 - Mount CPU Heatsink.

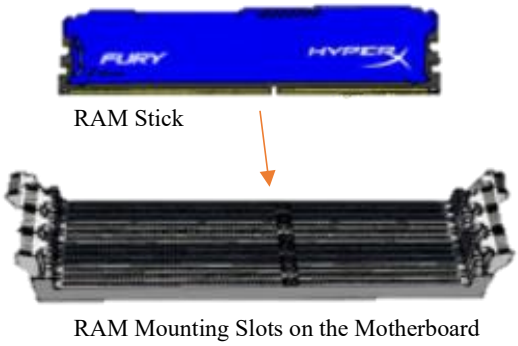
1. Apply thermal paste to the CPU surface.
2. Seat the CPU heatsink on the CPU and fix the position by using screwdrivers.
3. Connect the CPU heatsink to the motherboard by plugging the power cable attached to the heatsink into the motherboard connector.



TIPS: Apply thermal paste is optional. Some CPU heatsinks have a thermal pad already mounted.

Step 3- Install Memory (RAM).

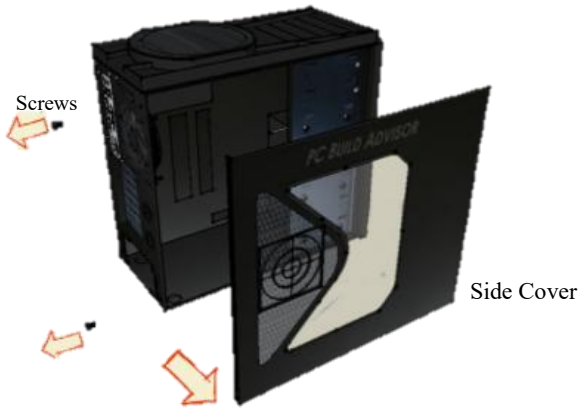
1. Seat the RAM and press it tightly into the mounting slots for the RAM.
2. The tabs will be locked automatically to secure the RAM in place.



TIPS: Any other RAM sticks can be added in the same way.

Step 4- Open Case.

1. Remove the back screws by using screwdrivers.
2. Take away the side cover.



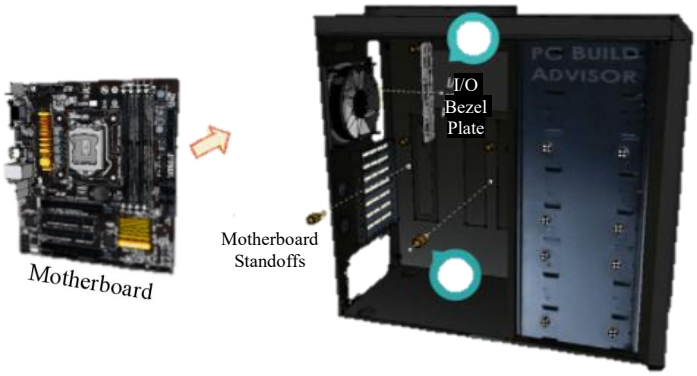
PRECAUTIONS: Handle with care to avoid injury.

Step 5- Mount Power Supply.

1. Install the power supply and secure with screws to the case mounting points.
2. Connect the power supply to the motherboard using the largest cabling connector from the power supply cabling.
3. Connect the power supply to the CPU power connector using an 8-pin cabling connector from the power supply cabling.

Step 6- Mount Motherboard.

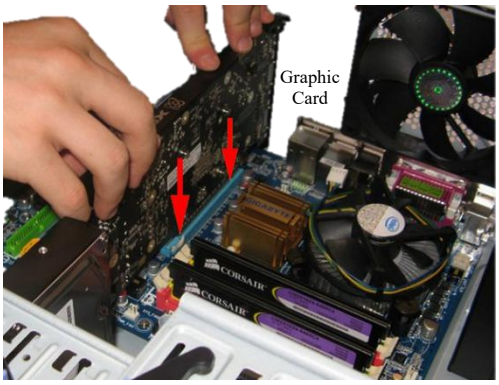
1. Install the I/O bezel plate into the opening in the back of the case. It pushes in from the inside.
2. Screw motherboard standoffs into the computer case mounting points.
3. On top of the mounting standoffs and align with the I/O bezel plate, fasten the motherboard in place.

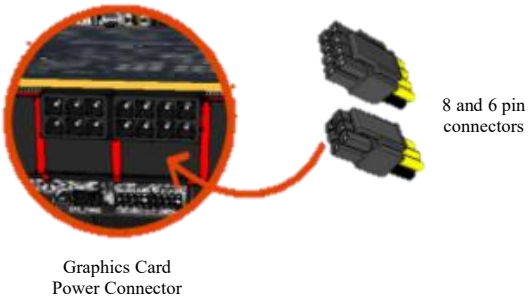


TIPS: Install the mounting standoffs in the case positions that fit the screw mounting holes on the motherboard.

Step 7- Install Graphic Card.

1. On the lower half of the motherboard, slot the graphics card into a PCI expansion slot.
2. To keep the graphics card in place, put in the screws.
3. Connect the power supply to the graphics card by plugging in the 8 and 6 pin connectors from the power supply cabling into the graphics card power connector.



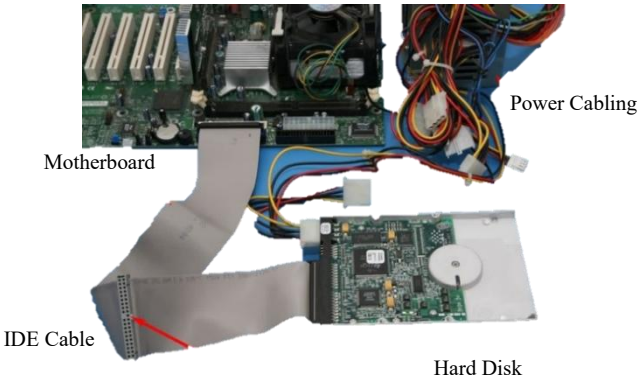


Step 8- Install CD Rom.

1. Slide-in CD ROM into the case.
2. Fasten the CD ROM with screws through the case frame into the case mounting holes found on the CD ROM.
3. Use a SATA cable to connect the CD ROM and the motherboard.
4. Connect the CD ROM to the power supply by plug in the SATA connector from the power supply cabling into SATA ports on the CD ROM.

Step 9- Install Hard Disk.

1. Install hard disk in the case drive bays.
2. Fasten the hard disk in place using screws through the case frame into the case mounting holes found on the hard disk.
3. Connect the hard disk into the IDE slots on the motherboard by using an IDE cable.
4. Connect the hard disk to the power supply by plug in the power cabling into the harddisk.



TIPS: Other storage drives can be installed in the same way.

Step 10- Connect Front Panel Connectors.

1. Recognize the cabling from the front panel ports on the PC.
2. Connect the microphone/audio connector to the motherboard front audio header.
3. Connect the USB connector to the motherboard USB headers.
4. Connect the front panel case connectors to the motherboard front panel I/O headers.

TIPS: Refer to the motherboard manual to ensure the correct connections.

Step 11- Close Case & Connect Peripherals

1. Put the side cover back on.
2. Use case screws to secure the side panel.
3. Plug in the peripheral devices such as a mouse, webcams, keyboard, and printer into the USB port then speaker and microphone into 2.5mm sockets.
4. Connect the monitor by plugging it into display ports.

PRECAUTIONS: Do not force if a cable does not fit, it will damage the connectors. The plug must align with the ports.

PART D: REFERENCE

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