9

Technical Vocational Education

Computer Systems Servicing
Quarter 1-Week 3- Module 3
**Computer Standard Operating Procedure:
Assemble Computer Hardware**
SPTVE_CSYS9- ICCSIa-c-1

Technical Vocational Education Computer Systems Servicing – Grade 9
Alternative Delivery Mode
Quarter 1 Week 3 Module 3 - Computer Standard Operating Procedure: Assemble Computer Hardware
First Edition, 2020

9

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Introductory Message

For the Facilitator:

Welcome to the Technical Vocational Education-Computer Systems Servicing 9 Project CAP-LRE Alternative Delivery Mode (ADM) Module on Computer Standard Operating Procedure: Assemble Computer Hardware.

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:

> ### *Notes to the Teacher*
> This contains helpful tips or strategies that will help you in guiding the learners

As a facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and the learners as they do the tasks included in the module.

For the Learner:

Welcome to the Technical Vocational Education-Computer Systems Servicing 9 Project CAP-LRE Alternative Delivery Mode (ADM) Module on Computer Standard Operating Procedure: Assemble Computer Hardware

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:

What I Need to Know	This will give you an idea of the skills or competencies you are expected to learn in the module.

What I Know	This part includes an activity that aims to check what you already know about the lesson to take. If you get all the answers correctly (100%), you may decide to skip this module.
What's In	This is a brief drill or review to help you link the current lesson with the previous one.
What's New	In this portion, the new lesson will be introduced to you in various ways; a story, a song, a poem, a problem opener, an activity or a situation.
What is It	This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.
What's More	This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.
What I Have Learned	This includes questions or blank sentence/paragraph to be filled in to process what you learned from the lesson.
What I Can Do	This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.
Assessment	This is a task which aims to evaluate your level of mastery in achieving the learning competency.
Additional Activity	In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned.
Answer Key	This contains answers to all activities in the module.

At the end of this module, you will also find:

References- This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.

4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!

What I Need to Know

This module encourages you to be familiar on how to validate one's work for quality improvement work. Different activities are provided for you to be able to:
1. Obtain tools, equipment and testing devices needed to carry out installation work in accordance with established procedures and check for correct operation and safety
2. Assemble computer hardware in accordance with established procedures and system requirements
3. Perform BIOS configuration in accordance with hardware requirements
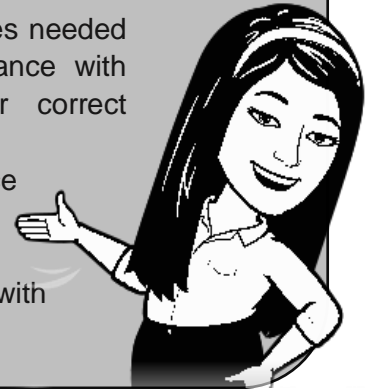
What I Know

Direction: Read the questions carefully and choose the BEST answer. Write only the letter of your answer in your answer sheet.

1. A hardware component that supplies power to an electrical device.
   A. CPU   B. Hard Disk   C. Power Supply Unit   D. System Unit

2. The hard disk drive is also known as _____.
   A. HDD   B. MOLEX   C. ROM   D. SATA

3. What power connector gives supply in the motherboard?
   A. 4 pin molex p3 12v   C. power cable
   B. 24 pin molex connector   D. sata connector

4. What power connector used to power the IDE hard drives and optical drives?
   A. 4 pin berg connector   C. 20 pin molex connector
   B. 4 pin molex connector   D. sata connector

5. Power supply unit converts the _____ to _____.
   A. PC TO DC   B. AC TO DC   C. PC TO AC   D. DC TO AC

6. How you will secure the safety of the CPU?
   A. By following the steps   C. By wearing the anti-static wrist strap
   B. By washing your hands first   D. By listening carefully to your teacher

7. What is the use of an anti-static bag?
   A. A bag is used for storing electronic components for inventory.
   B. A bag is used for storing electronic components before and after the activity.
   C. A bag is used for storing electronic components to prevent the loss of the components.
   D. A bag used for storing electronic components, which are prone to damage caused by electrostatic discharge.

8. All of the following is the wiring of the front panel EXCEPT ONE.
   A. Power Led   B. Reset switch   C. Switch on   D.HDD Led

9. Before you removed the CPU fan, what is the first thing to do?
   A. remove the four screws   C. remove the CPU
   B. remove the power cord   D. remove the heat sink

10. All of the following are internal drives of the computer EXCEPT ONE.
    A. Flash Drive   B. Floppy Drive   C. Hard Drive   D. Optical Drive

11. It instructs the computer on how to perform basic functions such as booting, identifying, and configuring hardware components.
    A. BEEP CODES   B. BIOS   C. CMOS   D. POST

12. It checks a computer's internal hardware for compatibility and connection before starting the boot process.
    A. BEEP CODES   B. BIOS   C. CMOS   D. POST

13. It is the audio signal given out by a computer to announce the result of a short diagnostic testing sequence.
    A. BEEP CODES   B. BIOS   C. CMOS   D. POST

14. It holds the configuration parameters.
    A. BEEP CODES   B. BIOS   C. CMOS   D. POST

15. The following are keys to enter the BIOS Set up except one.
    A. F2   B. F5   C. F8   D. F10

Directions: Arrange the jumbled letters to form the correct name of the tools in the given illustration. Write your answer in your answer sheet.
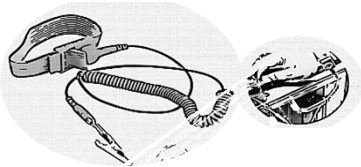
I N T A – C T A S T C I P S R A P T

1. _____

L T F L A W R E C S V E R D R I

2. _____
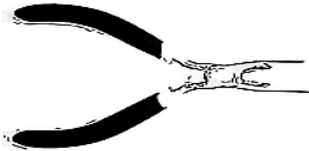
D E E N L E - S E N O E S R I P L

3. _____

T P A R R T E R I R V E

4. _____
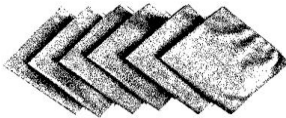
N T L I - E F R E H L C O T

5. _____

B L A C E S I T E S

6. _____

M E U L I T M R E T

7. _____

P T A R R E Z N A O G R I

8. _____

R E W T E Z E

9. _____
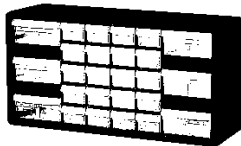
N T I A – S C T A I T T M A

10. _____

What's New

> One of the basic skills that you must acquire in computer system servicing is to independently assemble and disassemble a personal computer or simply setting up a PC. After familiarizing with all the tools, devices, peripherals and safety precautions I believe that you are now ready to gain another experience in CSS by going through this lesson.

Directions: Answer the given questions below. Write your answer in your answer sheet.

1. Are you familiar with the parts of the computer below? Write their names in your answer sheet.

_____   _____   _____

2. If you are to assemble your PC (Personal Computer), what are the things that you need to consider? Give at least five(5). Why?

_____
_____
_____
_____
_____
_____

What is It
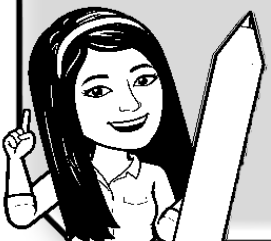
> **Computer Hardware** is the physical part of a computer while **Internal hardware** is the hardware inside the computer or is a device that is installed within the computer.

INTERNAL HARDWARE

✓ **Power Supply unit (PSU)** converts mains AC to low-voltage regulated DC power for the internal components of a computer.

20 PIN MOLEX ATX POWER CONNECTION
This is used to give supply to motherboard.

4 PIN MOLEX P4 12V

✓ The P4 connector is a 12V power supply cable used with motherboards that have an Intel Pentium 4 or later processor.
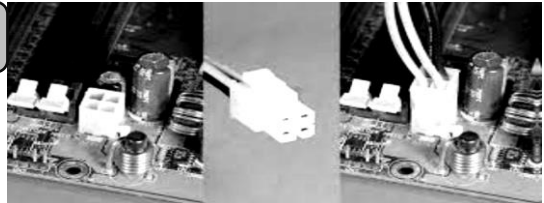
4 PIN BERG CONNECTOR

✓ It is used with computer power supplies that connect to floppy disk drives.
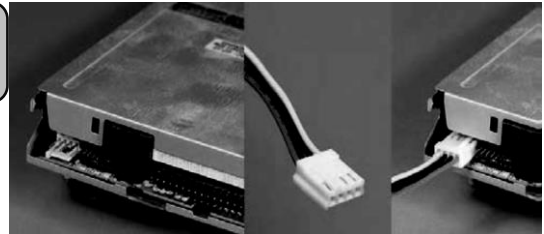
SATA CONNECTOR

✓ SATA means Serial Advance Technology Attachment) is a computer bus interface that connects host bus adapters to mass storage devices such as hard disk drives, optical drives, and solid-state drives.
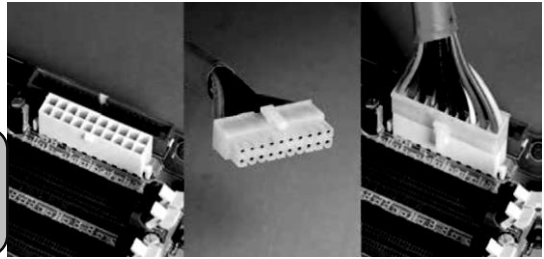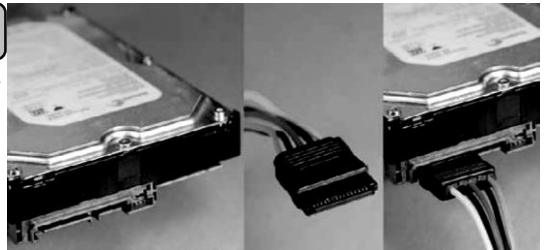
4 PIN MOLEX CONNECTOR

✓ This is used to power various component including hard disk drives and optical disk drives.
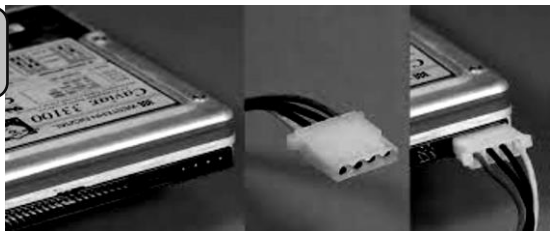
A **Motherboard is** one of the most essential parts of a computer system. It is a sheet of plastic that holds all the circuitry to connect the various components of a computer system.

PARTS OF THE MOTHERBOARD
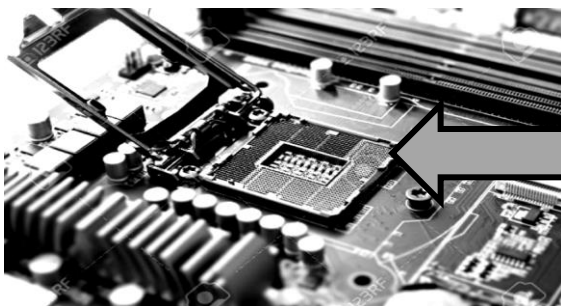
PROCESSOR SOCKET
It is the centerpiece of motherboard and were the CPU is installed.
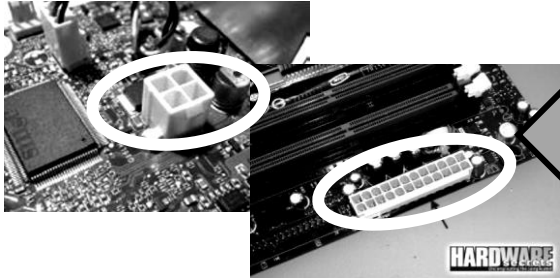
POWER CONNECTOR
Allows an electrical current to pass through it for the exclusive purpose of providing power to a device.
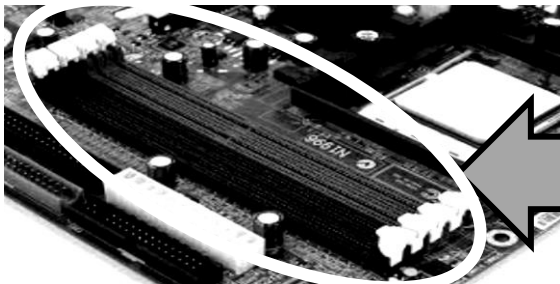
MEMORY SLOTS
Allows computer memory (RAM) to be inserted into the computer. Depending on the motherboard, there will usually be 2 to 4 memory slots (high-end up to 8 memory slots) and are what determine the type of RAM used with the computer.
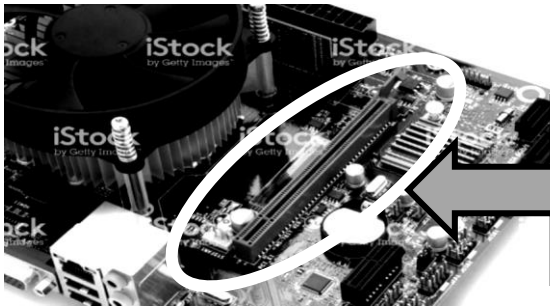
VIDEO CARD SLOT
The slot that enable the user to add the adapter card for additional function to the system.
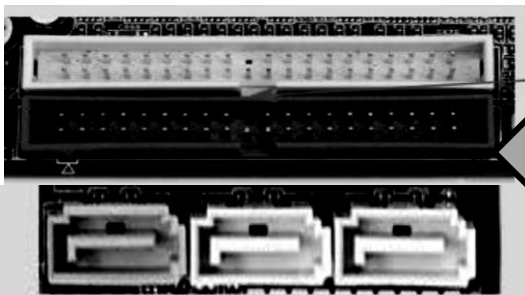
IDE & SATA PORT
A standard interface for connecting a motherboard to storage devices such as hard drives and CD-ROM/DVD drives.
- ✓ IDE - Integrated Drive Electronics
- ✓ SATA – Serial AT Attachment
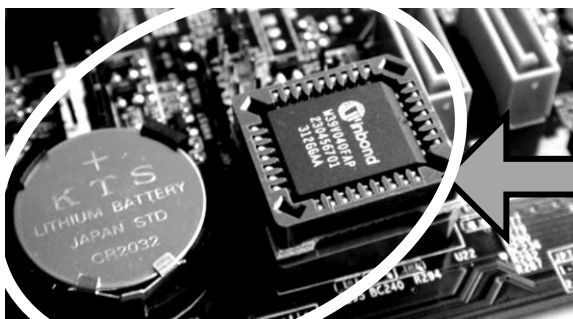
BIOS CHIPS & BATTERY
They set up the computer and boot the operating system.
- ✓ BIOS-Basic Input & Output System
- ✓ CMOS-Complementary metal–oxide–semiconductor
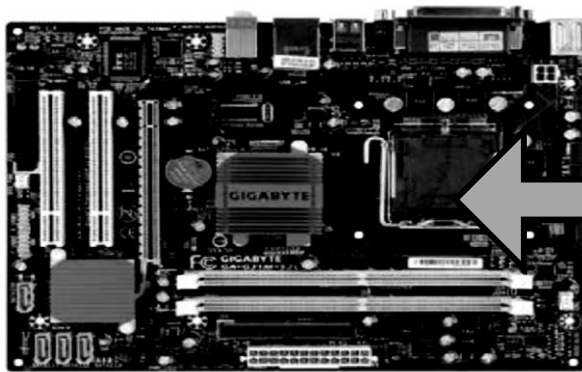
NORTHBRIDGE
It coordinates the flow of data between the CPU, graphics card, and RAM.

SOUTHBRIDGE
The other one, handles all of the computer's input/output functions.

FRONT PANEL
It is where the connectors of hard disk drive activity lights, case speaker, reset button, power on/off button, computer power on light, and key lock, are connected to make them function smoothly.
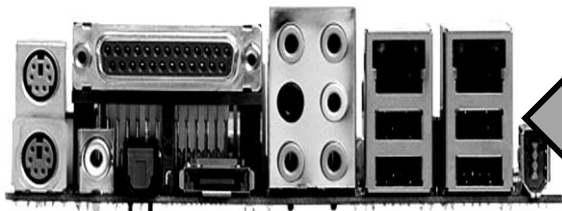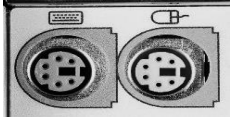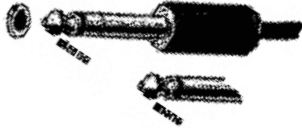
REAR CONNECTOR
The portion of the motherboard that allows you to connect external devices, such as your monitor, speakers, keyboard, and mouse.

A **Port** is an external connecting socket on the outside of the computer. This is a pathway into and out of the computer. A port lets users plugin outside peripherals, such as monitors, scanners, and printers. While **Cable,** is most often two or more wires running side by side and bonded, twisted or braided together to form a single assembly, but can also refer to a heavy strong rope.

TYPES OF PORT	FUNCTION
	Serial Port - Intended for serial type mouse and older camera
	Parallel Port - Also called a printer port. This is only for the old model printer. It has 25 pins. It is a female port.
	VGA (Video Graphic Array) Port - Used to connect monitors. It has 15 pins and it is a female port.

	USB (Universal Serial Bus) Port High-speed serial interface that is used with almost all devices. It is used to connect the latest model printers, pen drives, cell phones, etc. it has 4 pins.
	PS/2 Port - Simple, 6-pin, low-speed serial connections commonly dedicated to a keyboard and mouse
	Power Port - Intended for the power cord.
	S-Video Port - S-Video connections are available on certain source components and video display devices and offer a higher level of video performance over composite video signals.
	Audio Port - Intended for plugging in the speaker or headset.
	LAN (Local Area Networking) Port - A physical interface often used for terminating twisted pair type cables used to connect computers onto local-area networks (LAN), especially Ethernet RJ-45 connectors

TYPES OF CABLE	FUNCTION
	These **PS/2 jacks** are intended for the PS/2 port specifically for PS/2 type of keyboard and mouse.
	This type of **audio jack** is intended for the audio and microphone port.
	S-video jack is obviously for S-Video port.
	This **monitor jack** is intended for the VGA (Video Graphic Array) port.

	This **USB (Universal Serial Bus) plug** is intended for the USB port. A modern or new model of peripherals like printer, camera, scanners, and even other portable computer attachments used USB type of plugs.
	This **printer cable jack** is intended for the parallel port.
	RJ45 ("RJ" in RJ45 stands for "**registered jack**," since it is a standardized networking interface and the "45" simply refers to the number of the interface standard) is a type of connector commonly used for Ethernet networking.
	The power cord is the most important because it connects the computer to the main source of electricity to make it functional.

Listing down the things that you need to before starting computer disassembly and assembly, make sure you have the tools you need; and that they are all close by and handy. It is also necessary to have a container that will keep the screws in so you have them with you whenever you want to put things back together

STEPS IN DISASSEMBLY:

Step1. Unplugging

The first thing you do is to unplug every cable that is plugged in to your computer. That includes the cables such as Power, USB, Mouse, Keyboard, Internet, Ethernet, Modem, etc. Just unplug all the cables for safety purposes
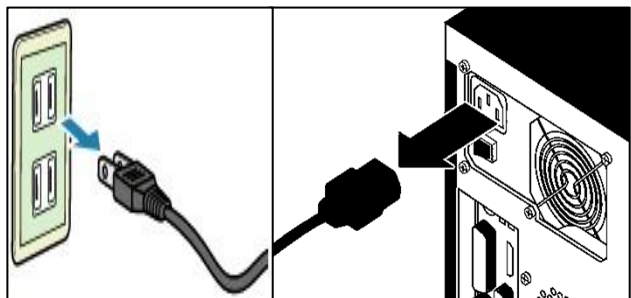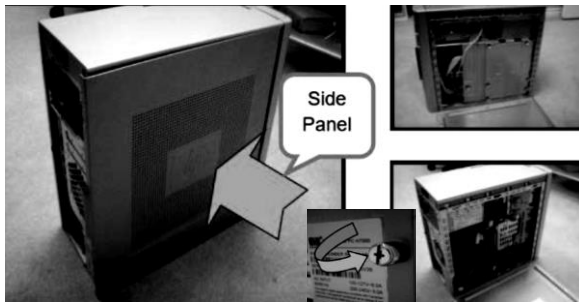
Step 2. Opening the Outer Shell/Case

First, unscrew the four screws at the back of the computer. On most computer cases, there will be large knobs that you can unscrew by hand or by screw driver on the back-right side of the computer. The left side has small screws because on that side you can't access much on the inside.

Step 3. Removing the System Fan

First, unplug the fan from the motherboard. You can find the plug by following the wire from the fan. It should be labeled "SYS_FAN1". Next, you will have to unscrew the fan from the outside. You should now be able to lift the fan out of the PC
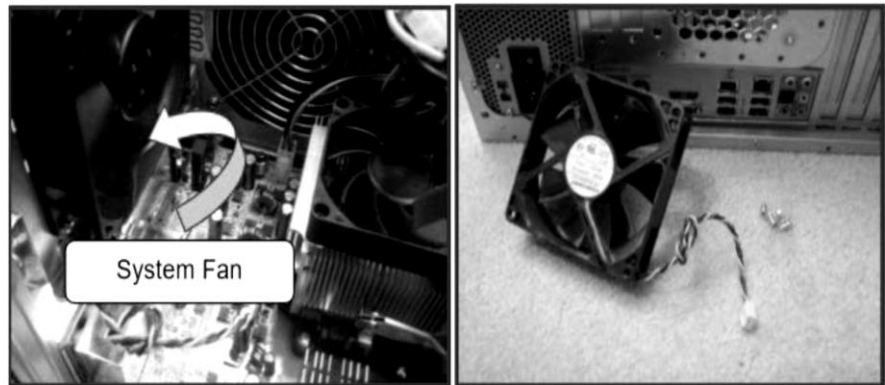
Step 4. Removing the CPU Fan

The CPU fan is located right on top of the CPU heat sink, which is a large piece of metal with fins on the top. The CPU fan plugs into the motherboard in an awkward place that is hard to access. But just follow the wires and you should easily find it. It is labelled "CPU FAN1". To remove the fan from the heat sink, remove the four screws securing it in place.
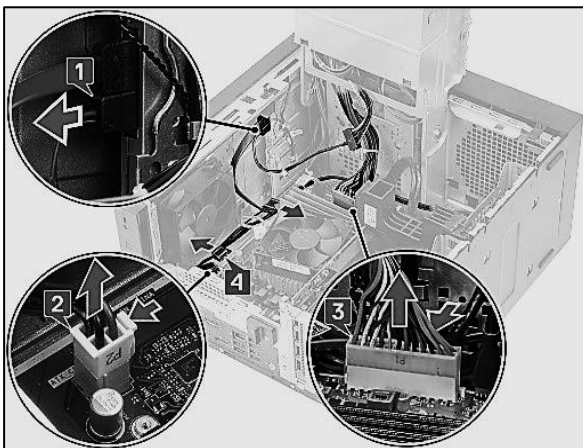
Step 5. Power Supply

Unplug every wire coming from the power supply. You must disconnect the motherboard (very large connector/plug), CD/DVD drive(s) power, internal hard drive power and portable hard drive slot power.

Step 6. CD/ DVD Drive(s)

Unplug the IDE or SATA cable from the back of the drive. Once that is completed, pull on the tab securing the drive in place, then push it out from the inside.

SATA POWER Plug the hard disk's power in here.

SATA DATA Plug one end of the data cable in here and the other end into a SATA port on the motherboard.
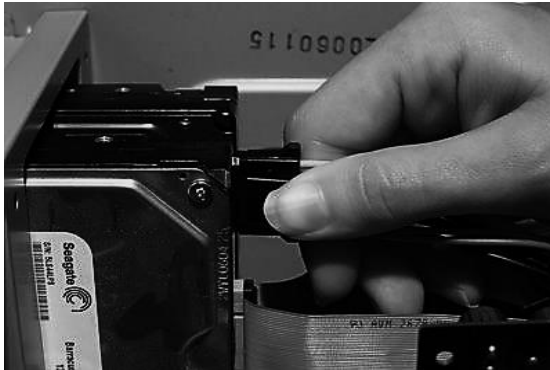
Step 7. Hard Drive

Unplug the connector at the back of the slot, and unplug the other end from the motherboard. Also unplug the SATA cable from the motherboard and the hard drive. The portable hard drive slot is secured the same way the CD/DVD drive is, with a tab. Pull on the tab, then slide the slot out.

Step 8. Memory (RAM)

To remove the RAM, push down on both tabs holding the RAM in place, which are located at both ends of the RAM.
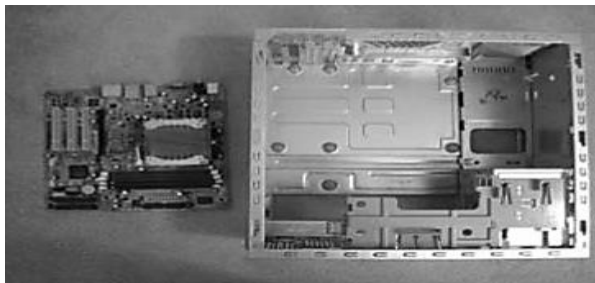
Step 9. Motherboard

The motherboard has seven screws holding it to the frame, which are indicated by large white circles around them. Remove them and then lift the motherboard out of the frame.

ASSEMBLE OF COMPUTER:

Step 1. Prepare your workplace

✓ Take Inventory:
✓ Make Space, Make Time:
✓ Prepare Grounding Protection:
✓ Have the Drivers Ready:
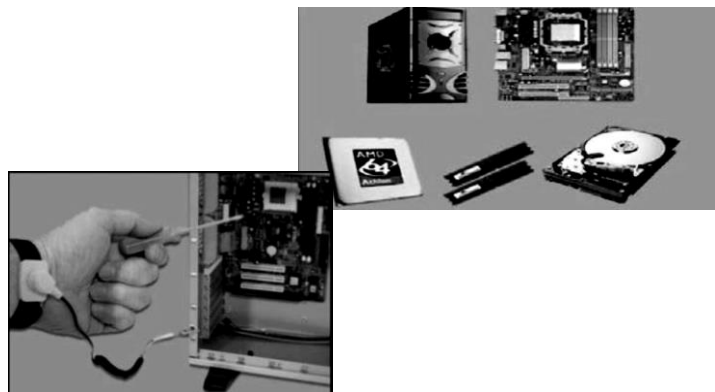
Step 2. Prepare the Motherboard

Antistatic Bag

- ✓ Great care should be taken when installing the motherboard. First, take the board out of its packaging and put it on top of the antistatic bag.
- ✓ Before you secure the motherboard onto the PC case/chassis, inspect it carefully for any visible defects.
- ✓ Next, review the motherboard manual, to make sure you are familiar with the motherboard layout and understand which socket is which. Manuals are extremely helpful, usually easy to read, and include illustrations.

Step 3. Install the CPU

- ✓ Use the unlocking mechanism to open the CPU socket which is usually a lever.
- ✓ Carefully line up the pins and place the chip in its socket; it will fit only when oriented the proper way. An arrow or a missing pin on one corner of the chip will show you how to line things up.
- ✓ Align Triangular CPU and socket key marks.
- ✓ Lower the lever to lock the CPU into place.
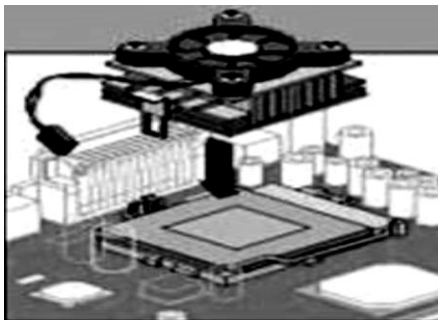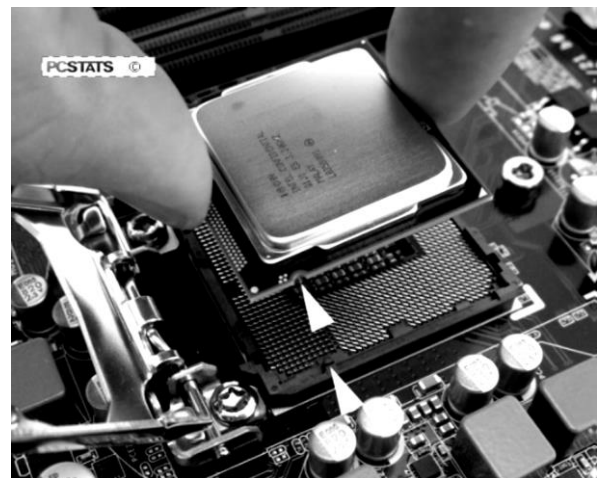
Step 4. Install the CPU Heat Sink

- ✓ Follow the manufacturer's directions to install the heat sink and the fan that will cool the processor. If you bought an OEM CPU and a separate heat sink, you may need to spread a thin layer of the thermal grease that came with the heat sink over the chip to ensure proper transfer of heat (some heat sinks come with this grease already applied).
- ✓ Attach the clip that holds the heat sink in place keeping in mind that it may require a fair amount of force. Again, follow the instructions that came with the heat sink. They will show you how to fit it correctly. If you are in doubt, you can visit the manufacturer's website for more information.
- ✓ 3. Plug the CPU fan's power connector into the proper connector on the motherboard.

Step 5. Install Memory (RAM Modules)

✓ In order to install the memory modules, insert them into the proper sockets and push down firmly but evenly until the clips on both sides of the socket pop into place.

✓ If your motherboard supports dual channel memory, consult the user manual to determine which pairs of RAM sockets you should use. The motherboard and the CPU are the brain and nerve center of your PC, so selecting these components is the most important decision you'll make.
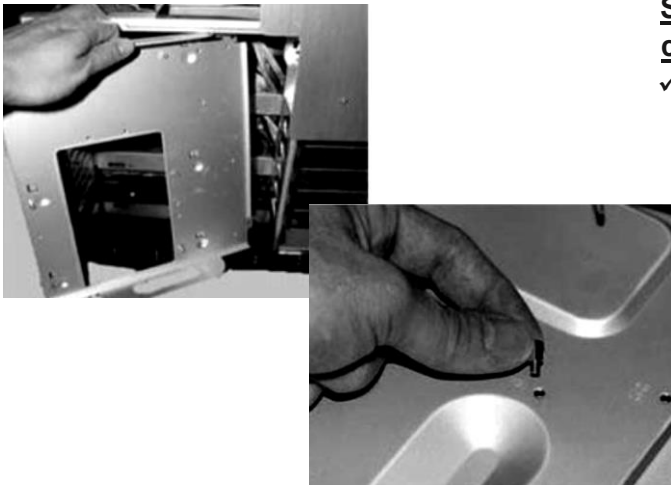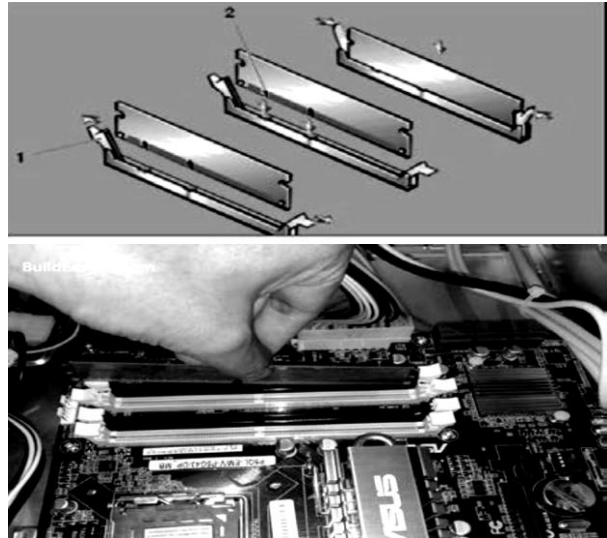
Step 6. Place the motherboard into the case

✓ Some PC cases have a removable motherboard tray. If yours does, remove the screws holding it in place and pull it out of the case.

Note the pattern of the holes in your motherboard, and screw brass standoffs into the motherboard tray or into the PC case in the correct locations (ALWAYS check the manual and follow their instructions to the letter).

Step 7. Place the motherboard into the case

✓ Check the layout of the sockets on the motherboard, and confirm that the ports on your motherboard's back panel match the holes on the case's Input/Output (I/O) shield

✓ that is installed in your case. If necessary, remove the old I/O shield by tapping it firmly a few times with the butt-end of a screwdriver, and then replace it with the shield that came with the new motherboard.

✓ Carefully position the motherboard on top of the brass standoffs, line up all the holes, and use the screws that accompanied the case to fasten down the motherboard. If you are using a removable tray in your system, slide the tray and motherboard back into the case and then secure the tray.
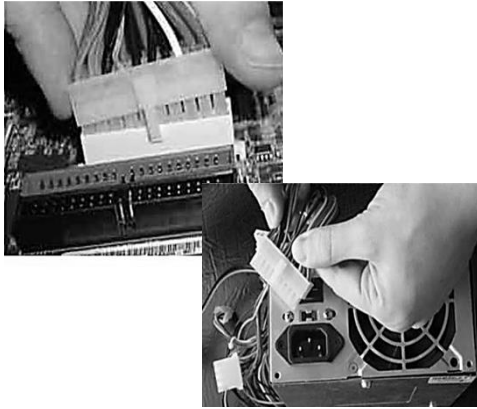
Step 8. Connect the Power Supply

✓ First, plug the large ATX power connector from your power supply into the matching port on your motherboard. Look Figure X for details.

✓ Locate the smaller, square processor power connector (you cannot miss it - it is the one

✓ sprouting the yellow and black wires) and attach it to the motherboard. Note: your connector is usually located near the processor. As always, refer to your

✓ motherboard's manual for the exact locations.

✓ Use your motherboard user manual and find the description about front-panel connectors.

✓ 4. Attach each of the tiny leads from the power and reset switches, the hard-disk activity lights, the PC speaker, and any front-panel USB and

✓ FireWire ports to the corresponding pin on your motherboard. The needle-nose pliers are useful for manipulating small pieces.
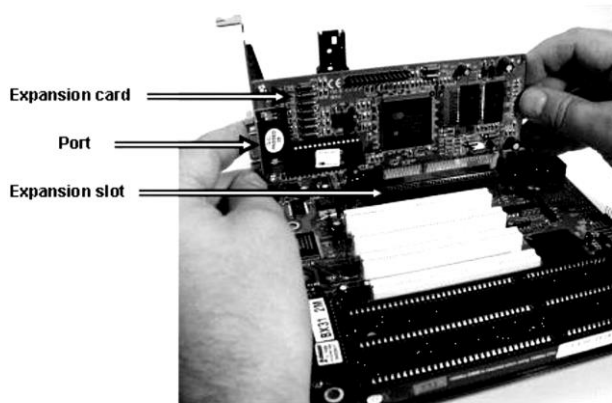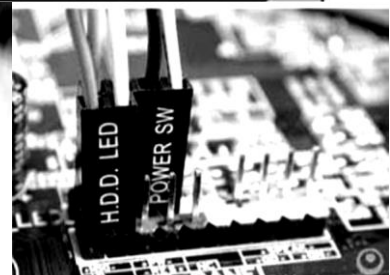
Step 9. Install Graphics / Video Cards

✓ Begin by removing the backplane cover from the AGP or PCI Express X16 slot (the metal piece where the monitor connector will emerge)

✓ Install the graphics board in that slot, and then secure the card with a screw

Step 10. Install Internal Drives

✓ Make any necessary changes to jumpers on the drives before mounting them in the case. A two-drive system (one or two SATA (Serial ATA- is a standard hardware interface for connecting hard drives and CD/DVD drives to a computer) hard drives, plus one parallel ATA (Advanced Technology Attachment) optical drive, for example) is easy to set up; the SATA drives are jumper less, and the optical drive can be set as master on its own parallel ATA channel. Many cases have removable drive rails or cages to house drives.
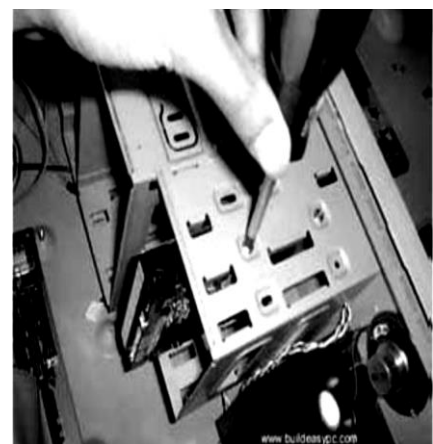
Step 10. Install Internal Drives

✓ Use the included screws to attach your drives to the rails or cage, and slide them into the case. For externally accessible drives such as a DVD recorder, you can save

✓ time by installing one drive rail and sliding the drive in for a test fitting to make sure that its front is flush with the case.
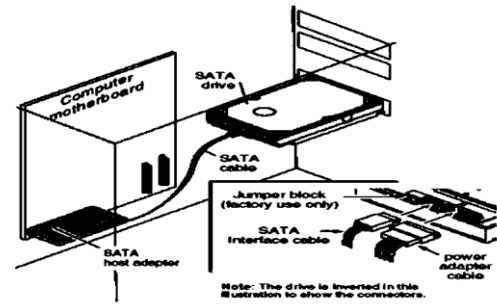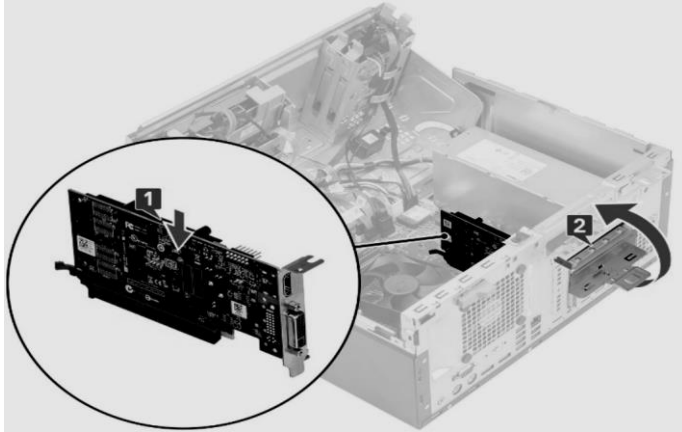
Figure 58. Connect Power Connector

Step 11. Install the Add- in Cards

✓ For each add-in card, you must choose a free PCI slot.

✓ Remove its backplane cover to allow access from the rear of the case.

✓ Carefully position the card above the slot, and press down firmly to seat the card

✓ Secure the card with a screw

STEPS IN CONNECTING EXTERNAL HARDWARE OF A PC

1. Attach the monitor (VGA) cable to the video port.
2. Secure the cable by tightening the screws on the connector.

3. Plug the keyboard cable into the PS/2 keyboard port or USB Port

4. Plug the mouse cable into the PS/2 mouse port or USB Port

5. Plug the USB cable into a USB port.

6. Plug the network cable into the network port.

7. Plug the power cable into the power supply.

After the success assembly and disassembly, you are now about to turn on your PC (Personal Computer). Upon turning on, an information will prompt in your desktop monitor, wherein those information is the result of the Power On Self-Test (POST).

Power On Self-Test (POST) - is a process performed by firmware or software routines immediately after a computer is powered on. The POST process may also set the initial state of the device from firmware. The POST routines are part of a device's pre-boot sequence; if they complete successfully, the bootstrap loader code is invoked to load an operating system.

Programs stored on ROM chips are known as **firmware** while programs stored on erasable media are called **software**
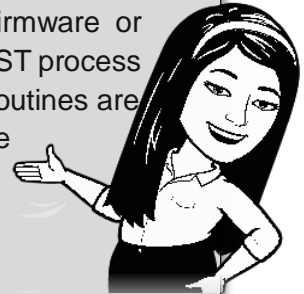
Note: Beep codes may vary depending on the manufacturer's BIOS chip that is used by the motherboard.

AMI BIOS Beep Codes (American Megatrends, Inc.)	
BEEP CODE	**DESCRIPTION**
1 short	DRAM refresh failure.
2 short	Parity circuit failure.
3 short	Base 64 K RAM failure.
4 short	System timer failure.
5 short	Process failure.
6 short	Keyboard controller Gate A20 error.
7 short	Virtual mode exception error.
8 short	Display memory Read/Write test failure.
9 short	ROM BIOS checksum failure.
10 short	How to replace the CMOS battery.

AWARD BIOS Beep Codes	
BEEP CODE	**DESCRIPTION**
1 long, 2 short	Indicates a video error has occurred and the BIOS cannot initialize the video screen to display any additional information.
1 long, 3 short	Video card not detected or bad video card.
Beeps repeating endlessly	RAM problem.
Repeated high frequency beeps while PC is running.	Overheating processor (CPU).
Repeated beeps alternating high & low frequency.	Issue with the processor (CPU), possibly damaged.

DELL Beep Codes		AWARD BIOS Beep Codes	
BEEP CODE	**DESCRIPTION**	**BEEP CODE**	**DESCRIPTION**
		1 short beep	Normal POST, computer is ok.
1 short	BIOS ROM corruption or failure.	2 short beep	POST error, review screen for error code.
		Continuous beep	No power, loose card, or short..
2 short	Memory (RAM) not detected.	Repeating short beep.	No power, loose card, or short.
3 short	Motherboard failure.	1 long and 1 short beep	Motherboard issue.
4 short	Memory (RAM) failure.	long and 2 short beeps	Video (Mono/CGA display circuitry) issue.
5 short	CMOS battery failure.	1 long and 3 short beeps.	Video (EGA) display circuitry.
6 short	Video card failure.	3 long beeps	Keyboard or keyboard card error.
7 short	Bad processor (CPU).	1 beep, blank or incorrect display.	Video display circuitry.

Basic Input/Output System (BIOS) is a ROM chip found on motherboards that allows you to access and set up your computer system.

The **BIOS** includes instructions on how to load basic computer hardware. It also includes a test referred to as a POST (Power-On Self-Test) that helps verify the computer meets requirements to boot up properly.

FUNCTIONS OF BIOS

1. **Configuring System Hardware** is the major responsible for setting up and preparing the memory of the system
2. **System Boot** starts the booting process of the operating system after ensuring that all the drivers are not only loaded but also configured appropriately for usage
3. **CMOS and Battery Backup** is a configuration program that allows you to configure hardware settings including system settings such as computer passwords, time, and date.
4. **Bootstrap Loader** locates the operating system. If a capable operating system is located, the BIOS will pass and have control over it.
5. **BIOS Drivers** are low-level drivers that give the computer basic operational control over your computer's hardware.
6. **POST -** Test the computer hardware and make sure no errors exist before loading the operating system

HOW TO ENTER THE BIOS OR CMOS SETUP

Computers manufactured in the last few years allow you to enter the BIOS setup using one of the five keys shown below during the boot process.

✓ F1
✓ F2
✓ F10
✓ Del
✓ Esc

> ✓ If pressing F2 opens a diagnostics tool, your setup key is likely F10
> ✓ F10 is also used for the boot menu. If F10 opens a boot menu, your setup key is likely F2.

An error or alert message like the following is displayed when CMOS was already expired and the computer boots.

- ✓ CMOS Read Error
- ✓ CMOS Checksum Error
- ✓ CMOS Battery Failure
- ✓ System battery voltage is low

If any of the issues or messages above is encountered, you likely need to replace the CMOS battery

HOW TO RESET CMOS OR BIOS SETTINGS

Using BIOS Setup Utility Menu Items

1. Switch on the System Unit
2. To enter the BIOS Setup utility, press the F2 key while the system is performing the power-on self-test (POST)
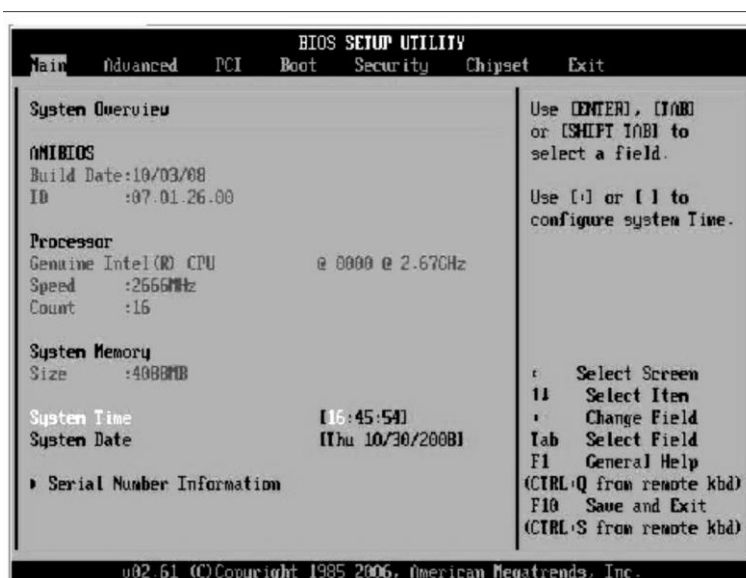
3. Use the left and right arrow keys to select the different menu options. As you select each menu option, the top-level screen for that menu option appears.
4. Select an option on a top-level screen, use the up and down arrow keys options presented are presented as you move. Only options that can be modified are highlighted when you press the up and down arrow keys.
5. Modify the setup field and press the Esc key to save the changes and exit the screen. Some screens present a confirmation dialog box that enables unwanted changes to be retracted.
6. On sub-screens that only provide configuration information and cannot be modified, press the Esc key to exit the screen.

7. To continue modifying other setup parameters, repeat Step 3 through Step 6. Otherwise, go to Step 8.
8. Press and release the right arrow key until the Exit menu screen appears.
9. Follow the instructions on the Exit menu screen to save or discard your changes and exit the BIOS Setup utility.

SCREEN	DESCRIPTION
Main	General product information, including BIOS type, processor, memory, and time/date.
Advanced	Configuration information for the CPU, memory, IDE, Super IO, trusted computing, USB, PCI, MPS, and other information.
PCI	Configure the server to clear NVRAM during system boot.
Boot	Configure the boot device priority (storage drives and the DVD-ROM drive).
Security	Set or change the user and supervisor passwords.
Chipset	View the configuration of server chipsets.
Exit	Save changes and exit, discard changes and exit, discard changes, or load optimal or fail-safe defaults.

Activity 1:

Matching Type: Write the letter of the correct answer that will match the connectors to the internal hardware.

Column A   Column B

___1.

___2.

___3.

___4.

___5.
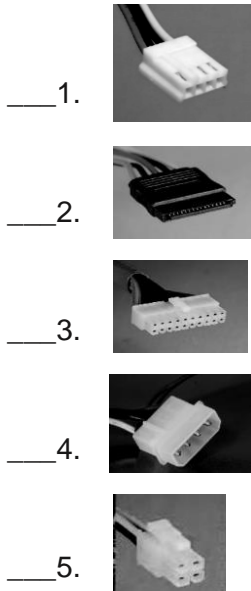
Activity 2:

Directions: Arrange the following steps chronologically using the number. Write only the number of your answer in your answer sheet.

Personal Computer Disassembly (1-9)

_____1. Detaching the Hard Drive
_____2. Detaching the power supply
_____3. Opening the outer shell/case
_____4. Pull Out the Motherboard
_____5. Removing the CD / DVD Drives
_____6. Removing the CPU fan
_____7. Removing the system fan
_____8. Unplugging all the cables and wires
_____9. Remove the memory

Personal Computer Assembly (1-10)

_____1. Connect the Power Supply
_____2. Install Graphics / Video Cards
_____3. Install Internal Drives
_____4. Install Memory (RAM Modules)
_____5. Install the Add-in Cards
_____6. Install the CPU
_____7. Install the CPU Heat Sink
_____8. Place the motherboard into the case
_____9. Prepare the Motherboard
_____10. Prepare your workplace

What's More

BIOS updates can be a costly mistake if all the proper information and steps are not known by the user before proceeding. Updating the BIOS improperly or with the wrong BIOS may cause your system to not boot.

The steps below are steps that should be taken before upgrading your computer BIOS.

Independent Activity 1: BIOS Update Precautions and Suggestions

Directions: Write **T** if the underlined word(s) is correct and **F** if it is incorrect. Write your answer in your answer sheet.

___1. Only obtain the BIOS update from the <u>computer manufacturer</u> or motherboard manufacturer.
___2. <u>Do not</u> shut off or reboot the computer until the BIOS instructs you to do so.

___3. Verify that the BIOS you were instructed to use or the one that you're downloading resolves a problem you have. Remember that BIOS updates only fix hardware issues and not software issues unless that software is directly related to the <u>software</u>.

___4. Verify the BIOS version and make sure that the BIOS update you plan on using is the <u>previous</u> version unless otherwise instructed by the motherboard manufacturer.

___5. Some BIOS updates only work with a specific type of <u>processor</u>. Therefore it is also a good idea to know what type of processor your computer has.

___6. Verify that the computer was scanned for viruses. A virus can cause a BIOS update to <u>ignore</u> or fail.

___7. If you are updating a laptop BIOS, make sure the <u>AC</u> adapter is connected.

___8. Only do a BIOS update in a stable environment. If it's storming outside, and the power goes out during the update on a computer without a battery backup or Uninterruptible Power <u>Source</u> (UPS), data loss or file system corruption may result.

___9. Finally, when upgrading BIOS, read all disclaimers and other instructions included with the download. Many computer manufacturers <u>void</u> warranties if a user does the update without the assistance of a technician or company representative.

___10. If the BIOS cause any difficulty with the computer, you may be held <u>responsible</u>.

Independent Activity 1: POST Troubleshooting Steps

Directions: Write **T** if the underlined word(s) is correct and **F** if it is incorrect. Write your answer in your answer sheet.

___1. If any new <u>hardware</u> was recently added to the computer, remove that hardware to make sure it is not causing your issue.

___2. Remove any disks, CDs, or DVDs that are on the computer. If any USB devices (iPods, drives, phones, etc.) are connected, disconnect all of them as well. <u>Reboot</u> the computer and see if anything changes.

___3. Remove everything from the back of the computer <u>and</u> the power cable. Turn on the computer and see if it beeps normally. If the computer has never beeped, keep the monitor or display connected to see if any change occurs

___4. If the computer is not getting enough power or the power is getting interrupted, the computer can encounter problems. <u>Connect</u> your power cables from any power strip or UPS (uninterruptible power supply) and connect the computer directly to a known-good wall outlet.

___5. If you are receiving a sequence of beeps, you can also check your <u>motherboard</u> or computer documentation for information on the beep codes.

___6. If a fan has failed (especially the heat sink fan for the CPU), your computer could be overheating or detecting the fan failure, causing the computer <u>not</u> to boot.

___7. Verify all the cables are securely <u>disconnected</u> to the computer and that there are no loose cables by firmly pressing in each cable.

___8. If you do not hear a beep code, power <u>on</u> the computer. Then, disconnect any IDE, SATA, SCSI, or other data cables from the motherboard.

___9. In some situations, a computer may have power-related issues often caused by either the power supply or the motherboard. To help determine if this is the issue, try turning the computer on, off, and back on <u>later on</u>.

___10.Loose over time due to heat expansion causes the computer to give an <u>regular</u> POST. Gently press down on the BIOS chip to make sure it has not become loose.

What I Have Learned

Following the procedure in disassembling and assembling and practicing the OHS standard can prevent us to damage the computer.

Also, BIOS Configuration is vital in the operation of computers. BIOS and CMOS work together to function both hardware and software components of the computer.

Direction: Read and understand carefully each question below then write your insights. Write your answer on the space provided.

1. Cite at least two(2) of the following, and describe its function?
   ✓ External Hardware - _____
   _____
   _____
   _____
   _____
   _____
   _____

   ✓ Internal Hardware - _____
   _____
   _____
   _____
   _____
   _____
   _____

2. Why is it important to perform regular computer hardware tools maintenance before using it?
   _____
   _____
   _____
   _____
   _____

3. Which should come first, the POST or the BIOS? Why?

_____
_____
_____

What I Can Do

Direction: Given the graph below, write inside the procedure in connecting the peripherals of the computer.

1	
2	
3	
4	
5	
6	
7	

Assessment

Directions: Choose the letter of the best answer. Write your answer in your answer sheet.

1. What is the color of the connector we used on the keyboard?
   A. Green   B. Blue   C. Violet   D. Red
2. What is the connector we used in the monitor that can display the graphics?
   A. Monitor jack   B. VGA   C. Display plug   D. Graphic card
3. What is the connector we used in the mouse?
   A. PS/1   B. PS/2   C. PS/3   D. PS4

4. Which of the following color in the audio port did we insert the microphone?
   A. Red   B. Blue   C. Green   D. Violet
5. Which of the following is the port we used in the printer?
   A. Serial port   B. Parallel port   C. USB port   D. Print port
6. This is used to give supply to the motherboard.
   A. IDE Cable   C. 20/24 pin Molex connector
   B. 4 pin Molex connector   D. Data Cable
7. It is the wires that you need to disassemble first on the computer.
   A. Front P. Wires   B. Data Cable   C. Back P. Wires   D. PS Connectors
8. All of the following is the wiring of the front panel EXCEPT ONE.
   A. Power LED   B. Reset SW   C. Switch on   D. HDD LED
9. All of the following are internal drives of the computer EXCEPT ONE.
   A. Flash Drive   B. Floppy Drive   C. Hard Drive   D. Optical Drive
10. It is used with computer power supplies that connect to floppy disk drives.
    A. 4 pin berg   B. FDD Cable   C. Sata terminal   D. 4 pin Molex
11. The computer uses an IBM BIOS chip. During the initial process, the beep produced which tells that the computer passed with the POST conducted, what do you think is the kind of beep does it produce?
    A. 1 short beep   C. continuous beep
    B. 2 short beep   D. repeating short beep
12. If 1 long and 1 short beep signal sounds produced after the POST using IBM ROM chip, which is the component that has an error?
    A. adapter   B. hard disk   C. motherboard   D. video card
13. To configure the date and time of your computer, which tab will you click in BIOS Utility Set-up?
    A. Advanced   B. Boot   C. Main   D. Security
14. To see the configuration information of the CPU, memory, and other information from the BIOS set-up utility, which tab are you going to open?
    A. Advanced   B. Boot   C. Main   D. Security
15. Hardware has the program which is embedded into it. Which program is being described?
    A. courseware   B. firmware   C. malware   D. virtual ware

Additional Activity

Directions: Draw a graphical illustration showing the following steps:

- ✓ Disassemble
- ✓ Assemble

Answer Key

What I Know

1. C	6. C	11. B
2. A	7. D	12. D
3. B	8. D	13. A
4. B	9. A	14. C
5. B	10. A	15. B

What's In

1. Anti-Static Strap	6. Cable Ties
2. Flat Screw Driver	7. Multimeter
3. Needle Nose Pliers	8. Part Organizer
4. Part Retriever	9. Tweezer
5. Lint-Free Cloth	10. Anti-Static Mat

What's New

1. DC/DVD ROM, Hard Disk, Motherboard
2. For Question No. 2

CRITERIA	RUBRICS				
	10	**8**	**5**	**3**	**1**
Quality of Answer with Correct Usage of Grammar	*The students are able to understand and answer the questions correctly and clearly explained*	*The students are able to understand and answer the questions correctly*	*The students are able to understand and answer the questions slightly correct*	*The students are able to understand and answer the questions slightly correct with a minimal error in usage grammar*	*The students are able to answer questions but has a difficulty in constructing ideas*
Ideas and Explanation	*The students are able to explain and expand his/her ideas extremely*	*The students are able to explain his/her ideas thoroughly*	*The students are able to explain his/her ideas slightly*	*The students are able to explain his/her idea*	*The students have the hardship to explain his/her idea*

What's In – Activity 1

1. C
2. B
3. D
4. A
5. D

Activity2-A

1. 7	6. 4
2. 5	7. 3
3. 2	8. 1
4. 9	9. 8
5. 6	

Activity2-B

1. 8	6. 3
2. 9	7. 4
3. 10	8. 6
4. 5	9. 2
5. 7	10. 1

What's More-Independent Act.1

1. T	6. F
2. T	7. T
3. F	8. F
4. F	9. T
5. T	10. T

Independent Activity2:

1. T	6. T
2. T	7. F
3. F	8. F
4. F	9. F
5. T	10. F

What I Have Learned

CRITERIA	RUBRICS				
	10	**8**	**5**	**3**	**1**
Quality of Answer with Correct Usage of Grammar	*The students are able to understand and answer the questions correctly and clearly explained*	*The students are able to understand and answer the questions correctly*	*The students are able to understand and answer the questions slightly correct*	*The students are able to understand and answer the questions slightly correct with a minimal error in usage grammar*	*The students are able to answer questions but has a difficulty in constructing ideas*
Ideas and Explanation	*The students are able to explain and expand his/her ideas extremely*	*The students are able to explain his/her ideas thoroughly*	*The students are able to explain his/her ideas slightly*	*The students are able to explain his/her idea*	*The students have the hardship to explain his/her idea*

What I Can Do

1. Attach the monitor cable to the video port.
2. Secure the cable by tightening the screws on the connector.
3. Plug the keyboard cable into the PS/2 keyboard port.
4. Plug the mouse cable into the PS/2 mouse port.
5. Plug the USB cable into a USB port.
6. Plug the network cable into the network port.
7. Plug the power cable into the power

Assessment

1. C	6. C	11. A
2. A	7. D	12. C
3. B	8. D	13. C
4. D	9. A	14. A
5. B	10. A	15. B

Additional Activity:

RUBRICS				
	10	**7**	**4**	**1**
Completion	*All of the assigned work is complete*	*Most of the assigned work is complete*	*Some of the assigned work is complete*	*Student did not turn in assignment*
Timeliness	*Homework was received on the due date*	*Homework was one(1) day late*	*Homework was two(2) days late*	*Homework was three(3) days late*
Accuracy	*All of the answers are correct*	*Most of the answers are correct*	*Some of the answers are correct*	*Little to none of the answers are correct.*
Work Shown	*All work is meticulously shown*	*Most work is meticulously shown*	*Some work is meticulously shown*	*Students didn't show any work*

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How to build a computer Step by Step

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How to Assemble a PC – Technology Guide

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