

**SPECIAL PROGRAM IN
TECHNICAL
VOCATIONAL
EDUCATION**

Grade 7

Quarter 2 Week 3-4

**INTERNET AND
COMPUTING
FUNDAMENTALS**

Basic Troubleshooting Techniques

MODULE 11	COMPUTING FUNDAMENTALS
Topic	<i>Computer Problems- Causes & Basic Troubleshooting Tips</i>

What I need to know?

This lesson will talk about the Basic Troubleshooting for computer problems.

LO 7. Apply Basic Troubleshooting Techniques:

1. Practice ways in routinely taking care of a computer
2. Identify, minimizing and solving common computer problems
3. Determine the factors that cause damage to computer

SPTVE-ICF-CLM pg. 8-9

What Is It?

Taking Care of the Computer

- What kind of power source do you have?
- Where is the computer set up?
- Is there a heat source near the computer?
- Are there any magnetic items near the computer?
- Are you eating or drinking around the keyboard?
- Was everything turned off before moving the computer?
- Was everything turned off before new device connected?
- If device no longer works, always check that it's connected.
- If weather is a factor, always turn off the computer.
- Should you leave your computer on all the time?
- Who have you shared your id and password with?
- Would it be better to have a technical person change something on your computer?
- What about error messages or activated items not requested?

Working with Hardware

- Follow a logical path to try and isolate the problem and how to resolve it
 - Is hardware securely plugged in?
 - Check cable or cord type
 - Turn computer off and restart it
 - Never force a connection between device and port
 - Did you delete any files recently?
 - Have you upgraded or installed new software recently?
 - If device is your mouse, clean the mouse and desktop/mouse pad
 - If keys on keyboard sticking, turn computer off and wipe with a clean cloth; or purchase cleaning kits

for keyboard, mouse
or CD drives

- If problem is with printing:
 - Check printer turned on and then check for paper jams or open areas on printer
 - Consider quality of printer cartridges if documents appear smudged or smeared
 - Check connection from printer to computer, or if network printer, check network cable connection from printer
 - Try turning printer off and on to reset connection
- Possible problems with disk drive:
 - If cannot access a file from floppy disk, floppy disk drive might need to be cleaned or floppy disk damaged
 - If having problems accessing data from hard drive, this may be an indicator of a more serious problem
 - If maintenance tools run and error messages still indicate failure to access file, call technical support

Beep Codes

The beep pattern is telling you what part of the hardware is failing. Unfortunately, there are different standards for the beep pattern, and you will have to refer to your motherboard's user manual for the meaning of it. And most common beep codes and error are as follows.

Beep Description

- 1 Short Beep Normal POST, computer is ok.
- Continuous Beep RAM Problem
- One Long and Three Short Beeps. Indicates a video error has occurred and the BIOS cannot initialize the video screen to display any additional information

What have I learned

Directions: Answer the questions given and use a separate sheet for your answers.

1. What are the things that contribute to long lasting computers?
2. What can you suggest if having problems accessing data from hard drive, this may be an indicator of a more serious problem?
3. Why eating and drinking while using a computer is badly discouraged?

What I Can Do

Activity 1

Directions: Scrambled Letters. Identify the computer problems from the box by arranging the letters to form a correct word(s). Write the letter and correct spelling. Write your answers on a separate sheet.

- A. REPAP MAJ
- B. YEKS TSUCK
- C. GHAN
- D. SUIRV
- E. EPEB

1. It tells you of the unwanted Ads displayed on the monitor
2. The need to restart the computer
3. It indicates motherboard's problem
4. Printer stops printing and LED is blinking
5. Keyboard is not functioning

Activity 2

Directions: A. Identify the beep and indicate the meaning. Write your answers on a separate sheet.

Beep	Meaning
1. 1-long and short beep- - - - ->	
2. 1-short beep - - - - ->	
3. continuous beep- - - - ->	

B. Tell whether if the problem is Hardware or Software. Write H for Hardware and S for Software. Write your answer on a separate sheet.

1. No power
2. The computer cannot read a file format.

Activity 3

Directions: Be able to conduct a survey near you about 5 simple computer problems experienced by the people and what solutions they implemented. Write your answers on a separate sheet.

Rubrics:

1. Can present 5 surveys with 5 solutions- - - - -> 5 pts.
2. Can present 4 surveys with 4 solutions- - - - -> 4 pts
3. Can present 3 surveys with 3 solutions- - - - -> 3 pts
4. Can present 2 surveys with 2 solutions- - - - -> 2 pts
5. Can present 1 survey with 1 solution- - - - -> 1 pt.

Note: any survey without solution is invalid

Assessment

Direction: Read the questions carefully.

A. Identify the letter of the correct answer. Write your answer on a separate sheet.

1. Which one is the correct action for the computer that has no power?

A. Check the mouse	C. Check the keyboard
B. Check the AC cord	D. Check the monitor
2. It is a sound pattern that tells you what part of the hardware is failing.

A. Beep code	C. Source Code
B. Mores Code	D. PIN Code
3. What does it tell you if the computer after switching on, it sounds continuously?

A. Acts normally	C. RAM problem
B. video card problem	D. ROM problem

4. What could be the possible problem if the paper is not loaded properly?
 - A. Tear into pieces
 - B. eject the paper
 - C. paper jam
 - D. not a problem
 5. What action you will do if the computer is showing serious problem?
 - A. Ignore it
 - B. Do it yourself
 - C. stop the computer for a while
 - D. call a technician
- B. True or False. Verify the solutions of the computer problems that show correct implementation. Write **T** if it is true otherwise **F** if it is not. Write your answers on a separate sheet.
6. Eating while doing computer work but turn your back from the computer does not cause any problem.
 7. A user experienced a keyboard problem, but his work is badly needed, it so happened that there is no keyboard available, yet he is using an off-screen keyboard featured from operating system.
 8. John has a hard drive and a computer speaker, he mixed it together because there is no chance for a hard drive to be damaged caused from the speaker. Is he correct?
 9. You can still put a computer in the kitchen near a stove for the purpose of multi-tasking.
 10. Low voltage power without the voltage regulator can harm the computer.

MODULE 12	COMPUTING FUNDAMENTALS
Topic	<i>Safety Guidelines & Upgrading Computer System</i>

What I need to know?

This lesson will talk about the Basic Troubleshooting for computer problems.

LO 7. Apply Basic Troubleshooting Techniques:

4. Observe safety guidelines
5. Install and upgrade computer equipment

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What Is It?

Safety Guidelines

1. **SAFETY PRECAUTIONS** Observe safety rules when working inside the system and when handling computer components. Avoid electric shock or personal injury by observing the following warning. Hazardous Voltage WARNING: before removing the system unit cover, turn off the power and unplug the system power cable. Power is removed only when the power cable is unplugged.
2. **Electrostatic Discharge** WARNING: your computer's internal components are highly susceptible to risk of damage from electrostatic discharge (static electricity, which occurs naturally on your body due to

friction). To avoid damaging your equipment, always earth yourself to your computer system before opening the computer's chassis or handling any internal component(s). To do this, use the following procedure: For best results, we strongly recommend you purchase an anti-static wrist strap (available at electronic supply stores). To use it, connect the strap's metal "alligator clip" to an unpainted metal portion of your computer's chassis. Then connect the elastic wrist band to the strap and slide the wrist band onto your wrist. Note: if you do not have a wrist strap, you can earth yourself by touching (and maintaining continuous contact with) an unpainted metal part of the computer's chassis while handling any of your computer's internal components or working inside the system.

3. **Select a suitable workspace** • Avoid carpets in cool, dry areas. • When you work on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand. • Cloth • Do not wear a wool or synthetic cloth to work with the computer. • Wear anti-static shoes to work with the computer. • Take off any jewels (a ring, bracelet, or wristwatch) before working with the computer.
4. **Handling of components** • Keep any component in an anti-static bag until you actually install it to the computer. • Hold a component by its edge to avoid touching any terminals or parts. • To store or carry any component, place it in an anti-static bag. • Turn off and disconnect all peripherals. • Do not disassemble parts other than those specified in the procedure. • Label any cable connectors before disconnecting. Note where the connector goes and in what position it was installed. • Take care when connecting or disconnecting cables. A damaged cable can cause a short in the electrical circuit. • When installing a cable, route the cable so it is not pinched by other components and is out of the path of the system unit cover. • Prevent damage to the connectors by aligning connector pins before you connect the cable. Misaligned connector pins can cause damage to system components at power-on. • When disconnecting a cable, always pull on the cable connector or strain-relief loop, not on the cable itself.
5. **HARDWARE HYGIENE** • Computers can get dirty inside. While even computers in particularly clean environments get dusty inside, computers in dirty environments, such as industrial settings or homes of people who smoke, get extraordinarily dirty. This dirt and dust can interfere with cooling and even electrical connections inside a computer.

Vacuuming and Spray Cleaning • This dirt and dust should be cleaned out periodically using compressed air sprays of the non-flammable and non-CFC type, and by vacuuming. • There are a few precautions to consider: • Turn off the computer and disconnect power first before vacuuming to prevent damage from flying debris or rapid cooling. • Make sure the vacuum doesn't pull cables off their connectors. • Do not rub the nozzle or brush directly on components. • Do not invert the spray can. Doing so can emit harmful freezing gas.

6. **The term static has several meanings in computer technology.** To the computer technician, static means both static electricity (electrostatic charge) and its evil twin — electrostatic discharge, also called electrical

static discharge; ESD, as it is infamously called, is the evil demon that lies in wait for the unsuspecting service technician who fails to don the sacred wrist strap before kneeling at the PC altar. Don't Give Me Any Static

7. **Remember A mere 30 volts will damage electronic**

components. A human feels ESD at around 3,000 volts; ESD is a greater threat to the PC than anything else the PC service technician might do accidentally. An electrostatic discharge you can't feel can harm an electronic component. Don't Give Me Any Static

9. **Take a look at some ESD facts:** • Most of the computer's electronic components use three to five volts of electricity. • An ESD shock of 30 volts can destroy a computer circuit. • An ESD shock you can feel, such as on a doorknob, has around 3,000 volts. • An ESD shock you can see carries about 20,000 volts. Don't Give Me Any Static

10. **Warning When working on the monitor, never wear a** grounding strap. The monitor has a very large capacitor in it and a grounding strap invites all of its stored charge to run through your body — not always a pleasant experience. Don't Give Me Any Static

11. **A few people confuse ESD with electromagnetic Interference (EMI),** which involves computer equipment receiving electrical interference from an outside source, such as another electrical device or a piece of machinery. • Although ESD often causes permanent damage (if you fry a computer chip, it is damaged permanently), EMI is, for the most part, temporary. • For example, if you notice that your monitor display is distorted because you are getting interference from an outside source, moving the monitor away from the external source should get the monitor back to normal. • That being said, EMI exposure for a long period of time can cause permanent damage to computer components. Watching Out for EMI

12. **Always ground yourself before touching any part of the computer** • Do not work alone • Be careful with tools that may cause short circuit • Replace only fuses with those proper ratings • Wear safety glasses for protection against sparks and metal fragmented • Use only grounded plugs and receptacles • Working area should have ventilations, trash can, fire exit and capable of being disinfected. Occupational Health and Safety

13. **Keep one hand in your pocket when working live circuit.** • Wear rubber sole shoes when standing on the ground or in a concrete floor. • Always power off and unplug the computer before working on it. • Wear hard hat when someone working above you • When making circuit changes, switch off and unplug the power cord from the equipment then discharge the capacitors. Occupational Health and Safety

Disposing of Older or Non-Working Items

- When you can no longer use an item for the computer, try to dispose of the item in an environmentally friendly manner
- A number of organizations will recycle or dispose of the equipment in a safe manner

- Check your telephone book under the category of recycling or through a search on the Internet
- Donate the equipment to a non-profit organization who may be able to use it in their programs

Replacing or Upgrading Equipment

- Computers will become obsolete after a certain period of time given advancements in technology
- General rules to upgrade or buy new include:
 - Will Windows generally recognize the new device on your existing system?
 - If you replace something inside the System Unit, how much will it cost to buy and install it?
 - How old is the computer? Is it worth buying the newer parts or is it more cost effective to buy a new computer?

What have I learned

Directions: Answer the questions given and use a separate sheet for your answers.

1. Why is it important to follow the safety precautions in working with computer?
2. What can an electrostatic do to the computers?
3. How to prevent the electrostatic?
4. What are the points to consider in upgrading your computer?

What I Can Do

Activity 1

Directions: Working out computer situations and how to handle it. Table below shows the given situations and be able to write the idea in handling it. Write your answers on a separate sheet.

Situation #1	Disassemble the computer
	1.
	2.
	3.
	4.
	5.

Situation #2	Computer Hygiene
	1.
	2.
	3.
	4.
	5.

Activity 2

Directions: Identify what components of computer need to be upgraded under the following situations stated below. Write your answers on a separate sheet.

Condition	Upgrade to
1. <u>Memory low</u>	_____
2. <u>Cannot load game</u>	_____
3. <u>Insufficient Disk Space</u>	_____
4. <u>Performance is slow</u>	_____
5. <u>Insufficient power consumption</u>	_____

Activity 3

Directions: Be able to conduct a survey near you about 5 incidents on computer parts replacement and be able to know who installed it. A checklist is being provided below.

Name of Parts	Who installed it? Put a (✓) mark	
	Self	Technician
1.		
2.		
3.		
4.		
5.		

Write your answers on a separate sheet.

Rubrics:

1. Can present 5 surveys with 5 responsible installer- - - - -> 5 pts.
2. Can present 4 surveys with 4 responsible installer - - - - -> 4 pts
3. Can present 3 surveys with 3 responsible installer - - - - -> 3 pts
4. Can present 2 surveys with 2 responsible installer - - - - -> 2 pts
5. Can present 1 survey with 1 responsible installer - - - - -> 1 pt.

Note: any survey without responsible installer is invalid

Assessment

Direction: Read the questions carefully.

A. Identify the letter of the correct answer. Write your answer on a separate sheet.

1. An electricity which occurs naturally on your body due to friction.

A. Electromagnetic	C. AC volt
B. Electrostatic	D. DC volt
2. A device which can discharge an electrostatic from the body is _____.

A. Glove	C. Dry cloth
B. Antistatic wrist strap	D. Insulated handle
3. Remy, a computer user found out that there is an open wire inside the system unit. What must he do to protect the computer from short circuit?

A. Remove the wire	C. Wrap the wire with electrical tape
B. Cut the wire	D. Hide the wire
4. The proper way of switching off the computer is _____.

A. Pulling out the AC cord first	B. Long-press the switch button
----------------------------------	---------------------------------

- C. Click the shutdown from power menu
- D. Remove the hard drive
5. Which one does NOT belong to the statement "Select a suitable workspace"?
- A. Take off any jewels
- B. Do not invert the spray can
- C. Avoid carpets in cool, dry areas.
- D. Do not wear a wool or synthetic cloth
6. Which one is the proper way of working on the computer before disassembling?
- A. Unplug the power cord before shutting down the computer
- B. Open the cover while the computer is on
- C. Unplug the power cord after shutting down the computer
- D. Wear gloves while the computer is on
7. Which statement supports in upgrading to higher Processor?
- A. Standalone Processor
- B. Both motherboard and Processor
- C. Motherboard, Processor and RAM
- D. A, B, & C do not support
8. What can an Electromagnetic Interference (EMI) harm the computer?
- A. It disturbs the sound of computer
- B. Create simple damage
- C. Affects the system time
- D. Cause permanent damage
9. A human feels ESD at around _____ volts.
- A. 1000
- B. 2000
- C. 3000
- D. 4000
10. Which statement is correct when working live circuit?
- A. Working out barefoot
- B. Use metal handle tool
- C. Do not use gloves
- D. Keep one hand in your pocket

Answer Key (Week 3)

What I have learned

1. By following the list of taking care of computer
2. Back up important files (if possible) and Replace the hard drive
3. Because the leftover food is inviting to the ants, ants' urine is hazardous to electronic components.

What I can do

Activity 1

- | | |
|-------------|-----------------|
| 1. D. VIRUS | 4. A. PAPER JAM |
| 2. C. HANG | 5. B. KEY STUCK |
| 3. E. BEEP | |

Activity 2

- | | |
|----------------|------|
| A. | B. |
| 1. Video error | 1. H |
| 2. Normal | 2. S |
| 3. RAM problem | |

Activity 3

The answer is based on surveys

Assessment

A

- | | |
|------|-------|
| 1. B | B |
| 2. A | 6. F |
| 3. C | 7. F |
| 4. C | 8. F |
| 5. D | 9. F |
| | 10. T |

Answer Key (Week 4)

What I have learned

1. To avoid electric shock or personal injury
2. Because ESD is a greater threat to the PC and it can damage electronic parts
3. By wearing antistatic wrist strap or discharge yourself by holding the metal part of the computer for 5 seconds.
4. Guide yourself with the following questions:
 - Will Windows generally recognize the new device on your existing system?
 - If you replace something inside the System Unit, how much will it cost to buy and install it?
 - How old is the computer? Is it worth buying the newer parts or is it more cost effective to buy a new computer?

What I can do

Activity 1

Please refer your answers to the above information: 1. Handling of components and 2. Vacuuming and spray cleaning

Activity 2

- | | |
|---------------|-----------------|
| 1. RAM | 4. Processor |
| 2. Video Card | 5. Power Supply |
| 3. Hard Drive | |

Activity 3

The answer is based on surveys

Assessment

- | | |
|------|-------|
| 1. B | 6. C |
| 2. B | 7. C |
| 3. C | 8. D |
| 4. C | 9. C |
| 5. B | 10. D |

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Reference:

IC7 Module –Basic Fundamentals