DepED
DEPARTMENT OF EDUCATION

9

# Computer System Servicing NCII

Quarter 2:

Install and Configure Computer Systems

Module 2:

Computer Hardware Tools (Week 3 – 4)

Locally Developed Self-Learning Material

**Computer System Servicing** – Grade 9
Alternative Delivery Mode
Quarter 2– Module 2
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## HOW DO YOU USE THIS MODULE?

Before you start with this module, pleases set aside other tasks that will distract and hinder you in enjoying the lessons. Read the simple instructions below to fully enjoy the objectives of this kit. *Have fun!*

Follow carefully all the contents and instructions indicated in every page of this module.

Write in your notebook the concepts about the lessons. Writing enhances learning, which is important to develop in retaining the lesson in mind.

1. Perform all the provided activities in the module.
2. Let your facilitator/guardian assess your answers using the answer keycard.
3. Analyze conceptually the posttest and apply what you have learned.
4. Enjoy studying!

**PARTS OF THE MODULE:**

**Expectations** - These are what you should be able to know after completing the lessons in the module.

- **Pre-test** - This will measure your prior knowledge and the concepts to be mastered throughout the lesson.
- **Looking Back to your Lesson** - This section will measure what learnings and skills did you understand from the previous lesson.
- **Brief Introduction**- This section will give you an overview of the lesson.
- **Activities** – These are sets of activities you will perform with a partner.
- **Remember** - This section summarizes the concepts and applications of the lessons.
- **Check your Understanding**- It will verify how well you learned from the lesson.
- **Post-test** - This will measure how much you have learned from the entire module.

## TOPIC 1: COMPUTER HARDWARE TOOLS

### EXPECTATIONS:

- Identify and select appropriate computer hardware tools in accordance with the task requirements
- Check and identify unsafe computer hardware tools in accordance with standard operating procedures
- Adhere to the safety procedures in using computer hardware tools

**PRE TEST**

**Multiple Choice**

**Directions:** Read and understand each question carefully and choose the letter of the correct answer.

1. When cleaning a keyboard, what tool is best used to remove the dust?
   a. Compressed air c. Duster
   b. Compressor d. Spray
2. If you are dealing with a slotted bolt, which of the following tools you will use?
   a. Flat screwdriver c. Torx screwdriver
   b. Philips screwdriver d. Hex driver
3. Which of the following does NOT describe a successful maintenance program?
   a. Defines procedure c. Unsystematic
   b. Controls hazard d. Well-organized
4. To loosen or tighten six-sided bolts, which of the following tools you will use?
   a. Flat screwdriver c. Phillips screwdriver
   b. Hex driver d. Torx screwdriver
5. In cleaning computer casing, which of the following tools is use with a mild cleaning solution?
   a. Blower c. Duster
   b. Cloth d. Lint-free cloth
6. What will you do if there are damaged or defective tools in your toolkit?
   a. Clean the toolkit c. Remove in your toolkit
   b. Place anywhere d. Store in the toolkit
7. What will you do to properly store computer hardware tools?
   a. Keep inside the box
   b. Layered the tools
   c. Place on the board/toolkit and labeled it
   d. Remove faulty tool
8. Which of the following is NOT a benefit of applying preventive maintenance of tools and equipment?
   a. Faulty tools and equipment
   b. Protection of tools
   c. Systematic care
   d. Safe conditions of tools and equipment
9. Which of the following computer hardware tool is BEST used to test a computer port?
   a. Anti-static strap c. Loopback adaptor
   b. Compressed Air d. Multimeter
10. Before repairing computer, which of the following must be consider first in using the hand tools?
   a. Check hand tools to be used
   b. Examine and clean the hand tools
   c. Never use Personal Protective Equipment
   d. Select faulty hand tools

## LOOKING BACK TO YOUR LESSON

Computers are classified into two types based on principles of operation and on principle of configuration. Group the following computers below according to its type. Write only the letter of your answer on the space provided

| Types of computer based on principle of operation | Types of computer based on principle of configuration |
|---|---|
| | |

**A.** Digital Computer
**B.** Hybrid Computer
**C.** Supercomputer
**D.** Laptop
**E.** Minicomputer
**F.** Desktop
**G.** Microcomputer
**H.** Server
**I.** Wearable Computer
**J.** Smartphones

## BRIEF INTRODUCTION

Computer hardware tools are handheld device that enables a person to install, remove, or perform a specific task on a computer. Before any computer task/job takes place, oneself must be familiar first in identifying and selecting appropriate computer hardware tools in accordance with the task requirements and raise awareness in addressing hand tools safety concerns.

Classification of Hardware Tools

In performing computer hardware assembly and repairs, it is very important to have a toolkit that contains all the necessary tools. Computer Hardware tools are categories into four:

1. Electro-Static Discharge (ESD) tools
2. Hand tools
3. Cleaning tools
4. Diagnostic tools

1. **Electro-Static Discharge (ESD) Tools** – tools that prevents the sudden flow of electricity to avoid damage to your computer components and parts.

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**Anti-static strap** – usually worn on your wrist to prevent the occurrence of ESD.

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**Anti-static mat** – used to stand on or place hardware on to prevent static electricity from building up.

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**Anti-static spray** – can be applied on floors, walls, ceilings, tools, equipment, and workspaces to prevent building up of ESD

2. **Hand Tools** – are used in the performing task like computer assembly and computer repair, this tools are manually operated by hand and are available individually or as part of a computer repair toolkit. Toolkits range widely in size, quality, and price.

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**Flat head screwdriver** is a hand tool used for tightening and loosening slotted screws, has a flat wedge shape tip

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**Philips head screwdriver** is a hand tool for tightening and loosening cross head screws,

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**Torx screwdriver**- Used for loosening or tightening screws with a star-like depression at the end, a function often seen on a laptop.

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**Hex driver**- Sometimes referred to as a nut driver, it is used to tighten nuts just like a screwdriver tightens screws

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**Needle- nose plier-** (Also known as long-nose pliers) characterized by long, tapering jaws of equal length. Used for holding small portions.

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**Tweezers** are tools used for picking up objects too small to be easily handled with human hands.

**Wire cutter** is used for stripping and cutting wires.

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**Flashlight** Used to light up areas that you cannot see well.

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**Part retriever** is used to retrieve screws, jumpers, fasteners, and other parts and prevents them from getting mixed.

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3. **Cleaning Tools** – are essentials when maintaining and repairing computers. Using the appropriate cleaning tools helps ensure that computer components are not damaged during cleaning

**Lint-free cloth** is a special type of cleaning cloth that wipes off dust and other types of unwanted elements from computer parts without scratching or leaving debris on them

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**Computer Duster** – softly brushes away dust from computer parts. This is commonly used for cleaning computer keyboard.

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**Compressed air** is a product used for cleaning or dusting electronic equipment and other sensitive devices that cannot be cleaned using water.

**Cable ties** are used to organize all kinds of cables, like those used with a computer, an entertainment system, or in a network.

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**Parts organizer** is a type of storage box featuring small compartments for sorting components like screws, nails, bolts, washers etc.

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**4. Diagnostic Tools** – are tools used for testing computer hardware to check for its functionality.

**Multimeter-** An electronic tool used to measure voltage, amps and resistance across circuits. By attaching two leads to different parts of an electrical system, learners can use multimeter to detect voltage and resistance levels, or changes in electrical currents.

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**Loopback Adapter** is also called a loopback plug, used to test the basic functionality of computer ports.

http://cejudoangelo.weebly.com/pc-hardware-servicing.html

**Checking of Hand Tools**

Once selected, use the tool for the purpose for which it was designed. Not all tools come with detailed instructions, but there are those that do spell out the safety Do's and Don'ts for your safety. If there are set-up/use options, operator judgment must always be based on what is the safest way to use the tool.

**Identifying Unsafe or Faulty Tools**

Environmental Safety and Health Program requires the following:

1. All tools be kept in good condition with regular maintenance
2. The right tool be used for the job
3. Each tool be examined before use AND damaged or defective tools NOT to be used
4. Tools be operated according to manufacturer's instructions
5. The right protective equipment for the tool and activity be used
6. **ACTIVITIES**

**Activity No. 1: TRUE or FALSE**

**Directions:** Read and understand each statement carefully. Write TRUE if the statement is correct and FALSE if it is wrong.

1. Faulty tools are safe to use in repairing computers.
2. Use hex driver to tighten and loosen screws that have hexagonal (six-sided) head.
3. Diagnostic tools are used for testing computer hardware functionality.
4. Flat screwdrivers are used to tighten and loosen star-like depression screws.
5. Read and follow what is said on the computer manual before using the tools
6. Turn the screwdriver clockwise to loosen and counterclockwise to tighten the screw.
7. Use Phillips screwdriver when you are working with slotted screw.
8. Always used the right tool for a right job
9. Follow the organization's OHS procedures and practices. Never wear Personal Protective Equipment (PPE).
10. Tools needed in performing task must be examined before using

**Activity No. 2: The RIGHT TOOL for the RIGHT JOB**

**Directions:** Below are different tasks/activities in undertaking a single computer operation, fill it in with the appropriate computer hardware tools to be used in accomplishing the said task. Choose your answer from the box below and write your answer beside the number.


_____ 1. Tightening cross-headed screws in assembling computer.
_____ 2. Testing the integrity of circuits and quality of electric flow on computer components
3. Organizing internal and external cables of a computer
_____ 4. Cleaning monitor screen
_____ 5. Wearing this tool on the wrist to prevent the occurrence of static electricity on the components of a
_____ computer.
6. Loosening star-like depression screws from the hard disk drive (HDD)
_____ 7. Picking up small objects and components from computer that is hard to reached by hands
_____ 8. Wipes off dust and other types of unwanted elements from computer parts to avoid scratching them
_____ 9. In assembling computer this is used to light up areas that you cannot see well
_____10. Removing dust from keyboard

**REMEMBER**

Computer hardware tools are handheld device that enables a person to install, remove, or perform a specific task on a computer. It is the most efficient and effective wat to get many jobs done. In aiming for the efficiency and effectivity of the job to be done do not forget this “USE THE RIGHT TOOL FOR THE RIGHT JOB”

**CHECK YOUR UNDERSTANDING**

Multiple Choice

Directions. Read and understand each question carefully and choose the letter of the correct answer then write your answer beside every items.

_____ 1. Which of the following tools is used for stripping and cutting wires?

a. Cable ties c. Parts organizer
b. Hex driver d. Wire cutter

_____ 2. Which of the following tools is used for tightening and loosening slotted screws?

a. Anti - static mat c. Hex driver
b. Flat head screwdriver d. Wire cutter

_____ 3. Which of the following computer hardware is used to prevent ESD?

a. Anti-static strap c. Lookback adaptor
b. Compressed air d. Multimeter

_____ 4. Which of the following hand tools also known as nut driver?

a. Flat screwdriver c. Parts retriever
b. Hex driver d. Philips screwdriver

_____ 5. Which of the following tools does NOT belong to cleaning tools?

a. anti-static wrist strap c. lint free cloth
b. cable ties d. parts organizer

_____ 6. When getting parts that are too small for your hand to fit in what tool should be used?

a. Cable ties c. Part retriever
b. Lint free cloth d. Wire cutter

_____ 7. What tool is used in removing cross-headed screws in the system unit?

a. Anti-static wrist strap
b. Cable ties
c. Philips head screwdriver
d. Wire cutter

_____ 8. Before using hand tools in performing pc assembly and disassembly, which of the following should be considered?

a. Check defective hand tools to be used
b. Examine and clean the hand tools
c. Never use Personal Protective Equipment
d. Select faulty hand tools

_____ 9. There are different tools needed in repairing computer, which of the following categories does parts retriever, screwdriver, wire cutter and long nose plier belongs?

a. Cleaning tools
b. Diagnostic tools
c. Electro-Static Discharge (ESD) tools
d. Hand tools

_____ 10. When cleaning computer system unit, which of the following tools is best used to blow away dust in electronic components?

a. compressed air c. hex driver
b. lint free cloth d. wire cutter

## TOPIC 2: COMPUTER HARDWARE TOOLS PROPER USAGE AND MAINTENANCE

### EXPECTATIONS:

- Use appropriate computer hardware tools in accordance with the task requirements
- Carry out routine maintenance of tools according to standard operating procedures, **principles** and techniques
- Adhere to the safety procedures on the proper use and maintenance of computer **hardware** tools.

## LOOKING BACK TO YOUR LESSON

### WORD SEARCH

**Directions:**
Using the crossword puzzle below, based on your understanding about computer hardware tools, locate by shading at least 10 words (computer hardware tools) **horizontally, vertically, diagonally**.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | H | R | P | T | S | S | C | H | T | I | E | V | C | S | Y | H | R | S | L |
| T | E | D | P | B | A | U | B | W | B | X | M | O | K | A | W | E | K | R | I |
| N | X | V | U | A | L | M | E | O | P | K | M | J | R | P | T | L | G | E | N |
| T | D | V | I | R | R | E | C | Z | T | P | S | P | O | E | Z | B | R | T | T |
| A | R | H | A | R | Z | T | R | I | R | L | S | L | M | N | E | F | E | P | F |
| U | I | U | T | E | D | I | S | E | T | C | Z | I | Z | E | P | A | T | A | R |
| M | V | E | R | J | O | W | S | O | I | A | T | P | X | D | Q | L | T | D | E |
| B | E | P | S | D | N | S | E | T | R | L | T | Y | T | A | D | J | U | A | E |
| S | R | N | X | W | E | H | A | R | U | G | U | S | C | D | W | D | C | K | C |
| E | Z | Q | E | D | E | T | S | M | C | C | A | E | I | P | G | A | E | C | L |
| B | Y | Q | A | X | S | U | X | J | Y | S | A | N | D | T | Q | D | R | A | O |
| X | L | I | I | I | K | K | L | F | O | Y | S | B | I | C | N | P | I | B | T |
| Q | R | G | T | W | J | C | R | G | O | Z | B | P | L | Z | G | A | W | P | H |
| F | C | N | F | L | A | S | H | L | I | G | H | T | I | E | E | S | Q | O | P |
| S | A | P | U | P | J | B | O | G | W | J | P | T | T | L | T | R | U | O | N |
| F | L | A | T | S | C | R | E | W | D | R | I | V | E | R | L | I | P | L | R |
| R | E | V | E | I | R | T | E | R | T | R | A | P | Y | C | U | I | E | O | H |
| Q | T | F | U | S | A | D | B | D | M | U | M | E | R | L | W | Y | H | S | O |
| L | F | E | H | I | Q | C | K | N | P | T | F | E | O | H | M | D | S | P | U |
| E | L | X | G | U | R | A | R | Q | B | J | O | N | G | P | P | N | Z | O | T |

and

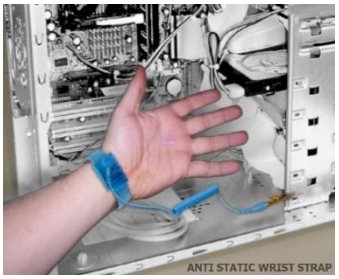
BRIEF INTRODUCTION

Proper usage and maintenance of computer hardware tools is vital in a workplace to ensure the safety of every job to be accomplished and to keep the optimum conditions of physical properties at acceptable levels. Oneself should be familiar in managing and upholding computer hardware tools to extend the use in lifespan and ensure the safety from using the tools, its physical properties, and the environment.

**PROPER USAGE OF COMPUTER HARDWARE TOOLS Proper Use of ESD Tools**

ESD tools are used to equalize the electrical charge between you and the equipment. When reducing the potential for ESD, it reduces the likelihood of damage to delicate circuits or components.

| ESD tools | Tips for properly use of ESD tools |
|---|---|

| | |
|---|---|
| **Antistatic wrist strap** | • Wrap the strap around your wrist and secure it using the snap or Velcro. The metal on the back of the wrist strap must remain in contact with your skin at all times.<br>• Snap the connector at the end of the wire to the wrist strap, and connect the other end either to the equipment or to the same grounding point that the antistatic mat is connected to. The metal skeleton of the case is a good place to connect the wire. When connecting the wire to equipment that you are working on, choose an unpainted metal surface. A painted surface does not conduct the electricity as well as unpainted metal.<br>  <br><br>https://i.stack.imgur.com/i0XSA.jpg |
| **antistatic mat** | • Lay the mat on the workspace next to or under the computer case. Clip the mat to the case to provide a grounded surface on which you can place parts as you remove them from the system. |

**Proper use of hand tools**

Technician toolkits contains various hand tools used for troubleshooting and repairing computers. Here are some tips to properly use the hand tools:

| Hand tools | Tips for properly use of hand tools |
|---|---|
| **Screw drivers** | Each screw matches with the correct screwdriver. Place the screwdriver tip onto the screw end. Switch the clockwise screwdriver to twist the screw and push the screw in counterclockwise.<br>If you over-tighten them with a screwdriver, the screws may get stripped. A stripped pin can get trapped in the hole of the bolt, or may not securely secure. Discard screws off. |
| **Flat head screwdriver** | If you are dealing with a slotted bolt, using a flat head screwdriver. Do not use a flat head screwdriver to loosen a head screw at Phillips. Using a screwdriver never as a pry bar. If you can't uninstall an item, test and see if a clip or lock is in position to protect the object. |
| **Phillips head screwdriver** | Using a screwdriver or Phillips head and crosshead screws. Should not use this sort of screwdriver to have it punctured. This would hurt the screwdriver's handle. |
| **Hex driver** | To loosen and tighten bolts with a hexagonal (six-sided) head, use a hex driver. Hex bolts should not be over-tight, as the bolts' threads can be stripped. Do not use the hex driver which is too big for the bolt you are using. |
| **Part retriever, Needle-nose pliers, or tweezers** | You should use the component retriever, needle-nose pliers, and tweezers to position and remove pieces that could be impossible to touch with your fingertips. When using such materials, do not smash or touch any parts. |

**Proper use of Cleaning Materials/Tools**

Keeping computers clean inside and out is a vital part of a maintenance program. Dirt can cause problems with the physical operation of fans, buttons, and other mechanical components. On electrical components, an excessive buildup of dust will act like an insulator and trap the heat. This insulation will impair the ability of heat sinks and cooling fans to keep components cool, causing chips and circuits to overheat and fail.

| Components to be cleaned | Tips for proper use of cleaning materials/tools |
|---|---|
| **Computer Cases and Monitors** | Clean computer cases and monitor outdoors on a damp, lint-free cloth with a mild cleaning solution. To create the cleaning solution, mix one drop of dishwashing liquid and four ounces of water. When some water drips within the device, give the liquid to dry enough time before turning on the machine. |
| **LCD Screens** | Do not use ammonized glass cleaners on an LCD screen or any other solution unless the cleaner is specifically designed for that purpose. Harsh chemicals damage the on-screen coating. Such displays are not covered by glass, so be careful when washing them, and don't click tightly on the screen. |
| **Component Contacts** | Clean the contacts on isopropyl alcohol components. Don't use alcohol to rub. Alcohol rubbing includes impurities which may affect contacts. Make sure the contacts receive no lint from the fabric or cotton swab. Blow some lint off the compressed air contacts before reinstalling |
| **Keyboard** | Clean a desktop keyboard with compressed air or a small, hand-held vacuum cleaner with a brush attachment |
| **Mouse** | Using a glass cleaner and a fluffy towel to brush the mouse outside. Do not sprinkle glass cleaner directly on your mouse. If you clean a ball mouse, you can remove the ball and clean it with a soft cloth and a glass cleaner. Wipe the rollers with the same rag, wipe inside the cursor. Do not sprinkle any liquids in the mouse. |

**TOOL AND EQUIPMENT MAINTENANCE**

All tools and equipment must be properly maintained so that workers are not endangered. Regulations require inspections of tools, machines and equipment before use.

Preventive maintenance is the systematic care and protection of tools, equipment and machines in order to keep them in a safe, usable condition, limit downtime and extend productivity. We must always be aware that maintenance tasks themselves are potentially hazardous and can result in injury. The successful maintenance program is:

1. well organized and scheduled,
2. controls hazards,
3. defines operational procedures, and
4. trains key personnel.

The degree of detail to include regarding tools and equipment maintenance will depend on the kinds of tools/equipment used. Some construction equipment may have very specific inspection and maintenance requirements. Electronic equipment may have different maintenance requirements. Hand tools may require only basic maintenance. Power tools should be maintained in good working order. This may be limited to ensuring that blades/bits

are replaced when needed and those guards or other safety devices are operable and any damaged electrical cords/plugs are repaired or replaced. Damaged or defective equipment/tools should be tagged and removed from service.

Most manufacturers can provide maintenance schedules for their equipment. Large companies typically have a comprehensive maintenance program due to the capital investment and/or leasing agreements. Smaller companies may lease equipment and maintenance services may be included in the leasing agreement.

General requirements for tools and equipment maintenance include:

1. Obtaining a copy of the maintenance schedule recommended by the manufacturer
2. Ensuring that maintenance is performed as required
3. Ensuring that the person(s) performing the maintenance are competent (e.g. licensed mechanic)
4. Retaining records of maintenance/service conducted
5. Specifying who is responsible for overseeing equipment maintenance and where the records are kept
6. Set up a system for removal and tagging of damaged or defective tools and equipment

## PROPER STORAGE OF TOOLS, PARTS, AND EQUIPMENT

To ensure that tools and equipment remain in good condition and last for a long time, store them properly. Properly stored tools and equipment will be easy to find when needed and are less likely to be lost.

Good practices include:

1. Parts should be properly stored and labeled.
2. Tools should be properly placed on the board, and labeled.
3. Consider drawing the shapes of the tools on the board so that they always get put back in the same position.
4. Use bins for storing small parts.
5. Consider making an individual (or individuals) responsible for the good maintenance of tools and parts.

Benefits:

1. Tools and parts are kept in good condition and are easy to find
2. Costs are reduced.
3. Productivity is increased because time is not wasted looking for tools, parts and equipment.
4. Workshop staff develop a sense of responsibility and pride in their work.

## ACTIVITIES

### Activity No. 1: Complete the Task

**Directions:** Complete the following statements below about the proper usage and maintenance of computer hardware tools by choosing the appropriate WORD inside the box. Write your answer on the each box provided.

| | | | | | |
|---|---|---|---|---|---|
| | Around | Ammoniated | Tighten | Electrical charge | Dust |
| Crosshead | Conductor | Bolts | Loosen | Alcohol | |

1. Use a Philips head screwdriver with _____ screws.
2. Turn the screwdriver counterclockwise to the _____ screw.

3. Pencils should not be used inside the computer to change the setting of switches or to pry off jumpers because the tip contains lead which can act as an and may damage the computer _____ components.
4. The purpose of an antistatic wrist strap is to equalize the between _____ you and the equipment.
5. C lean the contacts on components with isopropyl. _____
6. Turn the screwdriver clockwise to the _____ screw
7. On electrical components, an excessive buildup of will act _____ like an insulator and trap the heat.
8. Do not use _____ glass cleaners or any other solution on an LCD screen unless the cleaner is specifically designed for the purpose.
9. Use a hex driver to loosen and tighten that _____ have a hexagonal (six sided) head.
10. When compressed air is used to clean the inside of the computer, the air should be blown the components with a _____ minimum distance of four inches from the nozzle.

**Activity No. 2: Computer System Maintenance**

**Directions:** Read and understand carefully the situation below and then perform what is being asked.

**Situation:** You are tasked by your teacher individually to perform a computer system maintenance activity. Given the table below you need to accomplish the table by filling out the appropriate procedure to be done to cleaning or maintaining a computer component/s.

| **Name:** | | **Date:** | |
|---|---|---|---|
| **Grade & Section:** | | **Score:** | |

| **Computer System Maintenance Table** | |
|---|---|
| **Components to clean** | **Maintenance Procedure** |
| (e.g. Monitor Casing) | (e.g. Mild cleaning solution and lint free cloth) |
| 1. Monitor LCD Screen | |
| 2. Keyboard | |
| 3. Mouse | |
| 4. Computer Contacts | |
| 5. Computer Case | |
| 6. Internal Parts of Computer System | |
| 7. Internal Parts of Power Supply Unit | |

Note: Use this rubric to evaluate the performance of the learner on the activity.

| **Criteria** | **4 Excellent** | **3 Good** | **2 Fair** | **1 Poor** |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Proper cleaning / maintenance procedure | The learner list down all the proper cleaning procedures for all components | The learner list down the proper cleaning procedures for 4-3 components | The learner list down the proper cleaning procedures for 2-1 components | The learner list down the proper cleaning procedures for 3 components |
| Performing task | The learner demonstrates the proper cleaning procedure for all the components | The learner demonstrates the proper cleaning procedure for 4-3 components only | The learner demonstrate the proper cleaning procedure for 2-1 components only | The learner did not demonstrate the proper cleaning procedure for components |

**POST – TEST**

**Multiple Choice**

**Directions:** Read and understand each question carefully and choose the letter of the correct answer.

1. In cleaning computer casing, which of the following tools is use with a mild cleaning solution?
   a. Blower c. Duster
   b. Cloth d. Lint-free cloth
2. When cleaning a keyboard, what tool is best used to remove the dust?
   a. Compressed air c. Duster
   b. Compressor d. Spray
3. What will you do if there are damaged or defective tools in your toolkit?
   a. Clean the toolkit c. Remove in your toolkit
   b. Place anywhere d. Store in the toolkit
4. If you are dealing with a slotted bolt, which of the following tools you will use?
   a. Flat screwdriver c. Torx screwdriver
   b. Philips screwdriver d. Hex driver
5. To loosed or tighten six-sided bolts, which of the following tools you will use?
   a. Flat screwdriver c. Phillips screwdriver
   b. Hex driver d. Torx screwdriver
6. Which of the following is NOT a benefit of applying preventive maintenance of tools and equipment?
   a. Faulty tools and equipment
   b. Protection of tools
   c. Systematic care
   d. Safe conditions of tools and equipment
7. Which of the following does NOT describe a successful maintenance program?
   a. Defines procedure c. Unsystematic
   b. Controls hazard d. Well-organized
8. Which of the following computer hand tools is NOT used to hold small computer parts and components?
   a. Needle-nose Plier c. Tweezers
   b. Parts Retrievers d. Wire Cutter
9. Which of the following computer hardware tool is BEST used to test a computer port?
   a. Anti-static strap c. Loopback adaptor

b. Compressed Air d. Multimeter

10. There are different tools needed in repairing computer, which of the following categories does parts retriever, screwdriver, wire cutter and long nose plier belongs?
    a. Cleaning tools
    b. Diagnostic tools
    c. Electro-Static Discharge (ESD) tools
    d. Hand tools
11. Evaluate the following statements then select the best answer
    Statement 1: Properly stored tools and equipment will be easy to find when needed and are less likely to be lost.
    Statement 2: Using bins for storing small parts is a good practice on proper storage.
    a. All statements are FALSE
    b. All statements are TRUE
    c. Only statements 1 is TRUE
    d. Only Statement 2 is TRUE
12. Evaluate the following statements and select the best answer:
    Statement 1: Over-tightening screws may cause screw to get stuck on its holes Statement 2: Turn screws clockwise to loosen screws and counterclockwise to tighten screws
    Statement 3: Stripped screws may still be used but with care
    a. Only statements 1 and 3 are TRUE
    b. Only statements 2 and 3 are TRUE
    c. Only statements 1 and 2 are TRUE
    d. Only statements 2 and 3 are FALSE
13. Evaluate the following statements select the best answer:
    Statement 1: It is important to use hex drivers that is larger than a bolt being used
    Statement 2: Always over-tight bolts to ensure the quality of the thread
    Statement 3: Hex driver comes in both 6 and 8-sided head
    a. Only statements 2 and 3 are TRUE
    b. All statements are FALSE
    c. All statements are TRUE
    d. Only Statement 1 and 2 are FALSE
14. What will you do to properly store computer hardware tools?
    a. Keep inside the box
    b. Layered the tools
    c. Place on the board/toolkit and labeled it
    d. Remove faulty tool
15. Before repairing computer, which of the following must be consider first in using the hand tools?
    a. Check hand tools to be used
    b. Examine and clean the hand tools
    c. Never use Personal Protective Equipment
    d. Select faulty hand tools

## ANSWER KEY

### TOPIC 1: COMPUTER HARDWARE TOOLS Pretest (Multiple Choice)

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

**Looking Back to Your Lesson**

| Types of computer based on principle of operation | Types of computer based on principle of configuration |
|---|---|
| A B | C D E F G H I J |

**A.** Digital Computer **B.** Hybrid Computer
**C.** Supercomputer
**D.** Laptop
**E.** Minicomputer
**F.** Desktop
**G.** Microcomputer
**H.** Server
**I.** Wearable Computer
**J.** Smartphones

**Activity No. 1: TRUE or FALSE**

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

**Activity No. 2: The RIGHT TOOL for the RIGHT JOB**

1. E
2. C
3. A
4. G
5. H
6. F
7. I
8. G
9. K
10. B or D

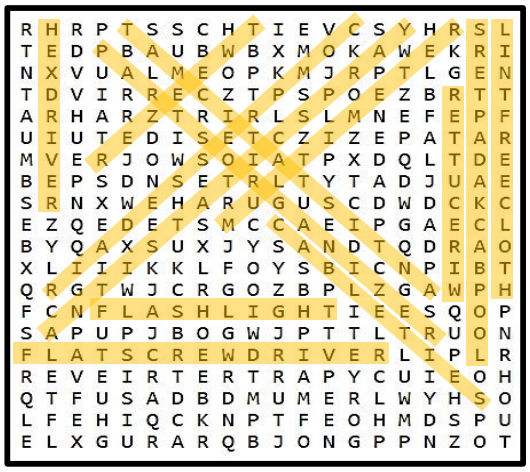
**Checking your Understanding**

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

**TOPIC 2: Computer Hardware Tools Proper Usage and Maintenance**

**Looking Back to Your Lesson**

**Word Search**




**Activity No. 1: Complete the Task**

1. Crosshead
2. Loosen
3. Conductor
4. Electrical charge
5. Alcohol
6. Tighten
7. Dust
8. Ammoniated
9. Bolts
10. Around

**Activity No. 2: Computer System Maintenance**

1. Do not use ammoniated glass cleaners or any other solution on an LCD screen unless the cleaner is specifically designed for the purpose.
2. Clean a desktop keyboard with compressed air or a small, hand-held vacuum cleaner with a brush attachment.
3. Use glass cleaner and a soft cloth to clean the outside of the mouse.
4. Clean the contacts on components with isopropyl alcohol.
5. Use mild cleaning solution and lint free cloth
6. Use Compressed Air or Vacuum to blow out dust from the internal parts of the system unit
7. Use Compressed Air or Vacuum to blow out dust from the internal parts of the power supply unit

**Check your Understanding (True or False)**

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

**Posttest (Multiple Choice)**

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

**REFERENCES:**


Book/s:

- K to 12 Basic Education Curriculum Technology and Livelihood Education Learning Module
- Understanding PC Hardware, Jemma Development Group

Online Resources:

- http://www.depedbataan.com/resources/9/k_to_12_entrep based_pc_hardware_servicing_learning_module.pdf
- https://vkrepair.com/how-to-use-anti-static-wrist-strap/
- https://www.computerhope.com/jargon/t/tools.htm

Video Links:

- https://youtu.be/kgBIsKeTLLk
- https://youtu.be/kgBIsKeTLLk
- https://www.youtube.com/watch?v=7cXEOWAStq4