



Computer Systems Servicing

Quarter 3 – Module 1:

MAINTAINING COMPUTER AND NETWORK SYSTEMS



GOVERNMENT PROPERTY
NOT FOR SALE

10

Computer Systems Servicing

**Quarter 3 – Module 1:
MAINTAINING COMPUTER AND
NETWORK SYSTEMS**



Introductory Message

For the facilitator:

Welcome to the Computer Systems Servicing – Grade 10 Alternative Delivery Mode (ADM) Module on Maintaining Computer and Network Systems!

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 assist the learners as they do the tasks included in the module.

For the learner:

Welcome to the Computer Systems Servicing – Grade 10 Alternative Delivery Mode (ADM) Module on Maintaining Computer and Network Systems!

The hand is one of the most symbolized part of the human body. It is often used to depict skill, action, and purpose. Through our hands we may learn, create and accomplish. Hence, the hand in this learning resource signifies that you as a learner is capable and empowered to successfully achieve the relevant competencies and skills at your own pace and time. Your academic success lies in your own hands!

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 correct (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 such as 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 Activities**

In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned. This also tends retention of learned concepts.

**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. Do not 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

In this module, topics will be introduced progressively for easy understanding. After carefully answering the pre assessment exercises, reading all the lessons, answering all the guide questions, skillfully performing all the activities, showing evidences of learning and finally answering the summative test you will gain a considerable knowledge and skills in configuring computer systems and networks essential to be successful in computer systems servicing as one of the career option in ICT.

LO 1. Plan and prepare for the maintenance of computer system and networks

- Plan on how to maintain computer systems and networks
- Identify tools in maintaining computer systems and networks
- Inspect testing equipment and devices
- Check PC specifications
- Verify network functions and specifications

LO 2. Maintain computer systems

- Identify faulty computer systems
- Test normal functions of computer systems
- Perform repair and replacement of faulty computer systems
- Adhere to the recommended schedule and techniques in maintaining and cleaning computer systems
- Respond to sudden breakdowns of computer systems in accordance with established procedures

LO 3. Maintain network systems

- Follow OHS procedures in maintaining network systems
- Identify procedures in maintaining network systems
- Check or run the diagnostic software
- Adhere to the recommended schedule and techniques in maintaining and cleaning network systems
- Respond to sudden breakdowns of network systems in accordance to established procedures
- Run the burn-in test on computer systems

LO 4. Inspect and test configured/repaired computer systems and networks

- Maintain the computer systems and networks to ensure safe operations
- Run or conduct computer-to-computer communications
- Connect computer systems to the internet
- Check computer system and network to ensure safe operations
- Run the burn-in test on computer systems
- Conduct final inspection on the tests undertaken
- Prepare technical reports that comply with the job requirements



What I Know

Before you proceed to the core of this module, challenge yourself first and dig deep into your mind to answer the pre assessment exercises prepared for you. Take time to answer it!

Pre-Assessment Test

Paper and Pencil Test General Directions: Read the items very carefully. Write your answer your TLE Quiz Notebook/Clean Sheet of paper. (Letter only)

Test I: Match the letter of the following Design Maintenance Plan

Column A

- _____ 1. This will allow proper circulation of air inside the computer unit.
- _____ 2. Protecting your files means creating backups, storing your file backups on your hard drive or any removable storage device regularly.
- _____ 3. This means taking care of your computer. PCs and laptops should be properly turned off.
- _____ 4. To avoid damage to the computer unit always turn off and unplugged it when transferring the computer to another location.
- _____ 5. Installing passwords makes your files more secure.
- _____ 6. Deleting the temporary files on your computer will enhance its speed and will create more disk space for your files.
- _____ 7. Regularly update your anti-virus for your computer protection against viruses.
- _____ 8. This saves time, money and frustration and ensures safe conditions to prevent injury to people and damage to computer equipment.
- _____ 9. Guidelines describe how computer technicians, students and computer users can work together
- _____ 10. This will help lessen the attacks of viruses and increases the life span of your computer.

Column B

- a. Maintenance procedures
- b. Install or secure passwords.
- c. Delete temporary files.
- d. Update anti-virus and spy ware.
- e. Back-up your files
- f. Schedule the use of computer for its longer life
- g. Monitoring plan
- h. Treat your computer properly.
- i. Unplugged power cable
- j. Place your computer in a well-ventilated area.

**Lesson
1**

Procedures in Planning and Conducting Maintenance

The purpose of systematic inspection, detection and correction of existing / future problems is very important to maintain equipment / facilities in satisfactory condition before it may cause major problem.

Maintenance, including tests, measurements, adjustments, and parts replacement, performed specifically to prevent faults from occurring.



What's In

You will be challenged to dig deeper into your prior knowledge and previous experiences about computer hardware servicing.

SKILLS TEST

Directions: Listed below are some of the most important skills that you must master to render quality service when you enter the industry of Computer Hardware Servicing. Read the skills carefully. Write “**YES**” if you can do the skill and “**NO**” if not. Feel free to answer each skill. Write your answers in your notebook/clean sheet of paper.

I can....	YES	NO
plan and prepare work to ensure occupational health and safety (OHS) policies and procedures are followed.		
obtain materials, tools, equipment and testing devices needed to conform with job requirements.		
interpret work instructions according to job requirements.		
obtain computer components/ devices/ systems and determine its location prior to installation.		
install equipment / devices / systems in accordance with job requirements.		
check / test devices / systems and / or installations to determine the conformity to job requirements.		
check computer systems and networks for configuration in accordance with specifications and requirements.		
diagnose fault or problem in the computer systems and networks in line with standard operating procedures (SOP).		

configure the identified systems and networks based on specifications and job requirements.		
inspect and test configured computer systems and networks in conformity with manufacturer's instructions / manual.		
correct / adjust components or parts of computer systems and networks in accordance with job requirements.		
test computer systems and networks to ensure safe operation.		
perform scheduled / periodic maintenance in accordance with manufacturer's requirements.		
clean and clear worksite of all surplus/excess materials in accordance with company SOP.		



What's New

Write your answers in your notebook or clean sheets of paper. Write at least 3 – 5 sentences on each picture.

Analyzing Graphic Content	What does the picture portray?



What is It

Preventive Maintenance

Preventive maintenance can be described as maintenance of equipment or systems before fault occurs. It can be divided into two subgroups: Planned Maintenance and Conditioned-Based Maintenance.

Planned Maintenance (PM) is any variety of scheduled maintenance to an object or item of equipment. Specifically, PM is a scheduled service visit carried out by a competent and suitable agent, to ensure that an item of equipment is operating correctly to avoid any unscheduled breakdown and downtime of an equipment.

Condition Based Maintenance (CBM) is a maintenance strategy that uses the actual condition of the asset to decide what maintenance needs to be done. CBM dictates that maintenance should only be performed when certain indicators show decreasing performance or upcoming failure. Checking a machine for these indicators may include non-invasive measurements, visual inspection, performance data and scheduled tests. Condition data can be gathered at certain intervals, or continuously.

Maintenance is divided into two (2) general type. *Preventive maintenance* is given for maintaining equipment and facilities in satisfactory operating condition to extend the life of the equipment. *Corrective maintenance* is task performed to identify, isolate, and rectify a fault so that the failed equipment or system can be restored to an operational condition within the tolerances or limits.

Maintenance Procedures

In preparing maintenance procedure, you also must consider designing a systematic plan for both hardware and software. This saves time, money and frustration and ensures safe conditions to prevent injury to people and damage to computer equipment.



Computer Inspection

Planning Maintenance Procedures for Computer System and Networking:

- A. Design a systematic maintenance plan for hardware.
 - 1. Design a monitoring, evaluating, and updating plan.
 - 2. Place your computer in a well-ventilated area.
 - 3. Schedule the use of computer for its longer life.
 - 4. Move the computer only when it is turned off and unplugged.
 - 5. Treat your computer properly.

- B. Design a systematic maintenance plan for your software.
 - 1. Backup your files.
 - 2. Install or secure passwords.
 - 3. Delete temporary files.
 - 4. Update anti-virus and spyware.

Design a systematic monitoring, evaluating, and updating plan for hardware.

Computers have significantly changed the working environment, simplifying, and speeding up many tasks across many work areas. However, with these advances are some potential problems and maintenance issues. These guidelines describe how computer technicians, students and computer users can work together to achieve a productive workplace environment. The guidelines reflect current knowledge and best practice for the use of computers so you can achieve maximum efficiency and safety in your workplace.

Sample Monitoring Plan						
	PC 1	PC 2	PC 3	PC 4	PC 5	Recommendations
Monitor is functional						
Keyboard is functional						
Storage devices						
Optical Drives are functional						

Guidelines for systematic monitoring, evaluating, and updating plan for hardware



Computer Laboratory

Place your computer in a well-ventilated area.

- This will allow proper circulation of air inside the computer unit.



Computer Usage

Schedule the use of computer for its longer life.

- This will help lessen the attacks of viruses and increases the life span of your computer



Unplugged Power Cable

Move the computer only when it is turned off and unplugged.

- To avoid damage to the computer unit always turn off and unplug it when transferring the computer to another location.



Computer Care

Treat your computer properly.

- This means taking care of your computer. PCs and laptops should be properly turned off.



Backup Media

Back-up your files

- Protecting your files means creating backups, storing your file backups on your hard drive or any removable storage device regularly.



Installing Passwords

Install or secure passwords.

- Installing passwords makes your files more secure.



Deleting Temporary Files



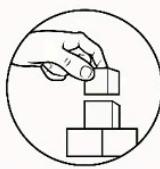
Updated Anti-Virus

Delete temporary files.

- Deleting the temporary files on your computer will enhance its speed and will create more disk space for your files.

Update anti-virus and spy ware.

- Regularly update your anti-virus for your computer protection against viruses.



What's More

Test I. Identify the following statement either Planned Maintenance or Condition based maintenance. Write “**PM**” for Planned maintenance and “**CBM**” for Condition based maintenance

- 1. scheduled service
- 2. maintenance should only be performed when certain indicators.
- 3. data can be gathered at certain intervals, or continuously.
- 4. to ensure that an item of equipment is operating correctly to avoid any unscheduled breakdown and downtime of an equipment.
- 5. include non-invasive measurements, visual inspection, performance data and scheduled tests.

Test II. Identify the following Planning Maintenance Procedures for Computer System and Networking:

Directions: Write “**Software**” if the statement pertains to maintenance for software and “**Hardware**” if the statement pertains maintenance for hardware.

- 1. Design a monitoring, evaluating, and updating plan.
- 2. Backup your files.
- 3. Delete temporary files.
- 4. Place your computer in a well-ventilated area.
- 5. Treat your computer properly.

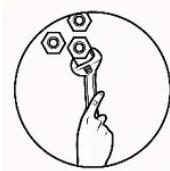


What I Have Learned

Complete the following statement. Use your notebook/clean sheet of paperq for your answer

Today, I have learned the following

I want to learn more on



What I Can Do

SAMPLE MONITORING PLAN

Create a three (3) days sample monitoring plan. You can use different devices which is available at your home if there is no computer or laptop at home.

You can use the following

1. Smartphones
2. Tablets
3. Smart tv

You can use this template. Put check mark if the guidelines match on each device. Add some recommendations if the devices show abnormalities.

Monitoring Plan						
	device 1	device 2	device 3	device 4	device 5	Recommendations
Monitor is functional						
Keyboard/touch screen is functional						
Storage devices						
Operating System is functional						
Date Monitored:	_____					
Name of Person Monitored:	_____					

Take note: provide pictures while doing this task to support as evidence of this activity send via messenger or print and attached to the activity sheets.

Rubrics for scoring

Criteria	Points
Correctness	5
Accurate Details	5
Completeness	5
Following instructions	5
Total	20



Assessment

Paper and Pencil Test General Directions: Read the items very carefully. Write your answer your TLE Quiz Notebook/Clean sheet of paper.

Test I: Match the letter of the following Design Maintenance Plan

Column A

- _____ 1. This will allow proper circulation of air inside the computer unit.
- _____ 2. Protecting your files means creating backups, storing your file backups on your hard drive or any removable storage device regularly.
- _____ 3. This means taking care of your computer. PCs and laptops should be properly turned off.
- _____ 4. To avoid damage to the computer unit always turn off and unplugged it when transferring the computer to another location.
- _____ 5. Installing passwords makes your files more secure.
- _____ 6. Deleting the temporary files on your computer will enhance its speed and will create more disk space for your files.
- _____ 7. Regularly update your anti-virus for your computer protection against viruses.
- _____ 8. This saves time, money and frustration and ensures safe conditions to prevent injury to people and damage to computer equipment.
- _____ 9. guidelines describe how computer technicians, students and computer users can work together
- _____ 10. This will help lessen the attacks of viruses and increases the life span of your computer.

Column B

- a. Maintenance procedures
- b. Install or secure passwords.
- c. Delete temporary files.
- d. Update anti-virus and spy ware.
- e. Back-up your files
- f. Computer usage
- g. Monitoring plan
- h. Treat your computer properly.
- i. Unplugged power cable
- j. Place your computer in a well-ventilated area.



Additional Activities

Planning and Conducting Maintenance

Cite the difference of the following. Five (5) pts each.

1. Planned Maintenance Vs. Condition Based Maintenance
-

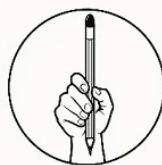
2. Preventive Maintenance Vs. Corrective Maintenance
-

3. Design a systematic maintenance plan for hardware Vs. Design a systematic maintenance plan for software
-

Lesson**2****Diagnoses and Identification
of Faulty Computer and
Network Systems**

The following topics will familiarize you with planning and preparing for installation; installing equipment and devices; and conducting test on the installed computer system. Read carefully all the topics and apply the skills you have gained from the lessons provided in this module.

Signs of imminent failure might include regular poor performance, frequent errors and/or popups, unknown programs being installed, frequent power loss (the computer shuts down automatically frequently), frequent crashes, or certain parts not working.

***What I Know*****Pre-Assessment****Test I. True or False**

Directions: Write **TRUE** if the underlined word on the subsequent statement makes it true and **FALSE** if it is making the statement false. Write your answer your TLE quiz notebook.

- 1. You need to treat your computer as if it were a doomed failure.
- 2. Take advantage of warranties on parts if they fail.
- 3. Install programs that you are not familiar with or if do not fully trust.
- 4. Dust can enhance the performance of the computer
- 5. Giving your computer a break also saves you money

Test II. Identification

Directions: Identify what kind of computer and network problem.

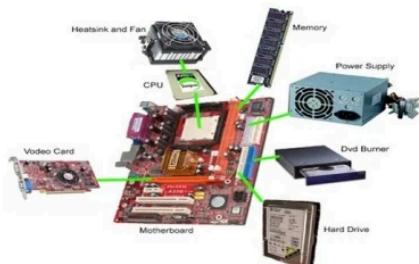
6.



7.



8.



9.



10.





What's In

Activity: Give five (5) strategies on how to maintain your devices (e.g., desktop computers laptop, smart phones, tablet, or any related devices) to extend their life at its fullest. Write your answers on your TLE quiz notebook/clean sheet paper.



Answers:

- 1.
- 2.
- 3.
- 4.
- 5.

“Every problem has in it the seeds of its own solution. If you do not have any problems, you don't get any seeds.” - *Norman Vincent Peale*
<https://www.wisesayings.com/problems-quotes/#ixzz6l7vQtySz>



What's New

Computers, in general, are stable, and you can usually rely on them to not fail you. However, if you develop some basic habits, you can postpone serious computer problems, if not avoiding them entirely.

Identify the following common computer problems

1.



2.



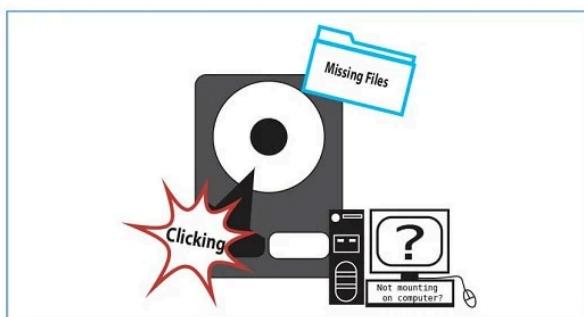
3.



4.



5.





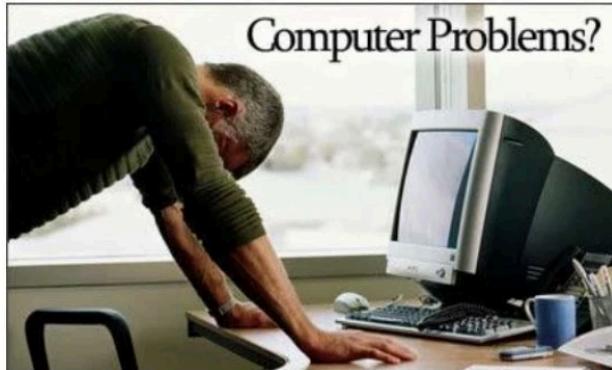
What is It

Diagnoses of Faulty Computer and Networks Systems

A fatal error results in data loss, damage to your computer and/or its ability to function, hardware failure, or other serious issues.

A. Preventing Computer Systems Failure

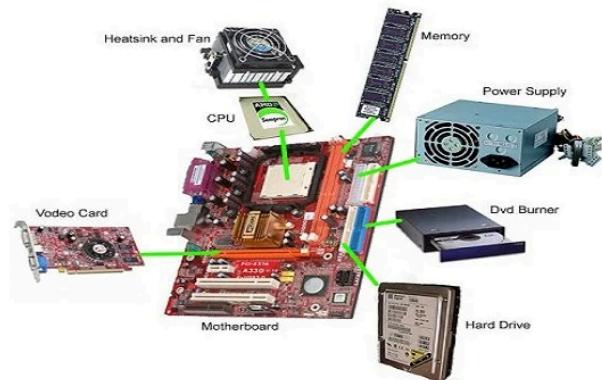
1. *Computer issues.* Know that your computer is going to fail. You need to treat your computer as if it were a doomed failure. Always assume that failure is imminent.
2. *Dust issues.* Preventing failure means making sure your computer is physically clean in its operations. Make sure that there is not too much dust inside, especially on the fans. Dust can reduce performance and cause overheating.
3. *RAM issues.* Know your computer's specifications and its limits. RAM runs even the PC is running idly. It consumes RAM storages capacity making you difficult to open a program if RAM storage had been consumed.



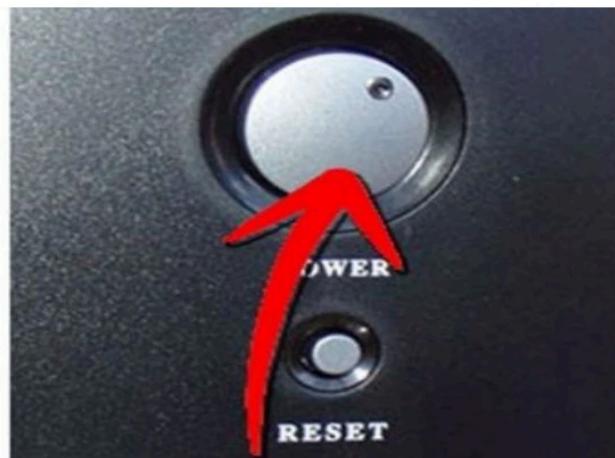
4. *Malware issues.* Make sure that your anti-virus software is updated to be able to scan unnecessary files that enter your PC. Do not install programs that you are not familiar with or if do not fully trust.



5. *Hardware issues.* When something is not working properly, either diagnose the problem yourself and fix it, to prevent further damage or contact a professional and have them look at it for you. Take advantage of warranties on parts if they fail.



6. *Warning issues.* If the same error message shows up every time you log in, be sure to investigate it. Although unlikely, these errors could be important.



7. *Usage issues.* Give your computer a break. Believe it or not, your computer likes rest, too. Leaving it on all the time wears out hardware and puts unnecessary wear and tear on the hardware. Giving your computer a break also saves you money (electrical bills).



8. *Warranty issues.* Always take advantage of warranties. Get a warranty to protect your hardware, so it can be replaced in case of failure.

9. *Backup issues.* Back-up everything. Run regular backup of your important files to other disks, computers, or an online backup service.

10. *Error message issues.* If your PC fails to function, diagnose the problem. Write down the necessary info such as error messages or things don't work properly. If you know how to fix it, do it, to avoid further damage but if not then seek for professional help.

B. Network Problems

When you suddenly cannot connect to the Internet, any of several things could be wrong. Use this checklist to find and solve common Internet connection problems.

- 1. Unplugged Network Cable.** Unplugged or loose network cables are one of the most common reasons why you might suddenly find yourself unable to connect to the Internet. That is a problem on wireless networks, but on most laptops the wireless-fidelity (Wi-Fi) radio can be inadvertently shut off instead. On home networks, it's also possible that someone unplugged the router.

Action: Ensure your wired or wireless network hardware is switched on and plugged in.

2. **Website Temporarily Offline.** What may seem to be a network problem connecting to the Internet is sometimes simply a Web site (or whatever server is on the other end of the connection) being temporarily offline.

Action: Before assuming your Internet connection is faulty, try visiting several popular Web sites rather than just one.

3. **IP Address Conflicts.** If your computer and another on the network both have the same IP address, the conflict between them will prevent either from working properly online.

Action: To resolve an IP conflict, follow these instructions to release and renew your IP address. If your network uses static IP addresses, manually change your IP to a different number.

4. **Computer Firewall Malfunctions.** Firewall software running on most computers is intended to prevent unwanted network traffic from disrupting its operation. Unfortunately, these software firewalls can malfunction and start blocking valid Internet traffic. When two software firewalls, such as Windows Firewall plus a third-party product, are installed on the same computer, contention between the two can also incorrectly block traffic.

Action: If you have recently installed or upgraded software firewalls on your computer, temporarily disable them to determine whether it may be the cause of Internet connection problems.

5. **Outside Wireless Signal Range.** The performance of Wi-Fi network connections depends on distance between the device and the wireless access point. The farther away a Wi-Fi device is, the slower the local connection generally runs, until it breaks altogether. Wireless signal interference in the area can also limit the effective range of a Wi-Fi connection. Whenever you are unable to reach the access point, you also cannot connect to the Internet, obviously.

Action: Use one of the options written below to measure the strength of your wireless signal and try these ideas to expand the range of your Wi-Fi.

Ideally, you should place the router at a height in some central location and away from other cordless devices. Make sure that the router is not placed near something metallic (like an almirah or window grills) as that will weaken the wireless signals. Avoid mirrors as they can reflect the wireless signals away from the desired direction.

Wireless routers generally ship with omni-directional antennas, but you can replace them with more powerful unit-directional antennas and that will keep the signal from getting broadcast in all directions.

6. **Wireless Network Configuration.** Wi-Fi networks with encryption options like WPA or WEP turned on require computers to use matching security keys when connecting. If someone changes the encryption keys or password on the access point, devices that worked before will suddenly be unable to establish sessions and Internet connections. Likewise (though less likely), if the access point settings are changed to require using a specific Wi-Fi channel number, some computers may be unable to discover it.

Action: Confirm that the Wi-Fi channel number and encryption keys on your router have not recently changed (check with the network administrator if necessary). When using a hotspot, follow the provider's instructions for signing in carefully.

7. **Broadband Router or Access Point Malfunctions.** Home networks that use broadband routers are easier to manage than those without one, but technical glitches with the router can also prevent computers from connecting to the Internet. Router failures are caused by overheating, excessive traffic, or simply a faulty unit. Typical symptoms of a flaky router include computers on the network not being able to obtain IP addresses, or the router console not responding to requests.

Action: Check the router's lights and console if possible, to ensure it is running and responding properly. Troubleshoot and reset the router if necessary. Change the old router if necessary.

8. **Blocked by Your Service Provider.** Internet Service Providers (ISPs) can choose to block access from your account if you fail to make payment or otherwise violate the provider's Terms of Service. Especially when using paid hotspots that charge by the hour or day, sometimes people forget to keep their subscription updated. Other common reasons an ISP might block your account include exceeding bandwidth caps, sending spam e-mail, and downloading illegal or inappropriate content.

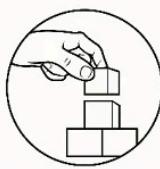
Action: Contact your ISP if you suspect your account has been blocked.

9. **Computer Glitches.** Computers suffer from technical glitches or malfunctions. Although relatively uncommon nowadays, a computer's network adapter hardware might suddenly fail due to overheating or age. Failures in the operating system software that control the adapter, on the other hand, can occur frequently especially with computers that are heavily used. Viruses and worms also may disable or block a computer's network interfaces from functioning properly. If using a laptop or other mobile device, transporting it from one location to another can corrupt the state of its network.

Action: Check the computer and remove any malware that you will find. On Windows computers, try resetting the network connection. Reboot the computer if necessary.

10. **Network Downtime.** Those using satellite Internet service may notice they cannot connect to the Internet during periods of very bad weather. Providers in dense urban areas (including cellular Internet carriers) sometimes are unable to support peaks in network traffic that causes sporadic outages for some customers. Finally, those who subscribe to newer or more complex forms of Internet services (such as fixed wireless broadband) may experience more downtime than others as providers encounter more issues with relatively less mature equipment.

Action: If all else fails, contact your Internet provider to verify whether they are experiencing an outage. Some providers also give advice on troubleshooting problems connecting to their network.



What's More

Identification

Directions: Identify the following computer network problems. Choose your answers in the box below. (2pts each)

- _____ 1. Whenever you are unable to reach the access point, you also cannot connect to the Internet, obviously.
- _____ 2. If someone changes the encryption keys or password on the access point, devices that worked before will suddenly be unable to establish sessions and Internet connections.
- _____ 3. When two software firewalls, such as Windows Firewall plus a third-party product, are installed on the same computer, contention between the two can also incorrectly block traffic.
- _____ 4. Give your computer a break.
- _____ 5. If the same error message shows up every time you log in, be sure to investigate it.



What I Have Learned

Essay Writing (10pts)

Directions: Give an explanation on how you understand the topic. Provide at least 3 sentence response per item.

1. Importance of Identifying faulty computer system

2. Difference between faulty computer system vs. network problem.



What I Can Do

Activity: Identifying Computer and Network Problems 10pts.

Directions: In this worksheet, you will write the computer errors/problems, error messages and the network problems you already encountered.

Note: In case computer/laptop is unavailable, smartphones/tablets can be used for this activity.

Computer/Smartphones Problem	Network Problems
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.



Assessment

Test I. True or False

Directions: Write **TRUE** if the underlined word on the subsequent statement makes it true and **FALSE** if it is making the statement false. Write your answer your TLE quiz notebook.

- 1. You need to treat your computer as if it were a doomed failure.
- 2. Take advantage of warranties on parts if they fail.
- 3. Install programs that you are not familiar with or if do not fully trust.
- 4. Dust can enhance the performance of the computer
- 5. Giving your computer a break also saves you money

Test II. Identification

Directions: Identify what kind of computer issues and network problem.

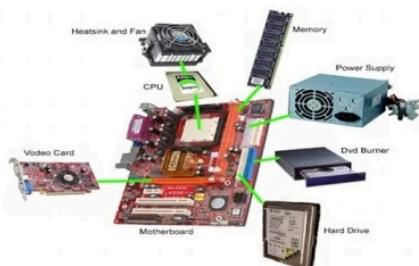
6.



7.



8.



9.



10.





Additional Activities

Activity 1. Investigative Report

Directions: To deepen your understanding about computer systems status, search online or you can also interview a practitioner while rendering a quality service in computer hardware servicing. Write in your TLE Quiz Notebook/Clean Sheet of paper

Ask their Profile (Name, Job description, Age, Business Name, Address).

Interview them about procedures in maintaining their computer and network systems or usual problems they encountered.

Remember: 1. Do not forget to put the citation/business name or the reference where did you get your investigative report. Provide pictures during interview send through fb messenger or attached to the report.

Profile Name:

Job Description/Business Name:

Age:

Address:

Type of work/business:

Guide questions for your interview:

1. How long in the business or work?
2. Is it hard to maintain computer system and network?
3. procedures in maintaining their computer and network systems or usual problems they encountered
4. What is their contingency plan for faulty computer systems?

Scoring Rubrics

Criteria	Points
Accuracy (Details in maintaining computer and network systems were elaborated well).	10
Presentation (Organization or sequence of information)	10
Clarity (Clearly delivered each topic)	5
Total	30

**Lesson
3**

COMPUTER SPECIFICATIONS

As a future computer technician, you must be diligent and eager to know the different procedures in using the tools for configuring computer and network systems because this will guide you to carry out a particular job in a proper manner. Once you already identify the competencies, you must also acquire the appropriate skills to apply it in real time situations.



What I Know

Pre assessment

IDENTIFICATION

Direction: Identify the following hardware specifications



1. _____

2. _____

3. _____



4. _____

5. _____

6. _____

- _____ 7. How many GB thus RAM recommended for general purpose PCs?
- _____ 8. Hard drive capacity recommended for general purpose PCs.
- _____ 9. Hard drive capacity recommended if working with multimedia applications where large graphics and digital audio/video files are being created and stored
- _____ 10. Appropriate size of monitor for video editing and advanced graphics work



What's In

Activity 1: Can you guess what tells the picture all about?



<https://www.google.com/url?sa=i&url=https%3A%2F%2Ftwitter.com%2F>



<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.mystery>



What's New

Activity 2: Can you give what are the special features of each devices?



Samsung S21 4G



Iphone 12 pro max



Huawei P40

Answers:

- 1.
- 2.
- 3.
- 4.
- 5.



What is It

What is Specification?

The specification or ‘spec’ is a list of the key components that make up the computer. It is provided by retailers to help buyers decide which PC, and which combination of features, they need. When buying a PC, you start by deciding what you want your PC to do. This tells the specification you need.

When reviewing a computer specification, the most important component to take are the processor, the size of RAM and the size of the hard drive as these are central to the overall capability of the system. If it is planned to use specialized programs for students with special needs, it is advisable to purchase a suitable specification computer to meet the system requirements for these programs.

Understanding a Specification

Sample specification for a certain desktop computer:

Processor	4 th generation Intel® Core™ i7 quad-core [3.4GHz, 8MB Shared Cache]
Operating system	Windows 8.1 64 bit
Memory	16GB DDR3 - 1600MHz
Hard drive	2TB 7200 RPM SATA
Graphics	2GB AMD Radeon R7 240 [DVI, HDMI, & DVI to VGA]
Screen	23" LED Display

<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.researchgate.net%2Ffigure%2FHigh-Performance-Computer->

Processors

Processors it is the brain of the computer and controls of the work done.

Two companies - Intel Inc. and AMD Inc. – are the manufacturers of most of today's PC processors and both offer a range that balances price and performance. Processors are generally defined by their speed, in megahertz (MHz) or in gigahertz (GHz), and this relates to the number of operations they can perform per second. The higher the value, the faster the PC will perform and the more expensive it is. More recent and more powerful processors use a 64-Bit architecture, rather than the previous 32-Bit models.



	Entry-level processors	Mid-range processors	High-end processors
IDEAL FOR	<ul style="list-style-type: none"> Office applications Internet browsing Basic graphics programs Home computing 	<ul style="list-style-type: none"> Educational software Office applications General multimedia applications Internet browsing 	<ul style="list-style-type: none"> Processor intensive multimedia creation applications, e.g. 3D graphics and video editing Office applications Internet browsing
PROCESSOR TYPES	<ul style="list-style-type: none"> Intel Celeron D AMD Sempron 	<ul style="list-style-type: none"> Intel Pentium 4 AMD Athlon (32 Bit) AMD Opteron 	<ul style="list-style-type: none"> Xeon AMD Athlon 64 X2

Memory (RAM)

The main working memory in a computer is called random access memory or RAM. The processor uses this memory to run programs.

RAM is measured in megabytes (MB). Most modern computers use DDR 2 RAM.

A minimum of 2048 MB (2GB) of RAM is recommended for general purpose PCs. 2048 MB (2GB) of RAM is also sufficient for PCs running multimedia applications, i.e., those on which digital music, digital video or high-end graphics are being created/edited.



Storage – The Hard Drive

The hard drive is the computer's primary storage area. It stores the applications and programs that run on the PC, as well as any work created by users. From a school's perspective, the capacity of the hard drive, measured in gigabytes (GB), is a key criterion and should be given due consideration when reviewing PC specifications.

A hard drive capacity of at least 80GB is recommended for general purpose PCs. A hard drive capacity of 200GB or more is recommended if working with multimedia applications where large graphics and digital audio/video files are being created and stored.



Hard Disk Drive (HDD)



Solid State Drive (SSD)



M.2 SATA SSD

<https://www.google.com/url?sa=i&url=https%3A%2F%2Fpkings.uk%2Fssd%2F&psig=AOvVaw0Pj2nprZF28pq3ELVJSo&ust=1612345634519000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCMDtIML2yu4CFQAAAAAdAAAAABAD>

Other Specifications

Monitors

The older Cathode Ray Tube (CRT) have been largely replaced by Liquid Crystal Display (LCD) and Light Emitting Diode (LED) flat screens. A 15" LCD/LED has the same viewing area as the older 17" CRT.

Average entry-level PCs usually come with a 17" flat-screen and this is adequate for most general-purpose applications.

Larger 19" flat-screens are available and may be appropriate if video editing and advanced graphics work is being carried out.

Teachers of students with special needs may want to consider using larger monitors with their students.



<https://www.google.com/url?sa=i&url=http%3A%2F%2Fjaani786.blogspot.com%2F2020%2F04%2Fmonitors.html&pssig=AOvVaw0Di-Gkz12HK-tVBLLUjAres&ust=1612346147919000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCIjBv9X3yu4CFQAAAAAdAAAAABAw>

Optical Drives

CD R/W drives are standard on PCs and allow the information on a compact disc (either data or audio) to be read and written to by the PC. It is defined by its speed (i.e., 48x or 48 speed).

DVD drives can read both CDs and DVDs. Standard on entry level computers are 48x DVD-ROM/CD_RW drives and allows you to copy blank CDs. High performance computer use 52x DVD-RWs. Educational software is being developed in both DVD and CD formats, but a DVD can hold over 25 times more data than a CD.



<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.cleverfiles.com%2Fhowto%2Fwhat-is-optical-drive.html&pssig=AOvVaw0EV9vDQdpFRPtB5RVb2dez&ust=1612346420106000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCJCW8tj4yu4CFQAAAAAdAAAAABAJ>

Graphics and Sound Cards

These cards are installed inside a PC and are responsible for determining the quality of the audio and visuals (graphics and video) output by the computer. They hold their own memory (in MB), which is why they add to a computer's capability.

An integrated graphics card with 256MB of memory is recommended for general purpose PCs.

Computers running high-end applications generally require a separate 256MB graphics card.

A sound card generally comes as standard in most PCs purchased today. If students intend to work extensively with digital music, the school should consider getting a high-end sound card as this will create greater depth, complexity and realism of sound.



https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.rockpapershotgun.com%2F2021%2F01%2F18%2Fbest-graphics-card-2021%2F&sig=AOvVaw11_Vzt1-kGMPVL13Em-h8O&ust=1612346561864000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCJiA9pX5yu4CFQAAAAAdAAAABAD

Speakers and Headphones

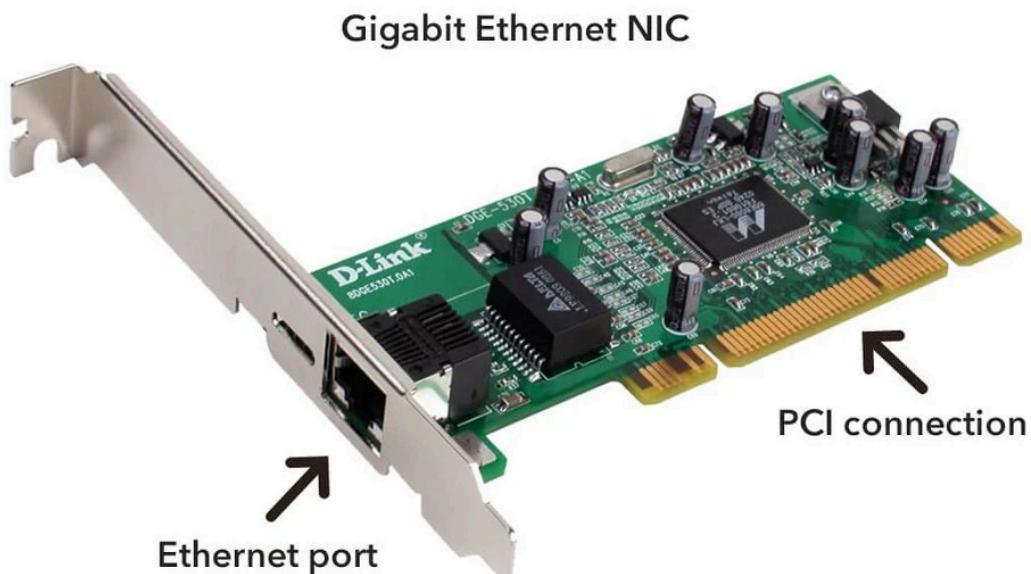
Most computers come with either built-in or external speakers. Schools may also consider buying headphones to control sound levels within a classroom or computer room. Cheap 'headphone splitters' can also be purchased — these enable two sets of headphones to be used per computer.



<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.ursuperb.com%2Fcategory%2Faudio%2Fspeakers%2F>

Network Interface Card (NIC)

It is recommended that all PCs be purchased with a suitable network interface card (NIC). A network card allows a computer to be connected to a network. A 10/100/1000 Mbps (Megabits per second) card is the standard network card today. Few school networks currently operate at speeds higher than 100Mbps.



TechTerms.com

Operating Systems (OS)

PCs are generally purchased with an operating system pre-installed. It is worth checking that your existing software will still work with the operating system of any new systems being purchased. It may be possible to choose a particular operating system and, if so, this may help standardize new machines with existing school PCs.



Operating system license costs depend on a few factors including type of school, or type of license, example once off purchase via Microsoft's select agreement or purchasing software per year via Microsoft's school's agreement.

Linux is an open-source free operating system which is not widely used by schools at present, though it may be suitable for schools who are aware of its capabilities. The most widely used open-source data base is Ubuntu. It is a Linux based operating system and is distributed free along with the source code. Its desktop looks somewhat like that of Windows, with window controls and icons. There is reasonable large software support available on Ubuntu; the common applications include Mozilla Firefox web browser, LibreOffice office application suite, GIMP image editor.

Open Solaris is a computer operating system developed by Sun Microsystems. It runs well on desktops, laptops, servers, and data centers. Open Solaris is GUI based like Ubuntu and has rich graphical desktop and windows for easy navigation. It is now available in version 11 and can be downloaded without any cost from the Oracle website.

Purchasing Considerations

Consider the following points when purchasing PCs

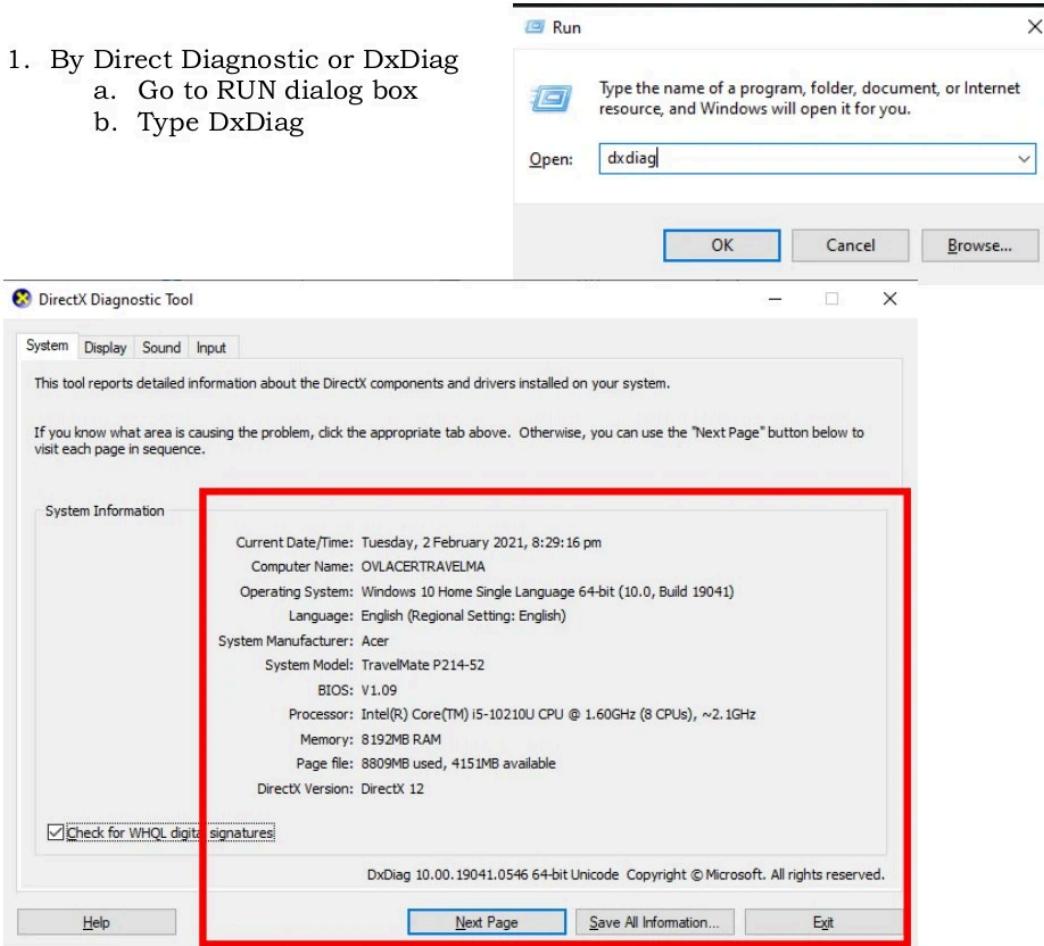
- What is the intended use of the PC and will the chosen specification fulfill these aims?
- Is the PC compatible with existing computer equipment and software?
- Is the technical support service satisfactory?
- a minimum 1-year warranty including replacement if needed and full parts and labor is recommended
- Will added peripherals be required such as headphones, and optical mice.
- Easy access of multiple USB ports
- Operating System licensing options

How to check computer specifications

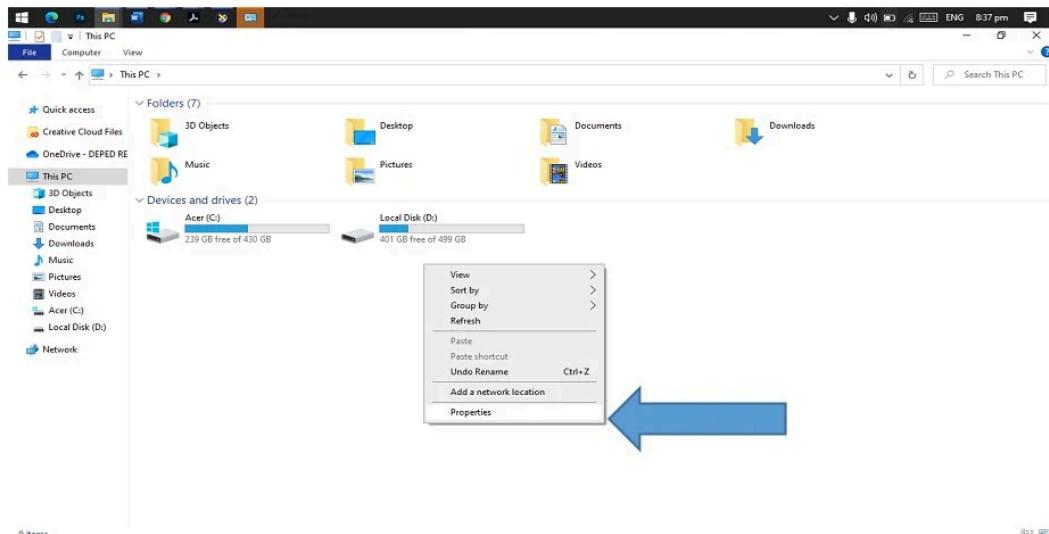
There are three (3) ways to check the specifications of a computer

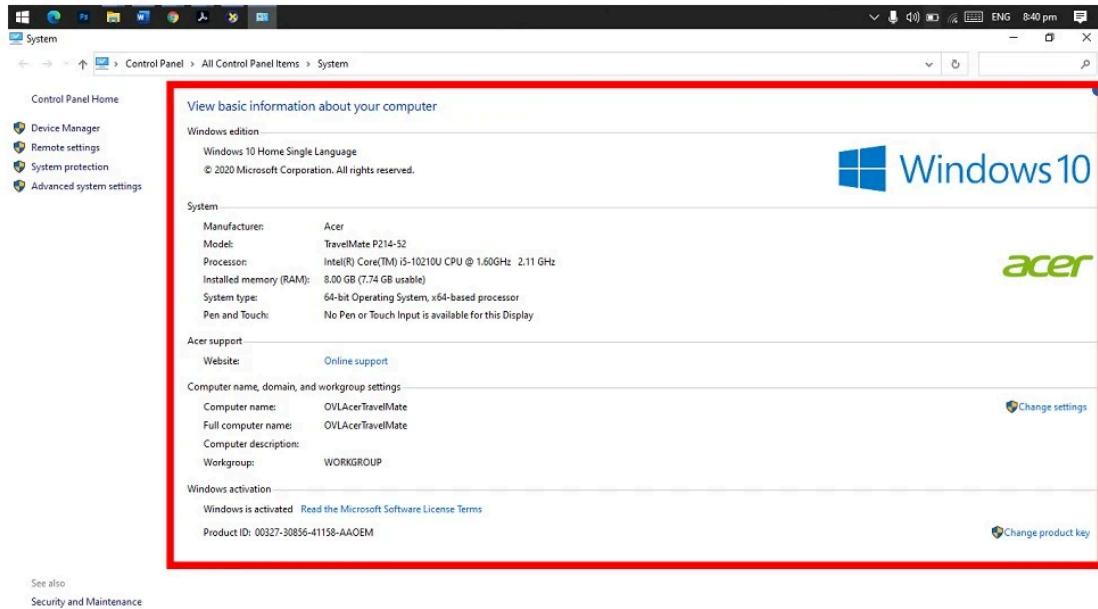
1. By Direct Diagnostic or DxDiag
2. Computer Properties
3. Third Party Software

1. By Direct Diagnostic or DxDiag
 - a. Go to RUN dialog box
 - b. Type DxDiag



2. Computer Properties





3. Third Party Software

You can use different application software to check the specification of a computer. For this example, we can use CPU Z app.

CPU-Z is a freeware that gathers information on some of the main devices of your system:

- Processor name and number, codename, process, package, cache levels.
- Mainboard and chipset.
- Memory type, size, timings, and module specifications (SPD).
- Real time measurement of each core's internal frequency, memory frequency.

CPU-Z (Processor View)

Name	Intel Core i5
Code Name	Comet Lake-U/Y
Max TDP	15.0 W
Package	Socket 1528 FCBGA
Technology	14 nm
Core VID	0.694 V

CPU-Z (Memory View)

Type	DDR4
Size	8 GBytes
Channel #	Single
DC Mode	
Uncore Frequency	498.8 MHz

Clock Settings (Core #0)

Core Speed	798.05 MHz
Multiplier	x 8.0 (4 - 42)
Bus Speed	99.78 MHz
Rated FSB	

Caches

L1 Data	4 x 32 KBytes
L1 Inst.	4 x 32 KBytes
Level 2	4 x 256 KBytes
Level 3	6 MBytes
Way	8-way
Way	8-way
Way	4-way
Way	12-way

Timing Parameters

DRAM Frequency	665.2 MHz
FSB:DRAM	1:10
CAS# Latency (CL)	10 clocks
RAS# to CAS# Delay (tRCD)	10 clocks
RAS# Precharge (tRP)	10 clocks
Cycle Time (tRAS)	28 clocks
Row Refresh Cycle Time (tRFC)	234 clocks
Command Rate (CR)	1T
DRAM Idle Timer	
Total CAS# (tRDRAM)	
Row To Column (tRC)	



What's More

MATCHING TYPE

Directions: Match the following item

- | Column A | Column B |
|---------------------------|----------------------------|
| _____ 1. STORAGE CAPACITY | a. Win 10, Win 8, Win 7 |
| _____ 2. OPERATING SYSTEM | b. 500GB, 1TB, 2TB |
| _____ 3. RAM | c. 2GB, 4GB, 8GB |
| _____ 4. MONITORS | d. Corei7, Corei5, Corei3, |
| _____ 5. PROCESSORS | e. LCD, LED, CRT |



What I Have Learned

Directions: Complete the following statement. Use your notebook for your answer

Today, I have learned the following

I want to learn more on



What I Can Do

Activity 3: Device Specifications

Directions: Conduct a report at least 3 devices of your choice de (e.g. Laptop, desktop computers, Smart phones, tablets) based on getting specification of a device and write in your TLE Quiz Notebook/Clean sheet of paper.

Must determine the following specifications

DEVICE MODEL

PROCESSOR

OPERATING SYSTEM

RAM

STORAGE CAPACITY

SPECIAL FEATURE (e.g., Camera Pixels, Sound, Graphics)

Reminder: provide screen shots for proof of evidence of this activity

Follow this template

NAME:

Date Conduct the report:

SECTION:

Score:

DEVICE TYPE/MODEL	PROCESSOR	OPERATING SYSTEM	RAM	STORAGE CAPACITY	SPECIAL FEATURE
Laptop Acer Travel Mate 240	Intel Core i5 - 10210U 1.6Ghz	Windows 10	8GB RAM	1TB	4GB Intel ® UHD Graphics; Good for Office and simple photo and video editing

Above mention info is for example purposes.

Scoring Rubrics

Criteria	Points
Accurate Information	15
Realistic	10
Correctness	5
Total	30



Assessment

IDENTIFICATION

Direction: Identify the following



1. _____



2. _____



3. _____



4. _____



5. _____



6. _____

- _____ 7. How many GB thus RAM recommended for general purpose PCs?
- _____ 8. Hard drive capacity recommended for general purpose PCs.
- _____ 9. Hard drive capacity recommended if working with multimedia applications where large graphics and digital audio/video files are being created and stored
- _____ 10. Appropriate size of monitor for video editing and advanced graphics work



Additional Activities

Activity 4 Research

Directions: You will be able to build your own Personal Computer. You will be the one to choose the specification of your computer.

Reminders: Include the Device Model or Brand and estimated cost each specification of your computer you want to build; you may include other specification aside from given example.

Purchasing Considerations

Consider the following points when purchasing PCs

- What is the intended use of the PC and will the chosen specification fulfill these aims?
- Is the PC compatible with existing computer equipment and software?
- Operating System licensing options

Use this template

Processor	4 th generation Intel® Core™ i7 quad-core [3.4GHz, 8MB Shared Cache]
Operating system	Windows 8.1 64 bit
Memory	16GB DDR3 - 1600MHz
Hard drive	2TB 7200 RPM SATA
Graphics	2GB AMD Radeon R7 240 [DVI, HDMI, & DVI to VGA]
Screen	23" LED Display

Estimated cost Php 36,000

Processor	8,000
OS	3,000
Memory	8,000
HDD	5,000
Graphics	7,000
Monitor Screen	5,000

Scoring Rubrics

Criteria	Points
Accurate Information	15
Realistic	10
Correctness of specification	5
Total	30



Answer Key

Lesson 1

What I Know Pre / Post Assessment Answers may vary, points will be based on your answers	What's more Test I 1. TRUE 2. TRUE 3. FALSE 4. FALSE 5. TRUE Range 1. Outside Wireless Signal 2. Wireless Network Configuration 3. Computer Firewall 4. Waranty Issues 5. Backup Issues 6. Hardware Issues 7. Dust Issues 8. Usage Issues 9. Malfunctions 10. Error message issues	What I Learned Test I Answers may vary, points will be based on your answers
What I Can Do Answers may vary, points will be based on your answers	Test II 1. PM 2. CBM 3. CBM 4. PM 5. CBM 6. C 7. d 8. a 9. g 10. f	Additional Activities Answers may vary, points will be based on your answers

Lesson 2

What I Know Pre / Post Assessment Answers may vary, points will be based on your answers	What's more Test I 1. TRUE 2. TRUE 3. FALSE 4. FALSE 5. TRUE Range 1. Outside Wireless Signal 2. Wireless Network Configuration 3. Computer Firewall 4. Waranty Issues 5. Backup Issues 6. Hardware Issues 7. Dust Issues 8. Usage Issues 9. Malfunctions 10. Error message issues	What I Learned Test I Answers may vary, points will be based on your answers
What I Can Do Answers may vary, points will be based on your answers	Test II 1. J 2. e 3. h 4. i 5. b 6. c 7. d 8. a 9. g 10. f	Additional Activities Answers may vary, points will be based on your answers

Lesson 3

<p>What I Know</p> <p>Pre / Post Assessment</p>	<p>Test 1</p> <p>1. Graphic Card 2. Optical Drive 3. RAM 4. Monitor 5. CPU 6. HDD</p> <p>Test 1</p> <p>1. B 2. A 3. C 4. E 5. D</p> <p>Test 1</p> <p>10. 19" flat screen 9. 200GB 8. 80GB 7. 2GB</p>	<p>Answers will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p>
<p>What I Learned</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p>	<p>Test 1</p> <p>What's more</p> <p>1. Test 1</p> <p>2. A 3. C 4. E 5. D</p> <p>Test 1</p> <p>1. B 2. A 3. C 4. E 5. D</p> <p>Test 1</p> <p>10. 19" flat screen 9. 200GB 8. 80GB 7. 2GB</p>	<p>Additional Activities</p> <p>Answers will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p> <p>Answers may vary, points will be based on your answers</p>

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ICT-CSS Instructor: ODY V. LAVARIAS, T-I
LIMAY NATIONAL HIGH SCHOOL
TLE DEPARTMENT

For inquiries or feedback, please write or call:

Department of Education – Region III,
Schools Division of Bataan - Curriculum Implementation Division
Learning Resources Management and Development Section (LRMDS)

Provincial Capitol Compound, Balanga City, Bataan

Telefax: (047) 237-2102

Email Address: bataan@deped.gov.ph

