DepED
DEPARTMENT OF EDUCATION

9

Computer System Servicing NCII

Quarter 2:
Install and Configure Computer Systems
Module 1:
Basic Hardware Components of Computer System (Week 1 – 2)

Locally Developed Self-Learning Material

SCHOOLS DIVISION OFFICE OF OLONGAPO CITY

Computer System Servicing – Grade 9
Alternative Delivery Mode
Quarter 2– Module 1
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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.

LESSON 1.1: PLAN UNIT ASSEMBLY EXPECTATIONS:

- Identify the different types of computer.
- Classify the different types of computers according to various ways.
- List the different types of computers.
- Identify the different factors to consider in planning and designing a **personal** computer (PC).
- Plan and design a personal computer.
- Give importance with the essential components when designing a PC.

PRE-TEST:

Direction. *Read the questions carefully and encircle the letter of the correct answer.*

1. This computer is used by touching your finger.
   A. Desktop C. Mainframe
   B. Laptop D. Tablet
2. Which of the following is the most expensive?
   A. Desktop C. Tablet
   B. B. Laptop D. Supercomputer
3. Which one of these is the least expensive?
   A. Desktop C. Mainframe Computer
   B. Laptop D. Supercomputer
4. Which of the following computer is the most powerful?
   A. Mainframe Computer C. Server Computer
   B. Microcomputer D. Supercomputer
5. What does the acronym PDA stand for?
   A. Personal Data Account C. Personal Digital Accountant
   B. Personal Diagram Assistant D. Personal Digital Assistant
6. Which of the following types of microcomputer is not included?
   A. Cray XT5 and DEC PDP-8 C. PS3 and PS4
   B. Desktop and Laptop D. Smartphones and SmartTV
7. Which computer is mainly used in homes for recreation?
   A. Mainframe Computer C. Server Computer
   B. Microcomputer D. Supercomputer
8. Complex scientific research is usually done using this computer.
   A. Mainframe Computer C. Server Computer
   B. Microcomputer D. Supercomputer
9. Which type of computer is generally used for travel?
   A. Laptop C. Server computer
   B. Mainframe D. Supercomputer
10. Which type of computer is used to link or connect other computers?
    A. Laptop C. Server computer
    B. Mainframe D. Supercomputer
11. This is one of the factors to consider in relation to how much is needed before building your own personal computer.
    A. Budget C. Operating System
    B. Intended use D. Reputation
12. It is also one of the important factors to consider before building your own computer, to know if its components work properly.
    A. Budget C. Lifespan
    B. Compatibility D. Reputation
13. It refers to what a person wants/likes or "*favorites*" in building their own personal computer.
    A. Budget C. Intended use
    B. Compatibility D. Personal preferences
14. It refers to what people are saying about the product you are purchasing?
    A. Budget C. Intended use
    B. Compatibility D. Reputation
15. It refers to how long you want your computer to last.
    A. Budget C. Lifespan
    B. Compatibility D. Reputation

LOOKING BACK TO YOUR LESSON:

Computers are often made from different parts. Listed below are the basic parts of computer. Match these parts with the correct image. Write the letter of your answer on the space provided.

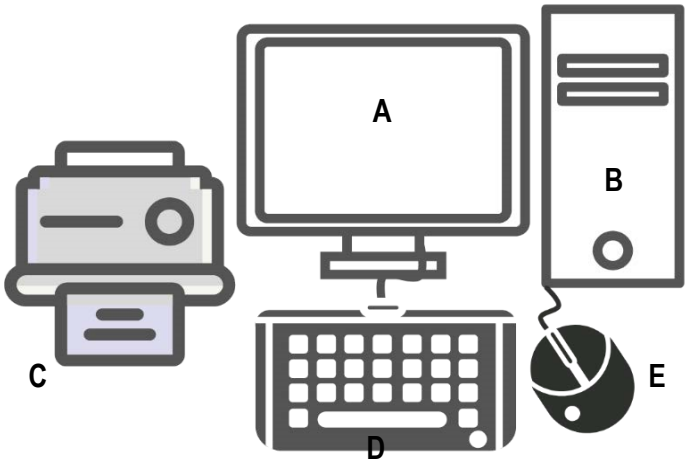
Basic Parts of Computer

System Unit _____

Monitor _____

Mouse _____ Printer

_____ Keyboard _____



BRIEF INTRODUCTION

We already have an idea of what a computer is. It is also important for us study the different types of computer to better understand the concept. Computers have developed so fast because of their usefulness. They now appear in various sizes, shapes, functions, and power and are used for a variety of purposes and needs.

Planning is the process of thinking about the activities required to **achieve** a desired goal. Like any other worthwhile endeavor, designing and building a new PC begins with planning. Proper planning prevents rushed trips to the computer store in the middle of the assembly process.

TOPIC: TYPES OF COMPUTERS

Objectives:

1. Identify the different types of computers.
2. Classify the different types of computers according to size and power.
3. List the different types of computer.

LEARNING CONTENT:

TYPES OF COMPUTERS

A. Based on Principles of Operation:

There are three different types of computers according to the structure, speed and architecture. Those three types of computers are:

- **Analog Computers**
- **Digital Computers**
- **Hybrid Computers**

Analog Computer is computing device that works on continuous range of values. The results given by the analog computers will only be approximate since they deal with quantities that vary continuously. It generally deals with physical variables such as pressure, temperature, speed, and voltages.

Examples:

- Thermometer – it measures the length of a mercury column continuously.
- Traditional Clock – the needle of clock covers the distance

Digital Computer operates on digital data such as numbers. It uses binary number system in which there are only two digits 0 and 1. Each one is called a **bit**. It can perform arithmetic operations like addition, subtraction, multiplication and division and also logical operations. Digital computer can give more accurate and faster results and most of the computers available today are digital computers.

Examples:

- Accounting machines
- Calculators

Hybrid Computer combines the desirable features of analog and digital computers. It is mostly used for automatic operations of complicated physical process and machines. It has the speed of analog and the accuracy of digital computer.

Examples:

- In the hospital's ICU (Intensive Care Unit), analog quality controls the temperature of the room, digital quality informs the doctor about the patient's temperature, blood pressure and other vital signs.
- Devices used in petrol pump.

B. Based on Configuration (Size and Capability)

Computers are classified in various ways. First, they differ according to size and power. Computers can be supercomputers, mainframes, minicomputers and microcomputers.

Supercomputer

Supercomputer is the largest and most powerful computers. It is also the most expensive because it is custom-made for the needs of governments and international groups and companies.

Supercomputers are used for very special purpose and engineering applications, including analyzing data from space probes, researching nuclear energy, creating weather maps and weather forecasting, and finding oil.

Examples:

- GRAPE (Gravity Pipe) – used for gravitational computations
- Anton – used for studying molecular dynamics:
- Cray XT5 – used for various applications that need great ability to process information. One of the world's most powerful supercomputers.

Mainframe Computer

Mainframe computer is a large computer that can process data at a very high rate of speed. It is mainly used by big businesses and companies to process and compute large, bulk amounts of data and handle millions of transactions.

Examples:

- Bank transactions
- Census and consumer statistics
- Airline ticketing "Mainframe" by guiskatenator i
- Large management and payroll needs s licensed under CC BY-NC 2.0

Minicomputer

Minicomputer is another type of multi-use machine that is smaller, less expensive and less powerful than mainframe. This is used in mid-range businesses and companies for their processing needs. Minicomputers have been replaced by network servers, which can also do multiuser and related applications.

Server

Server provides services to another computer program and its user, also known as the client. It is powerful than normal computers**.** differs from desktop hardware in terms of its form factor.

Microcomputer

Microcomputer is probably the most popular kind of computers. The invention of microprocessor (single chip CPU) gave birth to the much cheaper microcomputers. They are further classified into different types:

TYPES OF MICROCOMPUTERS

Desktop Computers

Today the Desktop computers are the most popular computer systems. These desktop computers are also known as personal computers or simply **PCs**. They are usually easier to use, upgrade and more affordable. Users can perform several complicated task in few times without getting any hindrance. PCs are normally intended for individual users for their word processing and other small application requirements.

Laptop/Notebook Computers

Laptop computers are portable computers. They are lightweight computers with a thin screen. They are also called as notebook/netbook computers because of their small size and designed like a stylish briefcase. It is battery operated computers that are very popular with travelers. These micro computers are more expensive than desktop computers because in which various small sizes of components are in built. Its best advantage is portability.

Tablet Computers

Tablet computers are handheld portable devices along with touch screen interface, and they are smaller in size than notebook devices but bigger to Smartphone. In which, users can perform both activities (Input/Output) on its LCD screen and can be run several applications such word processing and others.

Smartphones

Smartphone is a touch screen mobile phone that is capable to perform various advance functions similar to computer such as installs OS (operating system), download different applications, accessibility to internet, and more activities.

PDA Computers

PDA stands for “Personal Digital Assistant”. It is a handheld device with great portability as well as smaller in size similar to tablet, palmtop and smartphone. PDA is able to make communication with other computers like laptops, desktops and other through Wi-Fi, Bluetooth, radio beams, infrared (IR), radio waves, and LAN cable. Commonly used for maintaining the record to appointment calendars, to-do lists, take down notes, and address books.

Game Consoles

Game console is a special kind of computer primarily used for playing video games. It is a device that outputs a video signal or visual image to display a video game that one or more people can play. It also allows nongaming activities such watching videos, viewing pictures, or browsing the Internet.

Modern TVs

Modern televisions (Internet TVs) are now having their own applications and interactive features. These features allow users to stream music, movies online or browse the Internet, and view photos.

Wearable Computers

A wearable computer is any small technology device capable of storing and processing data that will be worn on the body. These are designed for accessibility and convenience, as well as improvements to workplaces by making information rapidly and readily available to the wearer.

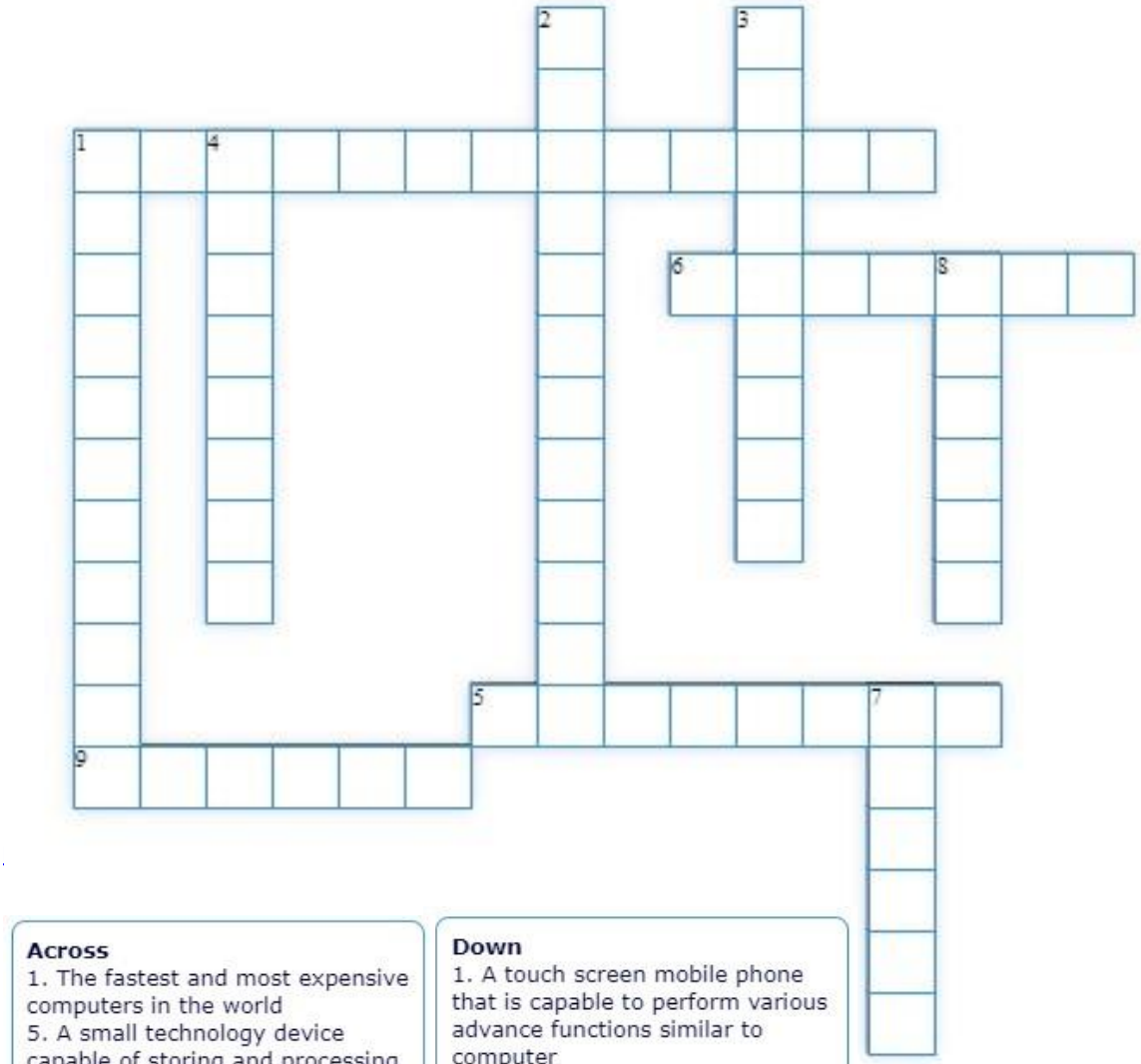
ACTIVITY #1:

A. Directions: Give the classification of the following machines as to their size/power and operations. The first one is given as an example.

MACHINE	SIZE / POWER
1. PS4	Microcomputer
2. SmartTV	
3. Apple watch	
4. Google glass	
5. Nintendo	
6. Calculator	
7. Cray XT5	
8. Airline Ticketing	
9. MSI Laptop computer	
10. DEC PDP-8	

CHECK YOUR UNDERSTANDING:

Directions: Fill in the crossword puzzle with the words missing from the descriptions provided. Match the number of the sentence to the boxes placed across or down the grid. If filled out correctly, the words will fit neatly into the puzzle.



Across
1. The fastest and most expensive computers in the world
5. A small technology device capable of storing and processing data that will be worn on the body.
6. A popular computer with the full functionality of a personal computer.
9. A computer that provides services to another computer program and its user, also known as the client.

Down
1. A touch screen mobile phone that is capable to perform various advance functions similar to computer
2. A special kind of computers that is used primarily for playing video games.
3. Laptops and netbooks can be use _____ or main electricity to power them.
4. Desktop computers are not designed to be as _____ as a laptop or netbook.
7. A lightweight computer with a fold down screen. It has less power, memory and storage than a PC
8. A small mobile computer with a flat touch screen. No separate keyboard or mouse.

TOPIC: PLANNING AND DESIGNING A PERSONAL COMPUTER

Objectives:

1. Identify the different factors to consider in planning and designing a PC.
2. Plan and design a personal computer.

3. Give importance with the essential components when designing a PC.

LEARNING CONTENT:

Planning and Designing a Personal Computer

There are many factors to be considered when designing a homebuilt computer. The most important among these are:

Factors to consider when planning a personal computer		
How much is your budget allotted?	*Cost*	The first step in planning your new PC is to set a budget -- decide how much you can afford to spend on the entire project. Later on, you can use this budget to help you make decisions about individual components.
What do you plan on doing with the machine?	*Intended Use*	If you only want to run office applications, surf the Internet, and other low-pressure tasks, then you can save a bundle by selecting components that are low-cost but more advanced. This is especially true of processors, which tend to drop very steep in price once the next-fastest version of the same chip is released. On the contrary, if you are into gaming, audio, photo or video editing, music composition, or other high-resource computing, you will want to get as close to the bleeding edge as your budget allows you when choosing a CPU, RAM, motherboard, etc. You'll also want the biggest hard drive(s) you can afford, and will probably want to use SATA for faster data transfer.
	Operating System	A kind of any computer components you buy will come with drivers for most recent versions of Windows (but check the box to make sure). If you are planning to use Linux, BSD, or some other non-Microsoft operating system, and then make certain that your components will work
How much processing power do you need?		with that system. Most Linux distributions, for example, maintain lists of hardware that will work with their distribution. There are also newsgroups devoted to hardware issues on specific operating systems.

What people are saying about the product you are purchasing?	*Reputation*	As you begin to lay out your new PC, it is better to check the reviews, newsgroups, and message boards to see what others think of the components you are considering.
How long do you want the computer to last?	*Lifespan*	Hardware advances that make a component forefront this year may just almost satisfy the minimum system requirements for software released a few years from now. If you can afford it, selecting the most current components available may enable your computer with an extra year or so of life.
What are your personal preferences when it comes to computer?	*Personal Preferences*	Most computer fans have their own "favorite" companies, like NVidia video cards and Creative sound cards. But it doesn't mean that the others are no good. It so happens that most found out that NVidia and Creative products are more durable, high-performing, and dependable. Others also like Netgear network cards and Plextor optical drives, for the same reasons. Some people would disagree with others opinions, and that's fine. But when you build a machine for your own use, you tend to choose hardware from companies that you like -- companies whose products has a good experience with. That is your right to choose which companies' parts will go into your computer, because It's your machine.
Some components simply don't play nicely with each other.	*Compatibility*	If you decide to design your computer yourself, check the newsgroups and message boards to see if anyone's had problems with the particular combinations you've selected. Some components simply don't play nicely with each other.

ACTIVITY #1:

Directions: Start to plan and design your own personal computer by answering the following guide questions. You can ask your parents/siblings to help you find/search for your ideal Desktop/Laptop computer.

Guide Questions	Your Answers
1. For what and why do you need to build your own personal computer? Give your reason.	
2. What do you need when you build your own personal computer? Specify all.	
a. How much is your budget?	
b. What do you plan on doing with the computer?	
c. How long do you want the computer to last?	
d. Are you considering a high-end computer? If yes, then why?	
e. What Operating System do you prefer?	

ACTIVITY #2:

Direction: Based from the Activity 1 above, list down all the needed computer components with its specifications for you to be able to design and build your own ideal Personal Computer. You can ask any persons with background in computer components/specifications.

Components	Specifications
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

CHECK YOUR UNDERSTANDING:

Direction: Inside the grid are factors to consider when designing a personal computer. Find and circle each of them to answer this task.

Note: The words may be hidden in any direction.

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

1. How much things you need to design?
2. What do you plan on doing with the machine?
3. How long do you want the computer to last?
4. Check the reviews to see what others think of the components you are considering.
5. Make certain that your components will work with that system.
6. You tend to choose hardware from companies that you like.
7. Some components simply don't play nicely with each other.

POST TEST:

A. Direction. *Read the questions carefully and encircle the letter of the correct answer.*

1. The fastest and most expensive computer in the world.
   A. Desktop computer
   B. Laptop computer
   C. Mainframe computer
   D. Supercomputer
2. It refers to what a person wants/likes or "*favorites*" in building their own personal computer.
   A. Budget
   B. Compatibility
   C. Intended use
   D. Personal preferences
3. A computing device that works on continuous range of values.

A. Analog computer
B. Digital computer
C. Hybrid computer
D. Mainframe computer

4. A type of computer with a flat touch screen but no separate keyboard or mouse?
   A. Desktop computer
   B. Laptop computer
   C. Mainframe computer
   D. Tablet computer
5. A special kind of computer that is used primarily for playing video games.
   A. Console game
   B. SmartTV
   C. Tablet
   D. Wearable computer
6. This is one of the factors to consider in relation to how much is needed before building your own personal computer.
   A. Cost
   B. Intended use
   C. Operating System
   D. Reputation
7. It is also one of the important factors in building your own personal computer, to know if its components work properly.
   A. Budget
   B. Compatibility
   C. Lifespan
   D. Reputation
8. It refers to what do you plan on doing with the machine?
   A. Budget
   B. Compatibility
   C. Intended use
   D. Personal preferences
9. It refers to what people are saying about the product you are purchasing?
   A. Budget
   B. Compatibility
   C. Intended use
   D. Reputation
10. It refers to how long you want your computer to last.
    A. Budget
    B. Compatibility
    C. Lifespan
    D. Reputation

REFLECTIVE LEARNING SHEET:

I learned that

_____
_____
_____
_____
_____

_____

_____

_____

_____

_____

_____

ACTIVITIES AND GAMES ONLINE:

1. Recognizing Different Types of Computers: Reading Activity https://www.english4it.com/unit/10/reading
2. https://www.bookwidgets.com/play/C9Q9CR?teacher_id=6014101963669504
3. https://www.bookwidgets.com/play/B6JZBC?teacher_id=6014101963669504

4. https://www.teachict.com/gcse_new/computer%20systems/types_computer/quizzes_types_computer.html

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ANSWER KEY

Post-Test:

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

Checking your Understanding 1:

1. Supercomputer	6. Desktop
2. Console game	7. Laptop
3. Batteries	8. Tablet
4. Portable	9. Server
5. Wearable	

Checking your Understanding 2:

1. Cost
2. Intended Use
3. Lifespan
4. Reputation
5. Operating System
6. Personal Preferences
7. Compatibility

Pre-Test:

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