Lesson 1

Parts are adapted from *Windows 98* by Mark Twain Media, Inc.

 **A Computer is an electronic machine.**

Even though they seem powerful and mysterious, computers are just machines. When we think of machines, we usually think of mechanical devices, such as sewing machines, power saws, tractors and even hand tools such as pliers or can openers. These are mechanical machines. They do useful work that we would otherwise have to do with our muscles. Some mechanical machines are powered by electricity or gasoline engines. Some machines, calculators or cell phones, use electricity for power. These electronic machines often help us do the work of our mind. (p 1)

A computer is an electronic machine. Its power cord must always be plugged into an electric outlet or a battery must be installed for it to work correctly. It contains special components that regulate the flow of electricity to cause it to do useful work. (p 2-3)

**Is a Computer smart?**

We often say that a computer is smart! But what is smart? Usually smart means you can apply the information you are given; that you can learn. But all a computer can do is what a human tells the computer to do. It can’t learn; it can’t apply information unless a human tells it how to do it. A computer is not smart.

So why do we always think the computer is smart? We’re always saying the computer is smarter than we are! Not possible! The computer only does what we, the users, tell it to do! But a computer does look smart. Why? We value three characteristics that computers have; they make people and computers look smart!

First, a computer is very fast. On the TV show *Jeopardy*, the contestant that rings in FIRST usually wins (assuming the contestant is correct!) If you can come up with an answer quickly, you look smart!

Second, a computer never makes a mistake. Students who never make a mistake on a math test are thought to be smart. If you never err, you must be smart! A computer never makes a mistake because it can only do what it is told to do! Just as a car has to go in the direction the driver takes it, the computer has to do what the human says! If a mistake is made, the human user made the mistake. Either the data was entered incorrectly or the program is incorrect.

Finally, a computer never forgets. A person with a photographic memory looks smart because they can recall anything the person has ever seen! It seems like they always know the answer. Actually, they can just remember what they have seen. A good memory makes you look smart! Unless a computer storage device breaks, a computer will always have any information that has been put in the put in the computer. It never forgets!

So a computer looks smart because it

1. Is Fast
2. Is Accurate (never makes a mistake)
3. Never forgets

**A Computer does 4 jobs**

No matter how complicated it appears, a computer performs a very straightforward operation. A computer takes material, called **data**, that we give to it and processes that material into information**. Information** is just data that has been made more useful or meaningful to us. b(p. 2) After processing the data, the computer stores the information and then gives it out to us. These are the basic jobs of the computer. The 4 jobs of the computer:

1. **Input** – puts data into the computer; allows humans to communicate with the computer
2. **Process** – changes data into information; organize it, gives it more meaning, or makes it more useful (p2)
3. **Storage** – Keeps information for use by the computer
4. **Output** – Gives the information to humans; allows computers to communicate with the computer

**Programs tell the computer what to do**

Computers must be told what to do. Human users give the computer a set of instructions to do a task. This is called a **program**. Programs aren’t written in English like you and I use. Programmers have special languages understood by computers for writing programs. Programs can be written to run the printer, start the computer, play a game or average grades.

**Software** is the name given to the set of all the programs. Software can be divided into two groups. One type of software, **application software**, is the software we the users use. Programs like games, spreadsheets, word processors or grading programs are examples of application software. The second type of software, **system software**, is the software that runs the computer. These programs start the computer and makes sure all parts of the computer are working properly. Windows, MAC OS X and Linux are examples of operating systems. All programs fall into one of these two groups.

**Different types of computers**

Though most of us are most acquainted with small desktop, laptop or netbook computers, there are other types of computers. For the most part you can differentiate between computer types by physical size; but processing speed and storage size also help differentiate computer types. The largest computers are called **Mainframes**. ENIAC would have been called a mainframe. Mainframes may be as big as room. They are used by large organizations such as the US government or USAA right here in San Antonio. Also companies like IBM sell mainframe services to different companies. A company may not want to buy a mainframe (very expensive!) but you may need some of the services of a mainframe. You can buy time on another company’s mainframe. The biggest of the mainframe computers is called a **supercomputer**. The National Weather Service uses a supercomputer to forecast weather.

Smaller than the mainframe is the **minicomputer or mid-range computer**. The minicomputer is often used by small businesses. The business isn’t big enough for a mainframe but needs a computer that many people can use at the same time.

You are most familiar with the next size, the **microcomputer or desktop computer**. These are usually computers for individuals. This computer allows the user access to processing right at their desk. We will concentrate on these computers in our study during the year.

Smaller, but computers that operate similar to desktops are laptops. **Laptops and notebook** computers are portable desktop computers! In the past the laptop was not as powerful and was more expensive than desktop. But today, laptops and desktops can be as powerful for similar prices as a desktop. The Desktop still offers more diversity, but laptops and notebooks are very popular.

Introduced in 2009, the **netbook** is an even smaller computer than the laptop. The netbook is not as powerful as the laptop or desktop. Storage is more limited. It does not have an interior CD/DVD player. The netbook originally was a light (about 4 lbs) small alternative to a laptop. You can access the web and use a modified program for word processing and spreadsheets.

Many of us carry around a computer-a **tablet**! A **tablet** is mobile. It often has a camera, microphone and a touch screen. The tablet you use today evolved from versions from as early as 1989. In fact, in 1968, Alan Kay envisioned a portable computer made for children’s education! Often, the programs available for the tablet, often called apps, are not full versions. However, full versions of some software, such as Office 360, can be accessed through an Internet connection. Also data can be kept in the cloud (see below).

The smallest computers are **handheld computers**. These include the ITouch, Blackberries, even cell phones! These small computers can do many tasks and access the Internet.

So computers come in all sizes. From largest, most powerful to the smallest, least powerful:

1. Mainframe
	1. Supercomputers
2. Minicomputers or Midrange
3. Microcomputer or desktop computer
4. Laptops and notebooks
5. Netbooks
6. Tablet
7. Handheld computers

Hooking up those computers!
One of the best advantages of the desktop/laptop/tablet/netbook and handhelds is that you can connect these computers. You can hook up these computers to a **server** to share hardware and software. A server is a computer to which many computers can be connected. It may be a simple desktop computer or a computer with increased processing speed and storage. The computers can use hardware connected to the server and software loaded on the server. These computers connected to a server are called a **network**. When the network is located in one area, on one campus, it is called a **Local Area Network** **(LAN)**. If the network is located over a large area, several cities, or even the world, it is called a **Wide Area Network (WAN).**

**The Cloud**

Many companies, schools and individuals are taking advantage of a new type of storage, call **the cloud**. **The cloud** is “internet-based computing in which large groups of remote servers are networked to allow the centralized data storage, and online access to computer services or resources. Clouds can be classified as public, private or hybrid” (en.wikipedia.org/wiki/Cloud\_computing). Basically you connect to server through your Internet connection and use the storage capacity of that server to save your data.

**Wrap up**

Now you know that the computer is just an electronic machine that can’t think but does look smart. It looks smart because it is fast, accurate, and always remembers. The computer does four jobs: Input, Process, Output, and Storage. The computer is told what to do by programs, collectively called Software. Software is divided into Application and System Software. Computers come in various sizes from large to small: Mainframes, minicomputers, microcomputers, laptops, netbooks, tablets, and handhelds. We are able to connect computers to a server to create a network. A network allows us to share hardware and software. There are two types of networks: LAN and WAN. Using a server accessed through the Internet we can take advantage of storage through the cloud!