Sandy Senior Center

Computer Basics

April 2016

Revision G

Introduction
Sandy Senior Center
Windows© Manual

This manual is designed to assist the student and instructor alike. The material in this manual has been gathered from several sources and placed in such a manner as to introduce the student to computers. This is the first of three courses designed to be taught in four classes, each two hours long. The manual is generated in color. This manual is also available on CD in PDF format. The PDF format can be read by the PDF Viewer provided on the CD. Feel free to print a color version but remember it costs 12 to 15 cents a page for the average color ink jet printer.

Acknowledgments

This manual was developed by Sandy Senior Center volunteer Jerry Stewart, and revised by Steve Livingston. Use of this manual is granted to all Salt Lake County Senior Centers under the provision that the acknowledgments section remain with the manual. Centers may change titles and pictures to tailor it for their Center. Students may print the manual for their use. All other use of this manual requires approval by Jerry Stewart.

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Overview

This course is designed to provide the fundamentals of understanding and use of a general-purpose digital computer. Without realizing it, we use special purpose computers every day. The electronic ignition in our cars, calculators, our digital watches and clocks, microwave ovens, TV sets, DVDs, stereos, games and even some toasters are examples of special purpose digital computers.

The course consists of four classes, each two hours long, once each week. Prior to each week's material will be a list of objectives that you should consider while you are reading the material. After you finish, go back and look at the objectives to see where you still need more information. Ask the instructor in class if the presentation material does not cover the subject adequately for you. The objectives are normally in three categories.

The first category is terms. It is necessary to know a lot of terms to allow communication between instructor and student. In many cases the words are familiar but used with a different meaning than we are accustomed. **An alphabetical list of terms is in Appendix 5**. We will try to help this learning process by giving examples of the objectives available in class. That way you can see and touch them. At times the instructor may go in-depth on certain objects and the facts may overwhelm you. Do not worry about this. In almost all cases you do not need to know the details, just like you do not need to know how the inside of a car engine works to drive a car. However, the background information will come back to you in the future when something goes wrong (like your engine overheating) and you are faced with something unexpected or new. At least you will be able to communicate your problem to the mechanic so the expert can fix it.

The second category will be tasks that you should be able to do on your computer.

The third category is things you should have some understanding about.

Another reason for the emphasis on terminology is the natural fear of the unknown. Most adults resist learning computers because of fear. Kids learn more easily because they have no fear doing something wrong and they are in the natural mode of learning. We no longer learn at the rate that we did as kids because we are out of practice **and** we hate to make mistakes. We just have to put up with our changed learning rate. We can, however, resolve to not worry about mistakes and looking stupid in the classroom.

Rule one: there are no stupid questions, just stupid answers. This will happen often because the instructor is thinking in computer terms and you are asking the question in English. **Just keep asking until the instructor understands the question!**

Basic Computers Week 1 Objectives

Learn the input/output parts of a computer
- Keyboard
- Screen
- Mouse, Touch Pad or Screen

Learn the following terms:
- Control key
- Alternate key
- Cursor keys
- Cursor
- Icon
- Enter Key
- Single Click
- Double Click
- Drag
- Operating System
- Program

Be able to:
- Hold the mouse
- Move the mouse
- Open a program using the mouse
- Open a program using the keyboard
- Close a program
- Use the start menu
- Shut down a program
- Shut down the computer

Understand:
- How a mouse works

Practice mouse skills by playing Solitaire
- "Click"
- "Drag"
- "Double Click"

Keyboard

In addition to the standard typewriter keys, the computer keyboard will have extra keys to perform computer unique functions in addition to normal typewriter functions. For example, look at the keys in the lower right hand corner of the keyboard picture below or your computer keyboard. They look just like the keys on an old fashioned calculator or cash register. For programs that require you to enter a lot of numbers, this keypad is much faster than the ones on top of the typewriter keyboard.

If you have used a typewriter you already know that you hold down the shift key and press a letter key and it will type in uppercase. The same is true for numbers and punctuation which actually show you the two possibilities on the key. Instead of having a keyboard with 256 keys on it, the computer people added **Control** (*ctrl*) and **Alternate** (*alt*) keys to the key board to change the key from its normal function to a special function that the computer understands. They work just like the shift key in that you hold down the control or alternate key while you press another key. Since it was hard for people to remember all of the special meanings, companies put out new keyboards that have extra keys that are labeled with the function it does. The example below has only the function keys (*F1-F12*) and some extra keys above the cursor keys.

Note:
In the modern computer keyboard the keyboard just sends the row and column numbers of the pressed key. A program in the computer looks up what key that is supposed to represent and uses it. This allows the same keyboard to be used for any language by just changing the characters painted on the keys. For example you can buy an English and Spanish keyboard that has both characters printed on the keys. When you run Windows in the Spanish mode the display will show Spanish characters. There are also programs that allow you to reprogram you keyboard in any layout you want.

The instructor will show you how to use the **cursor keys** in class. They allow you to move the cursor like you do with the mouse but much slower. On electric typewriters an extra key was added to cause the carriage to go back to the left side of the paper and go up one line. The key on the computer keyboard that does this is called the **Enter** key (**ent** on the keyboard above). When you are in the typing program it does the same thing. If you are in

some other program it is used to make whatever you selected to happen. For example, if you are trying to double click on something and are having trouble clicking fast enough you can select with mouse and then press the **Enter** key and it will do the same as the double click.

Display device

The display devices in this classroom are Liquid Crystal Display (LCD) type monitors. Most High Definition TVs use either a LCD or Plasma display. The Cathode Ray Tube (CRT) was the standard for many years in computers and they were high quality versions of the CRT that were used in TV sets. Portable computers almost always use LCD to provide the monitor function. The quality of your monitor and video card determine how your display will look. If you look at the pictures in a newspaper with a magnifying glass you will be able to see little dots. The monitor works the same way. The more dots per inch you have the higher resolution you can have. A color picture is made up of dots of red, green and blue. Your TV set only has one resolution (unless you have one of the new High Definition TVs). Most video cards in today's computers can support multiple resolutions. One of the initial monitor standards was 640 by 480. That means 640 columns of pixels by 480 rows of pixels. A pixel is a single dot in a monochrome system and a group of three (red, blue, green) dots in a color system. When monitors got larger, the dots were beginning to be seen, as dots just like when looking at a newspaper with a magnifying glass.
Today, many hand held devices (Smart Phones, iPads, etc.) use touch sensitive screens to combine the user input with the display device.

Pointing device

The pointing device is probably the most unusual item on the list. The early computers did not use pointing devices and everything was done by the keyboard (and still can be). The Apple computer company was responsible for making the pointing device popular on the personal computer by generating an Operating System that was graphic in nature rather than keyboard oriented. We will use a mouse in the classroom because it is the most common pointing device. Most portable computers use a touchpad or pointing stick to perform the same functions. Learning the use of the mouse is more a hand/eye coordination skill than knowledge. It will not come automatically and many hours of practice may be required to master the mouse. The purpose of the pointing device is to allow you to move the pointer quickly from one part of the display device screen to another quickly. Once there, an action can be taken by activating one of the switches on the mouse.
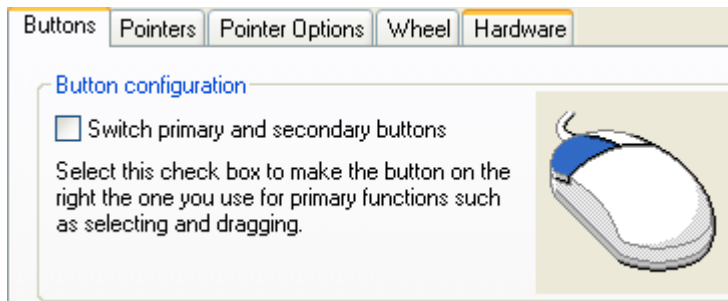
The switches on the mouse are called buttons and a personal computer mouse will have at least two buttons. Newer ones may have more buttons that do additional tasks. The **button on the left side of the mouse is used to select an action. The one on the right brings up a menu**. It is best to use the forefinger on the left button and the middle finger on the right button. The most common problem is that most people tend to rotate the mouse when they are trying to move it on the screen. Because of the way the mouse is designed you **must** keep the mouse square to your motion. This will be demonstrated in class. The next obstacle to overcome will be the double click. This is always done on the left mouse button. If you do not click fast enough nothing will happen. As mentioned above a single left click will select an action, where **the double click selects and then executes the action.** The speed at which you have to double click can be adjusted and if you need for the speed to be slowed down ask the instructor. **Another option is to left click once and then use the enter key on the keyboard to execute the action**. When you are in class you may want to do this when the instructor asks you to double click. We will teach the solitaire game so that you will have a less boring way to practice your mouse skills. Once you improve your mouse skills you will find that the double click is much faster.

If you have internet at home you can also go to one of the sites below:

> http://www.pbclibrary.org/mousing/
> http://www.seniornet.org/howto/mouseexercises/mousepractice.html

The easy way to get to the above site is to search for "mouse skills" in your browser search box.

You can tell where the mouse is by looking for the pointer. The way the pointer looks will also tell you what is happening with the computer and the program you are running. The picture to the right shows some examples of what the mouse pointer can look like in certain conditions.

Sometimes you will have two pointers (or cursors) on the screen at the same time. For example, in a word processing program you will have a straight line blinking cursor to tell you where the next character will be placed when you type and a Mouse pointer that looks like the "Text Select" pointer shown here. This pointer is sometimes called the I-beam because it looks like a capital I or a steel I-beam.

The next skill you will need to learn is how to **drag** the mouse. Instead of pressing and releasing the left button, you hold the button down and move the mouse. We will practice this skill using the games provided in Windows.

Normal Select	
Help Select	
Working In Background	
Busy	
Precision Select	
Text Select	
Handwriting	
Unavailable	
Vertical Resize	
Horizontal Resize	
Diagonal Resize 1	
Diagonal Resize 2	
Move	
Alternate Select	
Link Select	

Operating System

So, what is an operating system (also called OS)? Traditionally, it was the base program loaded on the computer that managed the storage devices connected to the computer and controlled the human input devices such as the keyboard and display device. It allows us to load other programs that perform the task we want the computer to do. **All you need to know** is which one you are currently using. When you turn your computer on, the computer will test itself and then start loading the operating system. While the OS is loading (this is called "booting") the display will show the name of the operating system. Even though all operating systems do the same thing they will look different. This will cause confusion to the beginner when the system he is learning on is different than his own computer. We generally keep the latest released version of the Windows on our machines. These are Microsoft operating systems, the most common operating systems in use on home computers currently. Apple computers use a different operating system that is proprietary to Apple. Once you learn one system it is easier to adapt to another. A history of operating systems is included in appendix 4.

Programs

After the operating system is loaded you can start to run programs. **A program is the software that is loaded to perform a task**. Software is the ones and zeros that tell the computer what to do. Today's operating systems come with many free programs and may be the main reason that you would upgrade to the latest version. Even though these programs come with the operating system they are not really part of the operating system. A partial list of free programs that comes with Windows XP, Vista or Windows 7/8/10 is provided below. Many of the programs not listed are used to maintain your computer or provide adaptive services for persons who have disabilities:

Internet Explorer – a program, which allows you to browse on the Internet.
Outlook Express in XP and Windows Live Mail in Vista/Windows 7/8. These are email clients which allow you to send and receive email. There also many other email clients which may be provided by your internet provider that provide the same function.
Games – Solitaire, Free Cell, Hearts and Minesweeper.
Notepad - allows you to write notes and save or print them.
WordPad – More capability than Notepad. Good for writing letters and other basic word processing tasks.
Calculator – Can be used in a conventional mode like a simple calculator or as a scientific calculator.
Media player – plays audio CDs, MP3 CDs and DVDs.
Paint – a program that allows you to draw and paint on your computer screen. You can print whatever you draw.

Sound Recorder. Plug a microphone into your sound card and record audio notes in your own voice and save them on your computer.

Some computers also come with "bundled" software. This is software that you would normally have to buy separately. Software can be very expensive; so do not overlook what is provided when buying a new computer. Some of the time you will get "trial" software, this software has a limited lifetime and is there to entice you to buy their brand over some other brand. You should remove trial software after it expires to keep your computer from slowing down.

Some of the additional software programs found on the computers in this classroom are listed below
Microsoft Live suite
     Live Mail
     Live Photo Gallery
     OneDrive
Oracle Open Office suite – This suite contains multiple programs that are designed to work with each other. These programs include a word processor, a spread sheet and presentation program.
Adobe PDF reader
Comodo anti-virus protection
Mozilla Firefox web browser

Basic Computers Week 2 Objectives

Learn the following terms:
      Programs
      Windows 7
      Windows 8
      Windows 10
      Hardware
      Software
      Portable computer
      Desktop computer
      Binary
      Power supply
      Motherboard
      Booting
      CPU
      RAM
      ROM
      Hard drive
      Floppy drive
      CDR
      CDR/W
      Input Device
            Keyboard
            Pointing Device
                  Mouse
                  Touch Pad
                  Touch Screen

Learn the basic parts of a computer
      Chassis
      Motherboard
      Processor, CPU
      Hard Drive

Learn the purpose of the extra keys on the keyboard

Running programs

There are several ways to start (or run) a program. If no one has installed icons on your desktop you can follow the procedures listed below. If there is an icon for the program you want to run, just double click on the icon. Make sure your pointer is on the icon, not the name below the icon. **If you have problems with double clicking, you can single click on the icon, then press the enter key.**
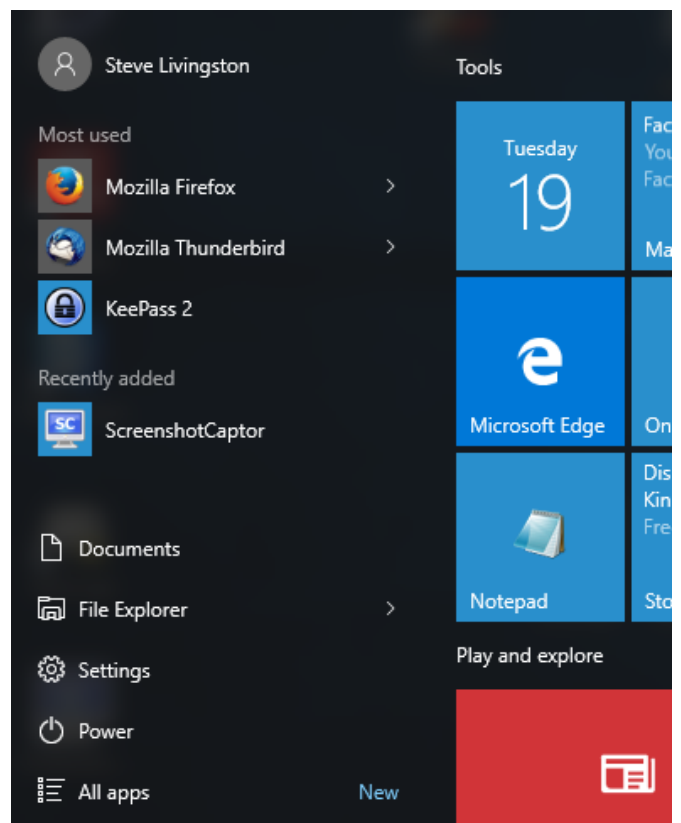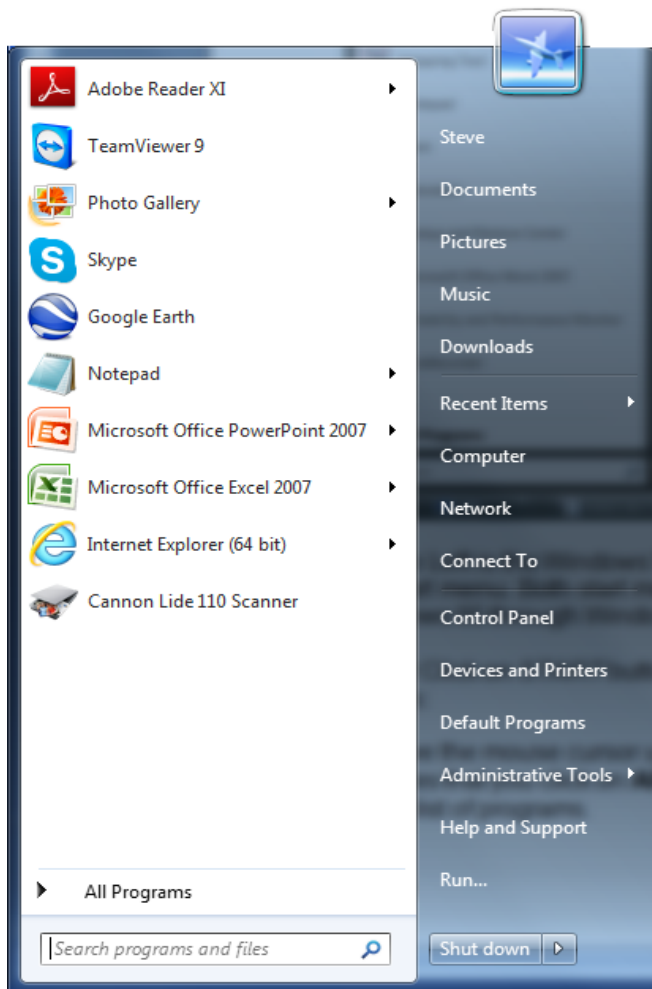
On the Left is the Windows 7 Start Menu and on the right is a portion of the Windows 10 Start Screen. These screens look quite dissimilar but their functions are surprisingly similar. Each allows you to initiate commonly used programs and Apps and each leads you to optional configuration and set up programs. The following descriptions are separated for clarity.

Windows 7 and earlier versions

1. Left Click on *START* button on the bottom left of the screen:

2. Move the mouse pointer up the menu and to the line that says **All Programs**. Windows 7 requires that you click on **All Programs**. The menu should show you a list of programs.

3. Move the pointer to the new menu and then down to the program you want to run. Some programs may be included within a **Folder**. Select and click on the folder to find those program names.

4. Click on the program name.

 NOTE: In Windows 7 or Vista you can skip steps 2 and 3 and just type the first 2 or 3 letters of the program name in the search block at the bottom. Windows will give you a list of programs that start with those letters.

If you see a folder icon , it means that there is another level of menus below the main menu. Some programs will have several levels of menus.

Windows 10

1. Left Click on *START* button on the bottom left of the screen:

2. You may find a tile/icon for the program/app you desire in one of several places:
   a.   Under the "Most Used" apps list on the left
   b.   As a tile on the right of the start screen or
   c.   Listed alphabetically under "All apps"

4. Some programs may have had an icon for them added to your desktop. You can also execute them by **double clicking** that icon on the desktop.

NOTE: In Windows 10 you can also just type the first few characters of the program/App's name on the search box and click on the resultant program icon that appears in the search results.

Windows features – all versions of windows

Button icons: Programs or Apps will have small square icons with a symbol inside the icon on the right end of the title bar at the top of the window. These icons are called buttons and activate specific functions. Below are the buttons on the top right side of the program window.

Minimize Button: The first button ▬ is used to reduce the window to a button on the task bar.

Maximize Button: Notice the middle icon ⬜ shows a full screen. To enlarge any window so that it fills up the screen click on the middle button with a single window in it.

This button changes to a **Restore Down** button ⧉ when you are in a full window display. If you have your window expanded so that it is the same size or larger than the full screen display you can tell which mode you are in by looking at the middle button. It always tells you which mode you can switch "**to"**, therefore you are in the opposite mode.

The **Close Button** on the far right ❌ is used to close that window or program/App. If the program window contains un-saved data, you will be presented with a pop-up window prompting you to save, or not save, this data.

Hardware

When most people think of computers, they think of personal computers (also known as PCs) like the ones we will be using in this class or the big mainframe computers that are used by large businesses. As technology progresses, the difference between the personal computers and the big mainframe computers has become smaller and smaller. Today's PC's have much more capability than the mainframe computers of the 70's and 80's.

This course will expose you to the many uses of a computer. But first, let's get familiar with the terminology used in today's world of computing.

In the average personal computer of today the following components are usually packaged in one of two ways. In a **portable**, (called a laptop or notebook) they will be packaged all together in a single assembly. In a **desktop** (like in the lab) they will divided in the following manner.
>   **Computer case:**
>   This is sometime called the: a. tower, b. CPU or c. computer
>   It contains most of the computer components including the CPU that we will
>   describe during this course.
>   **Input device**: Most often a keyboard. The keyboard looks like an oversized typewriter
>   keyboard and that is what it is. Modern keyboards have many extra keys that allow
>   you to hit just one key instead of holding down several keys at once. When
>   equipped with a microphone and software, many computers will actually take
>   dictation.
>   **Pointing device:** Mouse, trackball, stylus, touchpad or touchscreen
>   **Display device:** Normally a flat panel Liquid Crystal Display (LCD) or a Cathode Ray
>   Tube (CRT) monitor

Other peripheral devices such as printers, scanners, external modems will be covered later.

Numbering systems

Most of us grew up only knowing the decimal system. That is we have ten single digits that we repeat (0,1,2,3,4,5,6,7,8,9). Since the first people who learned to count had ten fingers it evolved naturally. If we had 8 fingers we would probably count in octal (0,1,2,3,4,5,6,7). The digital computer uses a binary system (0,1). This is because in early digital computers the devices used to store programs had two states, OFF and ON. These two states can be expressed as a punched hole or no hole, north or south magnetic directions, zero voltage or some voltage. You do not need to learn any of this type of math unless you plan to become a computer programmer who writes software. Because the first PCs used a group of 8 ones or zeros to do almost everything, they came up with a word (**byte**) that represented this. That is why almost all numbers about memory end in "byte". Because most of the numbers in computers are large we use prefixes to reduce the number of places you have to write. For example 1 gigabyte is 1 billion bytes or 8 billion bits. Each one or zero in the group is called a bit just like in Morse code. **All you need to know is that the computer uses a binary system (zeros and ones) and that this generates new terms and very large numbers. All data stored in your computer is either a one or a zero. The computer takes care of converting it back into something you can recognize.** The appendix in the back provides a little more explanation if you are mathematically inclined.

Power supply

The power supply provides the many types of voltages needed by the components in the computer. The capacity of the power supply will vary from computer to computer depending on how much equipment is installed or expected to be installed. The power supply comes with standard connectors and voltages and if you need more power, you can replace the old one with a newer one with a higher rating. The power supply and fans are most often the items to fail and are designed for easy replacement. A surge protector for your computer will help protect against power supply failure and is a worthwhile investment.

Central Processing Unit and RAM memory

The Central Processing Unit (CPU) is the device in your computer that determines what all the ones and zeros mean. It is the brain of the computer. The speed of this device is the primary factor in determining how fast your computer will be. It is also the most expensive device in your computer. The faster it is, the more your computer will cost.

The Random Access Memory (RAM) is the memory that the CPU uses to get the ones and zeros from the programs to do its job. Think of RAM as your short term memory. The hard drive, flash drive, and Optical drive (CDR, CDR/W, CDROM) are all long term storage devices. Think of them as your long term memory. In a computer, these devices are used to store programs and data (ones and zeros) that you are currently not using. Random Access Memory) is very fast compared to these storage devices but has the disadvantage of only retaining the ones and zeros while the computer is powered on. **If the electricity goes off, everything in RAM is lost**.

Motherboard

The motherboard is where the CPU and memory is located. More electronic circuits are on the motherboard to accomplish other computer tasks. It is called a motherboard because most computers are designed with the option of adding additional components mounted on circuit cards. These circuit cards were called daughter boards and are plugged into the sockets on the motherboard. Today we refer to the daughter boards by the name of the socket on the motherboard and its function. New computers have more than one type of socket on the motherboard, each faster than its predecessor. This allows us to use old circuit cards in new computers. The names (actually abbreviations) of these sockets are ISA, EISA, PCI, AGP and Express PCI. You could buy an ISA or EISA or PCI MODEM card for your computer if you needed to connect your computer to the telephone.

Booting

Because everything in RAM is lost when you turn the power off, the computer uses some special memory that contains the location of the operating systems programs, where on the hard disk drive (or solid state drive) or how to find it on a DVD disk.. Since this memory is expensive and slow, only enough is used to allow us to get the rest of the data we need transferred from our hard drive or other storage device to the RAM when the power is turned on. This process is called booting. The term is derived from the old expression of pulling yourself up by your own **bootstraps**. Depending on how fast your CPU and hard drive are, booting can take a few seconds or several minutes. During the boot process a number of self-tests are performed to ensure the hardware and memory are prepared to operate.
This process is controlled by either the BIOS (Basic Input Output System) or, in more recently manufactured machines, the UEFI (Unified Extensible Firmware Interface.) Suffice it to say, that once the operating system's programs are loaded into RAM, control is passed to that operating system. The machine will be available for your use when you see a logon screen (or lock screen) or the desktop or Start page.

Storage devices

Traditionally a floppy drive has been used as a storage device. The last were diskettes 3 ½" square in a plastic case and stored 1.44 megabytes of data, older drives used diskettes

that were 5.25 inches square and had a thin cardboard case and if you really go back in time, the disks were 8 inches square and really floppy. Inside each of these diskettes is a Mylar magnetic circular disk that the drive spins like a phonograph record. The Mylar material is like the tape you use in a tape recorder. A "head" like on your tape recorder, but much smaller, moves between the center of the disk to the outside of the disk in very small steps. Just like your tape recorder, data can be written or read from this head. Once the disk has made a complete revolution it has read or written all the data it can in that space, it then steps out a small amount and uses the next area. Each space it moves is called a track. The final result is series of concentric circles (tracks) on the disk with data installed. Originally, tape drives were used to store data. But when you wanted data that was stored at the end of a 15 inch reel, it would take several minutes to go there. By using a disk that spins very fast, you can move to any place on the disk in less than a tenth of a second and read or write data.

The only difference between the floppy drive and the hard drive is that the magnetic media on the hard drive is deposited on a temperature stabilized metal disk. This metal disk can be spun at much higher speeds than the floppy disk and because the metal does not expand and contract with temperature, the steps can be much smaller. The end result is that the hard drive can store thousands of times more data than the floppy disk and the data can be read or written much faster. A modern hard drive can transfer data off the disk at 133 to 300 megabits a second. It takes about ten seconds to read 1 megabit of data from a floppy.

## Hardware Terminology

Each disk consists of platters, rings on each side of each platter called tracks, and sections within each track called sectors. A sector is the smallest physical storage unit on a disk, almost always 512 bytes in size.

Figure 17.1 illustrates a hard disk with two platters. The remainder of this section describes the terms used on the figure.
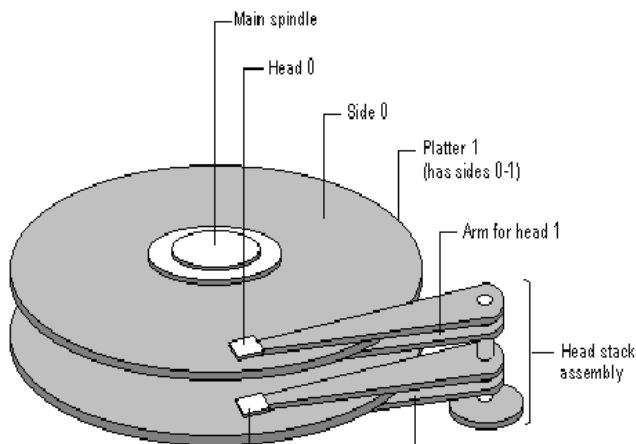
Typical Hard Drive Construction
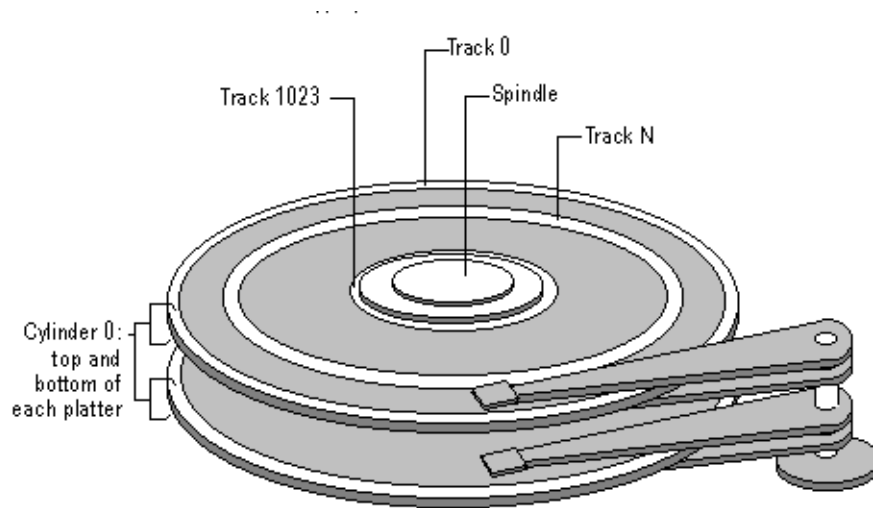
Concentric Tracks on Hard Drive

The Compact Disk Reader (CDR) has mostly replaced the floppy drive. The compact disk used in audio players and computers costs only pennies at the manufacturing level. A more proper name for most CDs is Compact Disk – Read Only Memory (CR-ROM). Your audio CDs and computer software CDs are of this type.

The CDR works like a hard drive except instead of using magnetic properties, it uses optical properties. The laser in the CDR shines on the compact disk and the head reads if there is a reflection or not (one or zero). A CDR/W (Compact Disk Reader/Writer) has a laser that is strong enough that it can "burn" a small spot on the disk. The cost of these devices has come down over the years and you see the CDR/W in most new computers. The CD used in computers is no different than those used in audio players, just the manner in which the data is encoded on the disk. A computer CDR or CDR/W can read and write audio to a CD if you have the correct software program. The CD is being replaced by the DVD which is a denser version of the CD and for the same size you can get 2500 megabytes or more of storage.

A new technology called the **flash drive** has replaced the floppy drive as a portable storage device. Every company has their own name for the flash drive like Travel Drive, Thumb Drive, San Disk, etc. Most of these interface with your computer via the Universal Serial Bus (USB) connector in your computer. I call it a flash drive because the storage is done using a technology called flash memory. Trade magazines are now indicating a new technology will soon be available that is faster and denser than flash memory. It will still work the same through your USB port but will be faster and store more data for less money.

Basic Computers Week 3 Objectives

Learn the following terms:
        Text attribute
        Windows ribbon display
        Font
        Text select
        Cut
        Copy
        Paste

Learn about My Documents

Learn how to use Notepad & WordPad
        Identify different pointers
        Use the backspace key
        Use the delete key
        Use the tab key
        Add blank lines
        Set wrap functions
        Print work
        Select text
        Change font and size
        Change text attribute
        Copy or move text from one location to another
        Save document to specified location and name

Learn the differences between editors and word processor programs
        Notepad, Word Pad, Open Office

Notepad

Last week you were shown how to use the program **Solitaire** to play a card game on your computer. This week we will use the program Notepad to generate notes or quick letters. This program lets your computer work like an electric typewriter. To get to this program click on the **START** button and then on **All Programs.** Another menu will come up. Click on **Accessories** and then **Notepad.** If you have Windows 7 or 10 you can type "no" in the **Search box** then click on **Notepad**.

The instructor will demonstrate several methods until you are comfortable finding Notepad.
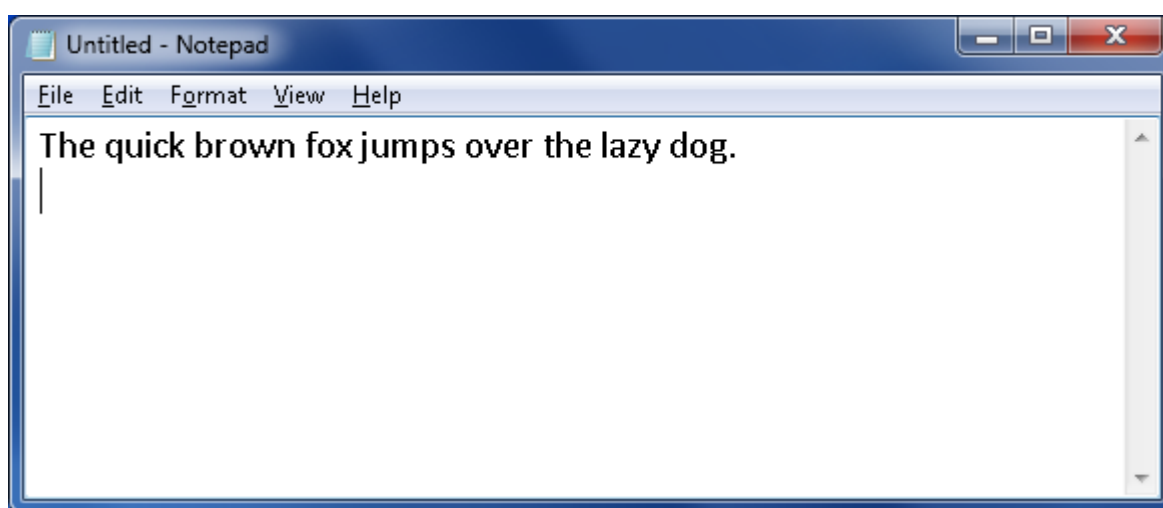
If you have done everything correctly you should have a large version of the picture above, not including the text. When you see the blinking cursor, you can start typing just like an electric typewriter. If you make a mistake in your typing you can correct it several ways. If you realize immediately, you can press the backspace and it will erase the character to the left of the blinking cursor. In the keyboard shown in the text, this key is labeled **bksp**, some keyboards just have a left facing arrow on the key. If you do not catch the mistake right away you must move the cursor from where it is to where the mistake is. If your mouse skills are good, you can move the mouse pointer to where the error is and left click. This will move the blinking cursor to the same location. If you do not have far to go it will be easier to use the cursor keys at the bottom right of your keyboard.

One of the most confusing items to new computer users is that you cannot get the blinking cursor to go to a blank space on the workspace. This is because the blinking cursor can only go where there is a typed character in memory. In addition to the printing characters

there are "hidden characters" in the workspace. The space between letters, the tab character, the carriage return and line feed are examples. The last two are generated when you press the Enter key. The tab character automatically jumps a number of spaces that are preset (8). In a full word processor you can set size and multiple tab stops.

When you have the note written just like you want, you will move the mouse to the file menu and left click. The menu shown below will appear and you can click on **Print…** to print your work.
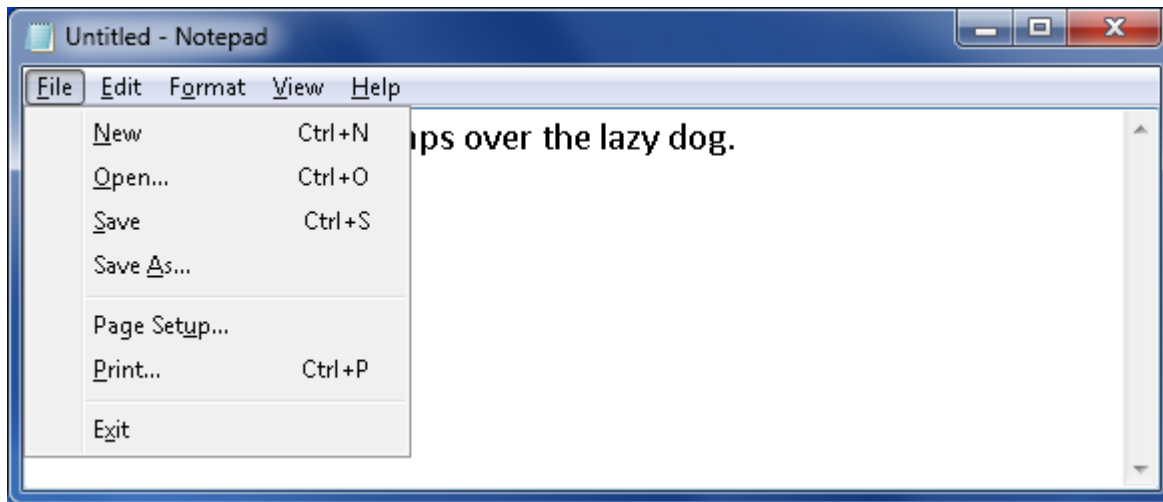
If you want to save your work you would click on the **Save As** line. It will bring up a dialogue box similar to below. The top box shows you where the document will be saved unless you change the location (Library / Documents). The bottom box that says File name currently has *.txt in it. This is where you type to change it to the name you want. If you use the same name twice in the same location it will ask you if you want to replace your old file. The program will automatically add the correct extension (.txt in this case).
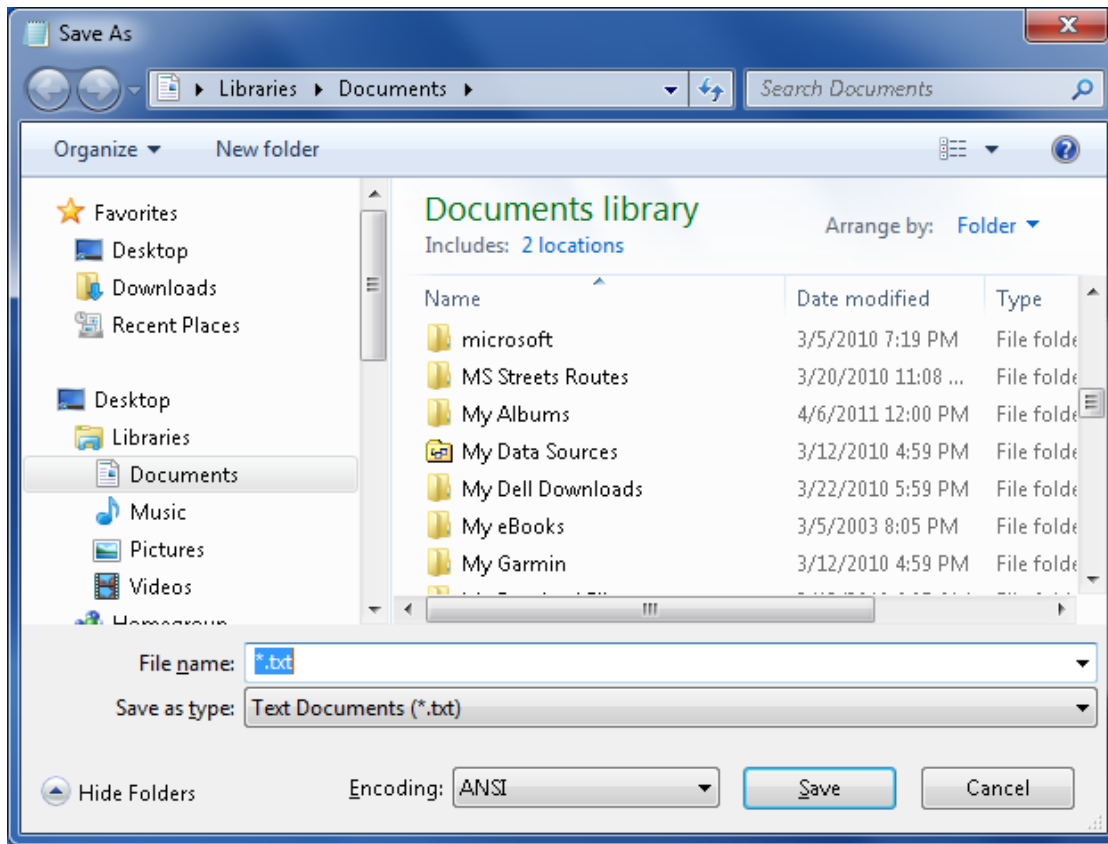
The Notepad program does have one nice feature that is unique to computers and that is the wrap feature. When the Word Wrap feature is checked as shown below, the text will automatically "wrap" back to the beginning of the screen when you get to the end of the screen. If you change the screen size the typing automatically adjusts to the screen size to show all of the text possible. If the word wrap is off, you will just have one continuous line of text unless you add carriage returns (enter key) where needed. You may see this when you receive emails.
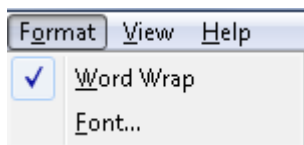
WordPad

The functions covered in Notepad are available in WordPad also. This section will show you some more features available in WordPad that places it into the word processing category. To get to this program, click on the **START** button and then on **All Programs**. Another menu will come up. Click on **Accessories** and then **WordPad**. If you have Windows 7 or 10 you can type "wo" in the **Search box** then click on **WordPad**.
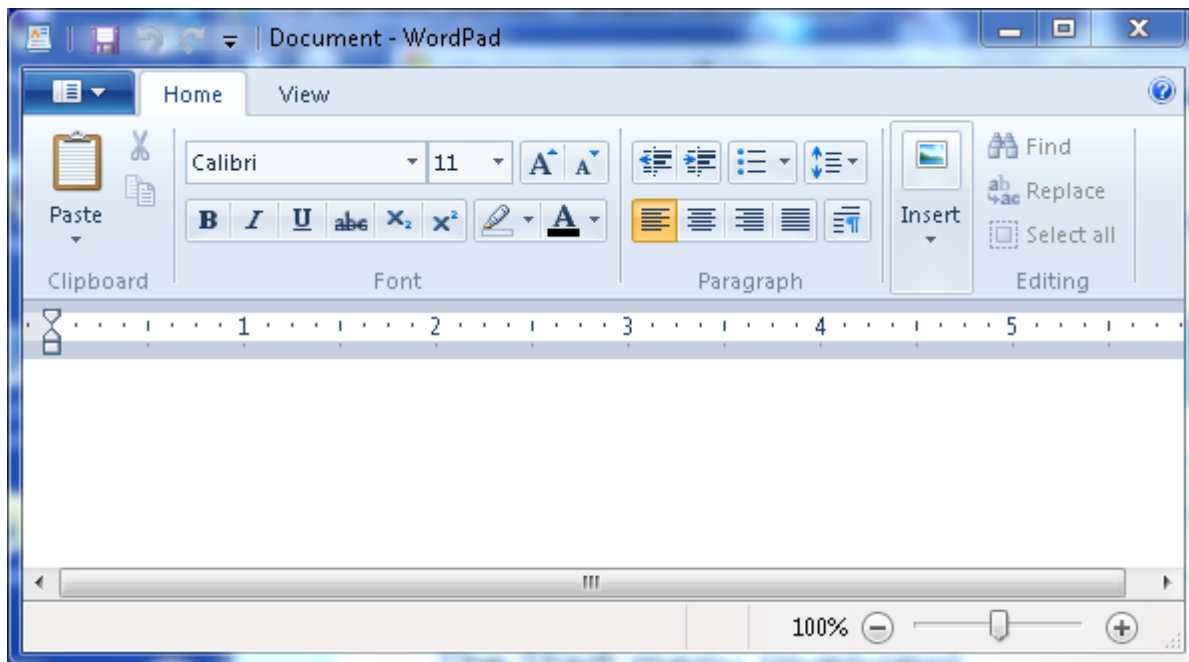
Text attributes

Unlike a typewriter, a word processor will let you change the size, shape, and color of the typed letters. A full fledged word processor will do much more. This can be done while you are typing or after you are finished.

The first thing you should notice is that there are many more items shown on the display underneath the **Menu Bar**. This presentation is known as the Windows Ribbon display. The items are separated into groups: Clipboard, Font, Paragraph, etc. Within each group are icons that perform related functions.

In the picture above, the first box in the Font group says **Calibri.** This is a font. The later electric typewriters had font balls or wheels that you could change to change the shape and size of the typed words. Here, we just click the ⏷ icon to the right of the word Calibri

and choose the font we want. If we click the to the right of the next entry (it will be a number) it will allow us to choose the text size.
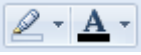
For instance:
This sentence was written using the Bookman Old Style font at size 12.
This sentence is written using Arial size 10.
This sentence was written in Freestyle Script size 22.

The **B** *I* and <u>U</u> symbols below the font/size selectors allow you to make your characters

bold, *italic* or <u>underlined</u>. The icons allow you to change the **color** or

<mark>background</mark> of the typed letters. In the Paragraph group, the icons allow you to align the text left, center, right or justify it respectively. Icons in the Insert group will allow you put in the current date and time or insert pictures from a file like we have used in this manual. Many of these features will be demonstrated in class.

When you select one of these text attributes, everything typed from that point on will take on that (those) attribute(s). That is, if you select ***bold italics all text you type after that will show up bolded and in italics.*** If you turn off those attributes, the text goes back to normal.

Selecting text

You can also change the attributes of text that has already been typed. You do so by <mark>SELECTING</mark> the text and then applying the attribute(s) to it. There are two ways to select text:

1. Keyboard method:
   a. Position the typing cursor, the blinking vertical bar, at the beginning (or end) of the text to be selected
   b. Hold down one of the <Shift> keys
   c. Use the cursor movement keys (arrows, home, end, page up, page down) to highlight the text
2. Mouse method:
   a. Position the mouse pointer (the I-beam), at the beginning (or end) of the text to be selected
   b. Hold down the left mouse button
   c. Using mouse movements, drag the mouse pointer across the text to highlight it.
3. <mark>In both cases, the selected text will be highlighted in blue</mark>
4. The selected text has to be contiguous and only one block of text can be selected at a time

CAUTION: Any, and every, action you take will be applied to the selected text until the selection is de-selected. This includes if you type any character on the keyboard, the entire selected block will be replaced by the character you typed.

5. To de-select text, move the typing cursor with the cursor movement keys WITHOUT having the <Shift> pressed, or, using the mouse, click anywhere in the document.

Cut, copy, paste

Selecting is also used to move or copy text from one location to another. With some text selected, the Clipboard options of Cut and Copy are made available.
Cut   –   to remove the selected text and place it in the clipboard
Copy –   to copy the selected text into the clipboard, leaving the original untouched.

The clipboard is a memory location into which text, or any computer object actually, can be temporarily stored until it is needed. It is used exclusively by the Cut or Copy and Paste functions. It is globally accessible by the current user during the current computer session. This means text, or a picture or a folder or a program can be cut or copied into the clipboard and later pasted to any other document or location you desire. This feature will be demonstrated in class.

Basic Computers Week 4 Objectives

Learn the following Terms:

     MODEM
     ISP
     DSL
     Broadband
     POP3 /SMTP email
     Web mail
     Username
     TCP/IP

Learn the different type of email systems

Use Outlook Express, or Windows Live Mail to:
     Send Mail
     Receive Mail
     Delete Mail
     Use Address Book

Learn some of the programs that come free with Windows
        Paint
        Calculator
        Outlook Express
        Internet Explorer
        Address book

Modem

The MODEM is the electronic device between the computer and the internet. The name is a contraction of the functions it performs. It can be internal or external to your computer. The original Modems were dial up Modems and used the telephone line and automatically dialed a number to connect you to the internet or mail server. Many computers have this type of modem built in internally. Since the telephone line from your home to the telephone office is analog and will not accept "ones and zeros" the modem converts ones and zeros into audio tones (this is called MOdulation) sends them over the telephone line to a modem on another computer which changes them back to "ones and zeros" (this is called DEModulation). As the speed of modems has increased over the years the sound that you can hear on the phone line is so fast that it just sounds like noise. If your software is setup to let you hear the modem while it is "handshaking" you will be able to hear the different tones in addition to the final sound. Handshaking is the term that is used to describe what the modem does when it first connects to another modem.
More common today are the DSL, Cable and Wireless Modems. They accomplish the same tasks as described above, but have a much faster speed capability and can be used simultaneously with the basic service. DSL (Digital Subscriber Line) uses your telephone line and Cable uses your cable TV service. There are two types of wireless modems. One uses cell phone frequencies that connect to your cell phone provider and the other uses a dedicated frequency that belongs to your Internet service provider.

Internet Service Provider

An Internet Service Provider (ISP) is a company that has equipment to connect to the Internet also known as the World Wide Web. Computer users can connect to an ISP by various means. The least expensive is via the telephone using a dial up MODEM as described above. If you are primarily going to use the internet for email and occasional visits to your bank, weather site, hobby site, etc. this is the least expensive method. This is called dial-up service. You are on the internet only when you dial and connect to the ISP. The disadvantage of this type of service is that it ties up your telephone line. If you need more speed or do not want to tie up your telephone while you are on the internet, you can go to a DSL MODEM which also requires special equipment at the telephone office for which you will be charged a monthly fee. In areas where the telephone company cannot provide DSL service you can find ISPs that have wireless or satellite service. The local cable TV company can also provide you with fast internet service. All internet services faster than dial-up are called broadband service.

If you do not travel a lot or want to get on the internet while traveling then a local ISP will normally give you better service and reduce the spam and viruses exposure. If you have a portable PC and want to connect no matter where you are the national ISPs will have local telephone numbers in most major cities. Another alternate is to use a local ISP and find an "internet café" or hotel where you can plug your computer (or wireless) and connect to the internet. Many of these connections are now free or included in your room charge. For

example, many Starbuck coffee houses and McDonalds restaurants provide this service. In Cancun Mexico you can go to the local Walmart, Costco or Sams Club and connect to the internet.

A local ISP will provide you with local email service called **POP-3** (Post Office Protocol version 3). They get the mail off the internet and store it locally until you connect to them. The mail is transferred to your local hard drive when you check your email. You do not even have to get on the internet to send and receive mail because they take care of it. You will have to use a email program to get this type of email.

National Internet Service Providers (ISPs) like Qwest, Comcast, Yahoo, Google and Hotmail, (Hotmail is now called Windows Live Mail) store your email on the internet and you read, write and edit your email over the internet using your internet browser. This type of email is called **HTTP** (hyper text transport protocol) or web mail. Web mail being on the internet means that you can get and send email no matter where you are. This used to be a major advantage of the national ISPs. Now, most all local ISPs also provide web mail access to your local POP3 service, thus providing you with the advantages of both systems. Windows comes with an internet browser called Internet Explorer. There are also free Internet Browser like Firefox and Chrome. There are other types of email that large companies use but are not applicable to home users.

TCP/IP address

When you sign up with an Internet Service Provider, they provide you with a TCP/IP (Transmission Control Protocol / Internet Protocol) address. This is like a telephone number. To connect to a web site you enter their address and when they reply they send the reply to your TCP/IP address. Although you could put in the actual number, your ISP has a look up computer that translates the www.websitename.com into a number and does this automatically. In case of a dial-up service your address is temporary and you will receive a new one each time you dial up. The ISP keeps track of your temporary number and lets you connect to the internet or local email address with the temporary number. If you have one of the broadband services like DSL, you have a permanent TCP/IP address as long as you have that service.

Email programs

Windows 10 provides a free email App called "Mail". Windows 7 did not include an email program but Microsoft does provide a free program that does both POP3 and HTTP mail called Windows Live Mail. You must download and install this program if you want to use POP3 or want to read your old email when you are not on the internet. We will demonstrate both POP3 email and HTTP program in class. Your ISP may provide you with their own program or you can use any of the many free email programs. To get to Web

email accounts you can use a internet browser or a email program that supports HTTP mail in addition to POP3 mail. A window like the one below will come up when you open Windows Live Mail.
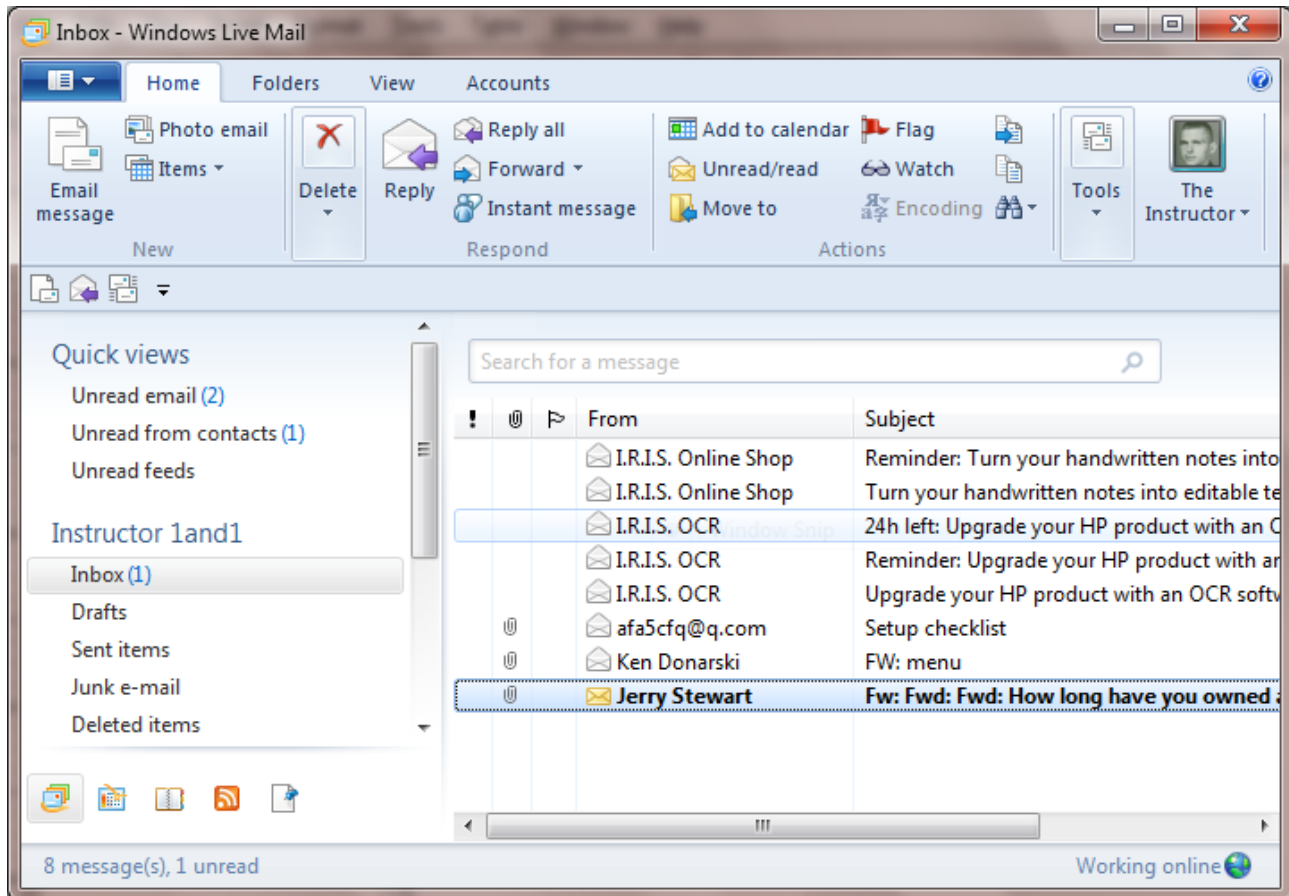
Notice that the example shows one unread mail in your inbox. To read your email all you have to do is double click on the specific email message in your inbox. This will bring a window up that lets you read your email. On that windows tool bar you will see a delete

icon ![Delete]. If you click on that icon it will put the email in the deleted items folder.

In the upper left hand corner in the "New" group you will see an icon that is labeled Email message. If you click on this icon and it will bring up a program similar to notepad and WordPad into which you can write or paste in your email.
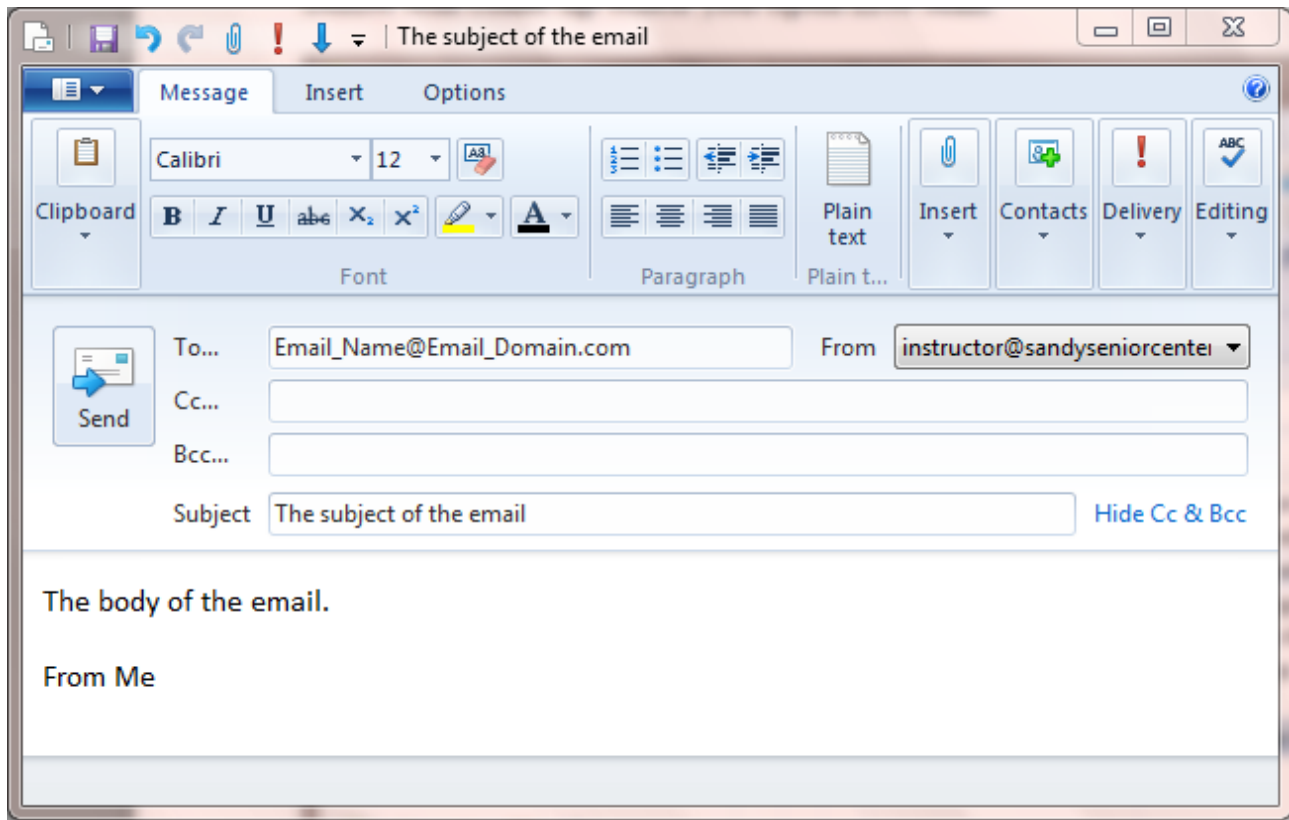
You type in the work space just like you did in WordPad using the same icons and tools. When you finish you will type in an email address of the person you want to send the email to. You should always enter a subject so that when the other person sees the email he knows if it is ok to open.

The **To…** label is a shortcut to the address book. The address book allows you to type in addresses only once and then select them later when you want to send to that person. This is handy because if you make any error in typing the email address it will not be
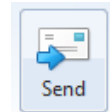
delivered. Once you finish your email you click on the Send icon and the email will be sent.

Although Outlook Express and other email programs can be setup to use http mail, you can use your internet browser to go to the site and run the email program on the site itself. For example, if you have a Yahoo mail account, you type www.yahoo.com in your browser window and click on the mail button on the main web page. You will then have to enter your email username and email password.

Email address

The format of an email address is as follows: username@ispname
The username is the name you select when you sign up with an ISP. It is best not to use your real name or common names. The people who send spam have dictionaries of common names that they try when they are sending spam. Use something like golf2bad as a user name. Adding numbers and punctuation helps. The ISP name will be the address of the ISP on the internet. Examples are yahoo.com, msn.com, networld.com, aros.net. The @ symbol between the username and ISP name means that it is an email address.

Appendix 1 – Math

The following information is to provide background only. Unless you plan to write software in the future, you will have little need for the details in this section. However, when you start buying equipment and you see memory and hard drives list one number and the computer uses another, you will not be as confused as you would be without this background. Digital personal computers are based upon binary logic. While humans count by ten, computers count by two. This means that only two states are required, one or zero. The RAM we talked about earlier works by storing either a voltage like 5 volts or zero voltage (well almost zero). Magnetic devices like the floppy disk and the hard disk orient the molecules either north-to-south or south-to-north. So, when we read these devices, all we have to determine is, if a one or a zero was stored, not the exact value. This is why digital/binary storage is more reliable than analog storage like audio on magnetic tapes. To represent a number like **254** in binary takes 8 digits (**11111110** - ones and zeros) and that is why you hear such large numbers when talking about computer memory. Just imagine how many ones and zeros would be required to store the number 1 million. Let's look at some examples.

Base 2 Binary	Base 10 Decimal	Base 8 Octal	Base 16 Hexadecimal
0	0	0	0
1	1	1	1
10	2	2	2
11	3	3	3
100	4	4	4
101	5	5	5
110	6	6	6
111	7	7	7
1000	8	10	8
1001	9	11	9
1010	10	12	A
1011	11	13	B
1100	12	14	C
1101	13	15	D
1110	14	16	E
1111	15	17	F
10000	16	20	10

Because writing down or remembering binary numbers would be difficult, most people who write software use either octal or hexadecimal numbering systems to write down binary numbers. For example the binary number **10011110** is **9E** in hexadecimal. The term byte refers to 8 bits of memory, the original size of digital words in personal computers (there is even a "nibble", a four bit word). The size of the word has increased over the years and is currently 64 bits wide but we still refer to memory size in 8 bit wide groups. The term **byte** and the use of these different numbering systems is why one kilobyte of memory actually means 2^{10} (1024) times 8 or 8192 bits in decimal form.

Actually, it is not important that computer users understand the mechanics of the math or numbering system used by the people who write software or build computers. But when you see two different numbers for the same device you will realize that the numbering system is the cause, not an error in the document.

Since only ones and zeros can be stored in memory, software programmers have generated conventions that are standardized to represent other symbols. One such convention is called ASCII and describes how letters and punctuations are stored in memory. It uses 8 bits (one byte), to store each symbol. Eight bits allows 256 different symbols to be represented (2^8). In decimal form, the letters a-z equals 97-122 and A-Z equals 65-90. This is probably why the term byte remains popular. A document with 1024 characters would require 1 kilobyte of memory. The standard CD used in computers stores 650 megabytes of data. That would be 650 million characters or about 260 thousand pages of an average book. By using data compression (more tricks with math) they can put over a million pages of data on a single CD.

Appendix 2 – BIOS or UEFI

The first functions of the BIOS are to initialize the video card and test memory. If everything is working properly you will hear a single beep in about a second, then you will see a number on your screen that is counting up to the amount of RAM that is installed in your machine. Shortly thereafter, you should see a screen that shows the hardware that the "BIOS" found on your machine. A typical list would show that a 3.5 inch floppy drive, the type of hard drive you have, CDROM, video card, modem, sound card, etc.

If the hardware is not all working properly or if a key component is missing, then you will hear several beeps. This assumes that the power supply, Central Processing Unit (CPU) and the first portion of your memory are working. No beeps mean they are not. There are presently three major BIOS manufactures. They are Award, AMI and Phoenix. Each BIOS manufacturer has their code for what the beeps represent. Technicians who work with computers can recognize these codes and use the code to troubleshoot. If you are interested, there are sites on the Internet that list these codes.

In addition to checking the hardware for basic responses it performs three other tasks. If you do not stop the boot up process, the BIOS stores the information of what it found in temporary memory. The operating system will examine this memory during the boot up cycle and use this information to configure itself to use all of the hardware that is available.

Second, it will allow you to modify the factory setting to improve performance or to adjust for new hardware. While the BIOS is busy checking the memory and hardware installed, it will display a message of which key you can press to stop the cycle and enter the BIOS program. The delete key, the F1 and F2 keys are common selections. Press the appropriate key and the first of several screens of data will appear. You will have to use the keyboard keys to navigate through the data and screens, as the mouse will not be working yet. The first screen will normally have the information necessary to allow you to add a second hard drive, CDROM or floppy. Items like MODEMS, sound cards, monitors, scanners and printers do not need changes in the BIOS. The settings that the factory installed are called the default setting. These provide all of the basic functions but may not be optimized if you have added hardware.

The last task the BIOS does, is to look at the storage device designated as the "boot device" and loads the operating system program into random access memory (RAM). The BIOS can be setup to look only at the hard drive, or it can be set to look in several devices in a specific sequence and use the first one that has a valid program. Many computers are set up to look at the floppy drive, then look at the hard drive. If your computer is set up this way, you will be able to see the light on the floppy drive come on for a second, and the sound of the drive looking for a diskette before it goes to the hard drive. This is one of the settings that you can change in the BIOS.

On many current PCs (since 2010), the BIOS function has been replaced with the **UEFI** function (Unified Extensible Firmware Interface.) While BIOS is fundamentally a solid piece of firmware, UEFI is a programmable software interface that sits on top a computer's hardware and firmware (and indeed UEFI can and does sit on top of BIOS). Rather than all of the boot code being stored in the motherboard's BIOS, UEFI sits in the/EFI/ directory in some non-volatile memory; either in NAND on the motherboard, on your hard drive, or on a network share. As a result, UEFI almost resembles a light-weight operating system. A computer boots into UEFI, an arbitrary set of actions are carried out, and then it triggers the loading of an operating system.

To access the UEFI setup screen on a Windows 8 machine, go to the Charms menu, run "Settings", "Change PC settings", "Update and recovery", "Recovery" and click **Restart now** under "Advanced startup." Once the machine has restarted, choose the options: "Troubleshoot,", "Advanced options" and "UEFI Firmware Settings" and then click **Restart**. After you have viewed the options and made any changes you desire, you will be prompted to save the changes and reboot into Windows again.

Appendix 3 – Saving data

If you are in a program that you have entered data, you can save that data by the following procedures. Look at the top of your program and find the menu bar. The first menu item will be "File".

Click on "File".

Move the pointer down and click on "Save As"
> A Window will open and provide you with options. Change the options as desired and type in a file name in the block provided.

The window will open up with the same options that were used the last time you used the "Save As" command. If the last person to save used "Documents" then that location would be shown in the "Save In" box of the window. If this is the case and you want to save on a flash drive you can select this option by clicking on the ▼ symbol next to the "Save In" box and it will display a list of storage devices. Select the flash drive that you have plugged in and it will appear in the "Save In" box.

Click on the Save button in the lower right hand corner.

The "Save" icon is a shortcut used to save a file which you have opened and modified and now want to save with the modifications. This command replaces the old copy with the new version using the same name. There are no options and it stores the file in the location from which it was opened using the original name of the file. More people have lost files because of this command than any other reason.

If you want to save both copies, you must use the "Save As" command and use a different name or location. Neither Windows nor any other operating system will allow you to use the same name in the same folder or location.

Appendix 4 – The history of Microsoft operating systems

Microsoft was the operating systems provided by IBM when they first entered the personal computers market in the 1980's. Prior to that, the most common operating systems for personal computers were CPM (Control Program for Microprocessors) and the Apple operating system. Microsoft called their operating system DOS short for Disk Operating System. They went through several updates of this system, ending with version 6.22. This was a text based, keyboard only system. Microsoft began offering a graphics based operating system in the early 1990s they called it Windows to compete with the Apple graphic operating system loaded on McIntosh computers. This graphics based operating system has gone through several updates.

The versions through Windows 3.11 had the same basic look with new features being added each year. Windows 95 began the next new look. Windows 95A (1996), Windows 95B (1997), Windows 98 (1998), Windows 98SE (1999) and Window ME (2000) are all updates of the original 1995 code. The same commands used in Windows 95 will work in all later versions. For that matter, many of the DOS commands that were first introduced in 1980 will still work in Windows. Together, all of the versions from Windows 95 through Windows ME are sometimes referred to as Windows 9x.

A network version of Windows primarily used in an office environment was called NT. It looks similar to Windows 9x but the software code has some basic differences related to security and networking. The security provisions prevented many games and some second source programs that would work under Windows 9x from working with Windows NT. Windows 2000 was supposed to combine the reliability and security of NT with the flexibility of Windows 9x. When this objective was not met from the home user aspect, Microsoft released Windows ME version of Windows 98.

In 2001 Microsoft released an OS called Windows XP (home and professional versions). Windows XP was about as different from Windows 95 thru Windows 2000 as Windows 95 was to Windows 3.1. It uses a new code base that is similar to NT and does require more advanced hardware than the previous Windows systems. Some of the old programs will run under XP, but you should check the compatibility list before you try. Vista was released in February of 2007 and looked a lot like XP but has many additional features.

Windows 7 was released in October of 2009. It retained many of the features of previous operating systems while it included code for 64-bit machines. It was generally regarded as more stable than previous operating systems since XP. In October of 2013 Windows 8 was released. The Start menu functions were redesigned to facilitate use on hand held, touch screen devices such as Smart Phones. This caused great anguish among PC users as they felt that they had lost the familiar Start menu features. In July of 2015 Windows 10 was released in which Microsoft attempted to combine the new features of Windows 8 and retain some of the functionality of the older OS's.

Another operating system that is used on PCs is called Linux. It is similar to the Unix operating system that is found on large mainframe computers. People who work on mainframe computers at work or school often use it. This is because the commands are the same or similar to UNIX. Linux is also popular as the operating system for network controllers for Internet service providers because of its excellent stability. The operating systems itself is free and can be downloaded from the Internet. IBM and HP and other manufactures will now provide their equipment with either Windows or Linux. Another free operating system is BSD (Berkley Software Distribution) which is compatible with Linux. The only disadvantage of using Linux is the lack of current availability of special purpose programs. There are many free word processor, spreadsheet, database, Internet browsers, email and other common office task programs available for Linux and BSD. OS2 was an operating system that IBM offered for a while on their systems which is no longer supported.

Appendix 5 – Terms

Application: This is another name for a computer program.

App: An abbreviation of "application," but is used specifically as the name of small programs accessed from the Start Screen of Windows 8/10 and available only through the Microsoft App Store. They are designed to run well on the smaller screens of hand held devices.

BIOS (Basic Input/Output System): The fundamental purposes of the BIOS are to initialize and test the system hardware components, and to load a bootloader or an operating system from a mass memory device

Bit: The smallest piece of information used by the computer. Derived from "binary digit". In computer language, either a one (1) or a zero (0).

Booting (also known as booting up): The initial set of operations that a computer system performs when electrical power is switched on.

Byte: A unit of digital information in computing and telecommunications that most commonly consists of eight bits.

CD-ROM (Compact Disk Read-Only Memory): A pre-pressed compact disc that contains data accessible to a computer for data storage and music playback. It is read in an optical disc drive.

Click or left click: Pressing and releasing the left mouse button in a short period of time. This selects the item under the pointer. This assumes the mouse has been set up for a right-handed person. The keys can be reversed to make it easier for a left-handed person.

Clipboard: A software facility that can be used for short-term data storage and/or data transfer between documents or applications, via copy and paste operations.

Close: To quit or exit a program or to remove a file from a program. On the program bar in the upper right hand corner is an icon with an X on it. This is the close button for that program.

CPU (Central processing unit): The portion of a computer system that carries out the instructions of a computer program, and is the primary element carrying out the computer's functions.

CRT (Cathode Ray Tube): A vacuum tube containing an electron gun (a source of electrons or electron emitter) and a fluorescent screen used to view images. Older technology replaced by LCD or LED monitors.

Cursor: A graphic symbol that shows the location of the text entry point in a word processing program or a text entry box in a program. The cursor is normally a thin vertical bar that blinks on and off. The thickness of this bar can be increased for visibility.

Desktop: The work area, which fills your monitor screen when you boot up in Windows. It normally will have several icons and a task bar displayed.

Double Click: Pressing and releasing the left mouse button twice in a short period of time. This performs the same function as a Left Click (select) and then pressing the *Enter* key.

Dragging: The procedure for moving or copying an object from one place to another on the screen with the mouse. You press the left mouse key and keep it pressed until you have moved the cursor (or icon) to the desired location.

DSL (Digital Subscriber Line): A family of technologies that provide internet access by transmitting digital data over the wires of a local telephone network.

DVD (Digital Video Disc or Digital Versatile Disc): An optical disc storage media format that was invented and developed by Philips, Sony, TOSHIBA, and Time Warner in 1995. Its main uses are video and data storage. DVDs are of the same dimensions as compact discs (CDs), but store more than six times as much data.

File: A collections of ones and zeros stored on a storage device like your hard drive that has been given a name. Programs can be a single file or a collection of files depending on how large and complex the program is. When you create a letter, or picture or data of any kind, the program you are using will let you save that data in a file.

Floppy Disk: A data storage medium that is composed of a disk of thin, flexible ("floppy") magnetic storage medium encased in a square or rectangular plastic shell.

Folder: There are thousands of files on your computer. To make it easier to find a file, the computer has "Folders" which lets you group files together under a specific name. This is similar to using cardboard folders or index dividers in a file cabinet. Computers have an additional advantage over file cabinets, in that it is easy to create multiples layers of folders. For example the top folder could be called Correspondence; it could contain folders called Bills, personal, business, children, etc.

Hard Disk Drive (HDD): A non-volatile storage device that stores digitally encoded data on rapidly rotating rigid (i.e. hard) platters with magnetic surfaces.

Hardware: Multiple physical components of a computer, upon which can be installed an operating system and a multitude of software to perform the operator's desired functions

HTTP (Hypertext Transfer Protocol): An application protocol for distributed, collaborative, hypermedia information systems.

Icon: A small graphic image that appears on your desktop that represents a <u>shortcut</u> to a program file or location. The icon will also have a name underneath providing an additional hint of its function.

Input device: Any peripheral piece of computer hardware equipment used to provide data and control signals to an information processing system.

ISP (Internet service provider): An organization that provides access to the Internet.

Keyboard: An input device, partially modeled after the typewriter keyboard, which uses an arrangement of buttons or keys, to act as mechanical levers or electronic switches.

LCD (Liquid Crystal Display): A flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals.

LED (light-emitting diodes) display: A flat panel display, which uses light-emitting diodes as a video display. An LED panel is a small display, or a component of a larger display.

Menu: A list of commands and or options you can select.

Motherboard: The central printed circuit board (PCB) in many modern computers and holds many of the crucial components of the system, while providing connectors for other peripherals.

Memory: Devices that are used to store data or programs (sequences of instructions) on a temporary or permanent basis for use in an electronic digital computer.

MODEM (MOdulator-DEModulator): A device that modulates an analog carrier signal to encode digital information, and also demodulates such a carrier signal to decode the transmitted information.

Open: To start a program or load a file into a program.

Optical Disc Drive (ODD): A disk drive that uses laser light or electromagnetic waves near the light spectrum as part of the process of reading or writing data to or from optical discs

Operating system: An operating system (OS) is a set of software that manages computer hardware resources and provides common services for computer programs.

Pointer: A graphic symbol that shows the location of the data entry point in a program or your desktop. The pointer changes size and shape depending on what is happening. An arrowhead is the default symbol when the desktop is displayed.

Post Office Protocol (POP): An application-layer Internet standard protocol used by local e-mail clients to retrieve e-mail from a remote server over a TCP/IP connection.

RAM (Random Access Memory): A form of computer data storage. Today, it takes the form of integrated circuits that allow stored data to be accessed in any order (i.e., at random).

ROM (read-only memory): A class of storage media used in computers and other electronic devices.

Right click: Same as left click except the button is on the right side of the mouse. The right click will bring up a menu. The choices on the menu can be selected by using the Left Click.

Run or **Execute**: To start a program.

Save: To store the information that you have entered in a file on a storage device. If you do not save your information, it will be gone when you leave the program that you are in.

Scroll bar: On the right side and/or along the bottom of some windows is a slider with arrows at each end. This appears when the size of the window and the resolution of the screen is not large enough to show the whole display. The arrows allow the screen to be moved to display what is currently hidden.

Software: Another name for a program. More specifically, software is program code (ones and zeros) that is loaded into volatile Random Access Memory. Firmware is program code that is loaded into non-volatile RAM. Your BIOS is a firmware program. It stays when you turn off the power. The programs you load from a diskette, CD or hard drive are software programs and they must be reloaded the next time you power up your computer.

Start button: The button that will display the main menu for Windows.

Taskbar: At the bottom of the screen (normal location) will be the taskbar that tells you what programs are running and provides a starting menu. As software is loaded onto your machine, icons may be added to your taskbar to provide additional shortcuts. On the right corner of the task bar, the current time will be displayed.

Tile: A square or rectangle containing an icon or image that represents a program, App or folder on the Start Screen of Windows 8/10. Clicking (once) on a tile will execute (open) that program or file.

Title bar: The bar at the top of the window that contains the name of the program you are running and some button icons.

UEFI (Unified Extensible Firmware Interface): defines a software interface between an operating system and platform firmware. This definition replaces the **BIOS** definition on newer PCs.

USB (Universal Serial Bus): An industry standard developed in the mid-1990s that defines the cables, connectors and communications protocols used in a bus for connection, communication and power supply between computers and electronic devices.

USB flash drive: A flash memory data storage device integrated with a USB (Universal Serial Bus) 1.1, 2.0, or 3.0 interface. USB flash drives are typically removable and rewritable, and much smaller than a floppy disc.

Window: The area of the desktop that displays the program that you are running.