People's Resource Center

Introduction to Computers
Module 1

Course Overview

Introduction to Computers will help you will learn the basics of how to use a personal computer. The outline of topics to be discussed and reviewed follows:
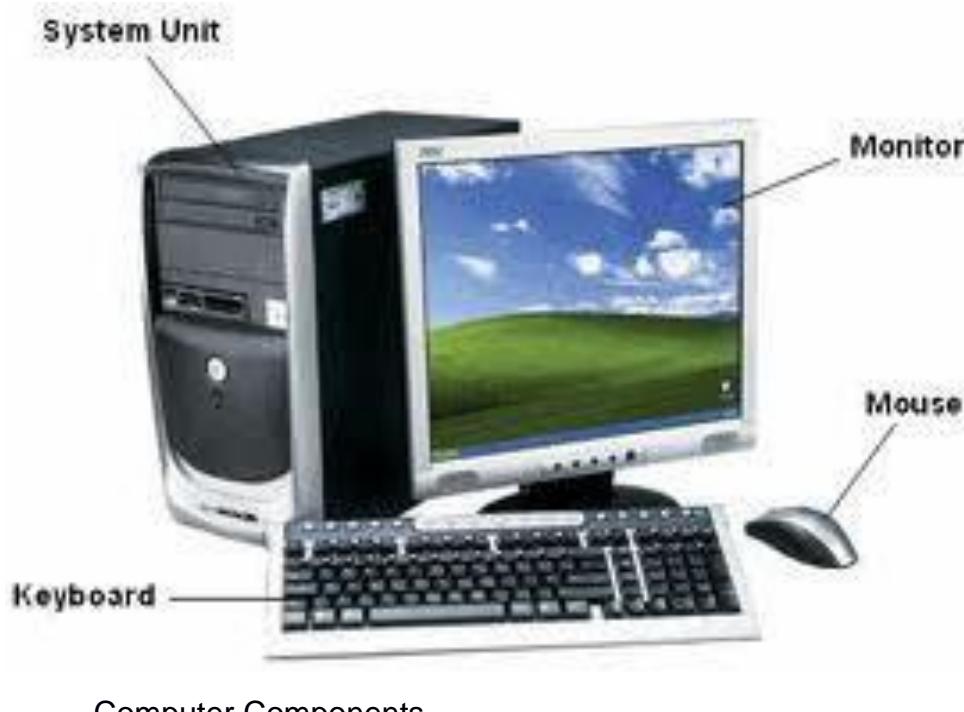
List of Modules

1. Parts of a Computer
2. The Mouse & Keyboard
3. Window Management and Basic Applications
4. Introducing the Internet
5. Common Computer Actions
6. Using Email
7. Putting it all Together

Peoples Resource Center

1. Parts of a Computer
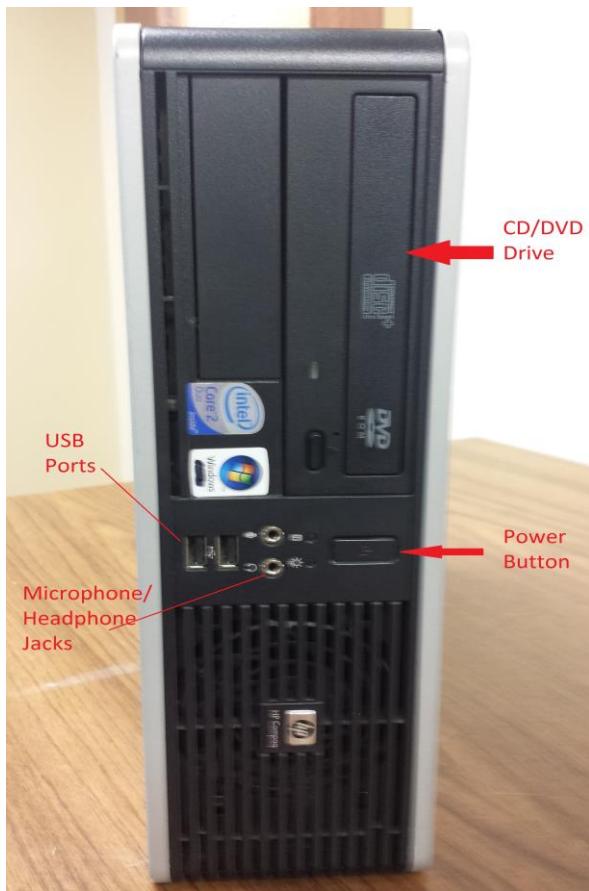
The main components include:

- System Unit
- Monitor
- Mouse
- Keyboard

Computer Components

System Unit

Inside the system unit are the printed circuit boards, memory, disk, and fans that make the computer work.

System Unit - Front

On the outside of the system unit you will find lights, buttons and connectors. Each model of computer will look slightly different, but just like a car, every computer will have a way to perform the functions you need.
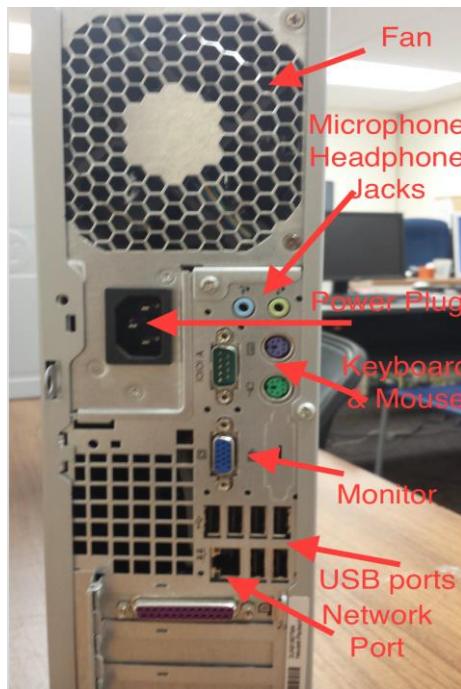
Connectors are used to plug into power, computer components (monitor, keyboard, mouse), and other devices you will use to help your computer do useful things. Typically at the front of the computer, you will find:

1. USB Connectors – Used to connect devices like a flash drive to the computer.

2. Power Button – Used to turn the computer on (this is not used to turn the computer off).

    Following are examples of power buttons

3. Headphone Connector – Used to attach headphones to the computer.

4. Microphone Connector – Used to attach a microphone to the computer.

5. CD/DVD Drive Bay – Internal CD/DVD drive would be installed here.
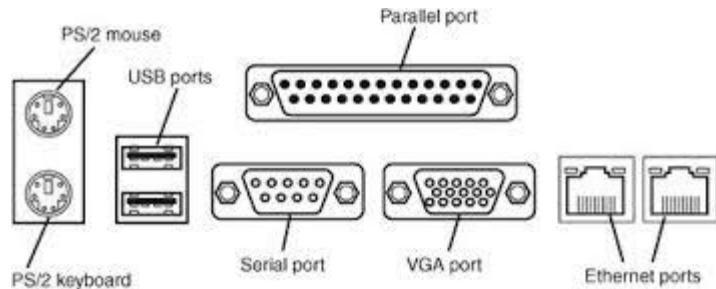
System Unit- Back

Typically at the back of the computer, you will find:

1. Fan
2. Power Plug Connector– Provides electricity to the computer
3. Headphone Connector
4. Microphone Connector
5. Keyboard Connector
6. Mouse Connector
7. Monitor Connector
8. USB Connectors – Used to connect devices like a flash drive to the computer.
9. Network Port (for Internet access)

Here is another view of the commonly used connectors

Monitor   **Ethernet Network**   **USB**   **Micro Head Memory Card Slot**
                                                                        Phone phone

The system unit contains the processor (CPU), memory, and storage. When comparing computers, these are often the numbers that are thrown around.

The internal memory is used to hold an image of programs and data being used while the computer is running. The hard disk is used to store programs and information that is kept when the computer is turned off so it is always available.

To give a feel for memory and disk storage, here is an infographic from

http://www.slideshare.net/williamcraig/datastorage-ig-final

BYTE
(8 bit)

1 **Byte** = A single character ('A')
10 **Bytes** = A single word ('Applesauce')
100 **Bytes** = Telegram or punch card

KILOBYTE
(1,000 bytes OR 10³ bytes)

1 **Kilobyte** = A very short story
2 **Kilobytes** = A typewritten page
10 **Kilobytes** = Static web page
100 **Kilobytes** = A low-resolution photograph
200 **Kilobytes** = A box of punched cards

MEGABYTE
(1,000,000 bytes OR 10⁶ bytes)

1 **Megabyte** = A small novel OR a 3.5 inch floppy disk
5 **Megabytes** = The complete works of Shakespeare OR 30 seconds of TV-quality video
10 **Megabytes** = A minute of high-fidelity sound OR a digital chest X-ray
20 **Megabytes** = A box of floppy disks
500 **Megabytes** = A CD-ROM OR the hard disk of a PC

GIGABYTE
(1,000,000,000 bytes OR 10⁹ bytes)

1 **Gigabyte** = A pickup truck filled with paper OR a symphony in high-fidelity sound OR a movie at TV quality
20 **Gigabytes** = A good collection of the works of Beethoven OR 5 Exabyte tapes OR a VHS tape used for digital data
50 **Gigabytes** = A floor of books OR hundreds of 9-track tapes
500 **Gigabytes** = The biggest FTP (file transfer protocol) site

In 2017, a typical PRC computer has a dual core CPU, 2 gigabytes of internal memory and a disk with 80 or more gigabytes of disk storage . A hard disk is inside the system unit,

and looks something like this:

Monitor

The monitor is a TV like device used to display text and graphics. The monitor, like the System Unit, requires an AC power connection and has an on/off button. In general, the monitor will turn itself into low-power mode when the computer is inactive or turned off, so the power button on the monitor does not usually have to be turned off.

Following is a graphic showing the detail of the buttons on the monitor.

Mouse

The mouse is a pointing device used to point and select items that appear on the monitor. The class will focus on details of mouse usage in the next session.

Keyboard

The keyboard is used for entering letters, numbers, and punctuation.

2. Connections

If USB is used, you can plug into any available USB port. The USB port is rectangular, and fits in only one way. (Try flipping it around if it doesn't slide in easily.) For the monitor, keyboard, and mouse, if USB isn't used, the connections are color coded; both the cord and the connector will be the same color. For example the connector on the end of the monitor cord is blue; it plugs-in to the blue connector on the back of the computer.

USB can also be used to connect other devices, including:

- Web camera
- Printer
- Phone (e.g. for transferring photos)
- External storage devices

Below is a picture of a small portable (flash/thumb) drive and a larger external storage drive, both of which can plug into the USB port and can be used for extra storage or moving large files between computers.

External Storage Drives

Below is a picture of a printer.

One very important additional component is a surge protector to prevent damage to the computer caused by electrical power surges. Sensitive electronic computer components can easily be damaged by the power surges generated by storms. Never connect the computer directly to the wall outlet – always connect it first to a surge protector.

Exercise: Look at the connectors on the computers

3. Turning on the computer

If the computer is turned off, you need to press a button on the system unit. To figure out if the system is off:

1. Check to see if a light on the monitor is on. If not, push the power button on the monitor

2. Check to see if there is a light on the system unit. If so, move your mouse or press the "shift" key on the keyboard to bring the system out of hibernation mode.

3. If there is no light on the system unit, locate the power button on the system unit and press it and release.

Once the light comes on the system unit, the monitor will display the status of the system as it starts up. It takes some time, about a minute usually, before the system is ready for you to start using it.

When the system is done turning on, there will be a message telling you to press Ctrl-Alt-Del to start using the system. To log on to the system:

1. On the bottom of the keyboard, find the key marked Ctrl. Press the key and hold it down with the middle finger on your left hand while continuing with the next step

2. On the bottom of the keyboard, find the key marked Alt. Press the key and hold it down with the index finger on your left hand while continuing with the next step

3. In the upper right portion of the keyboard, find the key marked Del. Tap the key with a finger on your right hand, and then release the keys with your left hand.

4. The screen will change and ask for User Name and Password. On PRC computers, the User name is **student**, and the password can be left empty.

5. Press the Enter key (or you may click on the arrow). At this point, the computer will do some more work, bringing up the Windows desktop
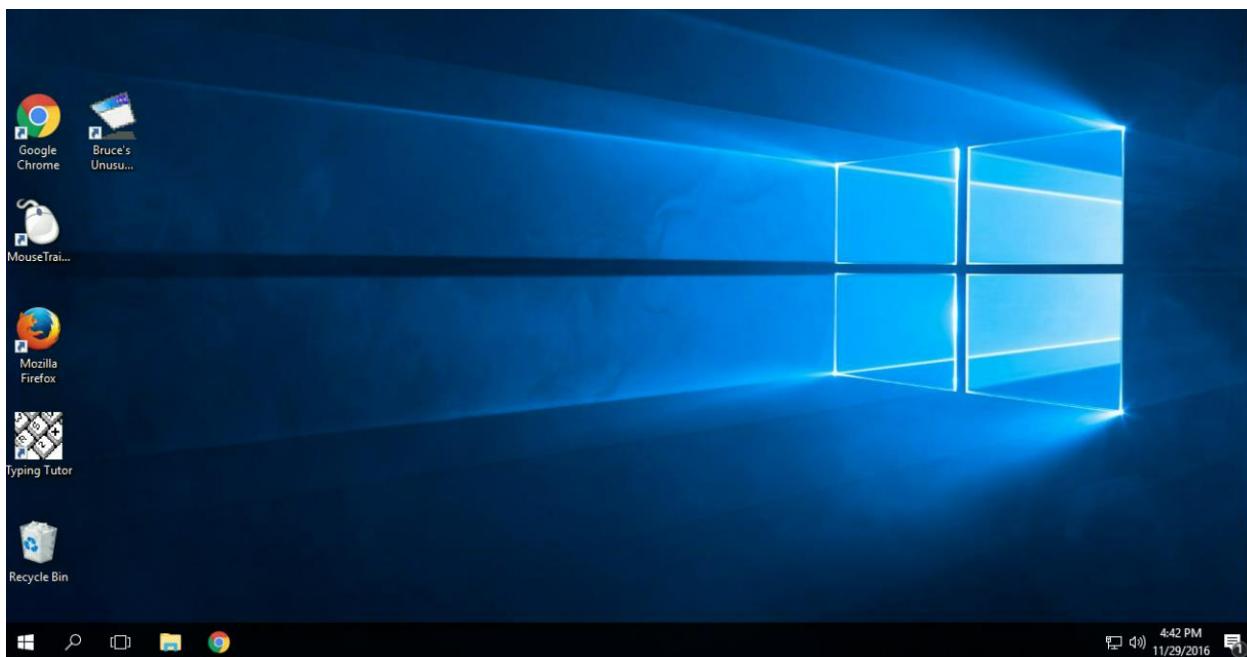
Exercise: Turn on your computer and log in as "student"
Your instructor will give you directions on how to login to the remote PRC session.

Your instructor will give you directions on how to login to the remote PRC session

4. Desktop

The following picture shows a Windows 10 desktop.

As the computer gets ready for use, the first thing you will see displayed on the monitor is called the desktop. The desktop is how you control the programs on your computer. The desktop is made up of:
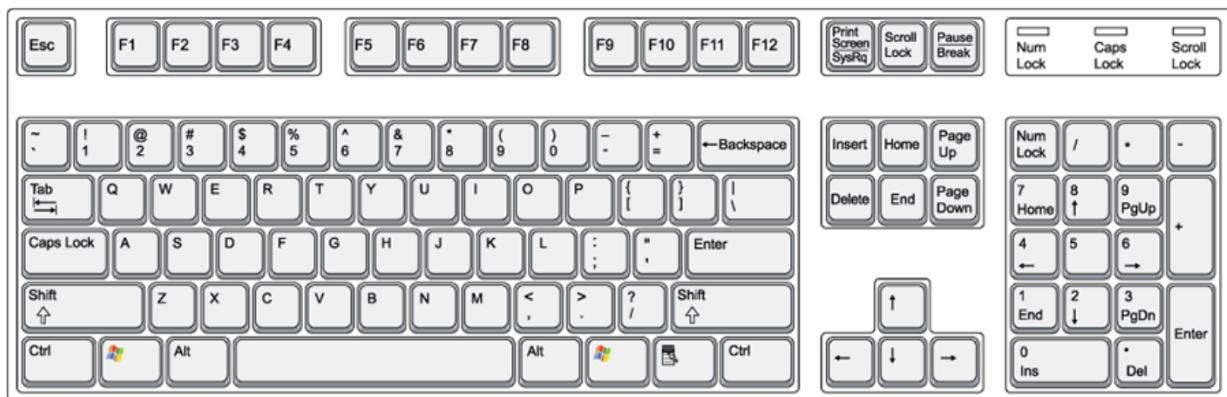
- Desktop Background – The Desktop Background is the picture that fills the monitor screen.

- Icons – Icons are the small pictures representing files or programs.

- Task Bar – The Task Bar is found at the bottom of the desktop screen.

The Task Bar shows what programs are running on the computer and provides access to all of the programs and files on your computer, as well as information on the status of the computer.

More details on this will follow in future class modules.

5. More on the Keyboard

The Computer Keyboard has all the letters in the alphabet, the numbers, keys for punctuation, and some special keys.

The Keyboard
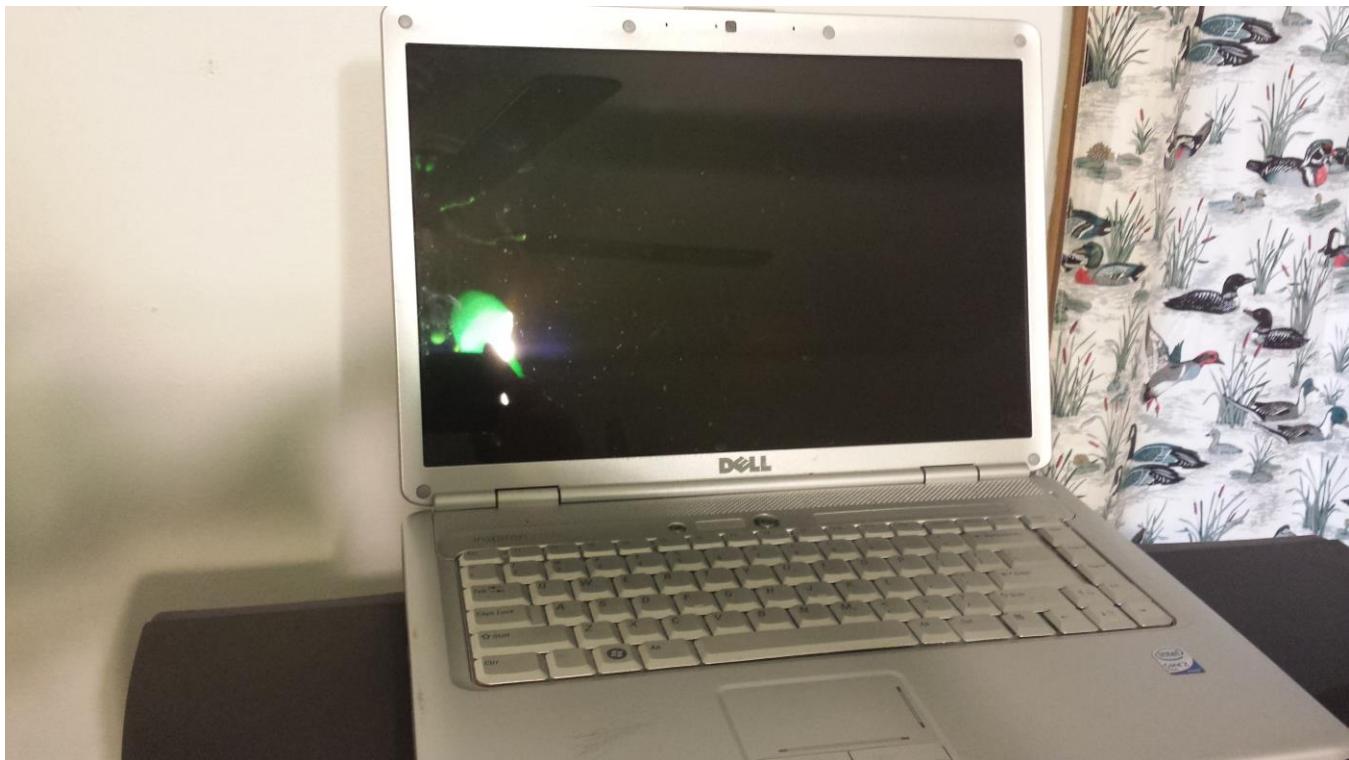
Some of the most important special keys on the keyboard are:

- **Shift**. Used to change lower case letters to upper case letters, or to select the punctuation mark at the top of the key. To use the shift key, press and hold it down while striking the key with the letter or punctuation you want.

- **Enter**. Used to send the cursor to the next line or execute a command or operation

- **Caps Lock**. Puts the keyboard into a mode where every letter is UPPER CASE. If you tap it a second time, it will take it out of Caps Lock mode. There is a light on keyboard showing if you are in Caps Lock mode

- **Backspace**. When typing, it will delete the last character you typed, or the character to the left of the insertion point. It will also delete all selected characters if you have some selected.

- **Delete**. When typing, it will delete the character to the right of the insertion point. It will also delete all selected characters if you have some selected.

- **Ctrl** & **Alt**. These are keys used in combination with other keys to perform keyboard shortcuts.

- **Tab**. When typing, will move the cursor to the next tab stop. On a pop-up or web form, it will move to the next field.

- **Windows**. This will open the start screen. If you tap it again, it will close the start screen.

- **Esc**. This can sometimes be used to cancel an action. For example if you start to rename a file, and decide you want to go back to the way it was, you can hit the Esc key.

The arrow keys on to the right of the keyboard can move the cursor in a document.

6. Desktops and Laptops

So far, we have talked about desktop computers, and their components. Another option for computers is a laptop.

A laptop computer:

- Combines the system unit, monitor, keyboard and mouse into one unit

- Instead of a mouse, a touchpad is often provided:

- May contain built in speakers, microphone and web camera

- Is smaller in size and weight

- Is portable

- Can run on AC or battery power. Note that the lifetime of the battery is typically shorter than of the laptop.

- Typically cost more than a desktop computer

- Due to density and issues with heat and dust, often do not last as long as a desktop computer

7. Hardware vs. Software

Everything we have looked at so far in this module is called computer hardware. Hardware is the things you can see and touch, like the monitor and keyboard. Software is what allows the computer to do things with the hardware. You may hear software referred to as "programs". There are two types of software:

- Operating System

- Application

Operating System

Operating System software tells the computer what to do and how to do it. The operating system coordinates the interaction between the keyboard, mouse and computer. Operating System software comes installed on the computer. Windows is an example of operating system software. It includes all the programs that work with the hardware and make it possible for the application programs to use the mouse, monitor, disk, and USB devices.

Application Software

Application software is the programs installed on the computer that let us do things we find useful. For example if you wanted to write a letter you would need a word processing program. Microsoft Word is an example of word processing application software. Dropbox is an application that can be used for storing and sharing files on an internet-cloud computer. Some application software comes installed on the computer. Additional software can be purchased/downloaded and installed at any time.

8. Keyboard Practice

Everything we learn in this class will stay with you if you practice it.

One of the things we need in order to use the computer effectively is to be able to type. Some people can type very fast, and they do that because they've practiced. The computers provided by the PRC have a program to help you learn and practice typing.

Typing Tutor is a program which you can use to practice and improve your typing speed and accuracy.

## Exercise: Find Typing Tutor on your Desktop, Open it, and start using it.
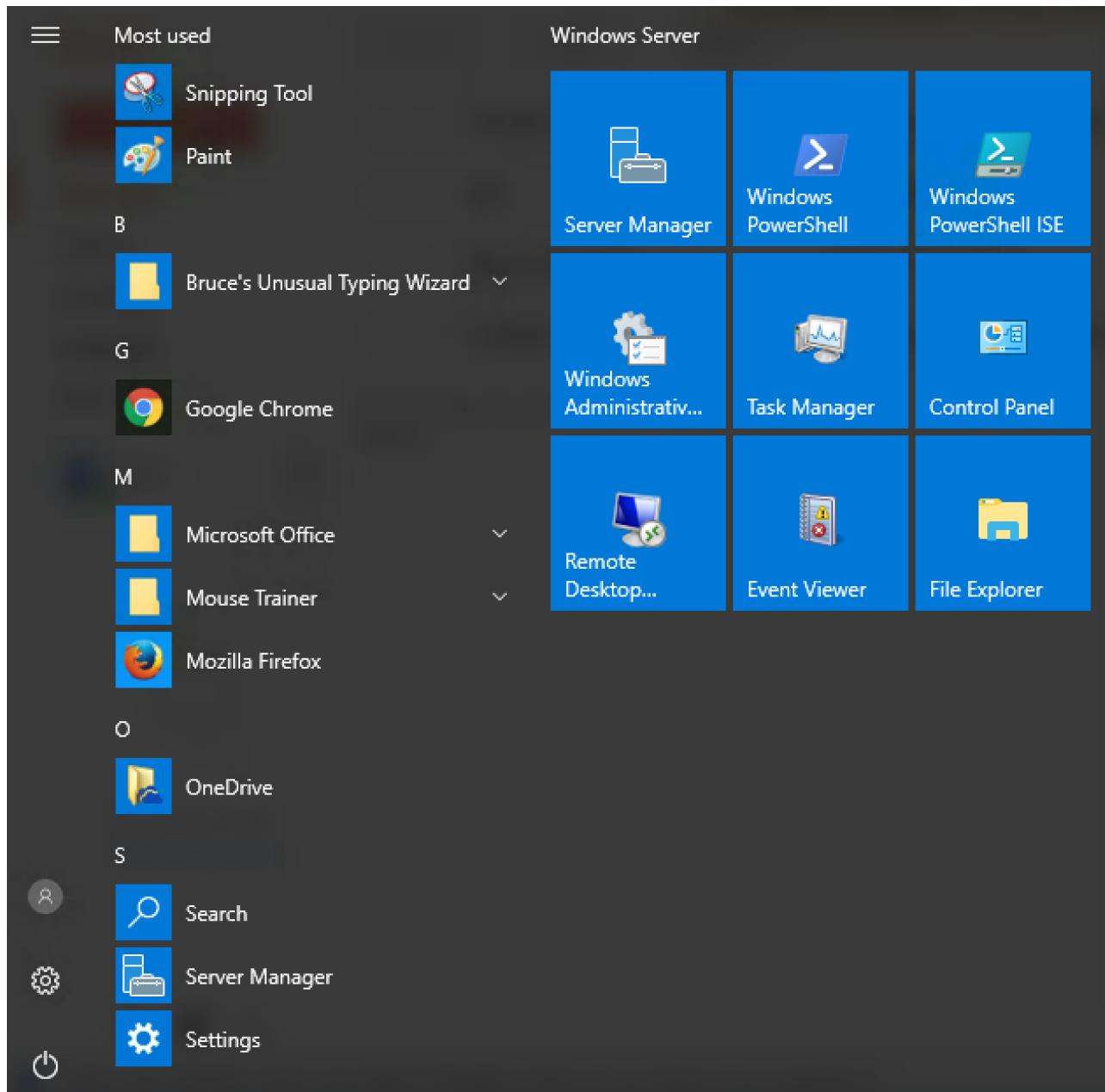
1) Your instructor will give you directions on how to login to the remote PRC session.

2) On your desktop, locate the Typing Tutor   icon

3) Move the mouse so the cursor points at the Typing Tutor icon, then click the left mouse button and release it.

4) Hit the Enter key on the keyboard

5) Follow the instructions on the screen.

6) We will practice typing in each class session. If you have a computer from the PRC, you can practice Typing Tutor at home.   Just 10 minutes every day will improve your keyboarding skills

9. Computer Shutdown
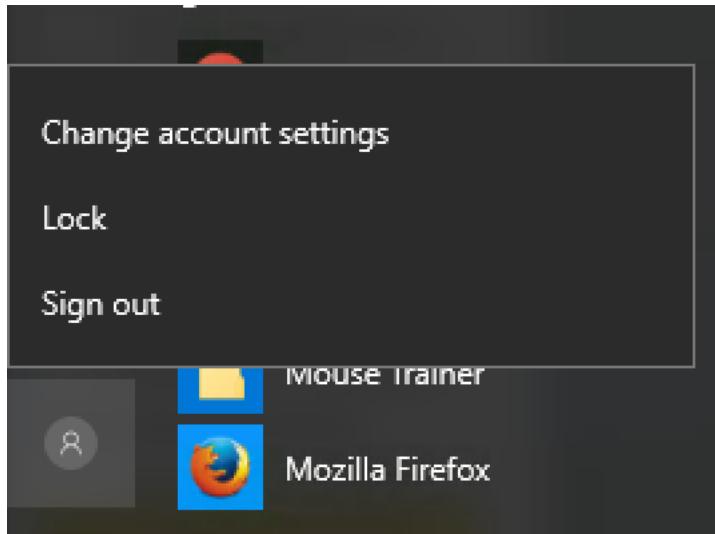
When you are done using the computer you sometimes need to turn it off. The proper way to do that is to shut down the computer. Proper shutting down the computer ensures that your work will be saved and no data will be lost. **You do not want to press the power button or pull the plug on a computer, because this can damage the computer.**

To disconnect from the Remote Windows 10 machine, the process will be similar, except that instead of clicking on the power button and choosing Shut Down, you will click on the user icon in the Start menu, and select the "Sign Out" option.

You can bring up the Start menu by clicking the Start icon in the lower left corner of your taskbar, hovering your cursor over the Start icon in the lower left corner of your taskbar, or by hitting the Windows key on your keyboard.

From the Start Screen, there is an icon representing a power button in the lower left-hand corner. Above that is the gear icon for settings, and above that is the User icon for the current user. If you click that, you will see options for Change Account Settings, Lock, and Sign Out. If you are running windows on your local computer, you will see options on the Power Button for Sleep, Shut down, and Restart.

Exercise: Sign out from the remote machine

8. Homework

Practice what we did in class today

Practice typing

Practice shutting down your home computer

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