COMPUTER LITERACY

System “Boot”
When a computer is turned on the system is designed to automatically perform several different procedures required to get the computer up and running. This process is called “booting” the computer, or simply referred to as a system boot. The term “boot” is a reference to pulling one’s self up by the bootstraps.
The first step in the boot process is to access the CMOS chip on the motherboard.

The CMOS chip is battery powered.

Battery power allows this chip to keep track of the current date and time (system time).

The CMOS chip also holds and executes the instructions for the POST...
POST (Power On Self Test)

- The purpose of the Power On Self Test is to check that all basic pieces of hardware are in good working order.
- The POST checks the status of such components as the hard drive, keyboard, mouse, monitor, etc.
- Once this operation is complete the POST accesses a ROM chip that holds the BIOS.
-ROM chips hold instructions that are to be read only
-The content of a ROM chip is seldom (if ever) changed
-Unlike a RAM chip, in which content is constantly and easily changed by the user – the content of a ROM chip is designed to not be changed by the user – special technical procedures are required to “write” to Read Only Memory
One use for a ROM chip is to hold the BIOS

The BIOS of a computer system is a set of information that is specific to that machine

The BIOS contains specific information on the number of hard drives, amount of memory, etc.

Information in the BIOS can be accessed and changed by the user during the boot procedure – this generally involves pressing a specific key on the keyboard while the system is booting. NOTE: do not change BIOS settings unless you know what you are doing!
The “kernel”

- One activity assigned to the BIOS is to load the kernel from the hard drive into memory.
- The kernel is that portion of the OS that contains the most frequently used system commands.
- Examples of frequently used system commands include move, copy, rename, delete, run, etc.
- The kernel remains in memory at all times while the computer is running.
- Commands not included in the kernel are retrieved from the hard drive when needed.

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NOTE: the word “kernel” implies a small portion of something much larger – as in a “kernel” of corn – it is only a very small piece of the entire ear of corn!
GUI (Graphical User Interface)

- The kernel also includes, and thus loads, the GUI.
- The GUI provides the “desktop” that appears on your monitor.
- This “virtual” desktop is a graphic representation of our physical world – it uses icons (small pictures), menus (command choices), windows (containers) and dialog boxes (a communication device between the user and the OS) as a means of providing a familiar visual environment in which to work.
“Boot” process complete...

- Once the system has been booted the OS controls the computer - and provides the user with
  - system commands and...
  - the ability to run applications

- This means... that if YOU know how to use the OS, YOU now control the computer!

- To truly claim that you know how to use a computer, you must know how to use the OS that is running that computer!
Acronyms used in this presentation:

- **OS** — Operating System
- **CMOS** — Complementary Metal Oxide Semiconductor
- **POST** — Power On Self Test
- **ROM** — Read Only Memory
- **BIOS** — Basic Input / Output System
- **GUI** — Graphical User Interface