Operating Systems and Using Linux

**Topics**
- What is an Operating System?
- Linux Overview
- Frequently Used Linux Commands

**Reading**
None.

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**What is an Operating System (OS)?**

- A computer program
- Performs many operations, such as:
  - Allows you to communicate with the computer (tell it what to do)
  - Controls access (login) to the computer
  - Keeps track of all processes currently running
- At this point, your main concern is how to communicate with the computer using the OS

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**How Do I Communicate With the Computer Using the OS?**

- You communicate using the particular OS’s **user interface**.
  - **Graphical User Interface (GUI)** - Windows
  - **Command-driven interface** - DOS, UNIX, Linux
- We will be using the **Linux** operating system, which is very similar to UNIX.
How Do I Communicate With the Computer Using the OS? (cont.)

- When you log in to the Linux system here, a user prompt will be displayed:
  ```
  linux[1]# _
  ```
  where # is the number of the Linux server that you have connected to. You may use any of the Linux servers.

- The number in the brackets will change as you work. It is the “number” of the command that you are about to type.

- If this prompt is not on the screen at any time, you are not communicating with the OS.

Linux Overview

- Files and Filenames
- Directories and Subdirectories
- Frequently Used Commands

Files

- A file is a sequence of bytes.
- It can be created by
  - a text editor (xemacs or pico)
  - a computer program (such as a C program)
- It may contain a program, data, a document, or other information.
- Files that contain other files are called directories (sometimes called folders).
Linux Filenames

- Restrictions
  - May not contain blanks or other reserved characters
  - Have a maximum length
  - Are case sensitive
- It is best to stick with filenames that contain letters (uppercase or lowercase), numbers, and the underscore ( _ ) for now.
  - Project_1.c

Directories

- Directories contain files or other directories called subdirectories. They may also be empty.
- Directories are organized in a hierarchical fashion.
- They help us to keep our files organized.

Directories (cont.)
Directories (cont.)
- Your home directory is where you are located when you log in
  - /afs/umbc.edu/users/j/d/jdoe28
- The current directory is where you are located at any time while you are using the system.
- Files within the same directory must be given unique names.
- Paths allow us to give the same name to different files located in different directories.
- Each running program has a current directory and all filenames are implicitly assumed to start with the name of that directory unless they begin with a slash.

Subdirectories
- Are used for organizing your files
- For example,
  - make a subdirectory for CMSC104
  - make subdirectories for each project

Moving in the Directory Tree
- . (dot) is the current directory.
- .. (dot-dot) is the parent directory.
- Use the Linux command `cd` to change directories.
- Use dot-dot to move up the tree.
- Use the directory name to move down.
- Use the complete directory name (path name) to move anywhere.
Frequently Used Linux Commands

- passwd, man, lpr
- pwd, ls, cat, more, cd, cp, mv, rm
- mkdir, rmdir
- ctl-c

References:
- Linux man page
- Links from the 104 homepage
- Books and the Internet

Wildcard Characters

- You will find **wildcard characters** useful when manipulating files (e.g., listing or moving them).
- The wildcard characters are `*` and `?`
  - `?` is used to represent any single character.
  - `*` is used to represent 0 or more characters.