Introduction to UNIX

CS 2204
Class meeting 1

What is UNIX?

- A modern computer operating system
- Operating system:
  - "a program that acts as an intermediary between a user of the computer and the computer hardware"
  - Software that manages your computer’s resources (files, programs, disks, network, …)
  - e.g. Windows, MacOS
- Modern: features for stability, flexibility, multiple users and programs, configurability, etc.

Why UNIX?

- Used in many scientific and industrial settings
- Huge number of free and well-written software programs
- Open-source OS
- Internet servers and services run on UNIX
- Largely hardware-independent
- Based on standards

Brief history of UNIX

- Originally developed at Bell Labs for internal use in 1970s
- Borrowed best ideas from other OSs
- Meant for programmers and computer experts
- Two main threads of development:
  - Berkeley software distribution (BSD)
  - Unix System Laboratories System V

UNIX variants

- Sun: SunOS, Solaris
- GNU: Linux (many flavors)
- SGI: Irix
- FreeBSD
- Hewlett-Packard: HP-UX
- Apple: OS X (Darwin)
- …

Parts of the UNIX System
Parts (Continued...)
- Kernel: heart of the OS.
- Shell: Interpreter between the user and the computer.
- Tools and applications: Accessible from the shell.

Getting started

Logins and passwords
- You must have an “account” on the UNIX machine you’re trying to use
- “login” is your user name (usually some variant of your real name)
- Your password will not echo as you type
- Remember good password practices

The shell prompt
- After logging in, you get some information about the system, then a shell prompt
- *shell*: The program you use to send commands to the UNIX system
- Prompts take many forms:
  * $`
  * username@hostname>
  * hostname # %

Entering commands
- Anytime you see a prompt, you can enter a command for the shell
- Some commands are a single word
- *who*  
- *date*  
- *ls*  
- Others use additional information
  * cat textfile  
  * ls -l*

Command syntax
- Commands must be entered exactly. If you make a mistake before entering, delete/backspace to fix it. Be careful!
- *command options argument(s)*  
- Options: modify command’s execution
- Arguments: often filenames that tell a command what to operate on
Example commands: ls
- ls -l
- ls -a -l
- ls -a
- ls -a; ls -l
- ls textfile
- ls folder
- ls textfile1 textfile2
- ls -ai textfile

If you don’t get a normal shell prompt...
- A program is probably running
- If you see a special program prompt, try to quit the program (quit, bye, exit)
- If you see nothing, you can
  - Stop the program with CTRL-z (program will wait until started again)
  - Interrupt the program with CTRL-c (program will usually die)

Ending your session
- **Always** log out when you are done
- Use the command `exit` (also sometimes logout or CTRL-d)
- Note: if you are running a window system, logging out of the shell only ends that shell. You must also log out of the window system using a menu.