

CS206 Lab0 Unix and Emacs

Review 113Lab1 (113Lab1.pdf) and make sure you are familiar with all materials there. This is especially important if you did not take CMSC 113. There is a fair amount of overlap between these two labs, so feel free to skip when appropriate.

Remember to head to a TA and show that you have completed all exercises.

All programming assignments and labs in this class must be completed on our Linux server. You can either come to our lab, or connect to our server remotely via an ssh client (see below).

The Unix operating system consists of three parts: the kernel, the shell and the application programs. The kernel is the heart of the operating system, it allocates processor time and memory, handles file operations and user tasks. The shell acts as an interface between the user and the kernel. The shell is what you are typing to at the prompt after you log in.

Remote connections

- Terminal (mac)
- PuTTY (windows), SecureCRT (windows),
- ssh
 - Connect to powerpuff.cs.brynmawr.edu

Linux/Unix basics

- Login
- **man (RTFM)**
 - man <entry>
 - Displays the manual for a given command
 - Flags you should know
 - -k Search the man pages for the given word.
 - -a Displays all entries for the command instead of the first one (if there are more than one).
- **ls**
 - Displays all the files in the directory.
 - Flags:
 - -l displays additional information for each file
 - -a displays all files, files that begin with "." are not displayed automatically
 - -F displays "/" after directories, and "*" after executables
 - -t sort by timestamp instead of alphabetically
- **mkdir**
 - mkdir cs206
 - You can use this as your primary directory for storing your homework files and stuff; create subdirectories for each of the homeworks and projects.
- **cd**
 - cd cs206
 - Switches the current working directory. All file names that you enter are relative to the current working directory.
 - cd ..

- cd with no argument (cd ~)
- **pwd**
 - Displays the current working directory
- Understand the path
 - The file system groups all files together in a hierarchical tree structure.
 - The top of the hierarchy is traditionally called the root.
 - Root is denoted by /
 - Any path name that starts with a / is a so-called absolute path name
 - Traverse the path (/home/dxu), e.g. whatever pwd returned:
 - cd /
 - ls
 - cd home
 - ls
 - cd dxu
- File related commands
 - **cp**
 - cp test.txt and long.txt from ~dxu/handouts/cs206/labs/00
 - cp test.txt test2.txt
 - Copies a file from one location to another.
 - **mv**
 - mv test.txt test3.txt
 - Moves a file from one location to another. Works across directories.
 - **cat**
 - cat test2.txt
 - cat test2.txt test3.txt
 - Displays multiple files in succession.
 - **more (less)**
 - more long.txt
 - Displays a file in multiple pages determined by terminal size.
 - **clear**
 - Clears all text on the screen except for a single shell prompt.
 - **rm**
 - rm test2.txt
 - **Unix does NOT have undelete!!!**
 - Flags you should know
 - -r Recursive Delete
 - -i Always Confirm
 - -f Force Delete

Emacs

- Buffer-based editor
- Actually a fully functional LISP interpreter, but most people use it for editing purposes mostly. EXTREMELY POWERFUL; can do things like run a shell, do compilation internally, etc.
- To start emacs: emacs filename (if filename does not exist, it will be created)
- Emacs Commands
 - Syntax for commands
 - C-<letter> means “Control + <letter>”

- M-<letter> means “Escape, followed by letter”
 - C-x C-s
 - Saves the current document
 - C-g
 - Cancel any mistaken command
 - C-_
 - Undo the last action.
 - C-k
 - Cuts the current line (starting from current cursor position).
 - C-spacebar
 - Sets the mark for the beginning of a text region
 - C-w
 - Cuts text from the last mark set to the current cursor. Note: in Unix, blocking text automatically copies it to the clipboard.
 - C-y
 - Paste. Can also be done with middle click.
 - C-a
 - Works just like the home key in Windows.
 - C-e
 - Works just like the end key in Windows.
 - M-x global-font-lock-mode
 - Colors your text for easy reading, similar to that in other editors.
 - M-x recover-file
 - If Emacs crashes, a “#” file will be created. Use this command to restore that file.
 - C-h t
 - Bring up the Emacs tutorial. Feel free to read this in addition to the Emacs guide sheet for other commands. Read until you can’t stand it anymore. No one every finishes.
 - C-x C-c
 - Quits Emacs, will give opportunity to save.
- Unix FAQ
 - <http://www.faqs.org/faqs/unix-faq/faq/part1/preamble.html>
- History of Unix
 - <http://www.bell-labs.com/history/unix/>
- Emacs HOWTO:
 - <http://www.tldp.org/HOWTO/Emacs-Beginner-HOWTO.html>
- Emacs tutorial (yet another)
 - <http://web.nwe.ufl.edu/writing/help/others/emacs/tutorial/index.html>
- **Google and use key words “unix tutorial”, “emacs tutorial”**

Exercise 1:

In your home directory, make directory cs206, under cs206, make directory lab00.

```
cd ~/cs206/lab00/
```

1. Use emacs to create your own HelloWorld.java.
2. Compile and run.

Exercise 2:

1. Copy the file `~dxu/handouts/cs206/labs/00/Lab00.java`.
2. Compile and run – how do command-line arguments work?

Exercise 3:

1. Use emacs to make the following changes to your copy of the file `Lab00.java`:
 - a) Delete the first two `System.out` lines using `C-k`
 - b) Now yank them back (`C-y`)
 - c) Delete them again using set region then cut (`C-spacebar`, `C-w`)
 - d) Now paste them back to the end of the file (`C-y`)
 - e) Save and quit