CS 35L-5

Week 1 Lec 2

Linux Commands - Review

- pipeline: |
- redirection: >, >>, <
- cat, grep, head, tail

- Examples
  - cat exer1.html | grep HTML
  - echo "some text" > file1
  - cat < head -2 file1
  - cat < file1 >> file2
  - head -2 file1 | cat
  - cat < file1 | sort > file2

Process: ps and kill

- Process
  - An instance of a computer program in execution
- ps
  - List processes that are currently running
- kill
  - Terminate a certain process
  - Usage
    - kill PID

Special Permissions

- sticky bit
  - On shared directories, it locks files within the directory from being modified/deleted by users other than the file creator, owner of the directory, or root, even if others have write permissions (Example: /tmp)
  - Example:
    - chmod o+t /opt/dump/
    - -rwxr-xrwx 1 xyz xyzgroup 148 Dec 22 03:46 /opt/dump/
    - -rwxr-xrwt 1 xyz xyzgroup 148 Dec 22 03:46 /opt/dump/

diff

- A file comparison utility that outputs the differences between two files.
- Shows the changes between one version of a file and a former version of the same file
- Usage
  – diff *original_file new_file*
  – *diff –u original_file new_file*

wget

- A computer program that retrieves content from web servers
- Usage
  – wget <URL>

Emacs

"The customizable, extensible, self documenting display editor"

- Customizable (no programming)
  – Users can customize font, colors, etc
- Extensible (programming required)
  – Run Lisp scripts to define new commands
- Self-documenting
  – C-h r (manual) and C-h t (tutorial)

• Cheat sheet: http://www.rgrjr.com/emacs/emacs_cheat.html

Getting Started

- Install emacs
  – Should be installed already
- Emacs has both GUI and CLI
- All emacs commands start with "C" or "M"
  – "C" = ctrl;   "M" = alt (Windows) / option(Mac)
- Starting emacs
  – emacs <filename>
- Exiting emacs
  – C-x C-c

Basic Editing

- **Insert text** by simply typing it
- **Undo** by typing C-x u
- **Save changes** by typing C-x C-s
- **Copy, cut, paste**
  - C-space (starts selecting region)
  - M-w (copy a region)
  - C-w (cuts a region)
  - C-k (kill a line)
  - C-y (yank/paste)

Moving around

```
Keystrokes  Action
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C-p         Up one line
C-n         Down one line
C-f         Forward one character
C-b         Backward one character
C-a         Beginning of line
C-e         End of line
C-v         Down one page
M-v         Up one page
M-f         Forward one word
M-b         Backward one word
M-<         Beginning of buffer
M->         End of buffer
C-g         Quit current operation
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```

Windows and Buffer

- Emacs can split a frame into two or many windows. Multiple windows can display parts of different buffers, or different parts of one buffer.

```
C-v Scroll down (toward end of buffer)
M-v Scroll up (toward beginning of buffer)
C-M-v Scroll other window down
C-x 2 Split window vertically
C-x 3 Split window horizontally
```

- The text you are editing in Emacs resides in an object called a *buffer*. Each time you visit a file, a buffer is used to hold the file's text. Each time you invoke Dired, a buffer is used to hold the directory listing.

- At any time, one and only one buffer is *selected*; we call it the *current buffer*.

- When there are multiple windows, the buffer displayed in the *selected window* is current.

- Minibuffer: special buffer for entering commands or input arguments to commands

- *scratch* - used for evaluating Lisp expressions and is not associated with any file

- Kill buffer
  - C-x k

- Emacs as lisp interpreter
  - C-x b *scratch*
  - type (random) or (+ 1 2) or (setq x 2) then C-j
  - M-: and an expression to evaluate, e.g. (* 1 2 3)

Directory edit (dired) (C-x d)

- Creates an Emacs buffer containing list of directory contents
- Allows you to operate on files
- Allows you to navigate filesystem
- d - select for deletion, x - actually deletes
- + - new directory, C-x C-f new file in directory
- ! - run shell command, e.g cat
- Shift C - copy file

Other features

- Emacs as shell
  - Run shell commands: M-! <command>
  - To run a subshell interactively, type: M-x shell
- Emacs as IDE
  - Compile programs
  - M-x compile, then specify command to compile
  - Tip for homework: gcc hello.c –o hello
  - Run the executable by running the shell command
    - ./hello