University of Colorado Boulder

LAB 1 UNIX COMMANDS

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COURSE: CSCI 3308, SUMMER 2017

INFORMATION

- **Labs**: CSCI 3308
- Location for all the labs: **ECCR 235**
- Schedule:
  - **Everyday**: Generally after lecture review and demo

LAB 1 – UNIX COMMANDS & PAIR PROGRAMMING

- **Objectives:**
  - Installing a VM to use for the rest of this course
  - Access Moodle
  - Learn how to use a text editor like VIM
  - Experience Pair Programming (optional)
  - Learn Unix Commands
- First, find a partner! Make friends.
- Install a virtual box software like Oracle VM Virtual Box and create a virtual machine using image from CS Department.
- Instructions to install Virtual box and VM are at: https://foundation.cs.colorado.edu/

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TEXT EDITOR: VIM OR VI EDITOR

- What is Vim and Why Do We Want it?
  Vim is a “modal” text editor.
- **Modes of Operation**:
  - Insert mode
  - Command mode (default mode when you start the Vim)
  - Last-line mode
- Type i to go to the insert mode and hit the Escape key to get out of the insert mode => command mode
- If you want to save your file or search through your document? Then we need to switch to the last-line mode, by pressing : in the command mode.

VIM: MODES AND USAGE

- Insert Mode: Alphanumeric input entry
- Command Mode:

  Moving across:

  - j moves the cursor down one time
  - k moves the cursor up one line
  - h, l – to move the cursor one character left or right
  - 0 moves the cursor to the beginning of the line
  - $ moves the cursor to the end of the line
  - w moves forward one word
  - b moves backward one word
  - G moves the cursor to the end of the file
  - `. moves to the last edit.

VIM: MODES AND USAGE

- Command Mode:

  Editing the document:

  - **x** deletes the character at which cursor
  - **u** undo the previous action
  - **dw** deletes the word from cursor on
  - Want to undo your undo? Hit **Ctrl – r**
  - **d** starts the delete operation
  - **d0** will delete to the beginning of the line
  - **d$** will delete to the end of a line
  - **dgg** will delete to the beginning of the file
  - **dG** will delete to the end of the file

VIM: MODES AND USAGE

- Command Mode:

  Searching and replacing in the document:

  - /”text you want to search” - /”start” , keep on hitting n to move to the next found result
  - ?text – to search for text in the document going backwards
  - :%s/text/replacement text/ search for text in the entire document and replace it with replacement text

VIM: MODES AND USAGE

- Command Mode:

  Copying and Pasting

  - When you delete a text, the text is stored in the buffer, ready to be pasted back into the document by hitting p.
  - You can highlight some text by using:
    - v highlight one character at a time
    - V highlight one line at a time
    - Ctrl – V highlight by columns
  - After you select some text, hit y to store that in buffer and hit p to paste it wherever you want.

VIM: MODES AND USAGE

- Last-Line Mode:

  Saving and Quitting

  - For quitting or saving, you enter : to change to the last-line mode
  - To save a file enter w, (:w)
  - To quit the Vim after you are done enter q, (:q)
  - To force quit the Vim to ignore all the changes made hit :q!
  - To save and quit the Vim, hit :wq

UNIX COMMANDS

- General Unix command format:

`command –option argument --more-optns`

Example:

grep -i “the” <filename>

grep – command prints lines matching the pattern

i – options – **ignore case**

“the”, Filename - arguments

UNIX COMMANDS

Let us learn some UNIX basic commands:

- date
- ls –ltr
- cd . .
- pwd
- who
- whoami
- man man
- env

UNIX COMMANDS

Task 1: Find out the commands for the following tasks:

Command	Goal
	Make a directory named cs3308 and move into that directory.
	Rename your directory cs3308 to csci3308. Change to the root directory.
	Make a copy of a file.
	Delete the copy of your file (Careful!)
	Make a directory named tmp. Then delete that directory. View the contents of a file.
	2nd way to view the contents of a file.
	View just the beginning of a file.
	View just the end of a file.
	List all files that contain the word the in the file.
	List full path to all files named books.txt
	Zip the contents in your directory into a file named dir.zip. Unzip your zipped file dir.zip into a new directory named tmp. Tar the contents in your directory into a file named dir.tar. Untar your zipped file dir.tar into a new directory named tmp
	Modify a file's last modified timestamp to now. This also creates a new file if it doesn't currently exist.

UNIX COMMANDS

Task 2:

- Create a file named Lab1
- Copy the given /etc/passwd/ file content given in lab1 writeup in this newly created file

```
root:x:0:0:root:/root:/bin/bash
daemon:x:2:2:daemon:/sbin:/sbin/nologin
bin:x:1:1:bin:/bin:/sbin/nologin
harpo:x:12502:1000:Harpo Marx:/home/harpo:/bin/csh
chico:x:12501:1000:Chico Marx:/home/chico:/bin/bash
zeppo:x:12505:1000:Zeppo Marx:/home/zeppo:/bin/zsh
groucho:x:12503:2000:Grouch Marx:/home/groucho:/bin/sh
gummo:x:12504:3000:Gummo Marx:/home/gummo:/usr/local/bin/ksh
```

- Using this file as input, figure out commands to do the following tasks:

UNIX COMMANDS

Command	Does what?
	Sort the file based on the username (first field)
	Sort the file based on the UID. Since it is a number, be sure to specify that it is a number so it sorts the numbers correctly.
	Sort first based on GID, then on UID.
	Show all the lines in the file with the word ‘Marx’ in it.
	Get the number of lines in the file (from a Unix command)
	Use your command for the previous question and now redirect the output to a file named tmp.
	Now write your answer (command) to find the number of lines question to a separate file with an extension of .sh for example the file name can be getUniqueGID.sh.Try to run your program. You should get command not found.Try to run ./getUniqueGID.sh. You should get Permission denied. Change the permissions on the file to allow users to execute the file. Now, which method runs your program? And why doesn’t the other one execute? And what is a second way to have changed the permissions? And do you know a third way?