Final Exam Review

Question 1

awk

- Description:
  - awk is a scripting language used for processing and displaying text
- Formula:
  - awk + options + {awk command} + file + file to save (optional)
- Examples:
  - convert the first field to upper/lower case
    - awk -F: '{print toupper($1)}' /etc/passwd
  - print the first and last field of the /etc/passwd
    - awk -F: '{print $1," = ",$NF}' /etc/passwd
  - print the first and 3 field with line numbers
    - awk -F: '{print NR, $1,$3}' /etc/passwd

cat

- Description:
  - cat command is used for displaying the content of a file
- Formula:
  - cat + option + file(s) to display
- Examples:
  - display the content of a file with line numbers:
    - cat -n ~/Documents/todo.md
  - display the content of a file wit line numbers excluding empty lines:
    - cat -b ~/Documents/todo.md
  - display the content of a file suppressing repeating empty lines to a single empty line:
    - cat -s ~/Documents/todo.md

cp

- Description:
  - cp copies files/directories from a source to a destination
- Formula:
  - cp + files to copy + destination
  - cp -r + directory to copy + destination
- Examples:
  - copy the content of a directory to another directory:
    - cp Downloads/wallpapers/* ~/Pictures/
  - copy multiple files in a single command:
    - sudo cp -r script.sh program.py home.html assets/ /var/www/html/
  - copy a directory with absolute path:
    - cp -r ~/Downloads/wallpapers ~/Pictures/

cut

- Description:
  - cut is used to extract a specific section of each line of a file and display it to the screen
- Formula:
  - cut + option + file(s)
- Examples:
  - display a list of all the users in your system:
    - cut -d ':' -f1 /etc/passwd
  - cut a range of bytes per line:
    - cut -b 1-5 usernames.txt
  - cut a file using a delimiter but changing the delimiter in the output:
    - cut -d ':' -f1,7 --output-delimiter=' => ' /etc/passwd

grep

- Description:
  - grep is used to search text in given file, works line by line basis
- Formula:
  - grep + option + search criteria + file(s)
- Examples:
  - search any line that contains the word 'dracula' regardless of the case:
    - grep -i 'dracula' ~/Documents/Books/dracula.txt
  - search for all lines that do not contain the word 'war':
    - grep -v 'war' ~/Documents/Books/war-and-peace.txt
  - search for all lines that start with a capital letter:
    - grep -n '^[A-Z]' ~/Documents/Books/war-and-peace.txt

head

- Description:
  - head displays the top N number of lines of a given file. By default, it prints the first 10 lines
- Formula:
  - head + option + file(s)
- Examples:
  - display the first 10 lines of a file:
    - head ~/Documents/Books/dracula.txt
  - display the first 5 lines of a file:
    - head -5 ~/Documents/Books/dracula.txt

ls

- Description:
  - ls is used for displaying all the files inside a given directory
- Formula:
  - ls + option + directory to list
- Examples:
  - long list all the files inside a given directory recursively:

        - ls -1R ~/Pictures
    - list all the files in a given directory sorted by extension:
        - ls -X ~/Documents
    - list all the files in a given directory sorted by file size:
        - ls -t ~/Documents

man

- Description:
    - manual pages are documentation files that describe Linux shell commands, executable programs, system calls, special files, and so forth
- Formula:
    - man + command
- Examples:
    - open the man page of the passwd command:
        - man passwd
    - show all the available pages of a command:
        - man -a passwd
    - searches for a man page for a given word or regular expression or phrase:
        - man -k file

mkdir

- Description:
    - mkdir is used for creating a single directory or multiple directories
- Formula:
    - mkdir + the name of the directory
- Examples:
    - create a directory with a parent directory at the same time:
        - mkdir -p wallpapers_others/movies
    - create a directory with a space in the name:
        - mkdir wallpapers/new\ cars
        - mkdir wallpapers/'cities usa'
    - create multiple directories:
        - mkdir wallpapers/cars wallpapers/cities wallpapers/forest

mv

- Description:
    - mv moves and renames directories
- Formula:
    - mv + source + destination
    - mv + file/directory to rename + new name
- Examples:
    - move multiple directories/files to a different directory:
        - mv games/ wallpapers/ rockmusic/ /media/student/flashdrive
    - rename a file using absolute path:
        - mv ~/Downloads/homework.docx ~/Downloads/cis106homework.docx

    - move and rename a file in a single command:
        - mv Downloads/cis106homework.docx Documents/new_cis106homework.docx

tac

- Description:
    - tac is used for displaying the content of a file in reverse order
- Formula:
    - tac + option + file(s) to display
- Examples:
    - display the content of a file located in the pwd:
        - tac todo.md
    - display the content of a file using absolute value:
        - tac ~/Documents/todo.md

tail

- Description:
    - tail displays the last N number of lines of a given file. By default, it prints the last 10 lines.
- Formula:
    - tail + option + file
- Examples:
    - display the last 10 lines of a file:
        - tail ~/Documents/Books/dracula.txt
    - display the last 5 lines of a file:
        - tail -5 ~/Documents/Books/dracula.txt

touch

- Description:
    - touch is used for creating files
- Formula:
    - touch + the name of the directory
- Examples:
    - create a file with a space in its name:
        - touch "'list of foods.txt'"
    - create several files:
        - touch list_of_cars.txt script.py names.csv
    - create a file using absolute path:
        - touch ~/Downloads/games.txt

tr

- Description:
    - tr is used for translating or deleting characters from standard output
- Formula:
    - standard output | tr + option + set + set
- Examples:

    - translate one character to another:
        - cat file.txt | tr '.' ','
    - translate white space into tabs:
        - cat program.py | tr "[:space:]" '\t'
    - translate tabs into space:
        - cat file.py | tr -s "[:space:]" ' '

tree

- Description:
    - tree lists all files and directories in a given directory in a nice tree like format
- Formula:
    - tree + the name of the directory
- Examples:
- long list all the files inside a given directory recursively:
    - tree -1R ~/Pictures
- list all the files in a given directory sorted by extension:
    - tree -X ~/Documents
- list all the files in a given directory sorted by file size:
    - tree -t ~/Documents

vim/nano

- Description:
    - vim stands for "vi improved" which is a command-line text editor
- Formula: vim(nano) + option
- Examples:
    - install vim:
        - sudo apt install vim -y
    - quit vim:
        - q!
    - start vim:
        - vim

Question 2

Answer each question:

1. How to work with multiple terminals open?

- open one terminal and then another terminal and set them side by side or use Tillix and split the terminal as needed

2. How to work with manual pages?

- to view the manual of a command type: man + command
- to navigate the man page, you can use the arrow key or the man command internal shortcuts
- to exit the man page press the letter "q"

3. How to parse (search) for specific words in the manual page

- searches for a man page for a given word or regular expression or phrase:
    - man -k file

4. How to redirect output (> and |)

- the pipe allows you to redirect the standard output of a command to the standard input of a file
    - For example:
        - use grep to look for a string in a particular man page:
            - man ls | grep "human-readable"
        - display only the options of any command from its man page:
            - man ls | grep "^[[:space:]]*[[:punct:]]"

5. How to append the output of a command to a file

- append means to add more to a file instead of overwriting its content. when we use > on a file that already exist and contains data, we overwrite whatever is already inside the file
    - For example:
        - ls -la > allmyfiles.lst

6. How to use wildcards

- For copying and moving multiple files at the same time;
    - use ls to find out what files you need
    - use mv to move or cp to copy multiple files at the same time
- Formula:
    - mv + what you are moving + destination
    - cp + what you are copying + destination
- Example:
    - ls lab6/*.log
    - mkdir lab6/log-files
    - mv lab6/*.log lab6/log-files/

7. How to use brace expansion

- For creating entire directory structures in a single command:
    - mkdir -p music/{jazz,rock}/{mp3files,video,oggfiles}/new