ECE5725: Homework 1

1. Read the Cornell academic integrity agreement. Take the Cornell academic integrity quiz, Post a screenshot of your quiz results.

2. Using the guide on Blackboard, format your 16 GByte SD card and load the appropriate Linux Raspbian kernel on the card. Once you have loaded Raspbian onto the SD Card, make a backup image on your laptop. Bring the SD card to Lab1 for use in the class Raspberry Pi 3 kit. Be prepared to show the backup image to your TA.

3. Log into the ece5725-f19 server. Using the appropriate commands, display your userid, display the current directory, display the current date and time, create a 'test' directory, list files in your directory. Change the permissions of your home directory so that:

   - You, as the owner, have full permissions
   - All other users can access ('cd into') your directory
   - All other users can read from your directory
   - No one else can write into your directory

   Change your default password (to something you will remember!) Attach a screenshot of outputs from all of the above commands (on a single screen).

4. Within the test directory created in Question 3, create a file named HW1.txt containing your netid, First and Last Name on a single line. Change the permissions of this file so that no-one can execute it, only you can write it, and you and the group can read it. Attach a screenshot showing the file in the appropriate directory (including the permissions you have set) and also a display of the file contents.

5. What were two key events that led to the proliferation of early Unix systems and paved the way for the eventual development of Linux?

6. Explain Linux file permissions. What is permission 777 and why might this be dangerous. What is permission 644 and what would it allow users to do with your file? What is permission 700 and what does this allow users to do with your file?

7. Explain the function of the 'df' command. Using the ece5725-f19 server, show the output of this command and explain the size settings for the /home entry. Use the appropriate flags on the df command to show the data in a readable format. Attach a screenshot of your results.

8. Run the ps command on the class server, pipe the output into another command to search for the processes you own (processes with your userid=netid). Also, run a ps command to count the total number of running processes. Attach a screenshot of your results.

9. Components of the Raspberry Pi can be viewed as similar to those in a server or a laptop. Identify the Raspberry Pi components that correspond to a laptop disk, laptop memory and the laptop processor. What are some advantages of the Raspberry Pi over the laptop. What are some disadvantages of the raspberry Pi versus the Laptop?

10. What is the difference between the top and htop command? Which one is preferable to use? Why?