# Homework 1

1. Read the Cornell academic integrity agreement. Take the Cornell academic integrity quiz, Post a screenshot of your quiz results. **Each team member must answer this question.**

2. Using the guide on Blackboard, format your 8 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 R-Pi 3 kit. Be prepared to show the backup image to your TA. **Each team member must complete this task. Note: This exercise is due at the start of your lab section during the week of 9/3/17**

3. Log into the ECE5725 server. Using the appropriate commands, display your userid, display the current date and time, create a 'test' directory, list files in your directory, and change the permissions of your home directory (use the chmod command). Attach a screenshot of outputs from the commands (on a single screen). Also, change your default password. **Each team member must complete this task.**

4. Within the test directory created in Question 4, 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. **Each team member must complete this task.**

**The following questions are to be completed as team exercises:**

5. 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?

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

7. Explain what the 'df' command does. Using the ECE5725 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.

8. Give definitions for Hard Real Time (HRT) and Soft Real Time (SRT) systems. Give an example of an application requiring HRT. Give an example of a system requiring SRT.

9. Can Linux be used as a RTOS? Give a possible application where Linux would work as an RTOS? Give a second application where Linux might NOT work as an RTOS?

10. In class, we discussed how the controllers for the SpaceX Falcon 9 rocket engines run Linux. How did the SpaceX researchers, engineers, and developers insure that their designs for these motors would be fault tolerant?