ECE 331

Homework 6

See course web site for due date

Place your typed homework answers in `vim`. Print single sided with your name using a **mono space font**. No need to restate questions. Fully investigating questions is required for a higher grade. Please use the kernel coding style for all code. Please use your RPi for developing answers. Although code should be written and run on a RPi, it should run on ANY POSIX compliant OS. As always, all code shall be comment, conform to the Linux Kernel Coding Style, and error conditions shall be checked and appropriately handled.

Place ALL code, scripts, and text files (questions 2 to the end of the homework) in gitlab and use the name "`umorse`" for the project name. Add the user "Sheaff" as a developer.

1. Write a C program that creates zombies. Call fork to create a child. Have the parent send a TERM signal to the child and then delay for 10 seconds. Exit after the delay. The child should wait in a endless loop that just sleeps. Check and appropriately handle, of course, errors.
   a) Include your source code for your answer to this part.
   b) Write a Makefile and include it for your answer to this part.
   c) Show that your program did indeed successfully create a zombie. Give the commands and **relevant** output as proof.

2. Write a C program that prints the geometry of your SD card. The `ioctl` command is `HDIO_GETGEO`. See the `sd(4)` man page for details.

   a) Write a Makefile and include it for your answer to this part.
   b) For your answer to this part, include the source code.

3. Disable login for the RPi serial port by following these instructions: `http://www.hobbytronics.co.uk/raspberry-pi-serial-port`.

   For your answer, state that it is completed.

4. Enable I2C on your RPi. Follow `https://learn.sparkfun.com/tutorials/raspberry-pi-spi-and-i2c-tutorial`.

   For your answer, state that it is completed.

5. Using only the command line, give the concise command to determine the number of processes on your RPi.

6. Using only the command line, give the concise command to total amount of virtual memory used by all processes on your RPi.

7. Give the command to find all files within `/usr/share` directory tree that are greater than 10 mebibytes. Do not list files that match in your homework.