CS240 Operating Systems

Assignment 2

Due date: 10/4/2021

Deliverables: see below

Objective: Understanding the unix shell, shell commands and `fork` and `exec`.

We will develop a linux shell and then add specific features. The goal of this assignment is to write the framework for a linux shell. Your shell will be called **`msh`**. Specifically, you are to write **msh** using the C (not C++) programming language. When your msh shell is executing it will prompt the user with the ">:" prompt. Once your shell is running, the user may issue any command line Linux command and execute it through your shell.

Here is the general battle plan

1) You have to build a parser that is based on the "getchar()" function. You should receive one character at a time from the command line until the entire command is received
2) After receiving the command-line, your shell should fork a process that either executes the command or generates an error message indicating that the command was not able to be executed. Executing a command will mean that you *fork* a process and *exec* the command that was parsed. After execution of a command, your shell should prompt for the next command. If the user issues the **exit** command your shell should terminate.
3) Your shell has to be bash-syntax compatible. If you divert from this your shell will not pass the input we use for testing and you will lose points!
4) Test your shell using simple commands such as ls and ps. Make sure you allow for parameter lists, (e.g. ls -l, ls -la etc.).
5) NOTE: design your code so it is **clean** and **modular.** We will likely add functionality to your shell later.

Deliverables: You need to turn in:

1) Electronically: The source code of your program and a Makefile, which are to be collected in a tar file named **CS240-Asgn2.tar**. You will submit your .tar file using the *cscheckin* utility. Your shell will be tested with a suite of commands. Make sure your Makefile contains all the instructions the user (who builds your shell) will need to know.

2) Hardcopy
    a. Use this page as the cover sheet
    b. Your well-documented code
    c. A Makefile file with all information needed to build and run your shell.