Lab 4 - Description

(Processes and the exec system call)

Lab Overview:

For this lab, we will be learning how to create a controlled number of processes and use them to execute other programs.

Warning: This lab could potentially crash your VM forcing a restart. Do not test more than 7 processes until 100% certain.

Core Tasks:

1. Create a child process.
2. Call exec to execute another program.
3. Create multiple processes to execute more programs.
4. Use existing code to monitor the current running processes.

Task Details:

1. Create a process.
    a. Use fork() to create a child process.
2. Call exec to execute another program.
    a. Use execvp() to execute “./iobound -seconds 5”.
    b. Wait for the child process to finish.
3. Create multiple processes to execute more programs.
    a. Ask the user from the command line for the number of processes(./lab.out n) where n is the number of processes.
    b. Create an array of pid_t
    c. Utilize a loop to start the exact number of processes.
    d. Wait for all the children processes to finish.
4. Open another terminal and use the command “top” to check the number of processes you created. Note, the processes’ names are “./iobound”
5. Once you are certain that you can spawn the correct number of processes, you may use existing code to monitor the current running processes as you intended to start for the rest of this project.
    a. Use the following function in the code provided to generate the monitor script
    `void script_print (pid_t* pid_ary, int size)`

Submission Requirements:

Task 1&2 are practice steps, the final products are the result of step 3&4.

Here are what you have to submit:

1. main.c
2. iobound
3. makefile
4. log.txt
5. Screenshot of compiling and system information.

The naming convention of the zip/tar file while uploading to canvas

UoID_duckID_LAB/ProjectX (an example is given below)

- UOID : alex
- DuckID: 951505xxx
- Submission for: Lab4
- So the name of the zip/tar file should be:

  alex_951505xxx_Lab4.tar **or** alex_951505xxx_Lab4.zip