Dept. of CSE, IIITDM Kancheepuram

COM301P – Operating Systems

August 27, 2021

Lab Assignment – 4

In this lab, you will implement system calls available in process management.

(1) Write a program to create multiple processes using fork() and display their process IDs (getpid()) and parent process ID (getppid()). Draw the hierarchy (up to 3/4 Levels).

(2) Write a program to demonstrate the exec() system call for displaying the content of the directory and the process tree.

(3) Explore different flavours of exec() and wait() system call. For example: execve(), execvp(), execv(), execlp(), wait(&status), WIFEXITED(status), waitpid() etc. Write one small program to demonstrate each one of them.
References
https://linuxhint.com/exec_linux_system_call_c/
https://www.tutorialspoint.com/unix_system_calls/wait.htm

(4) You are provided with a series of 1 to n natural numbers. Write a program where parent process will display the sum of the even numbers (EVEN_SUM) present between 1 to n and the child process will display the sum of odd numbers (ODD_SUM) present between 1 to n.

(5) You are provided with 10 numbers. Write a program where parent process will display the sorted sequence of those 10 numbers in ascending order whereas the child process will display the sorted sequence of those numbers in descending order. Make sure that the descending order must be displayed before the ascending order.

Submission Instructions:

- Submit your assignment file in the Google classroom.
- After writing the code for each problem, write your own explanation in plain paper (Own Handwriting). Write your Name and Roll No in each page.
- Attach the screen short of the output after the execution of the program.
- Save all the above things of all the programs in to one file and save as RollNo_Lab#.pdf (Example: EC20B1001_Lab4.pdf) and upload.
- Make sure the program description(handwritten), program, output screenshot for all questions are included in a **single pdf** as mentioned above.
- Save all the C program files as per the format RollNo_Lab#_QuestionNo.c (Example: EC20B1001_Lab4_Q2.c) and upload.
- Any form of plagiarism/copying from peer or internet sources will lead penalty.
- NOTE: DO NOT ZIP THE FILES.