Operating Systems Laboratory (CS39002)

Spring Semester 2017-2018

Assignment 1

Familiarization with Unix system calls on process creation and management

Assignment given on: January 08, 2018
Assignment deadline: January 14, 2018

a) Write a program in C/C++ under the Linux environment that would perform the following:
   - Create three processes A, B, C and D.
   - The processes A, B and C will each generate 100 random non-zero integers, and forward them in sorted order to process D (through pipes).
   - The process D will read the numbers received from the three pipes, and print the smallest. In other words, it will be merging the three sorted lists and print all the numbers in sorted order.

   Use pipes for inter-process communication.

b) Write a program in C/C++ under the Linux environment that would perform the following:
   - In a loop, read the name of an executable program with command-line arguments, if any. The loop will terminate if the command "quit" is entered.
   - Fork a child process, and execute the program.

Submission Guideline:

- Create two separate programs for the two assignments, and name them **`Ass1_<groupno>_1a`** and **`Ass1_<groupno>_1b`** (replace <groupno> by your group number).
- Make a single zip file with name **`Ass1_<groupno>.zip`**, and upload the file.
- You must show the running version of the program(s) to your assigned TA during the lab hours.

Things to study:

- fork() system call
- pipe() system call
- execlp() system call