BCSE – III – 1st Semester – 2018
Assignment Sheet – II
Operating Systems Laboratory

1. a. With the help of a Linux command show the details of currently running processes with real-time update of CPU usage in the system. Keep this command executing in one window.
   b. Write a program in C that runs for 30 seconds, but does not perform any I/O. Execute this in another window and see the output of the window of (a).
   Now stop this process (before the process automatically stops) and see how the change is reflected in the other window.
   c. Find a Linux command that will bring the process to running state again.
   d. Modify the above program that will now perform some I/O. This program exits normally after completing its task. Execute this in another window and track the output in the window of (a).

2. Write a shell script to check if a file exists and if it does exist, check the type of the file. (Use *test*).

3. Create child processes: X and Y.

   a. Each child process performs 10 iterations. The child process just displays its name/id and the current iteration number, and sleeps for some random amount of time. Adjust the sleeping duration of the processes to have a different output (i.e. another interleaving of processes' traces).

   b. Modify the program so that X is not allowed to start iteration *i* before process Y has terminated its own iteration *i-1*. Use semaphore to implement this synchronization.

3. Implement the following programs using different IPC mechanisms. Your choice is restricted to Pipes, FIFOs, and Message Queues (use different mechanisms for each program)
   1. Broadcasting weather information (one broadcasting process and more than one listeners)
   2. Telephonic conversation (between a caller and a receiver)
   3. Reader-Writer process (Writer writing in a buffer that is read by the Reader)

Last Date for submission and viva: Respective groups: September 10th and 11th, 2018