

# CS205-Operating Systems

## Assignment: 1

**Date: 15<sup>th</sup> March 2019**

### Instructions:

1. Assignment: 1 is for *all* section students of Operating Systems Spring 2019.
2. Assignment must be attempted individually, acquire help from *books* and the world of internet considering Teachers and class fellows unaware of OS.
3. Create a word doc named “Rollno\_Section\_A1”, describe answers in and attach programming files with the help of object, for object, find help from the [link](#). Answer every question corresponding to its sequence number.
4. DEAD LINE: 15th March, 2019, 12:00 AM

### Scheduling:

Consider the following set of processes, with the length of the CPU burst given in milliseconds:

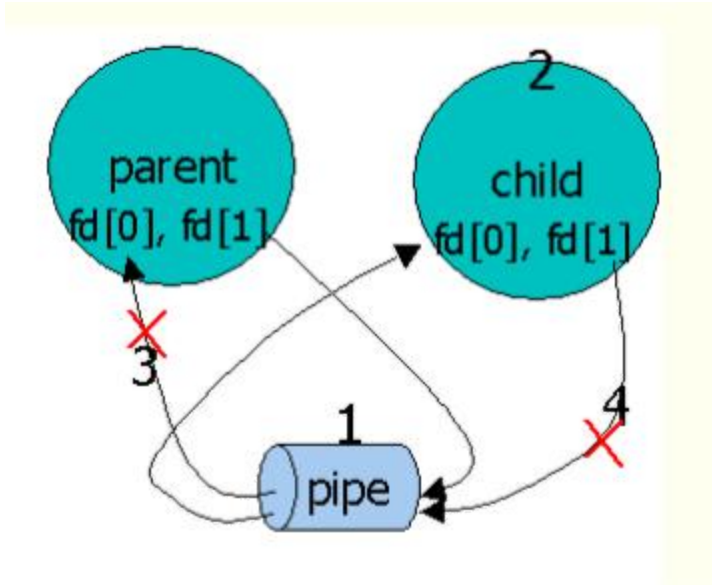
<u>Process</u>	<u>Burst Time</u>	<u>Priority</u>
$P_1$	2	2
$P_2$	1	1
$P_3$	8	4
$P_4$	4	2
$P_5$	5	3

The processes are assumed to have arrived in the order  $P_1, P_2, P_3, P_4, P_5$ , all at time 0.

- a. What is the average turnaround time for these processes with the FCFS scheduling algorithm?
  - b. What is the average turnaround time for these processes with the SJF scheduling algorithm?
  - c. What is the waiting time of each process for each of these scheduling algorithms?
  - d. Which of the algorithms results in the minimum average waiting time (over all processes)?
1. **Write the C program of the given scheduling algorithms in problem. Considering the condition given in above problem parts. Time should be taken in float. You are allowed to assume other parameters to bring efficiency in scheduling algorithms**

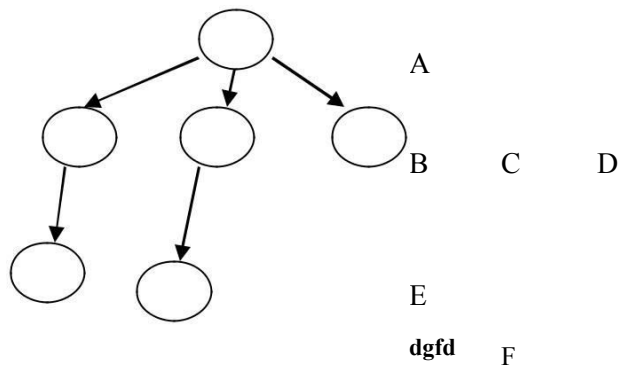
**Processes:**

3. **Write a program to implement bidirectional pipe.**



4. Write a c program which will fork child process according the following tree.

- Parent process A will wait for all child process to complete.
- arguments. (shell script would perform addition, subtraction, multiplication and division of that numbers)
- Child process D runs a shell script which asks user to enter his name, batch and id.
- Child Process E calls exec to display mac address.
- Child process F prints pid of his grandparent.
- Child process should display current date and time.



**Shell scripting:**

5. Write shell script for questions given below.

- a. Display, How to login email from terminal using some script.
- b. Write a shell script to rename file having extension sh to exe.
- c. Write a shell script to examine all the number from 1 to 999 and display all those number whose sum of cube of the digit is equal to the number. e.g.  $371 = 3*3*3 + 7*7*7 + 1*1*1$
- d. Is there a concept of pointers in shell script? Describe if either Yes or No.
- e. Write a script to find out String is palindrome or not.

- f. Write a script which copies the content of file1 to file2 without using cp command. It should check if file has a read permission if not it should print an error message. If file2 exists, then it should ask the user whether he wants to overwrite it.
- g. Write a shell script to list all the files of the current directory having read and write permission to the user.
- h. Write a script, disk\_usage.sh, that given a directory, the script lists the n largest directories or files. The disk\_usage.sh script takes argument to print n largest folders or files. If not specified, assume 10.

```
# Run on /etc
$ ./disk_usage.sh /etc
15M    /etc/
6.5M   /etc/udev
2.0M   /etc/ssl
1.9M   /etc/ssl/certs
1.8M   /etc/ca-certificates/extracted
1.8M   /etc/ca-certificates
1.1M   /etc/pacman.d/gnupg
1.1M   /etc/pacman.d
780K   /etc/ca-certificates/extracted/cadir
340K   /etc/ssh
```

**Hint:** Use ls, grep, mkdir, mv, copy, for loop, if, else, truncate, dd switch for conditions. In case of any ambiguity, first check the command manual “man truncate, man dd etc”.

*“Smart people learn from everything and everyone, average people from their experience and stupid people already have all the answers.” Socrates*

**Give your Best**