SCHOOL OF COMPUTING AND IT
II B.Tech. IV Semester; First- Sessional Examination, Feb-2018
Branch: CSE / IT /CCE

Subject Code: CS1401
Subject Name : Operating Systems
Max. Marks: 15 **Duration: 1 hour**

Instructions:

- All questions are compulsory
- Closed Book Exam
- Missing data if any can be suitably assumed

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1. What is the main advantage of microkernel approach to system design? How do user programs and system services interact in microkernel architecture? What are the disadvantages of using microkernel approach? [3]
2. Write a program in 'C' (Linux OS) in which a parent forks a child and child forks a grandchild. The program should display the output as **"My process ID is A, my parent's ID is B and my grandfather's ID is C"**, where A, B and C are the process ID's. [3]
3. Write a program in 'C' (Linux OS) in which the parent process sends the length and breadth of a rectangle and child process computes the area of rectangle. The communication between the parent and the child is through pipe. [3]
4. Consider the following set of processes, with the length of the CPU-burst time given in milliseconds:

Process	Arrival Time	CPU Burst Time
P1	0	2
P2	1	6
P3	4	1
P4	7	4
P5	8	3

a. Draw three Gantt charts illustrating the execution of these processes using First Come First Serve (FCFS), Shortest Remaining Time First (SRTF) and Round Robin (RR) with time quantum = 1, scheduling. Assume that context switch overhead is 0.

b. What is the turnaround time of each processes for SRTF and RR scheduling algorithms?

c. What is the waiting time of each processes for SRTF and RR scheduling algorithms?

d. How many context switches are required in SRTF Scheduling? Do not count the context switches at time zero and at the end. [1.5 +2 +2+0.5 = 6]