Date: 3rd Sep 2018
Time: 11:30 Hrs

1st OPERATING SYSTEM ASSIGNMENTS FOR 5th Semester, CSE-2018

Q. 1. Difference between Multi programming and Multi-tasking system.

Q. 2. Differentiate between Thread and process.

Q. 3. What is process control block and briefly explain about its components.

Q. 4. Describe about the various process state with neat diagram.

Q.5. Describe about various type of process scheduler.

Q.5. what are the differences between user-level thread and kernel level threads.

Q.6. Assume that there are N no. of processes to be schedule in a uniprocessor system, how many different schedule are possible.

Q.7. Consider the 3 processes, P1, P2 and P3 shown in the table.

Process	Arrival time	Time Units Required
P1	2	5
P2	1	7
P3	3	4

What is the completion order of the 3 processes under the policies FCFS and RR (round robin scheduling with CPU quantum of 2 time units)

Q.8. Consider the 4 processes, P1, P2, P3, and p4 shown in the table.

Process	Arrival Time	Burst Time
P1	0	5
P2	1	7
P3	3	4
P4	2	6

i. What are the sequence of process completion order of the 4 processes under the policies FCFS and SRTF.
ii. Find the Turnaround time, waiting time and response time for each process.
iii. How many context switches are needed, if the operating system implements a priority preemptive scheduling algorithm with lower process id as highest priority? Do not count the context switches at time zero and at the end.

Q. 9. Explain about the exponential average method (Aging) to predict the burst time a process in shortest remaining time first scheduling.

Q. 10. Discuss about the necessary and sufficient conditions of deadlock.

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Q. 11. A system contains three processes and each requires three tape units for its operation. What is the minimum number of tape units required, so that deadlocks will never arise in system? Justify your answer.

Q. 12. Show that a Resource Allocation Graph with multiple instances of resources, may or may not lead to deadlock, justify your answer.

Q. 13. A system shares 9 tape drives. The current allocation and maximum requirement of tape drives for three processes are shown below:

Process	Current Allocation	Maximum Requirement
P1	3	7
P2	1	6
P3	3	5

Check whether the above system is safe or unsafe? If it is unsafe, check whether it leads to deadlock or not?

Q. 14. Consider the code segment used by processes P1 and P2 for accessing their critical sections whenever needed, as given below. The initial values of shared Boolean variables S1 and S2 are randomly assigned.

P1:	P2 :
while (S1 = = S2) ; Critical Section S1 = S2;	while (S1 != S2) ; Critical section S2 = not (S1);

Among all the conditions for solution to critical section, which of the conditions is/are satisfied.

N: B-

1. **All the questions in 1st internal examination will be from this assignment only. However, the order and no. of questions in internal exam may vary. Further, you may get some other short questions of 1 mark each in the original question paper.**
2. **All students are need to submit this assignment within one week after the 1st internal examination. After the deadline no submission will be entertained.**

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