Midterm Examination-1

CSE 323 – Operating Systems Design

Section: 4

Summer 2022

Full Marks: 30 **Time: 1 hr 20 Minutes**

Answer all the following questions

1. Why OS is called resource allocator and control program? 6
2. Write an algorithm to read from a file. The user should be able to get the option to input the file name. He is supposed to read first 200 bytes from the file. After the reading is done, the file should be closed. If the file is not available, the program should be closed immediately. You should mention "System call" beside each instruction which are supposed to use a system call function. 6
3. Briefly explain, how interrupt handler is used to accomplish an I/O operation? 6
4. What is the principle of layered design of operating system? What are its benefits and challenges? Briefly explain its challenges with example. 6
5. Why Linux is called hybrid operating system? What is the function of SYSGEN program? 6

Final Examination

CSE 323 – Operating Systems Design

Section: 4

Summer 2022

Full Marks: 35 **Time: 1 hr 30 Minutes**

Answer all the following questions

1. Define cooperating processes? What is the race condition in the solution of bounded buffer problem? 7
2. What is critical section problem? What are the general solutions? 4
3. Consider multilevel queue scheduling where four queues are present. Queue 1 takes processes with priority values 1-5, Queue 2 takes processes with priority values 6-12, Queue 3 takes processes with priority values 13-20 and Queue 4 takes rest of the processes. Queue 1 uses round robin scheduling wit time quantum 4 and Queue 2 uses round robin scheduling wit time quantum 5. Queue 3 and 4 use FCFS. Draw the Gantt chart and calculate average waiting time for the processes shown in the following table. 10

Process	Priority	Burst time
P1	25	7
P2	6	4
P3	4	12
P4	14	2
P5	3	9
P6	17	8
P7	20	5
P8	15	11
P9	1	2

4. Draw the Gantt chart and calculate average waiting time using Round Robin scheduler. The time quantum is 3. Use the following table. 7
5. Draw the Gantt chart and calculate average waiting time using shortest remaining time first scheduling. Use the same table. 7

   Use this table for both Q4 and Q5.

Process	Arrival Time	Burst time
P1	0	7
P2	5	10
P3	10	12
P4	16	2
P5	25	9

Midterm Examination-2

CSE 323 – Operating Systems Design

Section: 4

Summer 2022

Full Marks: 30 **Time: 1 hr 20 Minutes**

Answer all the following questions

1. Define process and PCB. 6

2. Define different types of scheduler. Which scheduler is responsible for process mix and how? 6

3. What is context switch? What is the advantage and disadvantage of too much context switch? 6

4. Why do we use thread over process? How thread can be utilized for task parallelism? 6

5. What are the types of thread? What are the limitations of user thread? How these limitations can be resolved? 6