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D Y PATIL UNIVERSITY

Summer Term Examinations (July 2019)

School: School of Engineering

Program: BCA (MACT / CTIS / DS)

Course: Operating System

Course Code: CSC 107

Semester: Summer term

Max Marks: 50

Duration (mins): 90

Section A

Q1. Answer the following. (Any Five)

10 Marks

- Explain allocation methods of file system interface.
- Explain any 2 system calls for file management.
- What are the advantages of language based system.
- Explain 3 requirements of critical section problem.
- Explain any 4 operations on file.
- What is domain protection? Explain any 2 characteristics of domain protection.
- Explain types of operating system synchronization process.

Section B

Q2. Answer the following (Any Four)

20 Marks

- What is mean by process state diagram, explain in detail?
- What is scheduler? Explain types of scheduler in detail.
- Solve using First Come First Served (FCFS) algorithm. Calculate Waiting time and average waiting time.

Process	Arrival Time	Execution Time	Service Time
P0	0	9	4
P1	1	12	8
P2	2	18	6
P3	3	15	20

- d) Solve example using FCFS algorithm with Burst time. Calculate Waiting time of all processes, average waiting time, turnaround time and average turnaround time.

Process	Arrival Time	Burst Time
P1	2	4
P2	3	2
P3	1	8
P4	4	3

- e) Solve using Round Robin Algorithm with Quantum = 3. Calculate waiting time of P0, P1, P2, P3 and average waiting time.

Process	Arrival Time	Execution Time	Service Time
P0	0	10	9
P1	1	5	14
P2	2	11	6
P3	3	7	17

- f) Consider 6 memory partitions of size 200 KB, 400 KB, 600 KB, 500KB, 300KB, 250KB. These partitions need to be allocated to four processes of sizes 207 KB, 320 KB, 520 KB and 491 KB in that order. Perform the allocation of processes using -
- 1) First Fit Algorithm
 - 2) Best Fit Algorithm
 - 3) Worst Fit Algorithm

Section C

Q3. Answer the following (Any Two)

20 Marks

- a) Solve using Round Robin Algorithm with Quantum = 5. Calculate waiting time of all processes and average waiting time.

Process	Arrival Time	Execution Time	Service Time
P0	0	17	9
P1	1	14	14
P2	2	22	6
P3	3	11	17

- b) Solve using FCFS, SJN, and Priority. Calculate waiting time of all process and average waiting time.

Process	Arrival Time	Execution time	Priority	Service time
P1	0	5	1	9
P2	1	3	3	14
P3	2	8	2	6
P4	3	6	2	17

- c) Solve example using Round Robin and Priority. Quantum = 3. Calculate waiting time of P0, P1, P2, P3 and average waiting time.

Process	Arrival Time	Execution Time	Service Time
P0	1	8	0
P1	2	5	12
P2	3	11	10
P3	4	4	18

- d) Consider the following reference string as an example for better understanding of LRU algorithm.

8 7 8 1 2 4 6 7 2 3 0 1 5
3 2 1 4

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