Department of Artificial Intelligence & Data Science

III Year V Semester

5AID4-03: Operating Systems

Note: Each assignment of Maximum Marks 10.All question carries equal marks.

ASSIGNMENT-I

Q1. What is Operating system? Explain the architecture of an operating system.	BLT-1	CO-1
Q2. List out the various process state & brifly explain with a suitable state diagram.	BLT-2	CO-1
Q3. Explain the following: (i) Process and Program. (ii) Threads (iii) System Call	BLT-2	CO-1
Q4 Explain the various services of an operating system.	BLT-2	CO-1
Q5. Differentiate between (i) User thread/Kernel thread (ii) Processes/Threads	BLT-4	CO-1

ASSIGNMENT-II

Q1. What is critical section problem? How are semaphores are used for solving critical section problem.	BLT-1	CO-2
Q2. What is scheduling? Difference between short term and long term schedulers.	BLT-4	CO-2
Q3.Describe basic criteria to select a better CPU scheduling algorithm	BLT-1	CO-2
Q4. Consider the following set of process with the arrival time and CPU burst time in given in miliosecond PROCESS / ARRIVAL TIME / CPU BURST TIME P1 / 0 / 22 P2 / 3 / 15 P3 / 8 / 18 P4 / 10 / 25 Determine average waiting time and turnaround time with preemptive and non preemptive SJF scheduling.	BLT-5	CO-2
Q5. . Consider the following set of process with the arrival time and CPU burst time in given in miliosecond: Process / Arrival time / CPU burst time P1 / 0 / 25 P2 / 5 / 15 P3 / 8 / 12 P4 / 10 / 22 Determine average waiting time and turnaround time with FCFS scheduling algorithm.	BLT-5	CO-2

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ASSIGNMENT-III

Q1. Explain about deadlock .what are the necessary conditions for deadlock to occur?	BLT-2	CO-3
Q2. Explain the fragmentation and difference between internal and external fragmentation?	BLT-2	CO-3
Q3. Explain the following: (i) Resource allocation graph. (ii) Deadlock characteristic.	BLT-2	CO-3
Q4. What are memory management and explain swapping.	BLT-1	CO-3
Q5. Explain the following . (i) Logical and physical address space (ii) Relocation and address translation	BLT-2	CO-3

ASSIGNMENT-IV

Q1. Explain the following (i) Virtual memory (ii) Segmentation	BLT-2	CO-4
Q2. Explain the various page replacement policies using atleast one example of one policy.	BLT-2	CO-4
Q3. Explain Concept of Thrashing and TLB(translation look aside buffer).	BLT-2	CO-4
Q4. Explain the following (i) Demand paging. (ii) Global versus local allocation.	BLT-2	CO-4
Q5. Consider least recent unit algorithm using a matrix when pages are referenced in the order 0, 1, 2, 3, 2, 1, 0, 3, 2, 3.and calculate page fault.	BLT-5	CO-4

ASSIGNMENT-V

Q1. Explain various Disk Scheduling Algorithm in brief.	BLT-2	CO-5
Q2. Explain Concepts of file & Attribute of a file.	BLT-2	CO-5
Q3. Explain the directory structures and brifly explain about tree structured directory.	BLT-2	CO-5
Q4. Explain the following: Spooling i. File system mounting ii. Disk structure and disk operation	BLT-2	CO-5
Q5. Given the following queue -- 95, 180, 34, 119, 11, 123, 62, 64 with the Read-write head initially at the track 50 and the tail track being at 199 to calculate by sstf and scan and look algorithm.	BLT-5	CO-5

*BLT: BLT shows the **Bloom's taxonomy** levels.