

SE-sem-IV - old-computers

OS

22/12/15

QP Code : 1540

(3 Hours)

[ Total Marks : 100

- N. B. : (1) Question No. 1 is compulsory.  
(2) Attempt any four questions out of remaining.  
(3) Assume suitable data if necessary.

1. (a) What is operating system? Explain functions of operating system. 5  
(b) Explain microkernel architecture. 5  
(c) Explain role of PCB. 5  
(d) What is the effect of page size on hit ratio. 5
2. (a) Explain concurrency mechanisms in UNIX. 10  
(b) Explain file organization methods. 10
3. (a) Explain deadlock detection, prevention and recovery. 10  
(b) Explain I/O buffering. 10
4. (a) Consider following system snapshot. 10

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P <sub>0</sub>	0	0	1	2	0	0	1	2	1	5	2	0
P <sub>1</sub>	1	0	0	0	1	7	5	0				
P <sub>2</sub>	1	3	5	4	2	3	5	6				
P <sub>3</sub>	0	6	3	2	0	6	5	2				
P <sub>4</sub>	0	0	1	4	0	6	5	6				

Answer the following questions using Banker's algorithm.

- (a) What is the content of Need matrix?
  - (b) Is the system in safe state?
  - (c) If request from P<sub>1</sub> arrives for (0, 4, 2, 0), can the request be granted immediately?
- (b) Explain segmentation in detail. 10

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5. (a) On a disk with 1000 cylinders, numbered 0 to 999. Compute no. of tracks the disk arm must move to satisfy all requests in disk queue. Assume the last request serviced was at track 345 and head is moving towards track 0. The queue in FIFO order contains requests for following tracks :  
123, 874, 692, 475, 105, 376.  
Perform computation (calculate total distance) for following scheduling algorithms.  
FIFO, SSTF, SCAN, LOOK. 10
- (b) Explain solution to infinite - buffer producer - consumer problem using semaphores. 10
6. (a) Explain the components of windows 2000 system. 10  
(b) Explain various page replacement policies. 10
7. Write short notes on (any four) :- 20
- (a) Inode
  - (b) Process State Transition Diagram
  - (c) Compaction
  - (d) Preemptive and Non-preemptive scheduling
  - (e) Symmetric multiprocessing

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