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UA-3764

Third Year B. C. A. (Sem. V) Examination

March/April – 2012

504 : Operating System - Paper - II

Time : Hours] [Total Marks : 70

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ T. Y. B. C. A. (SEM. 5)

Name of the Subject :

☛ 504 : OPERATING SYSTEM - 2

☛ Subject Code No. : 3 7 6 4 ☛ Section No. (1, 2,.....) : NIL

Seat No. :

Student's Signature

(2) All questions are compulsory.

(3) Figures to the right indicate full marks.

(4) Draw figure and diagram wherever necessary.

1 Answer in short : 14

(1) What is race condition ? How to avoid race condition ?

(2) For what types of operations is DMA useful ? Explain your answer.

(3) What is difference between buffering and blocking ? What are the uses of PMTBR, PMTLR registers ?

(4) What purpose does the modified bit serve in demand paging system ?

(5) What Do You Mean By Cooperating Processes ?

(6) Describe the difference among short-term, medium-term, and long-term scheduler.

(7) What is the problem of external fragmentation ?

(8) What is the need of virtual memory ?

2 Do as directed : 8+6

(1) Explain with diagram indexed allocation.

(2) Consider the reference string given below :

1, 3, 4, 4, 3, 2, 1, 7, 5, 6, 4, 2, 1, 2, 4, 3, 2, 1

Show with diagram how many page faults occur in following replacement ? Consider the memory is empty initially. And memory having 4 page frames.

(1) Optimal page replacement algorithm.

(2) Least recently used page replacement algorithm.

OR

2 Do as directed : 8+6

(1) Explain demand paging with example. Also writes its advantages and disadvantages. What is pure demand paging ?

(2) Explain various CPU scheduling algorithm criteria.

3 Do as directed : 8+6

(a) Suppose a disk drive has 500 cylinders numbered from 0 to 599. Drive is currently served the request at cylinder no 63. The queue for pending request in FIFO order is as follow :

50, 125, 32, 180, 75, 5, 20, 58, 290, 211, 55, 6, 498.

Show the Disk scheduling for the following algorithm.

(a) FCFS

(b) LOOK

(c) SCAN

(d) SSTF

(b) Discuss Peterson's solution for achieving the mutual exclusion. Also write the necessary code for implementing it.

OR

(b) Differentiate between : Contiguous versus Non-contiguous memory management scheme.

4 Write short note : (any three) 18

(1) Disk management

(2) Semaphore

(3) Allocation of frames

(4) Inverted page table.

5 Do as directed : (show the method) 10

Consider the following set of process, with the length of CPU-burst time given in milliseconds :

Process	*Burst Time*	*Priority*
*P*1	3	1
*P*2	7	4
*P*3	5	2
*P*4	1	1
*P*5	4	3

The process are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0.

(a) Draw four Gantt charts illustrating the execution of these process using

(a) FCFS scheduling

(b) SJF scheduling.

(c) a non preemptive priority (a small priority number implies a higher priority) scheduling.

(d) RR (quantum = 1) scheduling.

(b) What is the turn around time and waiting time of each process for each of the scheduling algorithm in part a.

(c) Which of the schedules in part a results in minimum average waiting time (overall processes) ?