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RN-7369

B. E. IV (Sem. VII) (Computer) Examination

May / June – 2010

Operating Systems

Time : 3 Hours] [Total Marks : 100

Instruction :

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

Name of the Examination :

☛ B. E. 4 (Sem. 7) (Computer)

Name of the Subject :

☛ Operating Systems

☛ Subject Code No. : 7 3 6 9 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

Section – I

Q.1

(a) Fill in the blanks: **[10]**

1. The situation, when a group of processes are permanently blocked as a result of each process depending on the next one to release resources, is called _____.
2. Unlike processes, _____ are not independent of each other in a task.
3. In a PCB, _____ field is used to store the address of the next instruction to be executed.
4. _____ scheduler swaps the processes out and in.
5. The part of the program where shared memory is accessed is called _____.
6. _____ is the way to ensure that if one process is in its critical section other processes will be excluded from doing the same.
7. Two or more processes, reading or writing some shared data and the final result depends on who precisely runs when, is called _____.
8. A process can only go to _____ state after it is blocked.
9. _____ is a pure overhead that occurs during process switching.
10. _____ is a resource manager, control program as well as interface between user and computer.

(b) Answer the following: **[10]**

1. Explain Strict Alternation for providing mutual exclusion.
2. Describe 'naming' and 'length' issues of message passing.

Q.2 Answer the following:

1. Solve producer-consumer problem using monitors. **[08]**
2. Consider the following set of processes with their arrival time, service time and priority: **[07]**

Process	Arrival Time (mSec)	Service Time (mSec)	Priority
A	0	5	4
B	1	1	1
C	2	4	2
D	3	2	3

Find Average waiting time and Average turnaround time using Priority and FCFS algorithm drawing the Gantt chart. (4 is highest and 1 is lowest priority)

OR

Q.2 Answer the following:

1. Solve Dining Philosophers problem using semaphores. **[08]**
2. Explain process queuing diagram with medium term scheduler. **[07]**

Q.3 Answer ANY THREE: [15]

1. Describe system programs.
2. Draw and explain process state transition diagram.
3. Explain microkernel architecture.
4. In detail, write the concept of deadlock along with the four conditions.

SECTION –II

Q-4 (A) Answer the following.

1) TLB stands for _____ (1)

2) Define : Incremental dump (2)

3) Explain use of major and minor device number. (2)

4) FAT stands for_____ (1)

5) Write use of MD5. (1)

6) A machine has 48 bit virtual addresses and 32-bit physical addresses. Pages are 8 KB. How many entries are needed for page table (2)

7) MBR stands for _____ (1)

(B) If FIFO page replacement is used with four page frames and eight pages, how many page faults will occur with the reference string 0172327103 if the four frames are initially empty? Now repeat the same problem for LRU. (8)

Q-5 (A) Answer the following. (Any Four) (16)

1) Discuss Reducing Disk Arm motion technique to improve file system performance.

2) Explain types of I/O devices.

3) Explain hierarchical directory system

4) Compare and contrast First Fit, Next Fit, and Best Fit.

5) Explain I –node concept for implementing files.

Q-6 Answer the following. (Any Four) (16)

1) Differentiate between C-SCAN and SCAN disk arm scheduling algorithm.

2) Explain contiguous allocation method for implementing files.

3) Explain concept of buffering in I/O

4) Explain Bitmap technique for memory management.

5) Compare Page table and Inverted page table.