SIXTH/EIGHTH SEMESTE EXAMINATION-2008

OPERATIN SYSTEM

Answer question no-1 which is compulsory and any 5 from rest

1. Answer the following question 2x10

   a. What are the diffrences between binary and general semaphores?
   b. What are the essential goals of disk scheduling?\
   c. What is the diffrence between deadlock prevention and deadlock avoidance?
   d. When do page fault occurs?
   e. What are the advantages of storage inter-leaving?
   f. What is purpose of short-term-scheduler and long-term-scheduler?
   g. Can a resource allocation graph have cycles without a deadlock existing ?if so, state why and draw a sample graph ; if no,state why not?
   h. What is the diffrence between trap and interupts?
   i. Define the diffrence between preemptive and non-preeemptive scheduling.
   j. What are the basic function of an operating system?

2. a. What do you mean by process in a computer system? What are the different process states ? Exaplain the process life cycle in operating system. (5)
   b. When do page fault occurs? Describe the action taken by the OS, when a page fault occurs.(5)

3. a. What resources are used when a thread is created ? What two advantages do threads have over multiple processes ? What major disadvantages do they have?(5)
   b. Why paging is used ? Which is the best page replacement algorithm and why? How much time is spent usually in each phases and why?(5)

4. a. Explain the structure of a process control Block .Explain how the process is created when program is in execution?(5)
   b. Define deadlock. State four condition of deadlock and explain how each condition can be satisfied?
5. a. When a resource is returned by a process calling a monitor, the maonitor gives priority to an end waiting process over a new requesting process?Why?(5)
   b. What do you mean by inter-processor communication mechanism associated with an OS ? Discuss the mechanism associated with fifo( ) ? (5)
6. a. In a test of a new OS, the ready queue scheduler uses FCFS. For a particular test, beginning at time zero, the evolution of the ready queue is as follows:

Process	Arival time	Next CPU Burst time
P0	0	7
P1	0	8
P2	1	4
P3	4	6

It may be assumed that P0 and P1 arrive just fractionally before time zero,but P0 arrive before P1 . All times in the above table: arrival time and burst time ,are in milliseconds. The next scheduling decision is made at time zero. What is the average wait time?(5)

b. Give an example of a simple resource deadlock involving three processes and three resources. Draw the appropriate resource allocation graph.(5)

7. a. Consider the following references string. Calculate the page fault rates for the FIFO and LRU algorithms. Assume that the memory size is 4 frames.(5)

1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2

b. Why SSTF scheduling tends to fervor middle cylinders aver the innermost and outermost cylinder?(5)

8. a. Suppose three concurrent processes,P1,P2 and P3 exexuting in a machine with a single processor .(6)

P1 contain an instruction S1;
P2 cotains an instruction S2;
P3 contains an instruction s3;

The three processes use a *busy waiting* semaphore *synch* and wait()/signal() code to ensure that both S2 and S3 execute before S1 .

HENCE ANSWER THE FOLLOWINGS:

i. Which process or processes require that signal (*sync*) be inserted appropriately?
ii. If *synch* can be initially set to any integer value, positive , nagative, or zero what value must *synch* be initialized to?
iii. Write out the semaphore code that must be placed near S1 in P! to ensure that both S2 and S3 execute before S1. Include “S1;” in your answer.

b. Explain the diffrence between internal fragmentation and external fragmentation.(4)