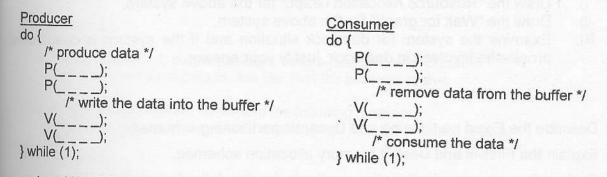


- b. Draw the process state diagram and briefly explain each state transition.
- c. Define the operations P(s) and V(s) on a semaphore 's'.
- d. The following is a skeleton of the solution of the Producer Consumer problem using (counting) semaphores:



- i. What do you understand by the "Producer Consumer problem"?
- ii. Define the required semaphores giving their initial values. Insert the appropriate semaphore into P() and V() operators to give the correct solution.

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- a. Define the "Response time", "Waiting time" and "Turn around time".
- gr b. What do you understand by the "Context Switching"?
 - c. Explain the "Priority scheduling" giving advantages and disadvantages.
 - d. Given the following information:

Process	Arrival time	Bulisiaimes - P.
A	0	6
В	3	2
С	5	1
D	9	7
E	10	5
F	12	3
G	14	4
Н	16	5

- i. Draw the Gantt chart for each of the following scheduling algorithms and calculate the average waiting time and average turn around time for each algorithm.
 - Round robin (using a time quantum of 4);
 - Pre-emptive Priority scheduling.
- ii. Which is the most efficient algorithm for the particular problem? Justify your answer.

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Q3)

- a. Define "Deadlock"?
- b. Describe the necessary conditions for a dead lock to occur.
- c. How do you recover the system from a dead lock?
- d. Consider the following system with 6 processes and 4 resources:
 - Process P1 holds R1 and wants R2 and R3.
 - Process P2 holds nothing but wants R2 and R3.
 - Process P3 holds nothing but wants R3 and R4.
 - Process P4 holds R2 and wants R1.
 - · Process P5 holds R3 and wants R2.
 - · Process P6 holds R4 and wants R2 and R3.
 - i). Draw the "Resource Allocation Graph" for the above system.
 - ii). Draw the "Wait for graph" for the above system.
 - iii). Examine the system for deadlock situation and if the system is deadlocker processes involved in deadlock, justify your answer.

Q4)

- a. Describe the Fixed partitioning and Dynamic partitioning schemes.
- b. Explain the First-fit and Best-fit memory allocation schemes.
- c. Explain the memory deallocation methods for the following scenarios in the dyn partitioning scheme.
 - Memory block to be deallocated is isolated from the other free blocks;
 - Memory block to be deallocated is adjacent to another free block;
 - Memory block to be deallocated is between two free blocks;
- d. The following tables focus the free and busy list of memory blocks of a dyn partitioned system:

Free list:

Beginning Memory					
address	block size	Status			
5225	5	free			
6785	600	free			
7560	20	free			
7800	5	free			
10250	4050	free			

Busy	list:

Job Beginning Memory					
name	address	block size	Status		
A	7580	20	busy		
В	7600	200	busy		
C	7805	1000	busy		
D	8805	445	busy		
E	9250	1000	busy		

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If the jobs finish its execution one after the other in the following order, show the free after the completion of each job.

- I. Completion of Job B.
- II. Completion of Job A
- III. Completion of Job D