

Question Bank (K scheme)

Name of Subject: Operating System (OSY)

Unit Test: II

Subject Code: 315319

Courses: CM5K/IF5K

Semester: V

Chapter No: 3 CPU Scheduling (16 Marks)

2 Marks

1. Explain term deadlock.
2. Enlist principal condition for deadlock.
3. State two features of non-preemptive scheduling
4. Describe in short safe state.

4 Marks

1. Solve given problem by using FCFS scheduling algorithm. Draw correct Gantt chart and calculate average waiting time and average turnaround time.

Process	Arrival Time	Burst Time
P0	0	10
P1	1	29
P2	2	3
P3	3	7
P4	4	12

2. Explain necessary condition for deadlock.
3. Explain how to prevent deadlock.
4. Explain priority scheduling algorithm with suitable example.
5. Explain Multilevel queue scheduling algorithm in detail
6. Write steps of Banker's algorithm to avoid deadlock.
7. Explain Round-Robin scheduling algorithm with advantage and disadvantage.

6 Marks

1. Calculate average waiting time for SJF(Shortest Job First) and Round Robin (RR) algorithm table:
(Time slice 4 ms)

Process	Burst Time
P1	10
P2	4
P3	9
P4	6

2. What is the average turnaround time for the following process using:
 - a) FCFS scheduling algorithm
 - b) SJF non-preemptive scheduling algorithm
 - c) Round Robin Scheduling algorithm

Process	Burst Time
P1	10
P2	4
P3	9
P4	6

3. Consider the four processes P1,P2,P3 and P4 with length of CPU Burst time. Find out average waiting time and average turnaround time for the following algorithms.
 - a) FCFS
 - b) RR (Slice-4ms)
 - c) SJF

Process	Arrival Time	Burst Time
P1	0	8
P2	1	4
P3	2	9
P4	3	5

4. Solve given problem by using
 - a) Pre-emptive SJF
 - b) Round Robin (Time Slice = 3ms)
 - c) Calculate average waiting time using Gantt Chart

Process	Arrival Time	Burst Time
P11	0	8
P12	1	4
P13	2	9
P14	3	5

5. The Jobs are scheduled for execution as follows:

Process	Arrival Time	Burst Time
P1	0	7
P2	1	4
P3	2	10
P4	3	6
P5	4	8

Solve the problem using:

- a) SJF
- b) FCFS

Chapter No: 4 Memory Management (16 Marks)

2 Marks:

1. Define term Demand Paging.
2. Define fragmentation in terms of memory.
3. Define paging and segmentation in terms of memory.
4. Enlist types of memory partitioning
5. Enlist types of free space management techniques
6. Describe term page fault
7. Describe term swapping
8. Describe compaction technique in short.
9. List contiguous memory management techniques.
10. List non-contiguous memory management techniques.

4 Marks:

1. Explain partitioning and its types.
2. Describe free space management using bit map.
3. Describe segmentation with example.
4. Differentiate between paging and segmentation
5. Explain concept of virtual memory in details.
6. Explain concept of fixed size partitioning with a suitable example.
7. Explain concept of variable size partitioning with a suitable example.
8. Explain bit vector for free space management technique with a suitable example.
9. Explain link list for free space management technique with a suitable example.
10. Differentiate between internal fragmentation and external fragmentation
11. Explain in details First in First out page replacement algorithm with suitable example
12. Explain in details Optimal page replacement algorithm with suitable example
13. Explain in details Least Recently used page replacement algorithm with suitable example.

14. Which hole is taken for next segment request for 8 KB in a swapping system for First fit, Best fit and Worst fit.

OS
4 KB
9 KB
20 KB
16 KB
8 KB
2 KB
6 KB

6 Marks:

- List free space management techniques. Describe any one in detail.
Explain First Fit, Best Fit, Worst Fit allocation for memory.
- Given a page reference string with (03) pages frames. Calculate the page faults with Optimal and LRU page replacement algorithm respectively. 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7
- Consider the string: 0, 1, 2, 3, 0, 1, 2, 3, 0, 1, 2, 3, 4, 5, 6, 7 with frame size 3 and 4, calculate page fault in both the cases using FIFO algorithm.
- Explain bit map vector and linked list free space management techniques with its advantages and disadvantages.
- Find out the total number of page faults using i) First in First Out page replacement ii) Optimal page replacement Page replacement iii) Least recently used page replacement algorithms of memory management, if the page are coming in the order 7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1
- Consider the following memory map and assume a new process P4 comes with memory requirements of 6 KB. Locate (Draw) this process in memory using. i) First fit ii) Best Fit iii) Worst Fit

O.S.
P1
<FREE> 12 KB
P2
<FREE> 19 KB
P3
<FREE> 7KB

- Describe the concept of virtual memory with respect to paging. Also draw paging hardware diagram and describe its working with example.

Chapter No: 5 File Management (10 Marks)

2 Marks

1. List any four file attributes and its meaning
2. List and state any four file operations
3. List and state any four file extension.
4. List the types of file allocation methods
5. List the types of directory structure.

4 Marks

1. Explain in details file operation
2. Explain in details sequential file access.
3. Explain in details direct access method
4. Explain in details contiguous file allocation
5. Explain in details Link file allocation
6. Explain in details Indexed File allocation
7. Explain Single-level directory structure in detail.
8. Explain Two-level directory structure in detail.
9. Explain Tree structured directory structure in detail.

6 Marks

1. Explain linked and indexed file allocation method with neat diagram.
2. Draw and explain directory structure of a file system in terms of single level, two level and tree structure.
3. List files allocation method and explain any one in details.