

CBSE NET JUNE 2013 PAPER III

Q. An operating system using banker's algorithm for deadlock avoidance has ten dedicated devices (of same type) and has three processes P1, P2 and P3 with maximum resource requirements of 4, 5 and 8 respectively.

There are two states of allocation of devices as follows :

State 1 Processes P1 P2 P3, devices allocated 2 3 4

State 2 Processes P1 P2 P3, devices allocated 0 2 4

Which of the following is correct ?

- (A) State 1 is unsafe and state 2 is safe.
- (B) State 1 is safe and state 2 is unsafe.
- (C) Both, state 1 and state 2 are safe.
- (D) Both, state 1 and state 2 are unsafe.

Ans:- A

Explanation:-

STATE 1:

| | MAXIMUM NEEDS | CURRENT NEEDS |
|----|---------------|---------------|
| P1 | 4 | 2 |
| P2 | 5 | 3 |
| P3 | 8 | 4 |

TOTAL NUMBER OF DEVICES = 10

NUMBER OF FREE DEVICES = Total number of devices - current needs of devices = $10 - 9 = 1$.

Note: Current needs shows number of devices engaged.

Since the number of free device is just 1, it can be allocated to any of the processes p1,p2 or p3.

p1 requires device = Max needs - Current needs = $4 - 2 = 2$,

p2 requires device= Max needs - Current needs = $5 - 3 = 2$,

p3 requires device= Max needs - Current needs = $8 - 4 = 4$,

Since, none of the processes requirement can be satisfied, *the state 1 is in unsafe state.*

STATE 2:

| | MAXIMUM NEEDS | CURRENT NEEDS |
|----|---------------|---------------|
| P1 | 4 | 0 |
| P2 | 5 | 2 |
| P3 | 8 | 4 |

TOTAL NUMBER OF DEVICES = 10

NUMBER OF FREE DEVICES = Total devices - current needs of devices = $10 - 6 = 4$

p1 requires device = Max needs - Current needs = $4 - 0 = 4$,

Because the number of free device right now is 4 and p1 gets its maximum need, it completes the process and returns all of the 4 devices.

p2 requires device = Max needs - Current needs = $5 - 2 = 3$,

3 devices, which can be allocated right now. p2 completes its process and returns all the 3 devices.

p3 requires device = Max needs - Current needs = $8 - 4 = 4$,

4 devices. which can be allocated right now. So, p3 also can finish its execution successfully.

So, state 2 is in safe state.

So, the correct answer is A , in which state 1 is in unsafe state and state 2 is in safe state

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87. Program to print string in reverse order
88. Program to implement while loop in Linux
89. Program to implement for loop using sequence keyword in Liux
90. Program to implement different types of increment in Linux
91. For loop without in keyword in Linux
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93. Multiple Processor Scheduling
94. What do you mean by Virtual Memory? Write down its advantages?
95. Compare Paging and Segmentation?
96. What is Process Scheduling, CPU Scheduling, Disk Scheduling? Explain Short, Medium and Long term Scheduler?
97. Explain concept of a process with its components ?
98. Explain the following in brief Contiguous and Linked list allocation for implementing file system?
99. Explain various Disk scheduling algorithms with Illustrations ?
100. Define process and thread. What is PCB ? Explain its various entries with their usefulness ?
101. Discuss advantages and disadvantages of the Buffer cache ?
102. Explain different types of OS with examples of each ?
103. What is an Operating System? Write down its desirable characteristics ?
104. Define a deadlock ? Write down the conditions responsible for deadlock? How can we recover from deadlock ?
105. What are the various services provided by Operating system ?
106. What do you mean by PCB? Where is it used? What are its contents? Explain.
107. What is Binary and Counting semaphores ?
108. What is File? What are the different File attribute and operations?
109. What are System call? Explain briefly about various types of system call provided by an Operating System?
110. Describe necessary conditions for deadlocks situation to arise.
111. What are points to be consider in file system design? Explain linked list allocation in detail?
112. Write a Semaphore solution for dining Philosopher's problem?
113. Consider the following page reference string:1,2,3,4,5,3,4,1,2,7,8,7,8,9,7,8,9,5,4,5.

How many page faults would occur for the following replacement algorithm, assuming four frames:a) FIFO b) LRU

- 114. Explain CPU schedulers in operating system?
- 115. Write the different state of a process with the help of Process state diagram?
- 116. What is Mutex in operating system?
- 117. Explain Network operating system?
- 118. What do you mean by paging in operating system ?