

Assignment -3

Deadlock Detection and Prevention

1. Is the state described in table 1 is safe or unsafe?

Process	Current Allocation		Maximum Allocation		Resource Available	
	R1	R2	R1	R2	R1	R2
P1	1	2	4	2		
P2	0	1	1	2	1	1
P3	1	0	1	3		
P4	2	0	3	2		

Table 1

2. Consider a system with the following current resource-allocation state:

There are five processes: P0, P1, P2, P3, P4 and three resources types: A, B, and C. For each process, the current allocation and the maximum required allocation are given by the allocation and Max matrices. The current available resources are given by the Available vector.

	Allocation			MAX			Available		
	A	B	C	A	B	C	A	B	C
P0	1	1	2	4	3	3			
P1	2	1	2	3	2	2			
P2	4	0	1	9	0	2	2	1	0
P3	0	2	0	7	5	3			
P4	1	1	2	11	2	3			

- A) Determine the total amount of resources of each type.
- B) What is the “Need” matrix?
- C) Determine if this state is “safe” using the “safety algorithm”.

3. Consider the following snapshot of a system:

	Allocation				MAX				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2				
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6	1	5	2	0
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following questions using bankers algorithm:

- A) What is the content of the matrix need?
- B) Is the system in a safe state?
- C) If a request from process P1 arrives for (0, 4, 2, 0) can be granted immediately?

4. Check whether the system is in safe or unsafe state?

	Current Allocation			Maximum			Need		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	7	4	3
P1	3	0	2	3	2	2	0	2	0
P2	3	0	2	9	0	2	6	0	0
P3	2	1	1	2	2	2	0	1	1
P4	0	0	2	4	3	3	4	3	1

AVAILABLE= 2, 3, 0

5. Define Deadlock in your own words. Explain several conditions for Deadlock.

***** All the Best ☺*****

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