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Consider the following snapshot of a system



modified 3.5 years ago by

prashantsaini (/u/62805/prasl • 0

		Max				Available						
	A	В	С	D	A	В	С	D	A	В	С	D
\mathbf{P}_{0}	0	0	1	2	0	0	1	2	1	5	2	0
$\mathbf{P_i}$	1	0	0	0	1	7	5	0				
\mathbf{P}_2	1	3	5	4	2	3	5	6				
\mathbf{P}_3	0	6	3	2	0	6	5	2				
\mathbf{P}_{4}	0	0	1	4	0	6	5	6				

With reference to Bankers algorithm

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

W

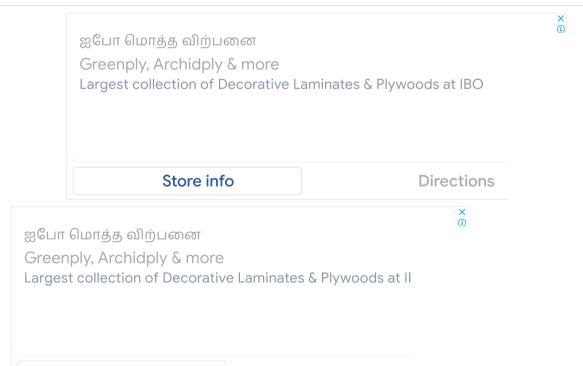
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1 Answer



Directions

written 7.3 years ago by



Need matrix is calculated by subtracting Allocation Matrix from the Max matrix

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	Need(Max-Allocation)									
	A	В	С	D						
\mathbf{P}_0	0	0	0	0						
\mathbf{P}_1	0	7	5	0						
\mathbf{P}_2	1	0	0	2						
P_3	0	0	2	0						
P ₄	0	6	4	2						

To check if system is in a safe state

- The Available matrix is [1520].
- A process after it has finished execution is supposed to free up all the resources it hold.
- We need to find a safety sequence such that it satisfies the criteria need $Need \le Available$.
- Since $Need(P0) \leq Available$, we select P0.[Available] = [Available] + [Allocation(P0)]

Available = [1520] + [0012] = [1532]

- Need(P2) ≤ Available → Available=[1 5 3 2]+[1 3 5 4]=[2 8 8 6]
- Need(P3) ≤ Available → Available=[2886]+[0632]=[214118]
- Need(P4) ≤ Available → Available=[214118]+[0014]=[2141212]
- Need(P1) ≤ Available → Available=[2 14 12 12]+[1 0 0 0]=[3 14 12 12]
- Safe Sequence is <p0,p2,p3,p4,p1>

A request from process P1 arrives for (0,4,2,0)

- System receives a request for P1 for Reg(P1)[0420]
- First we check if Req(P1) is less than Need(P1)
 ightarrow [0420] < [0750] istrue
- Now we check if Req(P1) is less than Available
 ightarrow [0420] < [1520] is true.
- So we update the values as:
 - $\circ \ \textit{Available} = \textit{Available} \textit{Request} = [1520] [0420] = [1100]$
 - $\circ \ \ Allocation = allocation(P1) + Request = [1000] + [0420] = [1420]$
 - $\circ Need = Need(P1) Request = [0750] [0420] = [0330]$

	Allocation				Max			Need				Available				
	A	В	С	D	A	В	С	D	A	В	С	D	A	В	С	D
\mathbf{P}_{0}	0	0	1	2	0	0	1	2	0	0	0	0	1	1	0	0
\mathbf{P}_1	1	4	2	0	1	7	5	0	0	3	3	0				-
P ₂	1	3	5	4	2	3	5	6	1	0	0	2				
$P_{\mathfrak{d}}$	0	6	3	2	0	6	5	2	0	0	2	0				
P_4	0	0	1	4	0	6	5	6	0	6	4	2				

- This is the modified table
- On verifying, we see that the safe sequence still remains the same .The system continues to remain in a safe state.

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