dek
TECHNOLOGIES
an Endava company

Date:

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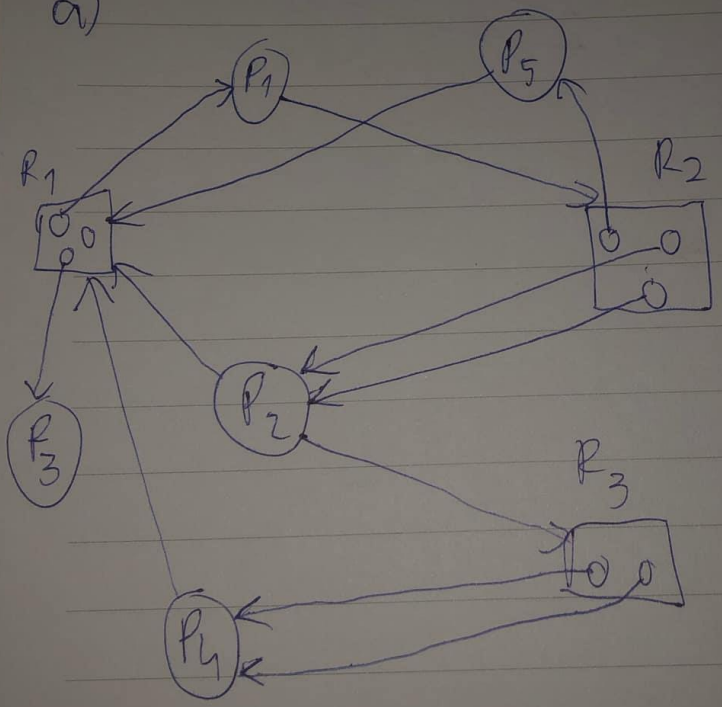
MSSV: 23521481

Bài 11:

a)



b) Có 24 chuỗi an toàn

Date:

c) 1 $\langle P_4, P_2, P_1, P_3, P_5 \rangle$

2 $\langle P_4, P_2, P_1, P_5, P_3 \rangle$

3 $\langle P_4, P_2, P_3, P_1, P_5 \rangle$

4 $\langle P_4, P_2, P_3, P_5, P_1 \rangle$

5 $\langle P_4, P_2, P_5, P_3, P_1 \rangle$

6 $\langle P_4, P_2, P_5, P_1, P_3 \rangle$

7 $\langle P_4, P_5, P_1, P_2, P_3 \rangle$

8 $\langle P_4, P_5, P_1, P_3, P_2 \rangle$

9 $\langle P_4, P_5, P_2, P_1, P_3 \rangle$

10 $\langle P_4, P_5, P_2, P_3, P_1 \rangle$

11 $\langle P_4, P_5, P_3, P_1, P_2 \rangle$

12 $\langle P_4, P_5, P_3, P_2, P_1 \rangle$

13 $\langle P_5, P_1, P_3, P_4, P_2 \rangle$

14 $\langle P_5, P_1, P_4, P_3, P_2 \rangle$

15 $\langle P_5, P_1, P_4, P_2, P_3 \rangle$

16 $\langle P_5, P_3, P_1, P_4, P_2 \rangle$

17 $\langle P_5, P_3, P_4, P_1, P_2 \rangle$

18 $\langle P_5, P_3, P_4, P_2, P_1 \rangle$

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19 $<P_5, P_4, P_1, P_2, P_3>$

20 $<P_5, P_4, P_1, P_3, P_2>$

21 $<P_5, P_4, P_2, P_1, P_3>$

22 $<P_5, P_4, P_2, P_3, P_1>$

23 $<P_5, P_4, P_3, P_1, P_2>$

24 $<P_5, P_4, P_3, P_2, P_1>$

Cau 13

a)

	Allocation	Max	Need	(work) Available	Finish
	R_1, R_2, R_3, R_4	R_1, R_2, R_3, R_4	R_1, R_2, R_3, R_4	R_1, R_2, R_3, R_4	
P_1	0, 0, 1, 2	0, 0, 3, 2	0, 0, 2, 0	2, 1, 2, 0	P_1
P_2	2, 0, 0, 0	2, 7, 5, 0	0, 7, 5, 0	2, 1, 3, 2	P_4
P_3	0, 0, 3, 4	6, 6, 5, 6	6, 6, 2, 2	4, 4, 8, 6	P_5
P_4	2, 3, 5, 4	3, 3, 5, 6	1, 0, 0, 2	4, 7, 11, 8	P_2
P_5	0, 3, 3, 2	0, 6, 5, 2	0, 3, 2, 0	6, 7, 11, 8	P_3

Date:

b) Request $P_1(1,1,0,0) >$ Need $P_1(0,0,2,0)$

$\Rightarrow$ Không thể đáp ứng

~~Request $P_1(1,1,0,0) \leq$ Av~~

14. a)

	Allocation	Max	Need	Available (Work)	Finish
	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	
P_0	3,0,1,4	5,1,1,7	2,1,0,3	0,3,0,1	P_2
P_1	2,2,1,0	3,2,1,1	1,0,0,1	3,4,2,2	P_1
P_2	3,1,2,1	3,3,2,1	0,2,0,0	5,6,3,2	P_3
P_3	0,5,1,0	4,6,1,2	4,1,0,2	5,11,4,2	
P_4	4,2,1,2	6,3,2,5	2,1,1,3		

$\Rightarrow$ Không an toàn vì có 2 tiến trình P_0 và P_4 không thoả điều kiện $Need_i \leq Work$

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b)

	Allocation	Max	Need	Available (work)	
	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	Finish
P_0	3,0,1,4	5,1,1,7	2,1,0,3	1,0,0,2	P_1
P_1	2,2,1,0	3,2,1,1	1,0,0,1	3,2,1,2	P_2
P_2	3,1,2,1	3,3,2,1	0,2,0,0	6,3,3,3	P_0
P_3	0,5,1,0	4,6,1,2	4,1,0,2	9,3,4,7	P_3
P_4	4,2,1,2	6,3,2,5	2,1,1,3	9,8,5,7	P_5

⇒ An toàn, chuỗi an toàn $< P_1, P_2, P_0, P_3, P_5 >$

Câu 15

a)

	Allocation	Max	Need	Available (Work)	
	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	Finish
P_0	2,0,0,1	4,2,1,2	2,2,1,1	3,3,2,1	P_0
P_1	3,1,2,1	5,2,5,2	2,1,3,1	6,4,4,2	P_1
P_2	2,1,0,3	2,3,1,6	0,2,1,3	9,5,6,3	P_2
P_3	1,3,1,2	1,4,2,4	0,1,1,2	11,6,6,6	P_3
P_4	1,4,3,2	3,6,6,5	2,2,3,3	12,10,9,8	P_4

Date:

⇒ Hệ thống an toàn ; chuỗi an toàn $<P_0, P_1, P_2, P_3, P_4>$

b) Request $P_1(1,1,0,0) \leq$ Need $P_1(2,2,1,1) \Rightarrow$ Đúng

Request $P_1(1,1,0,0) \leq$ Available $(3,3,2,1) \Rightarrow$ Đúng

Trạng thái mới của hệ thống

	Allocation	Max	Need	Available (work)	
	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	Finish
P_0	2,0,0,1	4,2,1,2	2,2,1,1	2,2,2,1	P_0
P_1	4,2,2,1	5,2,5,2	1,0,3,1	6,4,4,2	P_1
P_2	2,1,0,3	2,3,1,6	0,2,1,3	10,6,6,3	P_2
P_3	1,3,1,2	1,4,2,4	0,1,1,2	12,7,6,6	P_3
P_4	1,4,3,2	3,6,6,5	2,2,3,3	13,11,9,8	P_4

⇒ Có thể cấp phát ngay

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c) Request $P_4(0,0,2,0) \leq$ Need $P_4(2,2,3,3)$
⇒ Đúng

Request $P_4(0,0,2,0) \leq$ Available $(3,3,2,1)$
⇒ Đúng

Trạng thái hiện của hệ thống

	Allocation	Max	Need	Available	Finish
	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	
P_0	2,0,0,1	4,2,1,2	2,2,1,1	3,3,0,1	
P_1	3,1,2,1	5,2,5,2	2,1,3,1		
P_2	2,1,0,3	2,3,1,6	0,2,1,3		
P_3	1,3,1,2	1,4,2,4	0,1,1,2		
P_4	1,4,5,2	3,6,6,5	2,2,1,3		

⇒ Không thể cấp phát vì không có tiến trình thoả Need$_i$ < Available