Banker's Algorithm

Available
A B C D
1 5 2 0

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

Step 2

Banker's Algorithm

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

Step 3 Determine the safe sequence

Available + Allocation = New Available

Banker's Algorithm

Available + Allocation = New Available

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

	Need		
	A B C D		
P0	0 0 0 0	<=	< 1 5 2 0 > = T
P1	0 7 5 0	<=	< 1 5 3 2 > =
P2	1 0 0 2		
P3	0 0 2 0		
P4	0 6 4 2		

<1 5 2 0> + <0 0 1 2> = <1 5 3 2>

Next

Banker's Algorithm

Available + Allocation = New Available

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

	Need		
	A B C D		
P0	0 0 0 0	<=	< 1 5 2 0 > = T
P1	0 7 5 0	<=	< 1 5 3 2 > = F
P2	1 0 0 2	<=	< 1 5 3 2 > = T
P3	0 0 2 0	<=	< 2 8 8 6 > = T
P4	0 6 4 2		

<1 5 2 0> + <0 0 1 2> = <1 5 3 2>
<1 5 3 2> + <1 3 5 4> = <2 8 8 6>
<2 8 8 6> + <0 6 3 2> = <2 14 11 8>

Banker's Algorithm

Available + Allocation = New Available

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

	Need	
	A B C D	
P0	0 0 0 0	<= < 1 5 2 0 > = T
P1	0 7 5 0	<= < 1 5 3 2 > = F
P2	1 0 0 2	<= < 1 5 3 2 > = T
P3	0 0 2 0	<= < 2 8 8 6 > = T
P4	0 6 4 2	<= <2 14 11 8>

<1 5 2 0> + <0 0 1 2> = <1 5 3 2>
<1 5 3 2> + <1 3 5 4> = <2 8 8 6>
<2 8 8 6> + <0 6 3 2> = <2 14 11 8> New Available

Banker's Algorithm

Available + Allocation = New Available

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

	Need	
	A B C D	
P0	0 0 0 0	<= < 1 5 2 0 > = T
P1	0 7 5 0	<= < 1 5 3 2 > = F
P2	1 0 0 2	<= < 1 5 3 2 > = T
P3	0 0 2 0	<= < 2 8 8 6 > = T
P4	0 6 4 2	<= <2 14 11 8> = T

<1 5 2 0> + <0 0 1 2> = <1 5 3 2>
<1 5 3 2> + <1 3 5 4> = <2 8 8 6>
<2 8 8 6> + <0 6 3 2> = <2 14 11 8>
<2 14 11 8> + <0 0 1 4> = <2 14 12 12>

Banker's Algorithm

Available + Allocation = New Available

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

	Need	
	A B C D	
P0	0 0 0 0	<= < 1 5 2 0 > = T
P1	0 7 5 0	<= < 2 14 12 12 > =
P2	1 0 0 2	<= < 1 5 3 2 > = T
P3	0 0 2 0	<= < 2 8 8 6 > = T
P4	0 6 4 2	<= <2 14 11 8> = T

<1 5 2 0> + <0 0 1 2> = <1 5 3 2>
<1 5 3 2> + <1 3 5 4> = <2 8 8 6>
<2 8 8 6> + <0 6 3 2> = <2 14 11 8>
<2 14 11 8> + <0 0 1 4> = <2 14 12 12> N.Available

Banker's Algorithm

Available + Allocation = New Available

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

	Need	
	A B C D	
P0	0 0 0 0	<= < 1 5 2 0 > = T
P1	0 7 5 0	<= < 2 14 12 12 > = T
P2	1 0 0 2	<= < 1 5 3 2 > = T
P3	0 0 2 0	<= < 2 8 8 6 > = T
P4	0 6 4 2	<= <2 14 11 8> = T

<1 5 2 0> + <0 0 1 2> = <1 5 3 2>
<1 5 3 2> + <1 3 5 4> = <2 8 8 6>
<2 8 8 6> + <0 6 3 2> = <2 14 11 8>
<2 14 11 8> + <0 0 1 4> = <2 14 12 12> N.Available

The Safe Sequence:

P0 P2 P3 P4 P1