

Banker's Algorithm Simulation

Input data –

Max Resource instance		Process Name	Allocated			
			A	B	C	D
A	3	P ₁	0	0	1	2
B	14	P ₂	1	0	0	0
C	12	P ₃	1	3	5	4
D	12	P ₄	0	6	3	2
		P ₅	0	0	1	4

Process Name	Maximum			
	A	B	C	D
P ₁	0	0	1	2
P ₂	1	7	5	0
P ₃	2	3	5	6
P ₄	0	6	5	2
P ₅	0	6	5	6

Resource Request : P₂ → (0, 4, 2, 0)

Output Screenshots –

BANKER'S ALGORITHM

Enter number of processes :

Enter types of resources :

RESOURCE TABLE

Resource A	<input type="text" value="3"/>
Resource B	<input type="text" value="14"/>
Resource C	<input type="text" value="12"/>
Resource D	<input type="text" value="12"/>

CREATE ALL TABLES

FIND NEED

FIND AVAILABLE

FIND SAFE SEQUENCE

MAKE A RESOURCE REQUEST

CHECK SAFE STATE

RESET

ALLOCATION TABLE

Resource / Process	A	B	C	D
Process 1	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="1"/>	<input type="text" value="2"/>
Process 2	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Process 3	<input type="text" value="1"/>	<input type="text" value="3"/>	<input type="text" value="5"/>	<input type="text" value="4"/>
Process 4	<input type="text" value="0"/>	<input type="text" value="6"/>	<input type="text" value="3"/>	<input type="text" value="2"/>
Process 5	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="1"/>	<input type="text" value="4"/>

CREATE ALL TABLES

FIND NEED

FIND AVAILABLE

FIND SAFE SEQUENCE

MAKE A RESOURCE REQUEST

CHECK SAFE STATE

RESET

MAXIMUM TABLE

Resource / Process	A	B	C	D
Process 1	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="1"/>	<input type="text" value="2"/>
Process 2	<input type="text" value="1"/>	<input type="text" value="7"/>	<input type="text" value="5"/>	<input type="text" value="0"/>
Process 3	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="5"/>	<input type="text" value="6"/>
Process 4	<input type="text" value="0"/>	<input type="text" value="6"/>	<input type="text" value="5"/>	<input type="text" value="2"/>
Process 5	<input type="text" value="0"/>	<input type="text" value="6"/>	<input type="text" value="5"/>	<input type="text" value="6"/>

CREATE ALL TABLES

FIND NEED

FIND AVAILABLE

FIND SAFE SEQUENCE

MAKE A RESOURCE REQUEST

CHECK SAFE STATE

RESET

NEED TABLE

Resource / Process	A	B	C	D
Process 1	0	0	0	0
Process 2	0	7	5	0
Process 3	1	0	0	2
Process 4	0	0	2	0
Process 5	0	6	4	2

Need (Process 1) = Max (0,0,1,2) - Allocation (0,0,1,2) = (0,0,0,0)

Need (Process 2) = Max (1,7,5,0) - Allocation (1,0,0,0) = (0,7,5,0)

Need (Process 3) = Max (2,3,5,6) - Allocation (1,3,5,4) = (1,0,0,2)

Need (Process 4) = Max (0,6,5,2) - Allocation (0,6,3,2) = (0,0,2,0)

Need (Process 5) = Max (0,6,5,6) - Allocation (0,0,1,4) = (0,6,4,2)

CREATE ALL TABLES

FIND NEED

FIND AVAILABLE

FIND SAFE SEQUENCE

MAKE A RESOURCE REQUEST

CHECK SAFE STATE

RESET

AVAILABLE TABLE

Resource A	1
Resource B	5
Resource C	2
Resource D	0

Available (Resource A) = Total (3) - Total allocated (0 + 1 + 1 + 0 + 0) = 1

Available (Resource B) = Total (14) - Total allocated (0 + 0 + 3 + 6 + 0) = 5

Available (Resource C) = Total (12) - Total allocated (1 + 0 + 5 + 3 + 1) = 2

Available (Resource D) = Total (12) - Total allocated (2 + 0 + 4 + 2 + 4) = 0

CREATE ALL TABLES

FIND NEED

FIND AVAILABLE

FIND SAFE SEQUENCE

MAKE A RESOURCE REQUEST

CHECK SAFE STATE

RESET

SAFE SEQUENCE

1	3	4	5	2
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Process 1 : Need (0,0,0,0) <= Available (1,5,2,0) -> New Available (1,5,3,2)

Process 3 : Need (1,0,0,2) <= Available (1,5,3,2) -> New Available (2,8,8,6)

Process 4 : Need (0,0,2,0) <= Available (2,8,8,6) -> New Available (2,14,11,8)

Process 5 : Need (0,6,4,2) <= Available (2,14,11,8) -> New Available (2,14,12,12)

Process 2 : Need (0,7,5,0) <= Available (2,14,12,12) -> New Available (3,14,12,12)

FIND NEED

FIND AVAILABLE

FIND SAFE SEQUENCE

MAKE A RESOURCE REQUEST

CHECK SAFE STATE

RESET

FIND NEED

FIND AVAILABLE

RESOURCE REQUESTEnter process number that wants to make request :

Resource Request Table

Resource A	<input type="text" value="0"/>
Resource B	<input type="text" value="4"/>
Resource C	<input type="text" value="2"/>
Resource D	<input type="text" value="0"/>

FIND SAFE SEQUENCE

MAKE A RESOURCE REQUEST

CHECK SAFE STATE

RESET

Process 3 : Need (1,0,0,2) <= Available (1,5,1,0) -> New Available (1,5,1,0)

Process 4 : Need (0,0,2,0) <= Available (2,8,1,0) -> New Available (2,8,1,0)

Process 5 : Need (0,6,4,2) <= Available (2,14,12,12) -> New Available (2,14,12,12)

Process 2 : Need (0,7,5,0) <= Available (2,14,12,12) -> New Available (3,14,12,12)

This page says
The resource request made is valid and can be granted

OK

CREATE ALL TABLES

FIND NEED

FIND AVAILABLE

RESOURCE REQUESTEnter process number that wants to make request :

Resource Request Table

Resource A	<input type="text" value="0"/>
Resource B	<input type="text" value="4"/>
Resource C	<input type="text" value="2"/>
Resource D	<input type="text" value="0"/>

FIND SAFE SEQUENCE

MAKE A RESOURCE REQUEST

CHECK SAFE STATE

RESET

Safe Sequence

<input type="text" value="1"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	<input type="text" value="2"/>
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CHECK SAFE STATE

RESET

Process 1 : Need (0,0,0,0) <= Available (1,1,0,0) -> New Available (1,1,1,2)

Process 3 : Need (1,0,0,2) <= Available (1,1,1,2) -> New Available (2,4,6,6)

Process 4 : Need (0,0,2,0) <= Available (2,4,6,6) -> New Available (2,10,9,8)

Process 5 : Need (0,6,4,2) <= Available (2,10,9,8) -> New Available (2,10,10,12)

Process 2 : Need (0,3,3,0) <= Available (2,10,10,12) -> New Available (3,14,12,12)