

Ain Shams University Faculty of Engineering Computer and System department

Bankers Algorithm

Submitted by:

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Code: 1700157

Section: 1

Safe State Tests:

```
Enter num of resources : 3
Enter num of resources : 3
                                               Enter num of processes : 5
Enter num of processes : 5
                                               Enter Allocation array for P0 : 0 4 0
Enter Allocation array for P0 : 0 1 0
                                               Enter Allocation array for P1 : 2 0 0
Enter Allocation array for P1 : 2 0 0
                                               Enter Allocation array for P2 : 3 0 2
Enter Allocation array for P2 : 3 0 2
                                               Enter Allocation array for P3 : 2 1 1
Enter Allocation array for P3 : 2 1 1
                                               Enter Allocation array for P4 : 0 0 2
Enter Allocation array for P4 : 0 0 2
                                               Enter Max array for P0 : 7 5 3
Enter Max array for P0 : 7 5 3
                                               Enter Max array for P1 : 3 2 2
Enter Max array for P1 : 3 2 2
                                               Enter Max array for P2 : 9 0 2
Enter Max array for P2 : 9 0 2
                                               Enter Max array for P3 : 2 2 2
Enter Max array for P3 : 2 2 2
Enter Max array for P4 : 4 3 3
                                               Enter Max array for P4 : 4 3 3
Enter Available array
                                               Enter Available array
3 3 2
                                               3 0 2
        Need Matrix
                                                       Need Matrix
        RØ
                R1
                        R2
                                                       RØ
                                                               R1
                                                                       R2
P0
                4
                                                               1
                                               P0
Р1
                2
                        2
                                               P1
P2
        6
                0
                        0
                                                       6
                                                               0
                                                                      0
Р3
        0
                        1
                                               Р3
                                                       0
Ρ4
        4
                                                       4
Do you want to check safety? (1-yes 2-no)
                                               Do you want to check safety? (1-yes 2-no)
your choice : 1
                                               vour choice : 1
Yes , Safe state <P1,P3,P4,P0,P2>
                                               No
Do you want to make request? (1-yes 2-no)
vour choice : 2
                                               Do you want to make request? (1-yes 2-no)
                                               vour choice : 2
Do you want to test agian?(y/n)
                                               Do you want to test agian?(y/n)
```

Requests Tests:

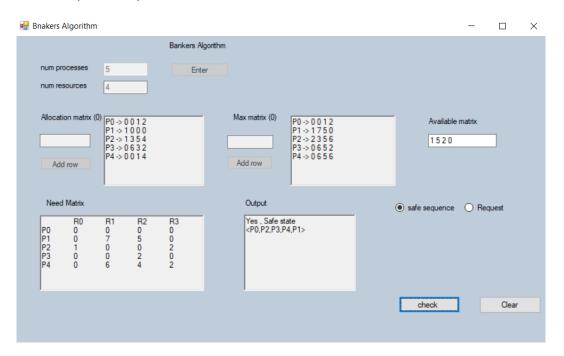
```
Enter num of resources : 3
Enter num of processes : 5
Enter Allocation array for P0 : 0 1 0
Enter Allocation array for P1 : 2 0 0
Enter Allocation array for P2 : 3 0 2
Enter Allocation array for P3 : 2 1 1
Enter Allocation array for P4 : 0 0 2
Enter Max array for P0 : 7 5 3
Enter Max array for P1 : 3 2 2
Enter Max array for P2 : 9 0 2
Enter Max array for P3 : 2 2 2
Enter Max array for P4 : 4 3 3
Enter Available array
3 3 2
       Need Matrix
        RØ
                R1
                        R2
Ρ1
P2
                0
                        0
Р3
        0
P4
Do you want to check safety? (1-yes 2-no)
your choice : 1
Yes , Safe state <P1,P3,P4,P0,P2>
Do you want to make request? (1-yes 2-no)
vour choice : 1
enter index of process: 1
enter request of process 1 : 1 0 2
       Need Matrix
        RØ
                R1
                        R2
                4
P1
P2
P3
        0
                        0
                        0
        0
P4
        4
Yes , Safe state <P1req,P1,P3,P4,P0,P2>
 o vou want to test agian?(v/n)
```

```
Enter num of resources : 3
Enter num of processes : 5
Enter Allocation array for P0 : 0 4 0
Enter Allocation array for P1 : 2 0 0
Enter Allocation array for P2 : 3 0 2
Enter Allocation array for P3 : 2 1 1
Enter Allocation array for P4 : 0 0 2
Enter Max array for P0 : 7 5 3
Enter Max array for P1 : 3 2 2
Enter Max array for P2 : 9 0 2
Enter Max array for P3 : 2 2 2
Enter Max array for P4 : 4 3 3
Enter Available array
3 0 2
        Need Matrix
        RØ
               R1
                        R2
PØ
P1
                        2
P2
        6
               0
                        0
Р3
        0
P4
Do you want to check safety? (1-yes 2-no)
your choice : 2
Do you want to make request? (1-yes 2-no)
vour choice : 1
enter index of process: 1
enter request of process 1 : 1 0 2
```

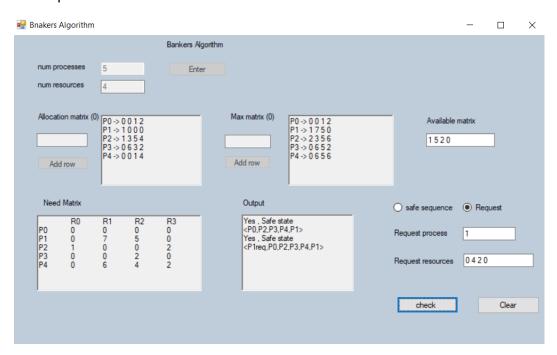
```
Enter num of resources : 4
Enter num of processes : 5
Enter Allocation array for P0 : 0 0 1 2
Enter Allocation array for P1 : 1 0 0 0
Enter Allocation array for P2 : 1 3 5 4
Enter Allocation array for P3 : 0 6 3 2
Enter Allocation array for P4 : 0 0 1 4
Enter Max array for P0 : 0 0 1 2
Enter Max array for P1 : 1 7 5 0
Enter Max array for P2 : 2 3 5 6
Enter Max array for P3 : 0 6 5 2
Enter Max array for P4 : 0 6 5 6
Enter Available array
1520
        Need Matrix
                 R1
                          R2
                                  R3
P0
P1
        0
                                  0
P2
P3
                 0
                          0
        0
                 0
                                   0
Р4
        0
Do you want to check safety? (1-yes 2-no)
your choice : 1
Yes , Safe state <P0,P2,P3,P4,P1>
Do you want to make request? (1-yes 2-no)
your choice : 1
enter index of process: 1
enter request of process 1 : 0 4 2 0
        Need Matrix
        RØ
                 0
                                  0
        0
                                  0
P2
P3
P4
                 0
                          0
                                   2
        0
Yes , Safe state <P1req,P0,P2,P3,P4,P1>
Do you want to test agian?(y/n)
```

GUI:

Check the safety of the system.

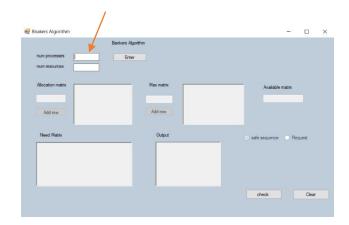


Check the request.

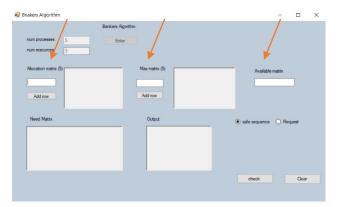


How to use the GUI:

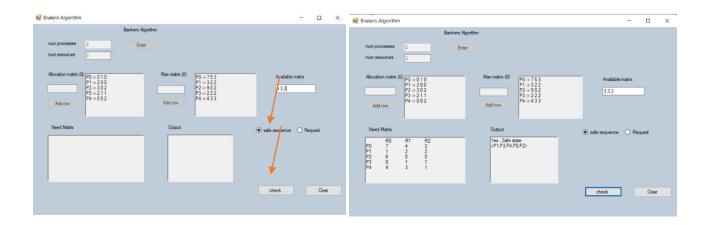
- First Enter the number of processes and resources in their fields
- Then, press Enter.



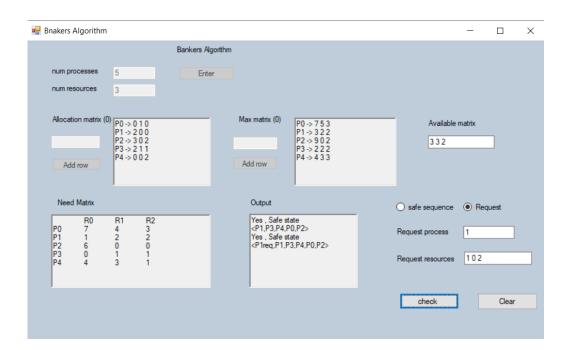
- Now the Allocation matrix, Max matrix and Available matrix will be Enabled.
- In the Allocation matrix and Max matrix you will need to press (Add row) button after entering each row in the test field. (enter values with space separated ex: 1 2 3).
- After that enter the Available matrix space separated values.



- Now if you want to check the safety, you need to check the safety option and click on check button.



- If you want to check request, you need to choose the request option and insert your request in the specified fields. Then, press check button.



- At the end if you want to check another system press clear button to restart it.

Test cases used:

3
5
010
200
302
211
002
753
3 2 2
902
222
4 3 3
3 3 2

3	_
5	
040	
200	
302	
211	
002	
753	
3 2 2	
902	
222	
433	
302	

4	
5	
0012	
1000	
1354	
0632	
0014	
0012	
1750	
2356	
0652	
0656	
1520	