

## **Assignment**

# **Banker's Algorithm**

Submitted by:

Amr Ehab Abdelaziz 1700923

عمرو ايهاب عبدالعزيز 1700923

Sec.3

## **Test Cases**

## 1) Safe

	Allocation					Max				Available			
	Α	В	С	D	Α	В	С	D	А	В	С	D	
PO	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					
Р3	0	6	3	2	0	6	5	2					
P4	0	0	1	4	0	6	5	6					

```
C:\Users\Amr\Documents\GitHub\Bankers_Algorithm\OS_assignment_BankersAlgorithm.exe
Enter number of Resources: 4
Enter number of Processes: 5
Enter allocation of P0: 0 0 1 2
Enter allocation of P1: 1 0 0 0
Enter allocation of P2: 1 3 5 4
Enter allocation of P3: 0 6 3 2
Enter allocation of P4: 0 0 1 4
Enter max of P0: 0 0 1 2
Enter max of P1: 1 7 5 0
Enter max of P2: 2 3 5 6
Enter max of P3: 0 6 5 2
Enter max of P4: 0 6 5 6
Enter available matrix: 1 5 2 0
Need of P0: 0 0 0
Need of P1: 0 7 5 0
Need of P2: 1 0 0 2
Need of P3: 0 0 2 0
Need of P4: 0 6 4 2
Choose Algorithm:

    Safety Algorithm

2. Request Algorithm
Yes, Safe state: <P0,P2,P3,P4,P1>
Press any key to continue . . .
```

#### 2) Request Granted

	Allocation				Max				Available			
	Α	В	С	D	А	В	С	D	А	В	С	D
PO	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				
Р3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

## Request from P1 (0, 4, 2, 0)

```
Enter allocation of P0: 0 0 1 2
Enter allocation of P1: 1 0 0 0
Enter allocation of P2: 1 3 5 4
Enter allocation of P3: 0 6 3 2
Enter allocation of P4: 0 0 1 4
Enter max of P0: 0 0 1 2
Enter max of P1: 1 7 5 0
Enter max of P2: 2 3 5 6
Enter max of P3: 0 6 5 2
Enter max of P4: 0 6 5 6
Enter available matrix: 1 5 2 0
Need of P0: 0 0 0
Need of P1: 0 7 5 0
Need of P2: 1 0 0 2
Need of P3: 0 0 2 0
Need of P4: 0 6 4 2
Choose Algorithm:

    Safety Algorithm

2. Request Algorithm
Enter number of process making the request: 1
Enter request: 0 4 2 0
Yes request can be granted with safe state, Safe state: <P1req,P0,P2,P3,P4,P1>
Press any key to continue . . .
```

#### 3) Not Safe

		Allocation	1		Max		Available			
	Α	В	С	А	В	С	А	В	С	
P0	1	0	1	2	1	1	2	1	1	
P1	2	1	2	5	4	4				
P2	3	0	0	3	1	1				
Р3	1	0	1	1	1	1				

```
C:\Users\Amr\Documents\GitHub\Bankers_Algorithm\OS_assignment_BankersAlgorithm.exe
Enter number of Resources: 3
Enter number of Processes: 4
Enter allocation of P0: 1 0 1
Enter allocation of P1: 2 1 2
Enter allocation of P2: 3 0 0
Enter allocation of P3: 1 0 1
Enter max of P0: 2 1 1
Enter max of P1: 5 4 4
Enter max of P2: 3 1 1
Enter max of P3: 1 1 1
Enter available matrix: 2 1 1
Need of P0: 1 1 0
Need of P1: 3 3 2
Need of P2: 0 1 1
Need of P3: 0 1 0
Choose Algorithm:
1. Safety Algorithm
2. Request Algorithm
Not Safe
Press any key to continue \dots
```

#### 4) Process exceeded its maximum claim

	Allocation					Max				Available			
	Α	В	С	D	Α	В	С	D	А	В	С	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					
Р3	0	6	3	2	0	6	5	2					
P4	0	0	1	4	0	6	5	6					

#### Request from P1 (10, 10, 10, 10)

```
C:\Users\Amr\Documents\GitHub\Bankers_Algorithm\OS_assignment_BankersAlgorithm.exe
Enter allocation of P0: 0 0 1 2
Enter allocation of P1: 1 0 0 0
Enter allocation of P2: 1 3 5 4
Enter allocation of P3: 0 6 3 2
Enter allocation of P4: 0 0 1 4
Enter max of P0: 0 0 1 2
Enter max of P1: 1 7 5 0
Enter max of P2: 2 3 5 6
Enter max of P3: 0 6 5 2
Enter max of P4: 0 6 5 6
Enter available matrix: 1 5 2 0
Need of P0: 0 0 0
Need of P1: 0 7 5 0
Need of P2: 1 0 0 2
Need of P3: 0 0 2 0
Need of P4: 0 6 4 2
Choose Algorithm:

    Safety Algorithm

Request Algorithm
Enter number of process making the request: 1
Enter request: 10 10 10 10
Error, process has exceeded its maximum claim
Press any key to continue \dots
```

#### 5) Not Granted

	1	Allocation	1		Max		Available			
	А	В	С	А	В	С	А	В	С	
Р0	0	1	0	7	5	3	3	3	2	
P1	2	0	0	3	2	2				
P2	3	0	2	9	0	2				
Р3	2	1	1	2	2	2				
P4	0	0	2	4	3	3				

#### Request from P4 (3, 3, 0)

```
C:\Users\Amr\Documents\GitHub\Bankers_Algorithm\OS_assignment_BankersAlgorithm.exe
Enter number of Resources: 3
Enter number of Processes: 5
Enter allocation of P0: 0 1 0
Enter allocation of P1: 2 0 0
Enter allocation of P2: 3 0 2
Enter allocation of P3: 2 1 1
Enter allocation of P4: 0 0 2
Enter max of P0: 7 5 3
Enter max of P1: 3 2 2
Enter max of P2: 9 0 2
Enter max of P3: 2 2 2
Enter max of P4: 4 3 3
Enter available matrix: 3 3 2
Need of P0: 7 4 3
Need of P1: 1 2 2
Need of P2: 6 0 0
Need of P3: 0 1 1
Need of P4: 4 3 1
Choose Algorithm:

    Safety Algorithm

2. Request Algorithm
Enter number of process making the request: 4
Enter request: 3 3 0
Not Granted
Press any key to continue . . .
```

## Github Link:

https://github.com/amrehab-98/Bankers Algorithm

## Google Drive:

 $\frac{https://drive.google.com/drive/folders/1HgezRW4UKXbOa60bwtCos3xqHuu1GwNn?usp=sharing}{aring}$