Manual and Project Assignment for Operating System Lab (CS693)

Lab #9

Objectives: Banker's Algorithm

Consider a system consisting 5 processes and 3 resource types R1 (with 15), R2 (with 8) and R3 (with 8 instances).

Process	Max			Allocation		
	R1	R2	R3	R1	R2	R3
P0	5	6	3	2	1	0
P1	8	5	6	3	2	3
P2	4	8	2	3	0	2
P3	7	4	3	3	2	0
P4	4	3	3	1	0	1

Find the Available matrix and Need matrix.
Whether the system is in safe state or not? If yes, display the safe sequence.

Suppose P4 now requests [2 0 2].
Whether the request will be granted or rejected?
Your program should respond by granting or rejecting each request. Program output should appear as follows:

Grant request 1
or
Deny request 1

Output:

Available matrix

Resources		
R1	R2	R3
3	3	2

Need Matrix

Process	Resources		
	R1	R2	R3
P0	3	5	3
P1	5	3	3
P2	1	8	0
P3	4	2	3
P4	3	3	2

The safe sequence <P4 P3 P0 P1 P2>
Deny request 1

Implementation:
n= Number of processes
m= Number of resources

Data Structure:
Available[j]: The number of instances currently available for resource type j.
Max[i, j]: The maximum number of instances of resource j that process i can request at any given time.
Allocation [i, j]: Process i currently holds the instatnces of resource j.
Need [i, j]: Process i may need additional instances of resource j.