FORMAN CHRISTIAN COLLEGE (A Chartered University)
Operating Systems Fall 2014 Section B, C
Programming Assignment 2

Submission Deadline: November 25, 2014 (In Class)

In this assignment you are required to implement Banker's Algorithm for Dead Lock Avoidance. Your program should accept following inputs:

1. Number of processes in the system.

2. Types of resources and number of instances in each resource type.

3. The Max matrix.

4. The Allocation matrix.

Once these data structures are provided as input, your program should compute the following:

1. The Need matrix.

2. The Available vector.

This will constitute the initial running state of the system. Now your program should interact with the user to get a Request vector for process P_i. Once this vector is obtained, your program will call Banker's algorithm to determine whether this process's request be granted or not.

Sample Data 1

Resources A(10 instances); B(5 instances); C(7 instances)

Processes	Max			Allocation			Available		
	A	B	C	A	B	C	A	B	C
P0	7	5	3	0	1	0	3	3	2
P1	3	2	2	2	0	0			
P2	9	0	3	3	0	2			
P3	2	2	2	2	1	1			
P4	4	3	3	0	0	2			

With this data, suppose P1 requests for (1,2,2). Execute and determine whether or not this request be granted.

Sample Data 2

Resources A(11 instances); B(10 instances); C(9 instances)

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

Assume some process requests resources (i, j, k). Call Banker's algorithm which in turn will call Safety Algorithm to determine whether or not we should grant this request.

Generate similar data sets (vary the number of processes and resources) and apply your algorithm on these.

I need you to generate three more data sets of your own.

This makes five data sets.

Run your program on all these data sets with varying (logical) request vectors.

Submission Format:

You must submit a hard copy (report) of your assignment. This should comprise following sections:

- Abstract
- Introduction
- Code
- Data Sets
- Results
- References

There will be a viva at the end of the semester where you must show your code running and producing results. I may also ask you few questions about the code that you have written.

Please consider submission date and time as hard deadlines. If you are not able to produce your report on the given time, 10% marks SHALL be deducted per day. Note that day ends at 12:00 noon (except the first submission deadline). Week end (Sat and Sun) will be considered as two days. No submission will be accepted on email.