**Operating Systems Lab**

**Assignment #**

Write a program for implementing Banker’s Algorithm for Deadlock Avoidance with following specifications:

Command line input: name of a file - The file contains the initial state of the system as given below Example:   
#no of resources                                                                                              4   
#no of instances of each resource                                                                 2 4 5 3   
#no of processes                                                                                               3   
#no of instances of each resource that                                1 1 1 1, 2 3 1 2, 2 2 1 3   
 each processes needs in its lifetime.

Rule: once a process uses a resource instance and returns it, the process no more needs it. For example, there are three processes, P0, P1, P2 and four resources R0, R1, R2 and R3. In the above set of 3 processes, If P2 finishes with 1 instance of resource R3, it will only need 3-1=2 instances of R3 in future. A process completes immediately when its need eventually reduces to 0.

Read this in. The programs then waits to accept a resource allocation or release requests-   this is supplied through keyboard For example: 0 a 1 0 1 1 indicates that P0 has requested allocation of 1 instance of R0, R2 and R3 each. Or 3 r 0 0 0 3 indicates that P3 is releasing 3 instances of resource R3

Your program should declare the result: (1) should this request be granted? (i.e. Is there a safe sequence, guaranteeing that  there will be no deadlock in future considering a worst remaining demand for resources) (2) if your answer is yes, print the safe sequence in which all remaining needs can be granted one by one and also grant the  request, making necessary changes to system's state. If the requesting process's need is NIL, the program internally releases all its resources and then goes back to accept another request till all processes finish with all their needs.  