



Assignment 2

Banker's Algorithm

Objectives :

- Assignment 2 is intended to help you better understand the banker's algorithm and how it determines the presence or absence of the safe state.

Instructions:

- You are required to implement the banker's algorithm in the programming language of your choice (preferably C or C++) using the following pseudo code :

P - set of processes

Mp - maximal requirement of resources for process p

Cp - current resources allocation process p

A - currently available resources

```
while (P != ∅) {  
    found = False  
    foreach (p ∈ P) {  
        if (Mp - Cp ≤ A) {  
            /* p can obtain all it needs. */  
            /* assume it does so, terminates, and */  
            /* releases what it already has. */  
            A = A + Cp  
            P = P - {p}  
            found = True  
        }  
    }  
    if (!found) return UNSAFE  
}  
return SAFE
```

Inputs

:

A filename from the keyboard, read the file for the pertinent data. The file contains the snapshot of a system at a certain time. The system has 5 processes and 3 resource types.

The first 5 lines (each line representing a process) in the input file will contain the current Allocation matrix for the system (with 3 resources). The second 5 lines in the input file will be the maximum possible resource request for each of the 5 process. The final line will contain the available resources at the time of the snapshot.

Outputs:

A prompt for which file is to be read. Then the output will be if the current state is safe and a possible execution sequence for the system.

Deliverables:

- Complete source code, commented thoroughly and clearly.
- A report that includes:
 - A description of the overall organization of your code and the major functions.
 - Sample runs and screenshots.

Notes:

- Languages used: C/C++.
- Operating System: Linux
- Students will work in groups of 4-5.