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**SE-Comps B/Batch C**

**2022300118**

## OS Experiment 7 : Banker's Algorithm

(All source code files are submitted on moodle)

**Problem statement:** Using the banker's algorithm for deadlock avoidance, when given data about resource constraints and their allocation, find whether a set of processes is in deadlock or not, if not, find the order in which to give control to processes so as to avoid deadlock.

**Files used:** *bankers\_algorithm.c*

**Output:**

(input file attached in submission)

```
Command Prompt
C:\Users\shubh\OneDrive - Bharatiya Vidya Bhavans Sardar Patel Institute Of Technology\OS>gcc bankers_algorithm.c -o bankers
C:\Users\shubh\OneDrive - Bharatiya Vidya Bhavans Sardar Patel Institute Of Technology\OS>.\bankers
Enter number of processes : 5
Enter number of resource types (no. of columns in the tables) : 3
Enter total number of instances for each of the 3 resources :
10 5 7
Enter the number of allocated instances of each of the resources for :
Process 1 : 0 1 0
Process 2 : 2 0 0
Process 3 : 3 0 2
Process 4 : 2 1 1
Process 5 : 0 0 2
Enter the max number of instances demanded by the different processes :
Process 1 : 7 5 3
Process 2 : 3 2 2
Process 3 : 9 0 2
Process 4 : 2 2 2
Process 5 : 4 3 3
Initially, the availability status of the 3 resources is as follows :
3 3 2
The need matrix is as follows :
7 4 3
1 2 2
6 0 0
0 1 1
4 3 1
```

Step 1 : Allocate resources to process 2  
The availability status of the 3 resources after process 2 has executed is as follows :

5 3 2

The need matrix after process 2 has executed is as follows :

7 4 3  
executed

6 0 0

0 1 1

4 3 1

Step 2 : Allocate resources to process 4

The availability status of the 3 resources after process 4 has executed is as follows :

7 4 3

The need matrix after process 4 has executed is as follows :

7 4 3

executed

6 0 0

executed

4 3 1

Step 3 : Allocate resources to process 1

The availability status of the 3 resources after process 1 has executed is as follows :

7 5 3

The need matrix after process 1 has executed is as follows :

executed

executed

6 0 0

executed

4 3 1

Step 4 : Allocate resources to process 3

The availability status of the 3 resources after process 3 has executed is as follows :

10 5 5

The need matrix after process 3 has executed is as follows :

executed

executed

executed

executed

4 3 1

Step 5 : Allocate resources to process 5

The availability status of the 3 resources after process 5 has executed is as follows :

10 5 7

The need matrix after process 5 has executed is as follows :

executed

executed

executed

executed

executed

The order of execution of the processes to avoid deadlock is as follows :

2 → 4 → 1 → 3 → 5

C:\Users\shubh\OneDrive - Bharatiya Vidya Bhavans Sardar Patel Institute Of Technology\OS>

```

C:\Users\shubh\OneDrive - Bharatiya Vidya Bhavans Sardar Patel Institute Of Technology\OS>.\bankers
Enter number of processes : 5
Enter number of resource types (no. of columns in the tables) : 3
Enter total number of instances for each of the 3 resources :
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Enter the number of allocated instances of each of the resources for :
Process 1 : 0 1 0
Process 2 : 2 0 0
Process 3 : 3 0 2
Process 4 : 2 1 2
Process 5 : 0 0 2
Enter the max number of instances demanded by the different processes :
Process 1 : 7 5 3
Process 2 : 3 2 2
Process 3 : 9 0 2
Process 4 : 2 2 4
Process 5 : 4 3 3

Initially, the availability status of the 3 resources is as follows :
3 3 1

The need matrix is as follows :
7 4 3
1 2 2
6 0 0
0 1 2
4 3 1

The processes are in a deadlock.

C:\Users\shubh\OneDrive - Bharatiya Vidya Bhavans Sardar Patel Institute Of Technology\OS>

```

(Deadlock case)