

SSN COLLEGE OF ENGINEERING, KALAVAKKAM
(An Autonomous Institution, Affiliated to Anna University, Chennai)
SSN College of Engineering

Department of Computer Science and Engineering

UCS1411 – Operating Systems Laboratory

II Year CSE - A Section (IV Semester)

Academic Year 2019-20

Exercise – 7- Deadlock Avoidance Algorithms

Lab exercise 7 Implementation of Banker's algorithm (deadlock avoidance)

Aim:

Develop a C program to implement the Banker's algorithm for deadlock avoidance

Algorithm:

1. Read the following
 - a. Number of processes.
 - b. Number of resources and number of instances of each resource available.
 - c. Maximum requirement of each process,
 - d. Allocated instances of resources
2. Determine the need of each process
3. Repeat the following till all processes are done.
 - a. Check if request of process i less than or equal to need of that process
 - i. If yes proceed
 - ii. Otherwise raise an error condition
 - b. Check if request of process i less than or equal to available instances
 - i. If yes proceed
 - ii. Otherwise wait till available.
 - c. Update the available vector, allocation vector and need vector
 - d. Generate safety sequence by running safety algorithm.

Sample Input/Output:

Banker's Algorithm

1. Read Data
2. Print Data
3. Safety Sequence
4. Exit

Enter the option :1

Number of processes: 5 P0, P1, P2, P3, P4

Number of resources: 3 A B C

Number of Available instances of A: 3

Number of Available instances of B: 3

Number of Available instances of C: 2

Maximum requirement for P0: 7 5 3
 Maximum requirement for P1: 3 2 2
 Maximum requirement for P2: 9 0 2
 Maximum requirement for P3: 2 2 2
 Maximum requirement for P4: 4 3 3
 Allocated instances to P0: 0 1 0
 Allocated instances to P1: 2 0 0
 Allocated instances to P2: 3 0 2
 Allocated instances to P3: 2 1 1
 Allocated instances to P4: 0 0 2

Enter the option: 2

Pid	Alloc A B C	Max A B C	Need A B C	Avail A B C
P0	0 1 0	7 5 3	* * *	3 3 2
P1	2 0 0	3 2 2	* * *	
P2	3 0 2	9 0 2	* * *	
P3	2 1 1	2 2 2	* * *	
P4	0 0 2	4 3 3	* * *	

Enter the option: 3

Display the Safety Sequence:

* * * * *

Enter the option:4