

SSN COLLEGE OF ENGINEERING, KALAVAKKAM
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
CS6413 - OPERATING SYSTEM LAB

Lab Exercise 9 Implementation of Deadlock Detection Algorithm

Aim:

Develop a C program to implement the deadlock detection algorithm for resources with multiple instances. Also list the processes that cause the deadlock.

Algorithm:

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
 - e. New requests by the processes.
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. Mark that process as "finished".
 - d. If all the processes are "finished", then say "No deadlock".
 - e. Else list the processes that cause the deadlock.

Sample input/output:

1. Read Data
2. Print Data
3. Run Algorithm
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

	Alloc	Max	Need	Avail
	A B C	A B C	A B C	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 processes that cause deadlock: * * * * *

Enter the option:4