

Module: CST2555

Coursework 1: Operating Systems

Assessment: 20% of final grade

Released: 30th November 2023.

Deadline: 7th January 2024 , 23:59 PM.

Instructions:

1. Write a program to solve the following problem.
2. Submit the file on the module page.
3. Create a video presentation (5 – 7 minutes) to:
 - 3.1. Explain how you implemented the code in detail (50%).
 - 3.2. Execute the file and show the output (50%).
4. Submit the presentation on the module page.
5. Don't forget to write and mention your name and student ID.

Aim :

Simulate Bankers algorithm for Deadlock Avoidance using C++ or Bash.

THEORY:

Banker's algorithm is a deadlock avoidance algorithm. It is named so because this algorithm is used in banking systems to determine whether a loan can be granted or not.

Consider there are n account holders in a bank and the sum of the money in all their accounts is S . Every time a loan has to be granted by the bank, it subtracts the loan amount from the total money the bank has. Then it checks if that difference is greater than S . It is done because, only then, the bank would have enough money even if all the n account holders draw all their money at once.

Banker's algorithm works in a similar way in operating systems. Whenever a new process is created, it must specify the maximum instances of each resource type that it needs, exactly.

Assume that there are n processes and m resource types in the system.

ALGORITHM:

1. Start the program.
2. Get the values of resources and processes.
3. Get the available value.
4. After allocation find the need value.
5. Check whether it's possible to allocate.
6. If it is possible then the system is in the safe state.
7. Else system is not in the safety state.
8. If the new request comes then check that the system is in safe state.
9. If so, grant the request.
10. If not, deny the request.
11. Stop the program.