Program:

import java.util.ArrayList;

import java.util.HashMap;

import java.util.HashSet;

import java.util.List;

import java.util.Map;

import java.util.Scanner;

import java.util.Set;

class Process {

  int id;

  List<Integer> dependencies;

  boolean isBlocked;

  Process(int id) {

    this.id = id;

    this.dependencies = new ArrayList<>();

    this.isBlocked = false;

  }

  void addDependency(int processId) {

    dependencies.add(processId);

  }

}

class DeadlockDetection {

  private final Map<Integer, Process> processes;

  DeadlockDetection() {

    this.processes = new HashMap<>();

  }

  void addProcess(int id) {

    processes.put(id, new Process(id));

  }

  void addDependency(int from, int to) {

    if (processes.containsKey(from) && processes.containsKey(to)) {

      processes.get(from).addDependency(to);

      processes.get(from).isBlocked = true;

    }

  }

  boolean detectDeadlock(int initiator) {

    Set<Integer> visited = new HashSet<>();

    return detectCycle(initiator, initiator, visited);

  }

  private boolean detectCycle(int current, int initiator, Set<Integer> visited) {

    if (!processes.containsKey(current))

      return false;

    if (visited.contains(current))

      return current == initiator;

    visited.add(current);

    for (int dependent : processes.get(current).dependencies) {

      if (detectCycle(dependent, initiator, visited)) {

        return true;

      }

    }

    visited.remove(current);

    return false;

  }

}

public class ChandyMisraHaas {

  public static void main(String[] args) {

    Scanner scanner = new Scanner(System.in);

    DeadlockDetection detector = new DeadlockDetection();

    System.out.print("Enter number of processes: ");

    int n = scanner.nextInt();

    for (int i = 1; i <= n; i++) {

      detector.addProcess(i);

    }

    System.out.print("Enter number of dependencies: ");

    int d = scanner.nextInt();

    System.out.println("Enter dependencies (from to):");

    for (int i = 0; i < d; i++) {

      int from = scanner.nextInt();

      int to = scanner.nextInt();

      detector.addDependency(from, to);

    }

    System.out.print("Enter initiator process for deadlock detection: ");

    int initiator = scanner.nextInt();

    if (detector.detectDeadlock(initiator)) {

      System.out.println("Deadlock detected!");

    } else {

      System.out.println("No deadlock detected.");

    }

    scanner.close();

  }

}

Output:



