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ASSIGNMENT 2

BATCH – D2

import java.util.LinkedList;

import java.util.Queue;

import java.util.Scanner;

import java.util.Stack;

class adjacenynonweightedGraph {

private int vertCount;

private int edgeCount;

private int[][] adjmatrix;

public adjacenynonweightedGraph(int vertexCount) {

edgeCount = 0;

vertCount = vertexCount;

adjmatrix = new int[vertCount][vertCount];

for (int i = 0; i < vertCount; i++) {

for (int j = 0; j < vertCount; j++)

adjmatrix[i][j] = 0;

}

}

public void accept(Scanner sc) {

System.*out*.println("Enter the number of edges");

edgeCount = sc.nextInt();

for (int i = 0; i < edgeCount; i++) {

System.*out*.println("enter edge (src dest) : ");

int src = sc.nextInt();

int dest = sc.nextInt();

adjmatrix[src][dest] = 1;

adjmatrix[dest][src] = 1;

}

}

public void display() {

System.*out*.println("\nAdjacency matrix : \n");

for (int i = 0; i < vertCount; i++) {

for (int j = 0; j < vertCount; j++)

System.*out*.print(adjmatrix[i][j] + "\t");

System.*out*.println();

}

}

public void bfsTraversal(int start){

System.*out*.print("bfs traverssal : ");

boolean[] marked = new boolean[vertCount];

Queue<Integer> q = new LinkedList<Integer>();

q.offer(start);

marked[start] = true;

while(!q.isEmpty()){

int trav = q.poll();

System.*out*.print(trav +",");

for (int dest = 0; dest <vertCount ; dest++) {

if(adjmatrix[trav][dest]==1 && !marked[dest]){

q.offer(dest);

marked[dest]= true;

}

}

}

System.*out*.println();

}

public void dfsTraversal(int start){

System.*out*.print("dfs traverssal : ");

boolean[] marked = new boolean[vertCount];

Stack<Integer> s = new Stack<Integer>();

s.push(start);

marked[start] = true;

while(!s.isEmpty()){

int trav = s.pop();

System.*out*.print(trav +",");

for (int dest = 0; dest <vertCount ; dest++) {

if(adjmatrix[trav][dest]!=0 && !marked[dest]){

s.push(dest);

marked[dest]= true;

}

}

}

System.*out*.println();

}

}

public class adjacencymatrixMain {

public static void main(String[] args) {

Scanner sc = new Scanner(System.*in*);

System.*out*.println("enter the number of vertices :");

int vertCount = sc.nextInt();

adjacenynonweightedGraph g = new adjacenynonweightedGraph(vertCount);

g.accept(sc);

g.display();

g.bfsTraversal(0);

g.dfsTraversal(0);

sc.close();

}

}