SSN College of Engineering, Kalavakkam
Department of Computer Science and Engineering
III Semester - CSE
UCS 1312 Data Structures Lab Laboratory

Academic Year: 2021-2022 **Batch: 2020-2024**

Date of Assignment: 30.11.2021

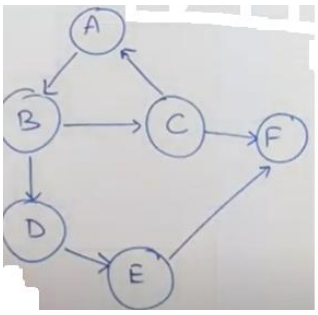
Exercise 9: Graph Traversal and its Applications

cityADT consists of adjacency matrix that represents the connection between the cities. Adjacency matrix has an entry 1, if there is a connection between the cities. Implement the following methods.

- void create(cityADT *C) – will create the graph using adjacency matrix
- void disp(cityADT *C) – display the adjacency matrix
- void BFS(cityADT *C) – provides the output of visiting the cities by following breadth first
- void DFS(cityADT *C) – provides the output of visiting the cities by following depth first

1. Demonstrate the ADT with the following testcase

For the following Graph,



Enter the no. of vertices: 6
Enter the no. of edges: 7
AB, BC, BD, CA, CF, DE, EF

Adjacency Matrix

	A	B	C	D	E	F
A	0	1	0	0	0	0
B	0	0	1	1	0	0
C	1	0	0	0	0	1
D	0	0	0	0	1	0
E	0	0	0	0	0	1
F	0	0	0	0	0	0

BFS Output: ABCDFE for Start vertex A

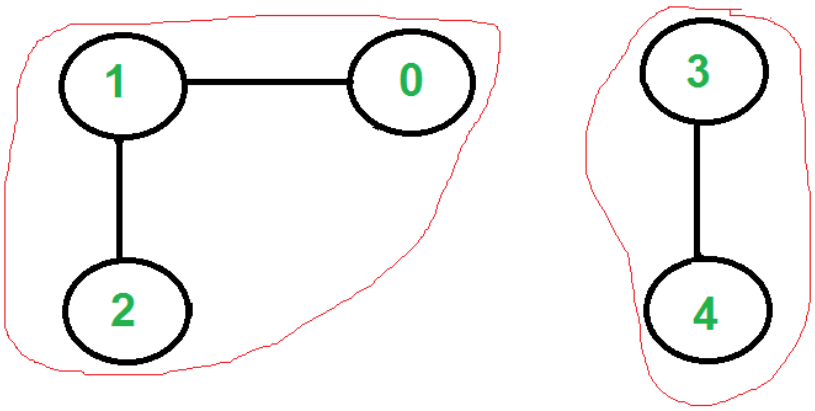
DFS Output: ABCDFE for Start vertex A

2. Write an application to utilize traversals to do the following:

a. Given the source and destination cities, find whether there is a path from source to destination
b. Find the connected components in a given graph

Test the application with the following
Input:
Source: D
Destination: F
Output:
Path exists
Input:
Source: F
Destination: B
Output:
Path not exists

Input:



There are two connected components in above undirected graph
0 1 2
3 4