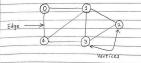
Assignment No. -6

Title - Represent a given graph using adjacency matrix!
list to perform DFS and using adjacency list to perform
BFS - Use the map of the area around the callege as
the graph. Identify the prominent land marks as nodes
and perform DFS and BFS on that

Objective -

1. To identify directed and undirected graph.
2. To represent graph using adjacency matrix and list.
3. To traverse program to the graph.

Theory—
A graph is a non-linear data structure consisting of nodes and edges. The nodes are sometimes also referred to as vertices and the edges are lines or ares that connect any two nodes in the graph. More formally a firmph consists of a finite set of vertices (or nodes) and set of Edges which connect a pair of nodes.



A graph is a data structure that consists of the A graph is a saw surgery of the fallowing two components:

1: A finite set of vertices also called as nodes.

2. A finite set of ordered pair of the form (U,V) called as edge. The pair is ordered because (U,V) is not the Same as (V,U) in case of a directed graph (di-graph). The pair of the form (U,V) indicates that there is an edge from vertex U to vertex I the edges may contain weight value less.

The following two are the most commonly used representation of a graph.

2. Adjacency Matrix
2. Adjacency list
There are other representations also like, Incidence that it and Tockhoce of graph.

That his and Incidence list. The choice of graph representation is Situation specific. It totally depends on the type of operations to be performed and ease of use.

Adjacency Matrix:
Adjacency Matrix is a 2D array of Size VXX where V is
Adjacency Matrix is a 2D array of Size VXX where V is
the Number of Vertices in a graph let the 2D array
be adj[III], a slot adj[III]] I indicate that there
is an edge from Vertice i to Verter i. Adjacency motris
for undirected graph is always symmetric. Adjacency
Matrix is also used to represent weighted graphs If
adj[III] w, then there is an edge from Vertex i to
vertex j with weight w

0 1 2 3 4

	0	1	2	3	4	
0	0	1	0	0	1	
1	1	0	1	1	1	
2	0	1	0	1	0	
2	0	1	1	٥	1	
 4	1	1	0	1	0	

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0 | 41 | 347 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 | 487 readth first Search or BFS is a graph traversal algorithm.

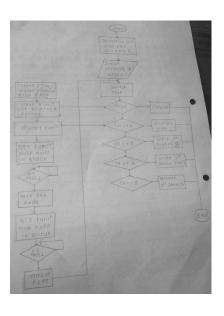
"It is used for traversing as Searching a graph in a tempolic fashion." \*\*11 i. stad der deutsteinig de Seitmany i. 1990e in de gespromelle Andreadeg, debt. etwante in the apoul his project de deutsteiniste deutsteiniste deutsteiniste deutsteiniste follosie, dahe stanten in state project deutsteiniste follosie dahe stanten in deutsteiniste gesprecht follosie dahe stanten deutsteiniste gesprecht follosie dahe stanten der deutsteiniste follosie das deutsteiniste deutsteiniste project on user mong Gener die the States node Signatu-tation deutsteiniste deutsteiniste deutsteiniste deutsteiniste deutsteiniste bestehnt deutsteiniste deutstein

Algorithm -

1) Create a recursive function that makes the index of node and a visited array.

2) Mark the current node as visited and print

3). Traverse all the adjacent and unmarked nodes and call the recursive function with index of adjacent



Assignment No. 12 Title - Implementation of a direct access file-Insertion and deletion of a record from a direct access file Objective -To understand concept of direct access file - Insertion and deletion. Theory—

1) Different types of organizing the file—
i) Sequential File organization
ii) Heap file organization
iii) Hash file organization
iv) 8" the file—organization
v) Clustered file organization 2) Direct access file organization:

i) Direct access file is also known as random access or relative file organization.

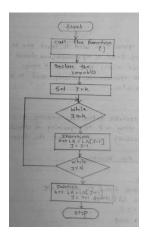
ii) In direct access file, all records are stared in direct access storage devices, such as hard disk. The records are mondarily placed throughout the file.

iii) The records close not need to be in sequence how they are updated directly and roundten back in the same location. locotion. Same location:

N) This file Organization is useful for immediate access
to large amount of information. It is used in accessing,
large abatabases.

N) It is also called as hashing.

Sequential file	Direct file			
access	access			
Information in the file is processed in order one record after the other.	i) A field length logical recontract allow the program to read 4 write record repidly no particular order.			
li)When we used read commond, it more ahead pointer, by one	ii) there is no restriction on- order of reading & writing for a direct access file			
iii)Data is entered in entry sequential order	iii) Data is entered in PRN number.			
iv) Duplicate data be allowed.	iv) Duplicate data is not			
v) Access is slow	V) Access is faster than sequential access.			
4) Advantages of direct ac i) Direct access file hel system like online mails	as in poline transcation proce			



Insertion : Insertion operator is used to insert one or more data elements into an array. Based on requirements, new elements be added of the beginning, end or any given index of array.

Insertion operator is basically used to add an element
in the given index. - Deletion operation refers to removing an existing elements of from the array and re-arganizing all elements of an array. - It is basically used to delete the data. Algorithm for insertion =

1. Start

2. Set J = k 3. Repeat Steps 4. F. 5 while J= k 4. set LA = LACJ-17 5. set J=J-1 6. Stop Algorithm for deletion -Start 3. Repeat the steps 4.4.5 while JCN
4. Set LA[J]=LA[J+1]
5. Set J 2 J+1 6. Set N= N-1 7. Stop.

Assignment No-3 [Group-8] Singput territors There - Construct on expression tree from the given the fix expression eg. + - a\*bc/def and traverse it using past order traversal (non recursive) and then delete the entire tree Objective - D. Combines advantages of an ordered array and a linked list. ii)Searching as fast as in ordered array.
iii)Fundamental data storage structure used in programming. Theory -Incory 
\*\*Expression Trees:

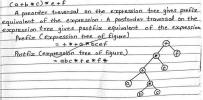
\*\*When an expression is represented through a tree, it is

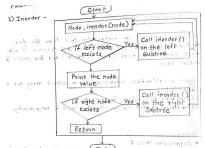
known as expression tree. The leaves of an expression tree

are operands, such as constants or variables names and all

internal nodes contain operations. Figure gives an example. of an expression tree.

(a+b\*c)\*e+f





R. Expression Vices:

1. When an expression Challed currented through a fact. R.

