02/11/2023

1. (a) Implementation of undirected unweighted graph using Adjacency Matrix.

(b) Implementation of undirected weighted graph using Adjacency Matrix.

(c) Implementation of directed unweighted graph using Adjacency Matrix.

(d) Implementation of directed weighted graph using Adjacency Matrix.

2. (a) Implementation of undirected unweighted graph using Incidence Matrix.

(b) Implementation of undirected weighted graph using Incidence Matrix.

(c) Implementation of directed unweighted graph using Incidence Matrix.

(d) Implementation of directed weighted graph using Incidence Matrix.

3. (a) Implementation of undirected unweighted graph using Adjacency List.

(b) Implementation of undirected weighted graph using Adjacency List.

(c) Implementation of directed unweighted graph using Adjacency List.

(d) Implementation of directed weighted graph using Adjacency List.

07/11/2023

4. (a) Consider an undirected graph, do DFS on it, and compute the DFS tree.

(b) Consider a directed graph, do DFS on it, and compute the DFS tree.

(c) Compute the number of components of a given undirected graph using DFS.

(d) Consider an undirected graph. Do DFS on it and differentiate its edges based on your sequence of visiting the vertices.

(e) Consider a directed graph. Do DFS on it and differentiate its edges based on your sequence of visiting the vertices.

5. (a) Consider an undirected graph, do BFS on it, and compute the BFS tree.

(b) Consider a directed graph, do BFS on it, and compute the BFS tree.

(c) Do BFS for computing the shortest distance and the path between a pair of vertices of an undirected graph, if one exists.

(d) Do BFS for computing the shortest distance and the path between a pair of vertices of a directed graph, if one exists.

09/11/2023

6. Devise a scheme in computing a polynomial ‘C’ using arrays, where ‘C’ is computed by:

(a) Adding two polynomials A and B

(b) Subtracting polynomial B from polynomial A

(c) Multiplying two polynomials A and B

(d) Differentiating polynomial A

7. Devise a scheme to represent a sparse matrix X and transpose this representation of X in lexicographic order.

23/11/2023

8. Implement Assignment (6) using dynamic data structure as follows:

Devise schemes of dynamic data structures to compute a polynomial ‘C’ where ‘C’ is computed by:

(a) Adding two polynomials A and B,

(b) Subtracting polynomial B from polynomial A,

(c) Multiplying two polynomials A and B,

(d) Differentiating polynomial A.