

CE205 Data Structures

Week-5

Graph Data Structure and Traversals

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Outline

- Introduction to Graphs
- Graph Representations
- Graph Traversal
- Water Jug Problem

Introduction to Graphs

- Vertex
- Edge

Introduction to Graphs

- Undirected Graph
- Directed Graph
- Mixed Graph

Introduction to Graphs

- End Vertices or Endpoints
- Origin
- Destination

Introduction to Graphs

- Adjacent
- Incident

Introduction to Graphs

- Outgoing Edge
- Incoming Edge

Introduction to Graphs

- Degree
- Indegree
- Outdegree

Introduction to Graphs

- Parallel edges or Multiple edges
- Self-loop
- Simple Graph
- Path

Introduction to Graphs

- Btech Smart Class
 - http://www.btechsmartclass.com/data_structures/introduction-to-graphs.html

Graph Representations

1. Adjacency Matrix
2. Incidence Matrix
3. Adjacency List

- Btech Smart Class

- http://www.btechsmartclass.com/data_structures/graph-representations.html

Graph Traversal - DFS

1. Depth-First Search (DFS)
 2. Iterative Deepening Search(IDS) or Iterative Deepening Depth First Search(IDDFS)
- Btech Smart Class
 - http://www.btechsmartclass.com/data_structures/graph-traversal-dfs.html

Graph Traversal - BFS

- Breadth-First Search (BFS)
 - Btech Smart Class
 - http://www.btechsmartclass.com/data_structures/graph-traversal-bfs.html

Graph Traversal - DLS

- Depth-limited Search
 - Educba
 - <https://www.educba.com/depth-limited-search/>

Graph Traversal

- Uniform Cost Search
 - Geeks for Geeks
 - <https://www.geeksforgeeks.org/uniform-cost-search-dijkstra-for-large-graphs/>

Graph Traversal

- Bidirectional Search
 - Geeks for Geeks
 - <https://www.geeksforgeeks.org/bidirectional-search/>

Graph Traversal

- Water Jug Problem
 - Geeks for Geeks
 - <https://www.geeksforgeeks.org/water-jug-problem-using-bfs/>
 - Tamu Edu
 - <https://www.math.tamu.edu/~dallen/hollywood/diehard/diehard.htm>
 - Udel Edu
 - <https://www.eecis.udel.edu/~mccoy/courses/cisc4-681.10f/lec-materials/handouts/search-water-jug-handout.pdf>

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