AL2002 – Artificial Intelligence Lab

Lab Task # 04

Note:

- Plagiarism will not be **tolerated!!**
- Use comments wherever applicable.

Problem: 1

Problem Statement: Graph Search with User Input

You are tasked with developing a program to perform graph searches on a given graph. The graph is represented in a CSV file, where each row represents an edge between two nodes along with their weights. Additionally, the program should take input from the user for the source and goal nodes and allow the user to choose between three search algorithms: breadth-first search (BFS), depth-first search (DFS), or best-first search (BestFS).

Requirements:

1. Read the graph from a CSV file where each row represents an edge between two nodes and their weights. The CSV file should have three columns: "source", "destination", and "weight".
2. Prompt the user to enter the source and goal nodes.
3. Ask the user to choose a search algorithm:
    - Type '1' for Breadth-First Search (BFS)
    - Type '2' for Depth-First Search (DFS)
    - Type '3' for Best-First Search (BestFS)
4. Implement the selected search algorithm to find the path from the source to the goal node in the graph.

Display the path found by the selected search algorithm along with the number of nodes traced.

Output:

Enter the source node: B

Enter the goal node: G

Choose a search algorithm:

1. Breadth-First Search (BFS)

2. Depth-First Search (DFS)

3. Best-First Search (BestFS)

Enter your choice: 3

Path found using Best-First Search: B -> D -> C -> E -> G

Nodes traced by Best-First Search: 4