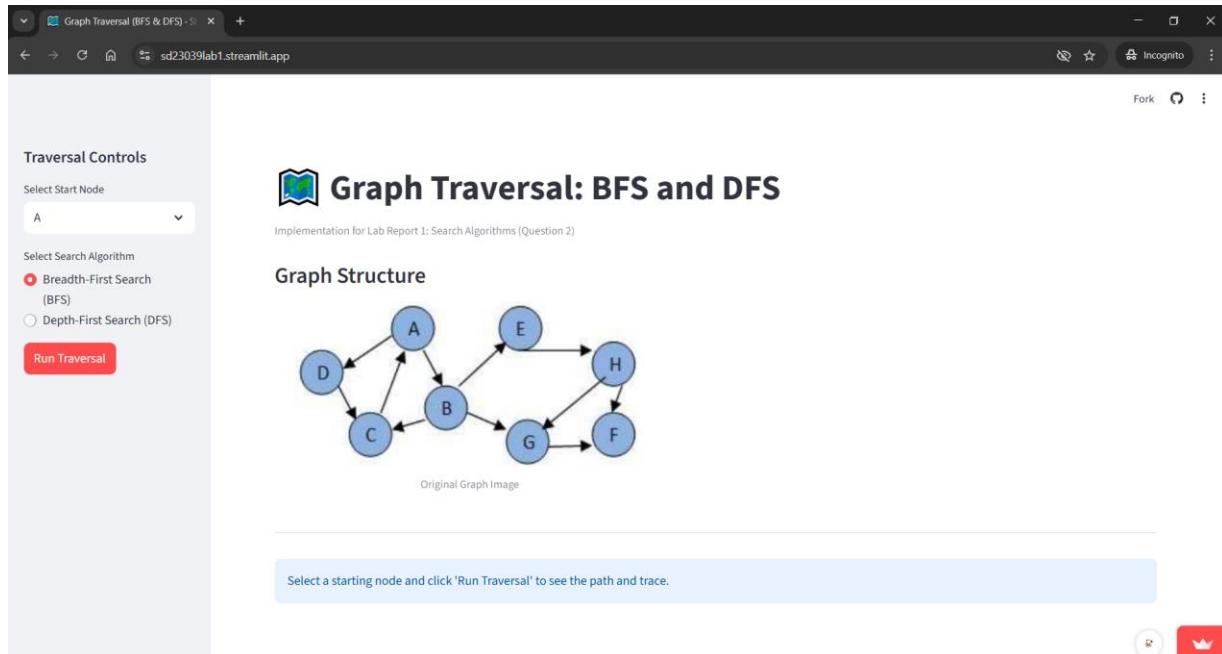
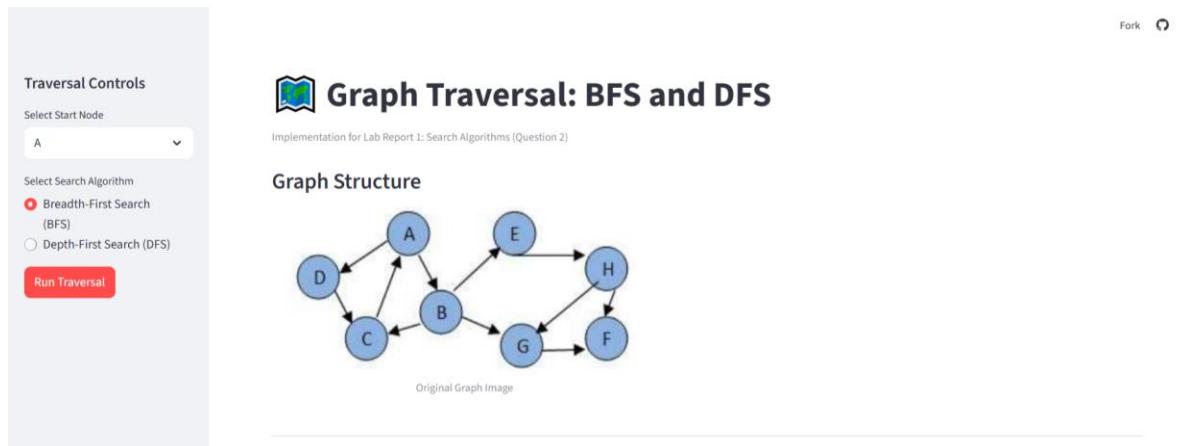


Instructions & Screenshots

1. Figure below shows a screenshot of the app immediately after it loads, which shows the title, the sidebar controls, the graph structure, and the initial information message: Select a starting node and click ‘Run Traversal’ to see the path and trace. So, you may select a starting node and choose a search algorithm between BFS or DFS. Then, click ‘Run Traversal’.



2. The following figures show the successful execution of the BFS algorithm, where starting node is at A. You can explore the traversal path, process path, step-by-step frontier trace, and traversal visualization.



Fork ⌂ ⌓

Traversal Controls

Select Start Node: A

Select Search Algorithm: Breadth-First Search (BFS) Depth-First Search (DFS)

Run Traversal

Breadth-First Search (BFS) Results

Rule: Uses a Queue (FIFO - First-In, First-Out). Tie-breaking: Alphabetical.

Traversal Path (Expanded Order)

A → B → D → C → E → G → H → F

Process Path (Trace Table)

Step	Expanded Node	Process Path
1	A	A
2	B	A → B
3	D	A → B → D
4	C	A → B → D → C
5	E	A → B → D → C → E
6	G	A → B → D → C → E → G
7	H	A → B → D → C → E → G → H
8	F	A → B → D → C → E → G → H → F

Traversal Controls

Select Start Node: A

Select Search Algorithm: Breadth-First Search (BFS) Depth-First Search (DFS)

Run Traversal

Step-by-Step Frontier Trace

▼ Show detailed step-by-step trace

Step 1: Expanded Node: A
Queue:

Step 2: Expanded Node: B
Queue: D

Step 3: Expanded Node: D
Queue: C, E, G

Step 4: Expanded Node: C
Queue: E, G

Step 5: Expanded Node: E
Queue: G

Traversal Controls

Select Start Node: A

Select Search Algorithm: Breadth-First Search (BFS) Depth-First Search (DFS)

Run Traversal

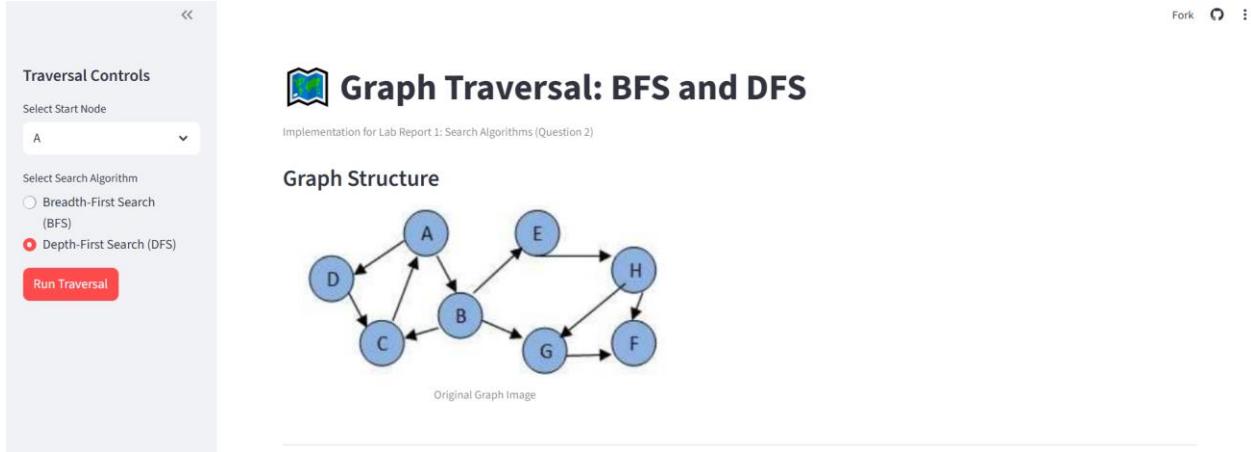
Step 6: Expanded Node: G
Queue: H

Step 7: Expanded Node: H
Queue: F

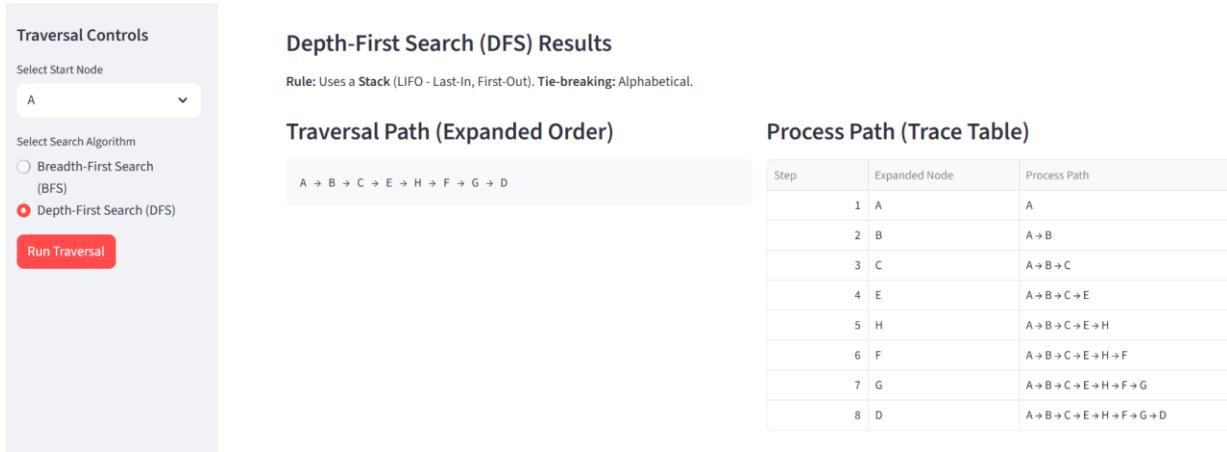
Step 8: Expanded Node: F
Queue:

Traversal Visualization

3. The following figures show the successful execution of the DFS algorithm, where starting node is at A. You can explore the traversal path, process path, step-by-step frontier trace, and traversal visualization.

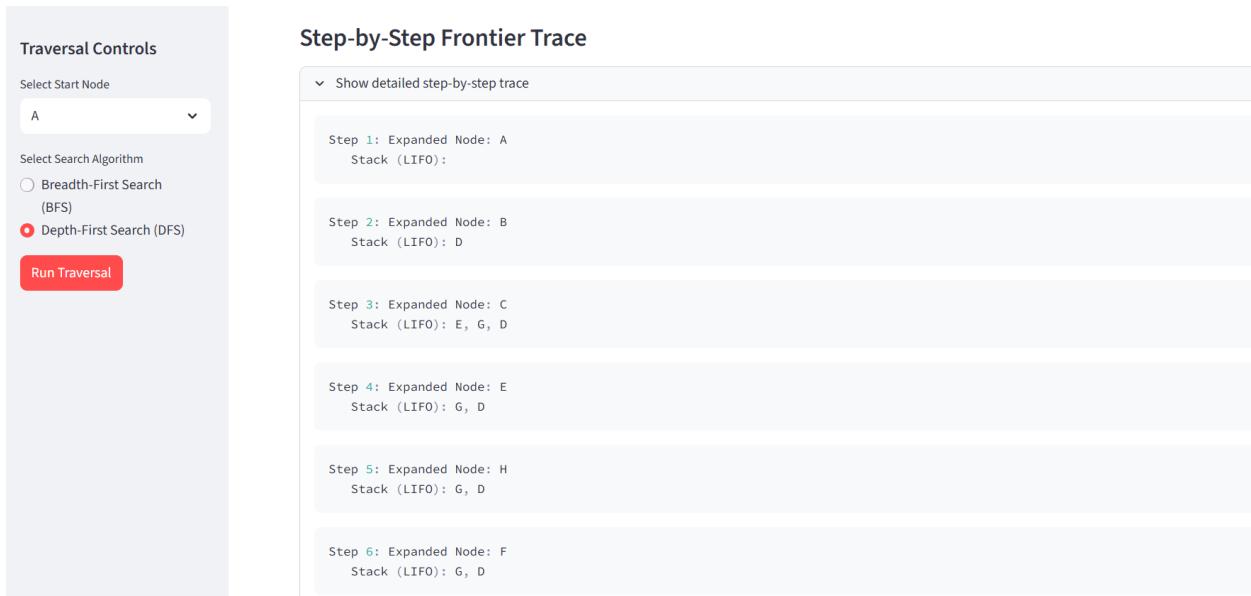


The screenshot shows a web-based application for graph traversal. On the left, a sidebar titled "Traversal Controls" includes a dropdown for "Select Start Node" set to "A", a radio button for "Select Search Algorithm" (BFS is unselected, DFS is selected), and a red "Run Traversal" button. The main area features a title "Graph Traversal: BFS and DFS" with a small icon, a subtitle "Implementation for Lab Report 1: Search Algorithms (Question 2)", and a section titled "Graph Structure" showing a directed graph with nodes A through H and their connections. Below the graph is a link "Original Graph Image".



The screenshot shows the results of the Depth-First Search (DFS). On the left, the "Traversal Controls" sidebar remains the same. In the center, a section titled "Depth-First Search (DFS) Results" contains the rule "Rule: Uses a Stack (LIFO - Last-In, First-Out). Tie-breaking: Alphabetical." Below this is a table titled "Traversed Path (Expanded Order)" showing the sequence of nodes visited: A → B → C → E → H → F → G → D. To the right is a table titled "Process Path (Trace Table)" showing the step-by-step expansion of the stack:

Step	Expanded Node	Process Path
1	A	A
2	B	A → B
3	C	A → B → C
4	E	A → B → C → E
5	H	A → B → C → E → H
6	F	A → B → C → E → H → F
7	G	A → B → C → E → H → F → G
8	D	A → B → C → E → H → F → G → D



The screenshot shows the "Step-by-Step Frontier Trace". On the left, the "Traversal Controls" sidebar remains the same. In the center, a table titled "Step-by-Step Frontier Trace" provides a detailed trace of the search steps:

Step	Expanded Node	Stack (LIFO)
1	A	A
2	B	A, B
3	C	A, B, C
4	E	A, B, C, E
5	H	A, B, C, E, H
6	F	A, B, C, E, H, F
7	G	A, B, C, E, H, F, G
8	D	A, B, C, E, H, F, G, D

Traversal Controls

Select Start Node
A

Select Search Algorithm
 Breadth-First Search (BFS)
 Depth-First Search (DFS)

Run Traversal

Step 7: Expanded Node: G
Stack (LIFO): D

Step 8: Expanded Node: D
Stack (LIFO):

Traversal Visualization

