

**Assignment -4 : Dijkstra's Algorithm**

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Advanced Algorithms

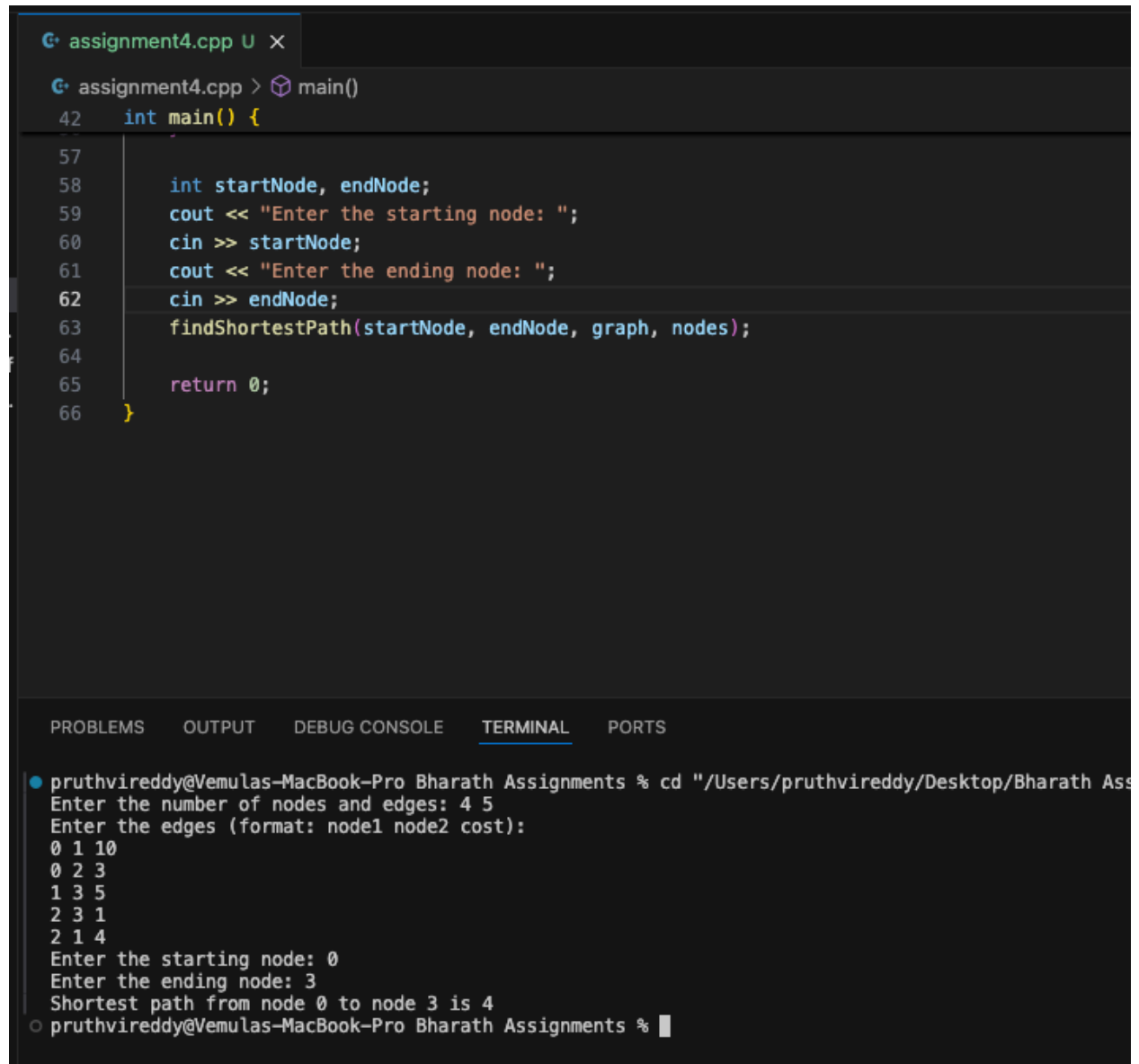
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GitHub repository : <https://github.com/RajaBharathReddyM/cpp/blob/main/assignment4.cpp>

## Assignment -4 : Dijkstra's Algorithm

Example :



```
assignment4.cpp U x
assignment4.cpp > main()
42  int main() {
57
58      int startNode, endNode;
59      cout << "Enter the starting node: ";
60      cin >> startNode;
61      cout << "Enter the ending node: ";
62      cin >> endNode;
63      findShortestPath(startNode, endNode, graph, nodes);
64
65      return 0;
66  }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
● pruthvireddy@Vemulas-MacBook-Pro Bharath Assignments % cd "/Users/pruthvireddy/Desktop/Bharath Ass
Enter the number of nodes and edges: 4 5
Enter the edges (format: node1 node2 cost):
0 1 10
0 2 3
1 3 5
2 3 1
2 1 4
Enter the starting node: 0
Enter the ending node: 3
Shortest path from node 0 to node 3 is 4
○ pruthvireddy@Vemulas-MacBook-Pro Bharath Assignments %
```

## Example 2:

```
assignment4.cpp U X
assignment4.cpp > main()
8 void findShortestPath(int start, int end, vector<vector<pair<int, int> > >& graph, int
36     cout << "No path from node " << start << " to node " << end << endl;
37 } else {
38     cout << "Shortest path from node " << start << " to node " << end << " is " <<
39 }
40 }
41
42 int main() {
43     int nodes, edges;
44     cout << "Enter the number of nodes and edges: ";
45     cin >> nodes >> edges;
46
47     // Create a graph using a list of neighbors for each node
48     vector<vector<pair<int, int> > > graph(nodes);
49
50     cout << "Enter the edges (format: node1 node2 cost):" << endl;
51     for (int i = 0; i < edges; ++i) {
52         int from, to, cost;
53         cin >> from >> to >> cost;
54         graph[from].push_back(make_pair(to, cost));
55         graph[to].push_back(make_pair(from, cost));
56     }
57
58     findShortestPath(0, 6, graph, 0);
59 }
60
61 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
● pruthvireddy@Vemulas-MacBook-Pro Bharath Assignments % cd "/Users/pruthvireddy/Desktop/Bharath
Enter the number of nodes and edges: 7 9
Enter the edges (format: node1 node2 cost):
0 1 1
0 3 4
1 2 2
1 4 7
2 5 3
3 4 2
4 5 1
4 6 5
5 6 4
Enter the starting node: 0
Enter the ending node: 6
Shortest path from node 0 to node 6 is 10
```

### 1) How long did you spend on this assignment ?

I spent 6 hours working on this assignment, which included the time to understand Dijkstra's algorithm, problem requirements, write the initial code, test the program, and troubleshoot errors that came up.

**2) Based on your effort, What letter grade would you say you earned ?**

Based on my effort, I would give myself a grade A. I invested a considerable amount of time and effort into learning Dijkstra's algorithm, implementing the code, and fixing errors.

**3) Based on your solution, what letter grade would you say you earned ?**

Based on the functionality and completeness of my solution, I would rate it as an A. The program works perfectly to find the shortest path between nodes as expected.

**4) Provide a summary of what doesn't work in your solution, along with an explanation of how you attempted to solve the problem and where you feel you struggled ?**

Initially, I encountered multiple errors related to syntax, and also struggled a bit with understanding how to store the graph using a list.