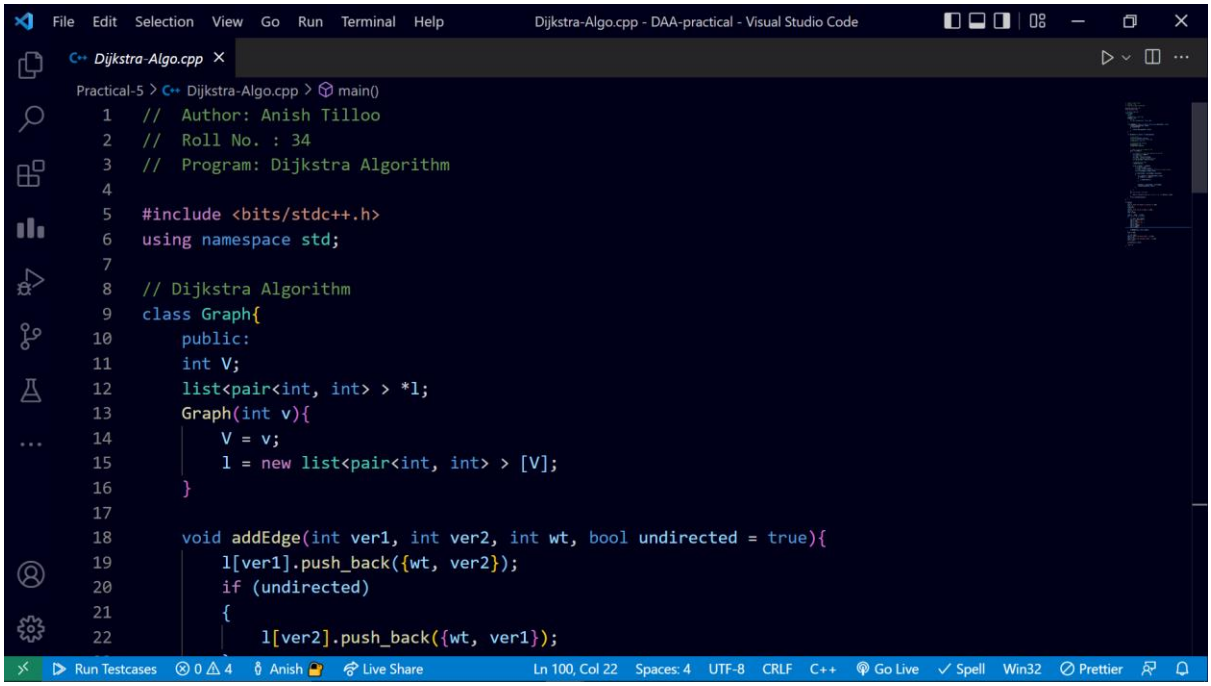
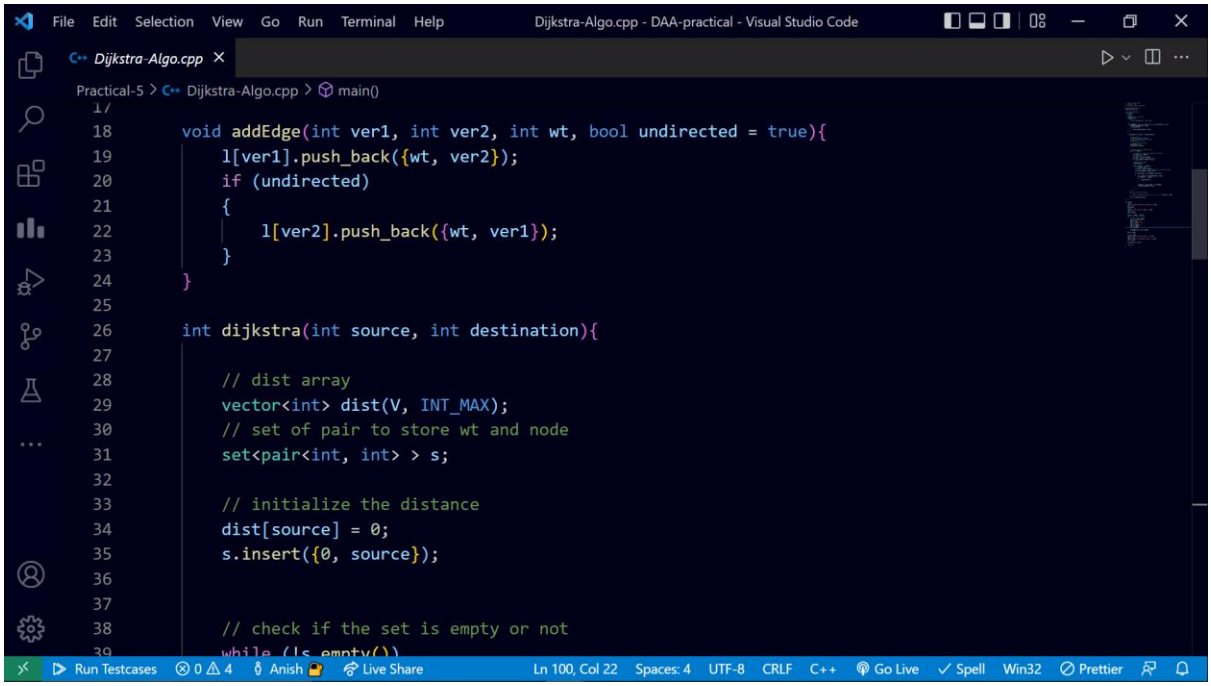

File Edit Selection View Go Run Terminal Help
Dijkstra-Algo.cpp - DAA-practical - Visual Studio Code
Dijkstra-Algo.cpp
Practical-5 > Dijkstra-Algo.cpp > main()
// Author: Anish Tilloo
// Roll No. : 34
// Program: Dijkstra Algorithm
#include <bits/stdc++.h>
using namespace std;
// Dijkstra Algorithm
class Graph{
public:
int V;
list<pair<int, int> > *l;
Graph(int v){
V = v;
l = new list<pair<int, int> > [V];
}
void addEdge(int ver1, int ver2, int wt, bool undirected = true){
l[ver1].push_back({wt, ver2});
if (undirected)
{
l[ver2].push_back({wt, ver1});
Run Testcases 0 4 Anish Live Share
Ln 100, Col 22 Spaces: 4 UTF-8 CRLF C++ Go Live Spell Win32 Prettier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l[ver1].push_back({wt, ver2});
if (undirected)
{
l[ver2].push_back({wt, ver1});
}
}
int dijkstra(int source, int destination){
// dist array
vector<int> dist(V, INT_MAX);
// set of pair to store wt and node
set<pair<int, int> > s;
// initialize the distance
dist[source] = 0;
s.insert({0, source});
// check if the set is empty or not
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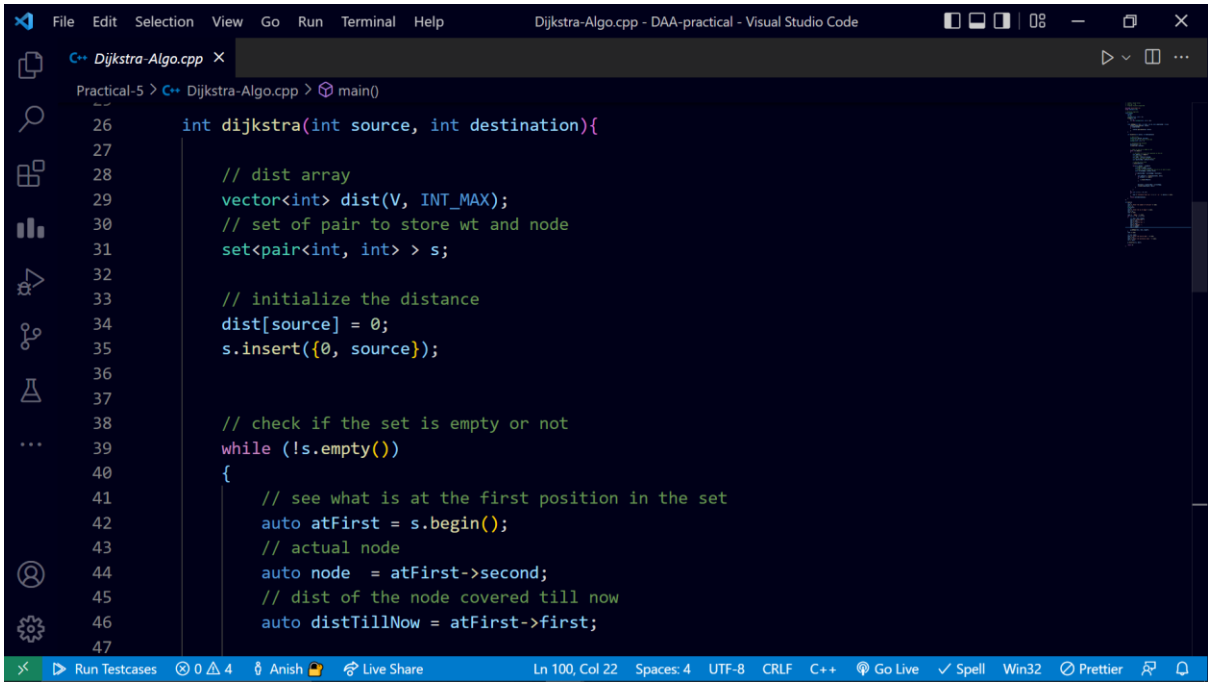
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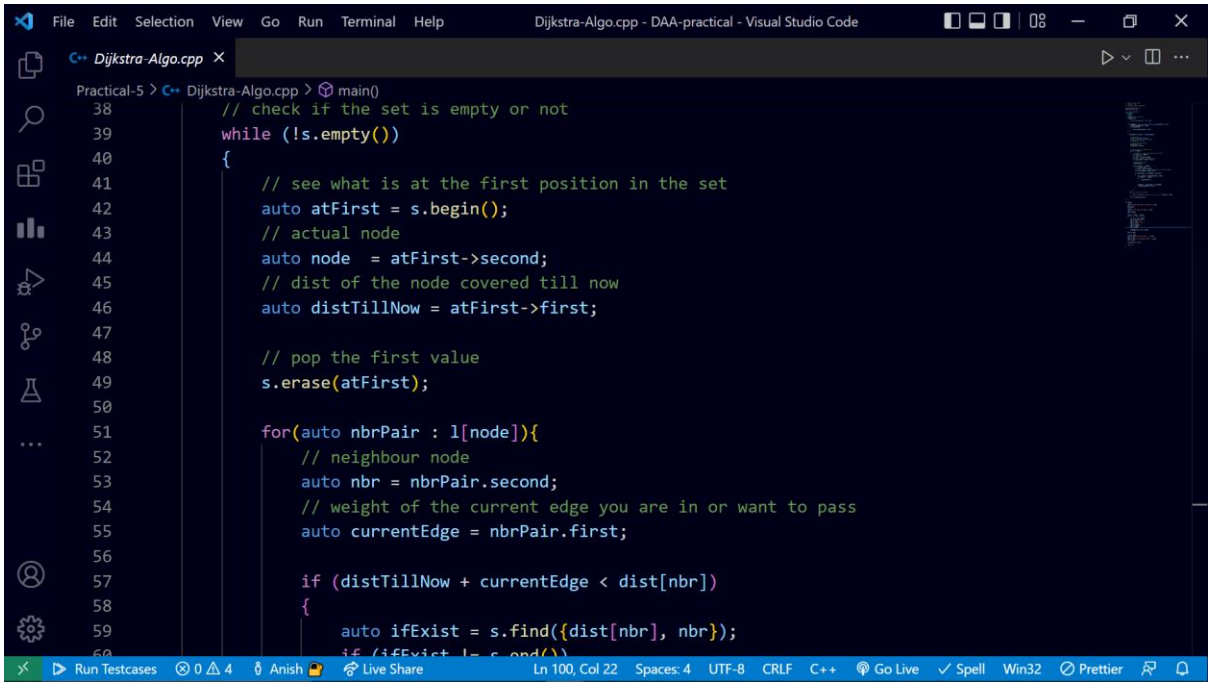
// dist array
vector<int> dist(V, INT_MAX);
// set of pair to store wt and node
set<pair<int, int> > s;
// initialize the distance
dist[source] = 0;
s.insert({0, source});
// check if the set is empty or not
while (!s.empty())
{
// see what is at the first position in the set
auto atFirst = s.begin();
// actual node
auto node = atFirst->second;
// dist of the node covered till now
auto distTillNow = atFirst->first;
Run Testcases 0 4 Anish Live Share
Ln 100, Col 22 Spaces: 4 UTF-8 CRLF C++ Go Live Spell Win32 Prettier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Dijkstra-Algo.cpp - DAA-practical - Visual Studio Code
Dijkstra-Algo.cpp
Practical-5 > Dijkstra-Algo.cpp > main()
// check if the set is empty or not
while (!s.empty())
{
// see what is at the first position in the set
auto atFirst = s.begin();
// actual node
auto node = atFirst->second;
// dist of the node covered till now
auto distTillNow = atFirst->first;
// pop the first value
s.erase(atFirst);
for(auto nbrPair : l[node]){
// neighbour node
auto nbr = nbrPair.second;
// weight of the current edge you are in or want to pass
auto currentEdge = nbrPair.first;
if (distTillNow + currentEdge < dist[nbr])
{
auto ifExist = s.find({dist[nbr], nbr});
Run Testcases 0 4 Anish Live Share
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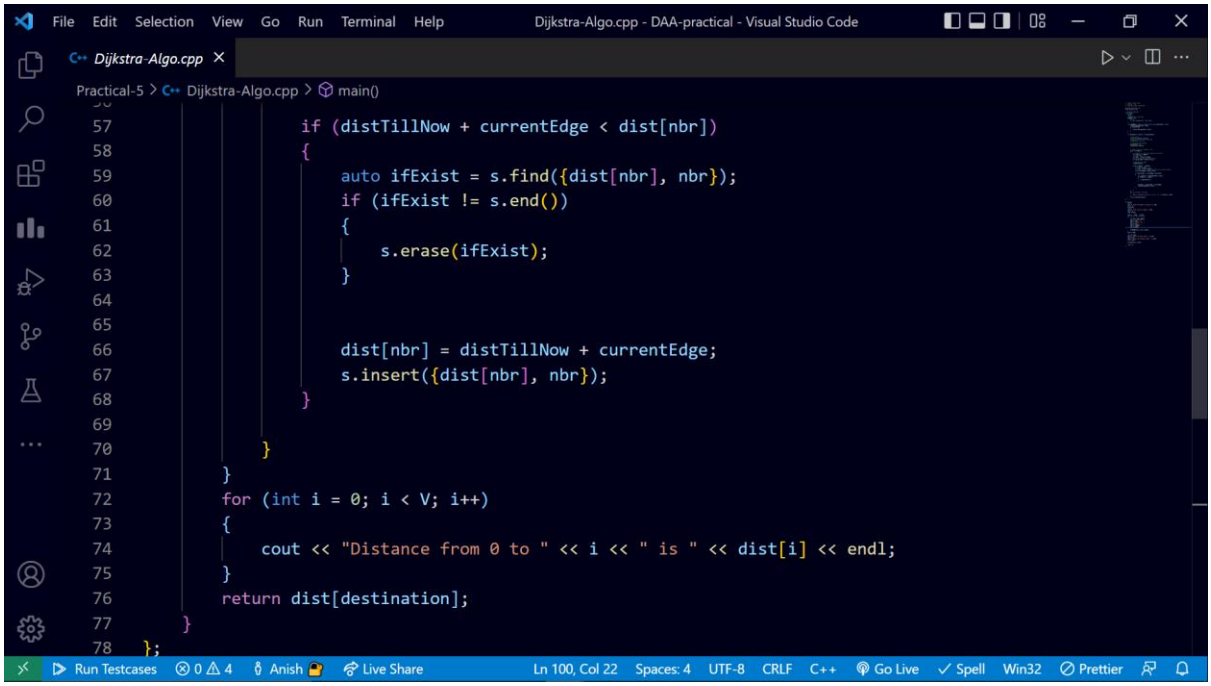
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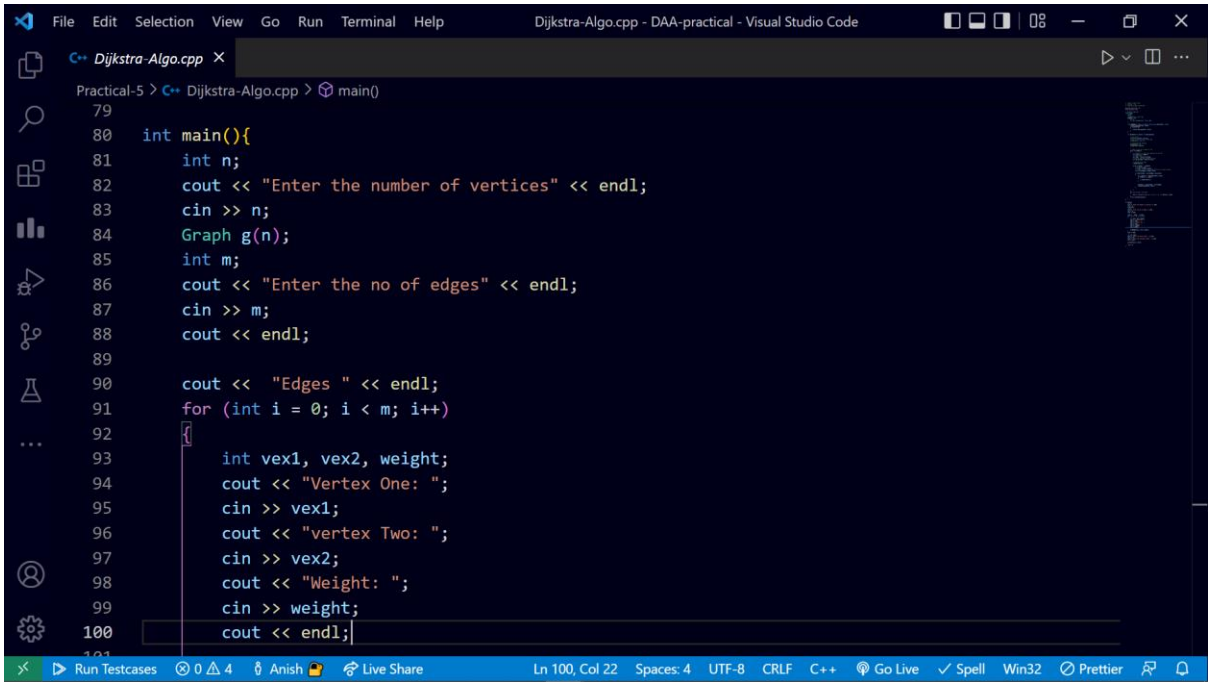
Dijkstra-Algo.cpp - DAA-practical - Visual Studio Code
Dijkstra-Algo.cpp
Practical-5 > Dijkstra-Algo.cpp > main()
57 if (distTillNow + currentEdge < dist[nbr])
58 {
59 auto ifExist = s.find({dist[nbr], nbr});
60 if (ifExist != s.end())
61 {
62 s.erase(ifExist);
63 }
64
65
66 dist[nbr] = distTillNow + currentEdge;
67 s.insert({dist[nbr], nbr});
68 }
69
70 }
71 }
72 for (int i = 0; i < V; i++)
73 {
74 cout << "Distance from 0 to " << i << " is " << dist[i] << endl;
75 }
76 return dist[destination];
77 }
78 };
Run Testcases 0 4 Anish Live Share Ln 100, Col 22 Spaces: 4 UTF-8 CRLF C++ Go Live Spell Win32 Prettier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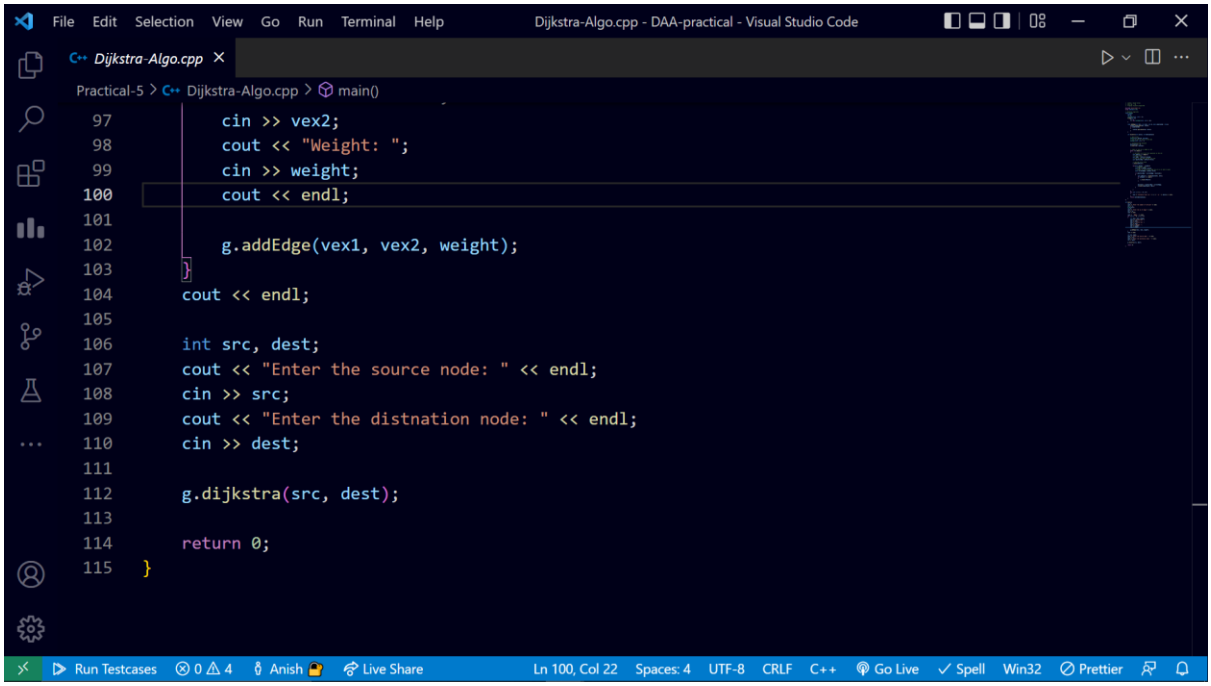
Dijkstra-Algo.cpp - DAA-practical - Visual Studio Code
Dijkstra-Algo.cpp
Practical-5 > Dijkstra-Algo.cpp > main()
79
80 int main(){
81 int n;
82 cout << "Enter the number of vertices" << endl;
83 cin >> n;
84 Graph g(n);
85 int m;
86 cout << "Enter the no of edges" << endl;
87 cin >> m;
88 cout << endl;
89
90 cout << "Edges " << endl;
91 for (int i = 0; i < m; i++)
92 {
93 int vex1, vex2, weight;
94 cout << "Vertex One: ";
95 cin >> vex1;
96 cout << "vertex Two: ";
97 cin >> vex2;
98 cout << "Weight: ";
99 cin >> weight;
100 cout << endl;
Run Testcases 0 4 Anish Live Share Ln 100, Col 22 Spaces: 4 UTF-8 CRLF C++ Go Live Spell Win32 Prettier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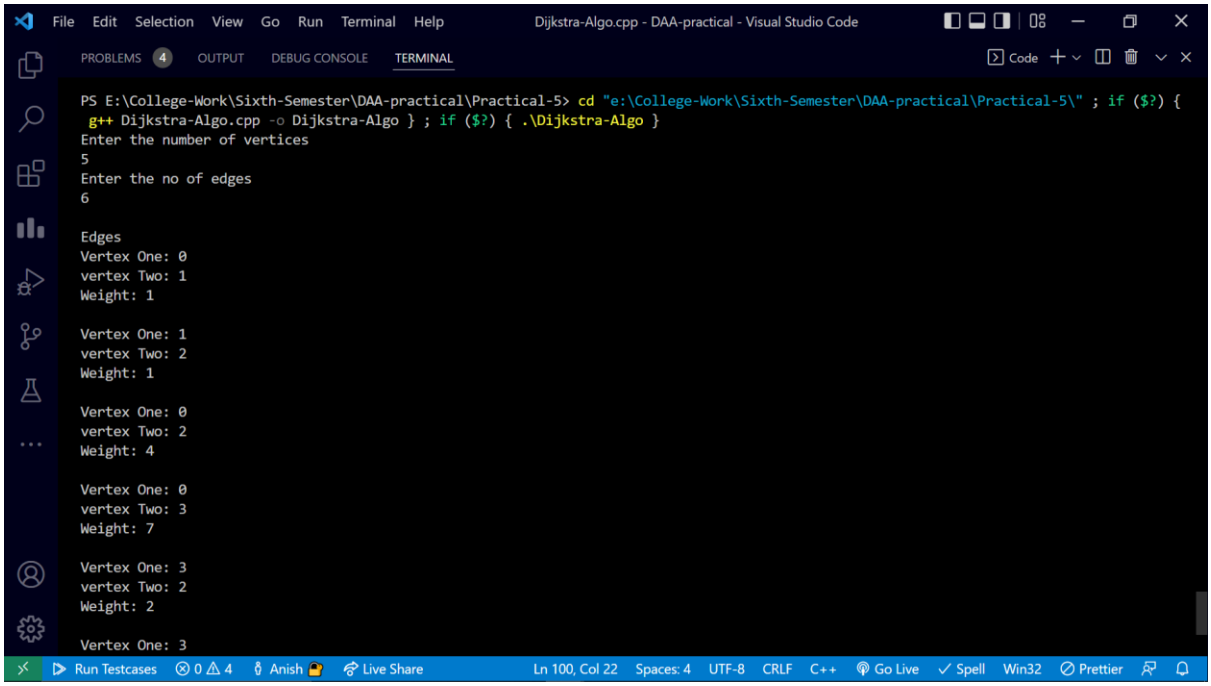
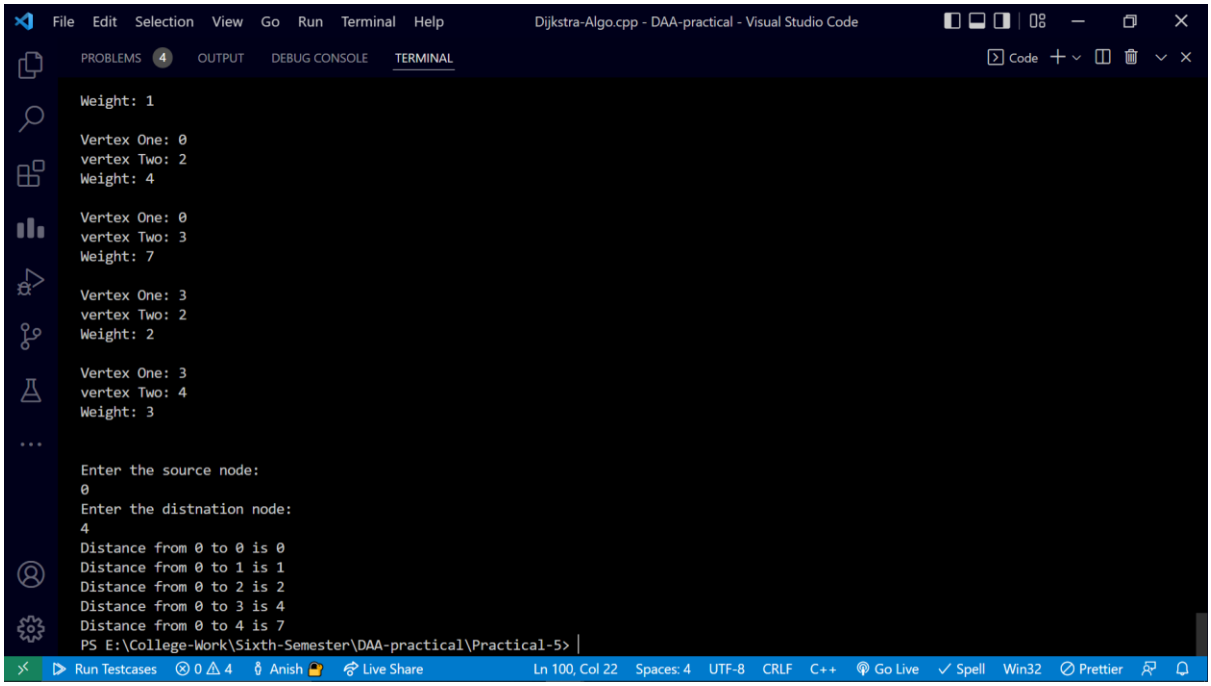
Dijkstra-Algo.cpp - DAA-practical - Visual Studio Code
Dijkstra-Algo.cpp
Practical-5 > Dijkstra-Algo.cpp > main()
97 cin >> vex2;
98 cout << "Weight: ";
99 cin >> weight;
100 cout << endl;
101
102 g.addEdge(vex1, vex2, weight);
103 }
104 cout << endl;
105
106 int src, dest;
107 cout << "Enter the source node: " << endl;
108 cin >> src;
109 cout << "Enter the distnation node: " << endl;
110 cin >> dest;
111
112 g.dijkstra(src, dest);
113
114 return 0;
115 }
Run Testcases 0 4 Anish Live Share Ln 100, Col 22 Spaces: 4 UTF-8 CRLF C++ Go Live Spell Win32 Prettier


File Edit Selection View Go Run Terminal Help
Dijkstra-Algo.cpp - DAA-practical - Visual Studio Code
PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL
Code
PS E:\College-Work\Sixth-Semester\DAA-practical\Practical-5> cd "e:\College-Work\Sixth-Semester\DAA-practical\Practical-5\" ; if ($?) {
g++ Dijkstra-Algo.cpp -o Dijkstra-Algo } ; if ($?) { .\Dijkstra-Algo }
Enter the number of vertices
5
Enter the no of edges
6
Edges
Vertex One: 0
vertex Two: 1
Weight: 1
Vertex One: 1
vertex Two: 2
Weight: 1
Vertex One: 0
vertex Two: 2
Weight: 4
Vertex One: 0
vertex Two: 3
Weight: 7
Vertex One: 3
vertex Two: 2
Weight: 2
Vertex One: 3
Run Testcases 0 4 Anish Live Share Ln 100, Col 22 Spaces: 4 UTF-8 CRLF C++ Go Live Spell Win32 Prettier


File Edit Selection View Go Run Terminal Help
Dijkstra-Algo.cpp - DAA-practical - Visual Studio Code
PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL
Code
Weight: 1
Vertex One: 0
vertex Two: 2
Weight: 4
Vertex One: 0
vertex Two: 3
Weight: 7
Vertex One: 3
vertex Two: 2
Weight: 2
Vertex One: 3
vertex Two: 4
Weight: 3
Enter the source node:
0
Enter the distnation node:
4
Distance from 0 to 0 is 0
Distance from 0 to 1 is 1
Distance from 0 to 2 is 2
Distance from 0 to 3 is 4
Distance from 0 to 4 is 7
PS E:\College-Work\Sixth-Semester\DAA-practical\Practical-5>
Run Testcases 0 4 Anish Live Share Ln 100, Col 22 Spaces: 4 UTF-8 CRLF C++ Go Live Spell Win32 Prettier