#include <stdio.h>

#include <limits.h>

#define MAX\_VERTICES 100

void dijkstra(int graph[MAX\_VERTICES][MAX\_VERTICES], int num\_vertices, int start\_vertex) {

int distances[MAX\_VERTICES];

int visited[MAX\_VERTICES] = {0};

for (int i = 0; i < num\_vertices; i++) {

distances[i] = INT\_MAX;

}

distances[start\_vertex] = 0;

for (int count = 0; count < num\_vertices - 1; count++) {

int min\_distance = INT\_MAX;

int min\_index;

for (int v = 0; v < num\_vertices; v++) {

if (!visited[v] && distances[v] <= min\_distance) {

min\_distance = distances[v];

min\_index = v;

}

}

visited[min\_index] = 1;

for (int v = 0; v < num\_vertices; v++) {

if (!visited[v] && graph[min\_index][v] &&

distances[min\_index] != INT\_MAX &&

distances[min\_index] + graph[min\_index][v] < distances[v]) {

distances[v] = distances[min\_index] + graph[min\_index][v];

}

}

}

printf("Vertex\tDistance from Source Vertex %d\n", start\_vertex);

for (int i = 0; i < num\_vertices; i++) {

printf("%d\t%d\n", i, distances[i]);

}

}

int main() {

int graph[MAX\_VERTICES][MAX\_VERTICES];

int num\_vertices, num\_edges;

for (int i = 0; i < MAX\_VERTICES; i++) {

for (int j = 0; j < MAX\_VERTICES; j++) {

graph[i][j] = 0;

}

}

printf("Enter the number of vertices: ");

scanf("%d", &num\_vertices);

printf("Enter the number of edges: ");

scanf("%d", &num\_edges);

printf("Enter the edges (format: source destination weight):\n");

for (int i = 0; i < num\_edges; i++) {

int src, dest, weight;

scanf("%d %d %d", &src, &dest, &weight);

graph[src][dest] = weight;

graph[dest][src] = weight;

}

int start\_vertex;

printf("Enter the starting vertex: ");

scanf("%d", &start\_vertex);

dijkstra(graph, num\_vertices, start\_vertex);

return 0;

}

Enter the number of vertices: 9

Enter the number of edges: 14

Enter the edges (format: source destination weight):

0 1 4

1 2 8

2 3 7

3 7 9

7 6 10

5 6 2

4 5 1

0 4 8

1 4 11

4 8 7

5 8 6

8 2 2

2 6 4

3 6 14

Enter the starting vertex: 0

Vertex Distance from Source Vertex 0

0 0

1 4

2 12

3 19

4 8

5 9

6 11

7 21

8 14