

COSC 2430 lab 6: Dijkstra's Shortest Path

1. Introduction

A graph (denoted as $G = (V, E)$) consists of a non-empty set of vertices or nodes V and a set of edges E . A vertex represents an endpoint of an edge. An edge joins two vertices a , b and is represented by set of vertices it connects. In this lab, you will create a C++ program that will calculate the minimum travel distance between two vertices in a graph. You can use STL implementation and Dijkstra's algorithm for this lab.

2. Input and Output

a. Input file

- The first line in the input will contain four integers m , n , x , and y , each separated by a space
- m is the number of vertices, n is the number of edges in the graph, x is the starting vertex and y is the destination
- Each line in the next n lines will contain three integers a , b , and c , each separated by a space
- a and b denote an edge that join two vertices a and b , integer c will represent the distance from a to b
- There will be no duplicate label for vertices

b. Output file

- Output the minimum distance travel between x and y

3. Example Output

input1.txt

7 7 3 7

1 2 5

1 3 3

1 4 6

2 5 2

4 5 3

5 6 4

5 7 5

output1.txt

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4. Turn in your lab assignment

Lab 6 needs to be turned in to our Linux server, follow the link here

https://rizk.netlify.app/courses/cosc2430/2_resources/

Make sure to create a folder under your root directory, name it lab6 (name need to be lower case), copy your code and argumentmanager.h to this folder, no testcase or other files needed.

PS: This document may have typos, if you think something illogical, please email TAs for confirmation.