Data Structures
2nd Homework (version_2)

Write a “C” or “C++” program that finds the shortest path between the given two cities and calculates the total distance for a given graph.

Your program should read data from an input text file which includes edge list representation of the graph and should output the results into output file. Both file names are input arguments to your compiled code with “-i” for input and “-o” for output. Input and output file formats are described in the next section.

You will submit your code file and report separately!

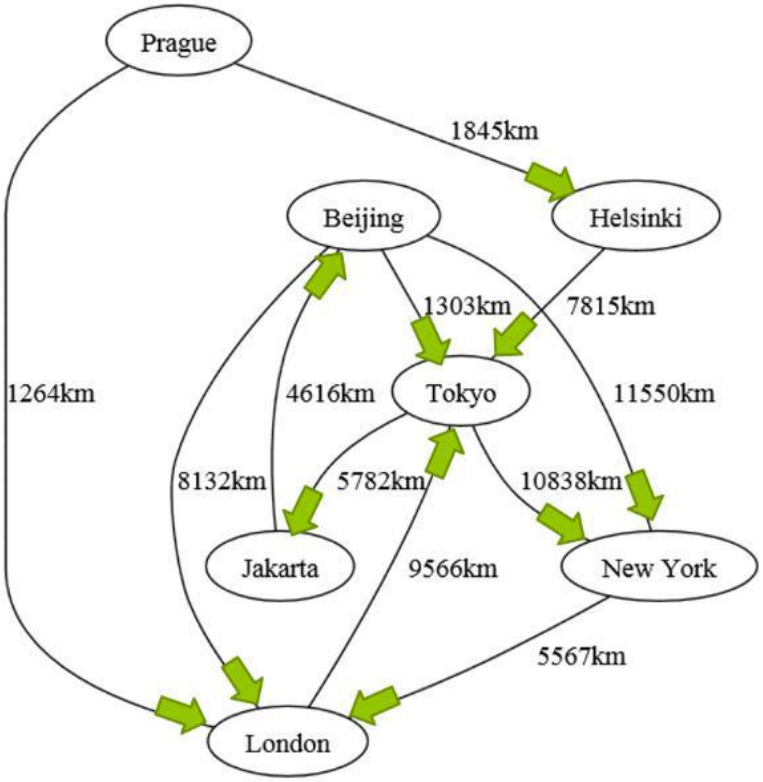
All your code should be commented properly in code file!

Note 1: You are expected to submit only one version of the homework_2. If you submit the first version of the homework_2, please do not submit for this second version.

Note 2: Turnitin can be used to check for any cheating. Please submit your own work!!

INPUT AND OUTPUT FILE FORMAT:

Consider the following directed graph.



For this graph the input text file contains:

7 11
Prague Helsinki 1845
Prague London 122264
Beijing London 8132
Beijing Tokyo 1303
Beijing NewYork 11550
Helsinki Tokyo 7815
Tokyo Jakarta 5782
Tokyo NewYork 10838
Jakarta Beijing 4616
NewYork London 5567
London Tokyo 9566
Prague London

where in the first line the number of nodes and number of edges are given. In the following 11 lines edges are given in format of {SOURCE_NODE, DESTINATION_NODE, LENGTH}. The last line is represents the

questioned path which in this case starts from Prague and reaches to London. Your code should calculate minimum path between these two cities.

The output file format is given below:

Path: Prague -> Helsinki -> Tokyo -> NewYork -> London
Distance: 26065 km

where path is the shortest path from initial to final node and distance is the length of this path.

Your compiled code should run on terminal when typing

./hw2compiled -i sample_input.txt -o sample_output.txt

and should generate the desired output file. Here sample_input.txt and sample_output.txt are optional parameters which can be replaced with any input/output file path.

Your code will be compiled with gcc or g++ and your grade will be automatically given. So the text in output file should be correctly typed (Not even extra spaces allowed. It is type-strict as the language:).

Best luck 😊