CHALLENGES PRACTICE COMPANIES

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OOM 2019 Assignment 1

Oct 05, 2019, 07:10 PM IST - Oct 29, 2019, 07:10 PM IST

INSTRUCTIONS

PROBLEMS

SUBMISSIONS

LEADERBOARD

ANALYTICS

JUDGE

← Problems / Graphs

Graphs

Max. Marks: 5

This problem is no longer available for practice. Apology for any inconvenience!

A road network graph of a city is modelled as a collection of vertices and edges and stored as an adjacency list. All edges have a name, length (int), maximum speed (v_{max} , int) and the vertex pair (string) that they connect. The cost of traversal on the edge is given by distance/effective speed. The edges can be of the following types:

• motorway: additionally, have toll price, number of lanes, maintenance level. The $v_{eff}^{mo\ torway} = v_{max} \left(1 - \frac{occupancy}{(max\ occupancy)(no\ of\ lanes)}\right)$

effective speed is given by:

The maximum occupancy is a constant (100).

• pedestrianRoad: additionally, have width of road, scenic value, current occupancy). The effective speed is given by:

$$v_{eff}^{pedestr\;ian\,Road} = v_{m\,ax} \left(1 - \frac{occupancy}{max\;occupancy} \right)$$

RECENT	SUBMISSIONS
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DEVELOPERS	RESULT	LANGUAGE
Believer	•	Java 8
Believer	Ø	Java 8
Akhil	Ø	Java 8
Akhil	•	Java 8
Akhil	•	Java 8
Sushant Singh	Ø	Java 8
Guillotine	Ø	Java 8
	_	

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The maximum occupancy is a constant (1500).

• cyclistRoad: additionally, have average curvature. The effective speed is given by:

$$v_{eff}^{cyclist\ Road} = \frac{v_{max}}{curvature}$$

• swamps: additionally have walking level difficulty. The effective speed is given by:

$$v_{eff}^{cyclist \, Road} = \frac{v_{max}}{(difficulty)^2}$$

• *lakes*: additionally have width, tidal level, and depth. The effective speed is the same as the maximum speed.

You are given n edges. The graph is assumed to be bidirectional. There may be multiple roads of different types between the same set of vertices. Print all edges in a sorted order. First sort all edges from the "from vertex" name. Out of all the outgoing edges, sort the edges as per the cost in an increasing order. In case of a tie, the secondary criterion is the names of all the edges.

Two costs (a and b) are stated as equal based on a precision till the 4th place of decimal, i.e. a=b iff abs(a-b)<0.0001

Input Format: The first input is *T*, the number of test cases. Thereafter, the next input is *n*, the number of edges. Thereafter, each line mentions the from vertex name, to vertex name, type of road (as above), name of road, length of road, speed of road. Additionally, if type is motorways, the toll price, number of lanes, maintenance level and occupancy is mentioned. Similarly, if type is pedestrianRoad, the width of the road, scenic value and occupancy is given. If the type is cyclistRoad, the curvature is given. If the type is swamps, the difficulty is given. Instead if the type is lakes, the width of the lake, tidal level and depth is given.

Output Format: In the mentioned sorted order, for every edge print the from vertex name, to vertex name, name of the road, length of the road, and maximum speed. Thereafter, print the specific details of every road in the same order as the input.

1 2	SAMPLE INPUT % 🖆	SAMPLE OUTPUT	S Time Limit:	2.0 sec(s) for each input file.
12	1	2n23c k04c4 evnfm	42 22 564 2 Memory Limit:	·
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k04c4 2n23c 08x9p 103 3 5 82				
V04C4 51152C 00X3b 102 2 2 05		VOACA SIISOC OOXAD	100 0 0 02	

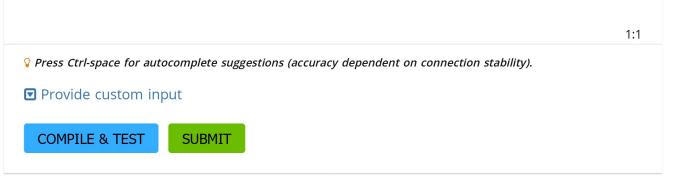
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1373
wzgqr k04c4 pw619 19 18 197
CODE EDITOR
wzgqr 2n23c a2e31 60 19 696
1 2 34
wzgqr k04c4 vivsj 41 5 2
wzgqr i2bni t5xle 96 1 8 5
10
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Java 8 (oracle 1.8.0_131)
Enter your code or Upload your code as file.
                                                                           Save
    import java.io.BufferedReader;
    import java.io.IOException;
    import java.io.InputStreamReader;
    import java.util.*;
 4
 5
 6
    import static java.lang.Math.abs;
 7
    class Vertex{
 8
 9
        private String name;
10
        private String road;
11
        private String type;
12
        private int LengthOfRoad;
13
        private int SpeedOfRoad;
        private double cost;
14
15
        private double EffectiveSpeed;
16
        String getName() {
17
18
             return name;
19
        }
20
        void setName(String name) {
21
22
             this.name = name;
23
        }
24
25
        String getRoad() {
26
             return road;
27
        }
```

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