

Problem B. Ford-Bellman

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Input file: input.txt
Output file: output.txt

Time limit: 1 sec
Memory limit: 8 Mb

Statement

You are to write a program that finds shortest distances from vertex S to all other vertices in a given directed weighted graph. Graph consists of N vertices, numbered from 1 to N , and M edges.

Input file format

Input file contains two integers $N\ M\ S$, followed by M triplets of integers $u_i\ v_i\ w_i$ — starting vertex, ending vertex and weight of the edge. There is at most one edge connecting any two vertices in every direction. There are no cycles of negative weight.

Output file format

Output file must contain a vector of N integers — distances from vertex S to other vertices. The distance from any vertex to itself is considered to be 0. If some vertex is not reachable from S , corresponding cell of the vector must contain empty space.

Constraints

$0 \leq N, M \leq 1000$. All weights are less than 1000 by absolute value.

Sample tests

No.	Input file (input.txt)	Output file (output.txt)
1	3 3 1 1 2 5 1 3 10 2 3 2	0 5 7

0.025s 0.006s 9