

January 2023 CSE 208

Online: All Pair Shortest Path

Time: 30 minutes

Subsections: A1 & B1

You live in a country that contains a Wall Street. Anyone who wants to visit one state from another has to go through the Wall Street to reach his destination, even if there are other alternate routes. You are to help your people choose their paths with the minimum cost possible.

Input/Output Format

The first line will contain two space-separated integers n and m , denoting the number of states and the number of streets respectively. **All the streets are two-way.**

In each of the following m lines, there will be three space-separated integers u, v, c denoting a street, where u and v denote the states connected by that street and c denotes the cost to travel between u and v .

After these m lines, the immediate next line will contain two space-separated integers w_1 and w_2 , denoting the two end-states of the Wall Street. You may assume that this street will always exist (i.e. its cost will be given as input).

The next lines will contain two space-separated integers s and d . You are to print the path along with the lowest cost from s to d containing the Wall Street $w_1 w_2$. **If no such path exists, you have to report that as well.**

The program terminates when "-1 -1" is given as s and d .

See the Sample I/O for further clarification.

Sample I/O

Input	Output
8 8 1 6 5 2 5 8 2 6 7 4 6 8 5 4 2 5 7 7 7 6 7 8 4 8 2 6 5 3 8 1 1 8 3 4 2 6 8 3 7 5 5 7 -1 -1	No path from 5 to 3 through the Wall Street Shortest Path Weight: 30 Path: 8 →4 →5 →2 →6 →1 Shortest Path Weight: 30 Path: 1 →6 →2 →5 →4 →8 No path from 3 to 4 through the Wall Street Shortest Path Weight: 7 Path: 2 →6 No path from 8 to 3 through the Wall Street Shortest Path Weight: 22 Path: 7 →6 →2 →5 Shortest Path Weight: 22 Path: 5 →2 →6 →7