All-pairs shortest path

Problem description

Given a weighted directed graph, you need to the compute the shortest path between any two nodes. You also need to print the shortest path.

Input/ output

First line of the input has three integer numbers N, E, Q where N is the number of nodes, E is the number of edges, and Q is the number of queries. Nodes are numbered as 1, 2, ..., N.

Each of the following E lines describes an edge. Each edge is represented by three integers A B C (i.e., the cost of going ***from*** A **to** B is C) where $1 <= A, B <= N$ and $N <= 100$.

Each of the next Q lines contains a query. Each query is represented by two integers A B. *You need to find the shortest path from A to B. If there is a path from A to B, print the cost of the shortest path and **the actual path**. If there is no path from A to B, just print NO PATH.*

See sample I/O for clarification.

Sample input/ output

Sample input	Sample output
5 7 3 1 2 5 1 3 2 2 3 -2 3 4 7 2 4 3 5 2 9 4 5 10 1 5 5 1 1 1	cost = 18 1-2-4-5 NO PATH cost = 0 1-1

Deliverables:

1. Makefile
2. Your source code

Notes:

1. **Make sure that your code runs on the CISE machines.**
2. **Name the executable as "Floyd-Warshall" in your submitted Makefile.**
3. Do not compress your submission. Just submit the Makefile and source file.
4. Follow the output format **exactly**. Do not print anything extra (e.g., prompt, whitespaces etc.).
5. Use cin>>, cout << (scanf, printf) for I/O. Assume the input from standard input and write to standard output.
6. If there are multiple paths with the same shortest path cost, print any of them.

Points:

Criteria	Points
Correct output	5
Code organization	2
Comments	3
Total	10

Sample Input Graph:

The shortest path from 1 to 5 is 1-2-4-5 and the cost is 18.