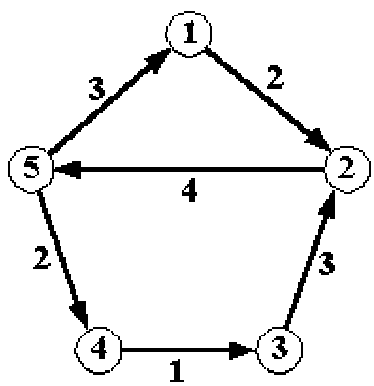
Problem A

Not the Best

Input: standard input
Output: standard output
Time Limit: 1 second

Abul is not the best student in his class; neither is he the best player in his team. Not that he is bad; he is really good, but unfortunately not the best.

Last semester our “not quite the best” *Abul* took a course on algorithms. In one of the assignments he was required to find the shortest path from a given vertex **x** to another vertex **y** in a weighted directed graph. As you have probably already guessed, he rarely managed to find the shortest path; instead he always ended up finding the $\mathbf{k^{th}}$ $\mathbf{(2 \le k \le 10)}$ shortest path from **x** to **y**. If he was fortunate enough and the shortest **k** paths from **x** to **y** had the same length, he was given credit for his solution.



For example, for the graph above, *Abul* was asked to find the shortest path from vertex **5** to vertex **2**. The shortest **7** paths from vertex **5** to vertex **2** are listed below in non-decreasing order of length. For this graph *Abul* was able to find the $\mathbf{5^{th}}$ shortest path which could be either **5 → 4 → 3 → 2 → 5 → 1 → 2** or **5 → 1 → 2 → 5 → 4 → 3 → 2**, each with length 15.

Path	*Length*
5 → 1 → 2	5
5 → 4 → 3 → 2	6
5 → 1 → 2 → 5 → 1 → 2	14
5 → 4 → 3 → 2 → 5 → 1 → 2	15
5 → 1 → 2 → 5 → 4 → 3 → 2	15
5 → 4 → 3 → 2 → 5 → 4 → 3 → 2	16
5 → 1 → 2 → 5 → 1 → 2 → 5 → 1 → 2	23

Given a description of the graph, source vertex ***x***, target vertex ***y***, and the value of ***k***, you need to find out the length of the path *Abul* computed. You may assume that there exists at least one path from ***x*** to ***y*** in the given graph.

Input

The input may contain multiple test cases.

The first line of each test case contains two integers **n** $(2 \le n \le 100)$ and **m** $(1 \le m \le 1000)$ giving respectively the number of vertices, and the number of edges in the graph. Each vertex in the graph is identified by a unique integer in **[1, n]**. The second line of the test case contains the values of x, y and **k** $(1 \le x, y \le 100, x \ne y, 2 \le k \le 10)$. Each of the next **m** lines contains three integers **u**, **v** and **l** $(1 \le u, v \le 100, 0 \le l \le 10000)$ specifying a directed edge of length **l** from vertex **u** to vertex **v**.

The input terminates with two zeros for n and m.

Output

For each test case in the input output a line containing an integer giving the length of the k^{th} shortest path in the graph. If the graph does not have at least **k** paths from **x** to **y**, output a **–1** instead.

Sample Input	Output for Sample Input
3 3 1 3 4 1 3 3 1 2 4 2 3 5 5 6 5 2 5 1 2 2 2 5 4 3 2 3 4 3 1 5 1 3 5 4 2 2 2 1 2 3 1 2 5 2 2 2 0 0	-1 15 9

Problem setter: Rezaul Alam Chowdhury, University of Texas at Austin
Special thanks: Md. Kamruzzaman, EPS