

Special Paths

Time limit : 1 sec

Memory Limit : 256 MB

Problem Statement

Given a weighted directed graph with N vertices and M edges, a start vertex S and a finish vertex T (not equal to S), consider all such paths which start at S , visit T and return back to S . Among these paths, a path P is special if there is least one common vertex u on the S - T and T - S paths. Print D , the length of the shortest special path.

Note - There might be multiple edges between a pair of nodes, but there will not be an edge which starts and ends at the same node. Also, the common vertex u cannot be either of S or T .

Note 2 - It is allowed to visit a vertex multiple times.

Input

The first line of the input contains four space separated integers N ($2 \leq N \leq 10^5$), M ($1 \leq M \leq 10^5$), S ($1 \leq S \leq N$) and T ($1 \leq T \leq N$) as described in the problem statement. The following M lines contain three space separated integers u v w ($1 \leq u, v \leq N, 1 \leq w \leq 10^3$) denoting a directed edge in the graph from vertex numbered u to vertex numbered v of length w .

Output

Output a single integer D as described in the problem statement. If there is not special path, print -1 .

Sample Input 1

```
5 9 1 5
1 3 1
1 2 5
5 2 1
3 1 10
3 4 5
4 5 1
2 1 5
2 3 100
2 4 5
```

Sample output 1

```
17
```

Explanation

1 - 2 - 4 - 5 - 2 - 1 is the chosen path ($u = 2$).

Sample Input 2

```
3 4 1 2
1 2 1
2 1 1
2 3 5
3 2 10
```

Sample output 2

32

Explanation

1 - 2 - 3 - 2 - 3 - 2 - 1 is the chosen path ($u = 3$).
Note that the vertex T is visited multiple times.