Get the Water

Summers are here and your friend wants to open up all the taps in his house to let the water out.

Your friend has a total of N taps in his house numbered from 1 to N.

The taps are connected internally through pipelines.

You will be given a list of connections among the taps as directed edges $taps[i] = (u, v, w)$, where 'u' is the source tap, v is the target tap, and w is the time it takes for water to travel from source to target.

Now, your friend tells you to go to tap number K and turn on that tap. Your task is to find the minimum time required for the water to reach all N taps.

If it is impossible for the water to reach any tap. Print -1.

Input Format

The first line of input contains N, the number of taps.

The second line of input contains K, the starting tap.

The third line of input contains E, the number of edges.

The next E lines will contain 3 integers each in the form of (u, v, w).

Constraints

$1 \le K \le N \le 10^4$

$1 \le E \le 10^5$

$1 \le u, v \le N$

$u \ne v$

$0 \le w \le 10^{12}$

All the pairs (u, v) are unique. (i.e., no multiple edges.)

Output Format

Output a single integer, the minimum time required for the water to reach all the taps after opening tap number K in the beginning.

If it is impossible for water to reach all taps, print -1

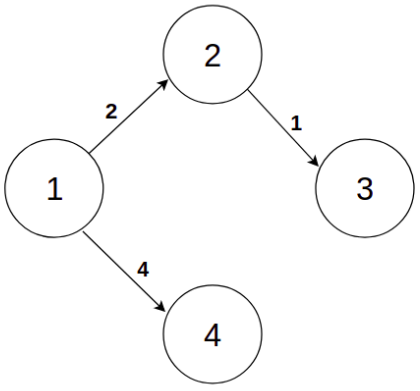
Sample Input 0

```
4
1
3
1 4 4
1 2 2
2 3 1
```

Sample Output 0

```
4
```

Explanation 0



Tap '1' is opened in the beginning, and it will take 4 units of time for the water to reach all the taps

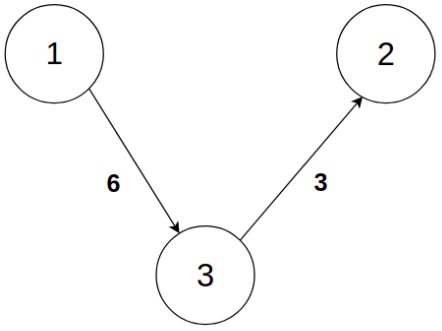
Sample Input 1

```
3
3
2
1 3 6
3 2 3
```

Sample Output 1

```
-1
```

Explanation 1



The tap 3 is opened in the beginning and it is impossible for the water to reach tap 1

Submissions: 70
Max Score: 100
Difficulty: Medium

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Current Buffer (saved locally, editable) C

```c
#include <stdio.h>
#include <string.h>
#include <math.h>
#include <stdlib.h>

int main() {

    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    return 0;
}
```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code