

Contest Duration: 2025-06-14(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250614T2100&p1=248>) - 2025-06-14(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250614T2240&p1=248>) (local time) (100 minutes)

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D - XOR Shortest Walk

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 400 points

Problem Statement

There is a directed graph with N vertices and M edges, where vertices are numbered from 1 to N and edges are numbered from 1 to M . Edge i is a directed edge from vertex A_i to vertex B_i with **weight** W_i .

Find the minimum value of the bitwise **XOR** of the weights of edges included in a walk from vertex 1 to vertex N .

► What is a walk from vertex 1 to vertex N ?

► What is the bitwise **XOR** operation?

Constraints

- $2 \leq N \leq 1000$
- $0 \leq M \leq 1000$
- $1 \leq A_i, B_i \leq N$
- $0 \leq W_i < 2^{10}$
- All input values are integers.

Input

The input is given from Standard Input in the following format:

N M
 A_1 B_1 W_1
 A_2 B_2 W_2
 \vdots
 A_M B_M W_M

Output

If there is no walk from vertex 1 to vertex N , output -1.

If there is a walk from vertex 1 to vertex N , output the minimum value of the bitwise XOR of the weights of edges included in such a walk.

Sample Input 1

Copy

3 3
1 2 4
2 3 5
1 3 2

Copy

Sample Output 1

Copy

1

Copy

The bitwise XOR of the weights of edges included in the walk (edge 1, edge 2) is 1.

Sample Input 2

Copy

4 4
1 4 7
4 2 2
2 3 4
3 4 1

Copy

Sample Output 2

Copy

0

The bitwise **XOR** of the weights of edges included in the walk (edge 1, edge 2, edge 3, edge 4) is 0.

Note that the walk may include vertex N in the middle.

Sample Input 3

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```
999 4
1 2 9
2 1 8
1 2 7
1 1 6
```

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Sample Output 3

[Copy](#)

```
-1
```

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If there is no walk from vertex 1 to vertex N , output -1.

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