Problem F
Cycling
Time Limit: 1 second

Bibi discovered a beautiful terrain suitable for exploring and practicing cycling during k holidays. The terrain has n sightseeing spots numbered from 1 to n. The sightseeing spots are connected by m one-way streets of length 1, 2, or 3.

Each day of the k holidays, Bibi wants to practice on a different route. To increase the challenge, Bibi sets the goal for each new day: the route today should not be shorter than the route of the day before. Each sightseeing spot and street can be included in a route multiple times as long as the route is valid, i.e. there exists a street in the correct direction between any two consecutive spots in the route. Two routes with different orderings of spots and streets are considered different.

Your task is to find k routes for the k holidays satisfying the conditions above such that the length of the route on the last day (k-th day) is minimized.

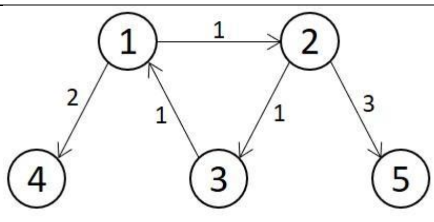
Input

The first line contains three integers n, m, k ($1 \le n \le 40, 1 \le m \le 10^3, 1 \le k \le 10^{18}$). Each line of the next m lines contains three integers u, v, c ($1 \le u, v \le n$; $u \ne v$; $1 \le c \le 3$) describing a one-way street of length c from u to v. There can be multiple streets connecting two sightseeing spots.

Output

Print the length of the shortest route on the k-th day. If it is impossible to have k different routes from the given terrain, print `-1`.

Sample Input	Sample Output
5 5 17 1 2 1 1 4 2 2 3 1 2 5 3 3 1 1	4



Explanation: These are the first 17 routes ordered by length:

- 3 different routes of length 1: $1 \to 2; 2 \to 3; 3 \to 1$
- 4 different routes of length 2: $1 \to 4; 1 \to 2 \to 3; 2 \to 3 \to 1; 3 \to 1 \to 2$
- 5 different routes of length 3: $2 \to 5; 3 \to 1 \to 4; 1 \to 2 \to 3 \to 1; 2 \to 3 \to 1 \to 2;\ 3 \to 1 \to 2 \to 3$
- 5 different routes of length 4:
  $1 \to 2 \to 5; 2 \to 3 \to 1 \to 4; 1 \to 2 \to 3 \to 1 \to 2;\ 2 \to 3 \to 1 \to 2 \to 3; 3 \to 1 \to 2 \to 3 \to 1$