

Greedy Hydra II

The problem description is the same as the problem [DRAGON](#).

Input

The first line contains 3 integers $N(1 \leq N \leq 3000)$, $M(2 \leq M \leq N)$, $K(1 \leq K \leq N)$, separated by single spaces. The N fruits are numbered $1..N$, and the biggest fruit is always numbered 1. $N-1$ lines follow, each contains 3 integers i, j, k separated by spaces denoted that there is a branch between fruit $i(1 \leq i \leq N)$ and fruit $j(1 \leq j \leq N)$ and the weight of illness of this branch is $k(0 \leq k \leq 100000)$.

Output

Output one line contains a single integer denoted the minimum weight of illness of the hydra. If we can't divide the fruit into M groups, output "-1"(without quotes).

Example

Input:

```
8 2 4
1 2 20
1 3 4
1 4 13
2 5 10
2 6 12
3 7 15
3 8 5
```

Output:

```
4
```

Some new test cases were added.