

Competitive Programming SS24

Submit until end of contest



Problem: badgermoles (1 second timelimit)

After your trip to the mountains around Omashu, you have become a big fan of hiking. Therefore, you decide to turn your backyard into the greatest hiking paradise in the world. Luckily, you are good friends with the badgermoles — the original earth benders! They can help you by rearranging all the earth in your backyard.

Because of your ancestors' countless inheritance disputes, your backyard has a very curious shape: It is exactly one meter wide and n meters long and contains m cubes made out of earth (each with a side length of one meter), stacked in a grid-like manner on top of each other.

While explaining your plan to the badgermoles, you lay out a few rules, to define what makes a great hiking paradise:

1. The ground should be stable, so no overhangs, hollow rooms or secret tunnels are allowed. In other words, at every position along the backyard, the earth cubes must be stacked on each other continuously without gaps between them.
2. There should be no unsurmountable obstacles, so there can't be drops or rises greater than one meter between any two consecutive positions along the backyard (on the other hand, there are no restrictions on the height at the borders of the backyard).
3. You don't want any dangerous holes with unstable flooring, so at every position there should be at least one earth cube.

You allow the badgermoles to move any earth cube available to any new grid position in your backyard, as long as the resulting landscape sticks to these rules. Figure D.1 shows an example of what an invalid and a valid arrangement could look like.

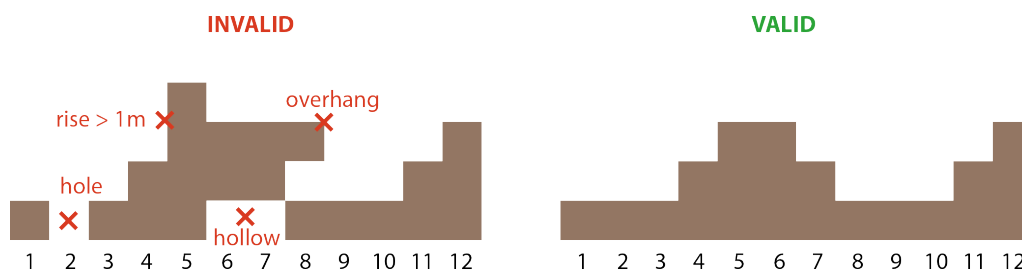


Figure D.1: Two arrangements of $m = 21$ earth blocks in the backyard of length $n = 12$. The left example is invalid because it doesn't stick to the rules. The right example is valid.

To enable the best possible views, you want the elevation at position k to be as high as possible, without violating the rules above. What is the highest elevation the badgermoles can achieve at position k ?

Input The input consists of:

- One line with three integers n, m and k ($1 \leq n \leq m \leq 10^9, 1 \leq k \leq n$), the length of your backyard, the number of earth blocks and the position of the viewpoint.

Output Output the highest elevation that can be achieved at position k while sticking to the rules.

Sample Input 1

```
4 6 2
```

Sample Output 1

```
2
```

Sample Input 2

```
3 10 3
```

Sample Output 2

```
4
```

Sample Input 3

```
3 6 1
```

Sample Output 3

```
3
```