Problem Level 2

Marks: 10

Test Case Weightage

- Test Case 1: 20
- Test Case 2: 20
- Test Case 3: 30
- Test Case 4: 30

Problem Description

A group of n soldiers are in a forest and are surrounded by the enemy. One of the soldiers needs to go out and ask the king for back up. However, only one soldier can go because there is only one horse. So the soldiers design a scheme to find the one. They line up in a circle in sequential manner from 1 to n in clockwise order. A number $m >= 1$ is next selected. The scheme then counts in one direction (clockwise/anticlockwise) starting from soldier number *1*. When the *m-th* soldier is spotted in the list in this counting process, he is asked to step aside from the list of soldiers. Now only *n-1* soldiers remained. The process starting from the next soldier (in the chosen direction) is then repeated (with the same value of m) until only one person remains. He is then given the horse to flee and ask for back up.

Write a program to find the person who was selected to flee with horse.

Input Format Each input containts 3 lines. First line consists of an integer n denoting number of soldiers. Second line consists of the parameter m. The third line consists of either *0* or *1*. *0* is for clockwise counting, and *1* is for anticlockwise counting.

Output Format An integer giving number (ID) of the soldier who gets selected to go with the horse.

Example

Input

```
5
2
0
```

Output

```
3
```

Input

```
5
2
1
```

Output

```
4
```