DMOPC '18 Contest 5 P1 - A Painting Problem

Time limit: 2.0s **Memory limit:** 64M

Mimi is taking both art and computer science this semester! Inspired, she decides to make an art piece based on the binary representation of two positive integers, N and M.

Mimi takes a strip of paper and draws K stripes on it. The i^{th} stripe is blue if 2^{i-1} appears in the binary representation of either N or M, **but not both**. Otherwise, it is painted purple.

Can you tell Mimi how many blue and purple stripes there are?

Constraints

$1 \leq N, M \leq 10^9$
$1 \leq K \leq 30$

Input Specification

The first and only line of input will contain 3 space separated integers: N, M, and K.

Output Specification

The output should contain two space-separated integers: the number of stripes that are painted blue, and the number of stripes that are painted purple, respectively.

Sample Input

```
3 1 2
```

Sample Output

```
1 1
```

Explanation for Sample Output

The binary representation of 3 is $2^1 + 2^0$, and the binary representation of 1 is 2^0.
Both representations have 2^0, so the first stripe is painted purple.
Since only 3 has 2^1 in its binary representation, the second stripe is painted blue.