# 1013. K-based Numbers. Version 3

Time limit: 0.5 second
Memory limit: 64 MB

Let's consider $K$-based numbers, containing exactly $N$ digits. We define a number to be valid if its $K$-based notation doesn't contain two successive zeros. For example:

- 1010230 is a valid 7-digit number;
- 1000198 is not a valid number;
- 0001235 is not a 7-digit number, it is a 4-digit number.

Given three numbers $N$, $K$ and $M$, you are to calculate an amount of valid $K$ based numbers, containing $N$ digits modulo $M$.

You may assume that $2 \le N, K, M \le 10^{18}$.

## Input

The numbers $N$, $K$ and $M$ in decimal notation separated by the line break.

## Output

The result in decimal notation.

## Sample

| input | output |
|-------|--------|
| 2<br>10<br>100 | 90 |