H. Fibonacci

Generalized Fibonacci numbers are the numbers corresponding following formula:

$$K_i = (K_{i-1}*C_N + K_{i-2}*C_{N-1} + K_{i-3}*C_{N-2} + \ldots + K_{i-N}*C_1) \text{ modulo } Y$$

You're given a first N generalized Fibonacci numbers, shift numbers Ci, the modular number Y and a positive number X. Find find X-th generalized Fibonacci number.

Input

The first line contains the integer numbers **N** ($1 \le N \le 100$), **X** ($N < X < 2^{28}$) and **Y** ($2 \le Y < 2^{28}$). The second line contains first **N** generalized Fibonacci numbers K_i ($0 \le K_i \le 100$). The third line contains **N** shift numbers C_i ($0 \le C_i \le 1$).

Output

You should output the desired Key K_X.

Sample Input

```
3 6 73
12 91 65
1 1 0
```

Sample Output

```
22
```