

## Problem D: Modulo Solitaire

Modulo Solitaire is a game that can be played when you are bored. You can even play it without a phone, just on paper. First, you pick a number  $m$ . Then you pick two sequences of numbers  $a_i$  and  $b_i$ . Finally, you pick a starting number  $s_0$ . Now, your goal is to go from  $s_0$  to 0 in as few moves as possible. In each move, you choose an  $i$ , then multiply your current number by  $a_i$ , add  $b_i$  to it, and reduce the result modulo  $m$ . That is,  $s_j = (s_{j-1} * a_{i_j} + b_{i_j}) \% m$ .

### Input Specification

The first line of input contains three integers  $0 < m \leq 1000000$ ,  $0 \leq n \leq 10$ , and  $0 < s_0 < m$ . The next  $n$  lines each contain two integers, a pair  $0 \leq a_i \leq 1000000000$  and  $0 \leq b_i \leq 1000000000$ .

### Sample Input

```
5 2 1
2 1
3 1
```

### Output Specification

Output a single integer, the shortest number of moves needed to reach 0 starting from  $s_0$ . If it is not possible to reach 0 in any number of moves, output -1.

### Output for Sample Input

```
2
```

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