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 $0 < m <= 1000000$, $0 <= n <= 10$, and $0 < s_0 < m$. The next n lines each contain two integers, a pair $0 <= a_i <= 1000000000$ and $0 <= b_i <= 1000000000$.

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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