# E. Byteland coins

time limit per test: 1 second
memory limit per test: 512 megabytes
input: standard input
output: standard output

There are $n$ types of coins in Byteland. Conveniently, the denomination of the coin type $k$ divides the denomination of the coin type $k+1$, the denomination of the coin type $1$ equals $1$ tugrick. The ratio of the denominations of coin types $k+1$ and $k$ equals $a_k$. It is known that for each $x$ there are at most **20** coin types of denomination $x$.

Byteasar has $b_k$ coins of type $k$ with him, and he needs to pay exactly $m$ tugricks. It is known that Byteasar never has more than $3 \cdot 10^5$ coins with him. Byteasar want to know how many ways there are to pay exactly $m$ tugricks. Two ways are different if there is an integer $k$ such that the amount of coins of type $k$ differs in these two ways. As all Byteland citizens, Byteasar wants to know the number of ways modulo $10^9+7$.

## Input

The first line contains single integer $n$ ($1 \le n \le 3 \cdot 10^5$) — the number of coin types.

The second line contains $n - 1$ integers $a_1, a_2, \ldots, a_{n-1}$ ($1 \le a_k \le 10^9$) — the ratios between the coin types denominations. It is guaranteed that for each $x$ there are at most **20** coin types of denomination $x$.

The third line contains $n$ non-negative integers $b_1, b_2, \ldots, b_n$ — the number of coins of each type Byteasar has. It is guaranteed that the sum of these integers doesn't exceed $3 \cdot 10^5$.

The fourth line contains single integer $m$ ($0 \le m < 10^{10000}$) — the amount in tugricks Byteasar needs to pay.

## Output

Print single integer — the number of ways to pay exactly $m$ tugricks modulo $10^9+7$.

### Examples

input

```
1

4
2
```

output

```
1
```

input

```
2
1
4 4
2
```

output

```
3
```

input

```
3
3 3
10 10 10
17
```

output

```
6
```

## Note

In the first example Byteasar has $4$ coins of denomination $1$, and he has to pay $2$ tugricks. There is only one way.

In the second example Byteasar has $4$ coins of each of two different types of denomination $1$, he has to pay $2$ tugricks. There are $3$ ways: pay one coin of the first type and one coin of the other, pay two coins of the first type, and pay two coins of the second type.

In the third example the denominations are equal to $1, 3, 9$.