Problem R2D2VOICE: R2-D2's Lovely Voice

R2-D2 is invited to Han Solo's and princess Leia's wedding. Leia is very much in love with R2-D2's voice, so she asked him to sing the famous *song which does never repeat*, a famous mining-robot worker song, while they walk to the altar.
For the song to be as exciting as possible, it is constructed as follows:

- The singer writes down all the different sounds he can make and sings them in an arbitrary order, that is the first verse.
- Every following verse is constructed by its predecessor, a songrule determines the new position of each sound.

Consider the examplary songrule $(3, 1, 4, 2)$: the first sound of a verse is the third sound of the next verse, the second sound is the first in the next verse and so on.

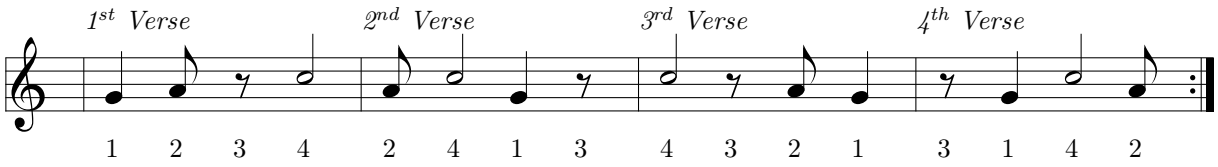

Figure 1: The song generated by the songrule $(3, 1, 4, 2)$

Sophisticated C-3PO is not as enthusiastic about this song as everyone else, he believes it will always repeat at some point. R2-D2 has been practicing for hours. He sings one verse, makes a break of one second and then starts with the next verse. C-3PO has been listening long enough to figure out the rule he is using, he wants to tell R2-D2 how many verses it takes until the song repeats itself. Maybe that will convince him that this song is a product of overrated pop-culture and he will stop. Can you help?

Input

The first line contains one integer n ($2 \leq n \leq 1\,000\,000$), the different sounds of R2-D2. The second line contains n distinct integers p_i ($1 \leq p_i \leq n$), the songrule: the i-th sound of each verse will be the p_i-th sound of the following verse.

Output

One line with one integer, the number of verses until the song will repeat itself. This number is guaranteed to be at most 10^{18}.

Sample Input 1

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5
3 4 5 2 1
```

Sample Output 1

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6
```

Sample Input 2

```
4
3 1 4 2
```

Sample Output 2

```
4
```

Sample Input 3

```
10
5 3 7 6 4 1 9 10 8 2
```

Sample Output 3

```
12
```

Sample Input 4

```
2
1 2
```

Sample Output 4

```
1
```