**Problem E.** *Permutations.*

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We remind that the *permutation* of some final set is a one-to-one mapping of the set onto itself. Less formally, that is a way to reorder elements of the set. For example, one can define a permutation of the set {1,2,3,4,5} as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***P***(*n*) = ( | 1 | 2 | 3 | 4 | 5 | ) |
| 4 | 1 | 5 | 2 | 3 |

This record defines a permutation ***P*** as follows: ***P***(1) ***=***4, ***P***(2) = 1, ***P***(3) = 5, etc.

What is the value of the expression ***P***(***P***(1))? It’s clear, that ***P***(***P***(1)) = ***P***(4) = 2. And ***P***(***P***(3)) = ***P***(5) = 3. One can easily see that if ***P***(*n*) is a permutation then ***P***(***P***(*n*)) is a permutation as well. In our example (believe us)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***P***(***P***(*n*)) = ( | 1 | 2 | 3 | 4 | 5 | ) |
| 2 | 4 | 3 | 1 | 5 |

It is natural to denote this permutation by ***P***2(*n*) = ***P***(***P***(*n*)). In a general form the defenition is as follows: ***P***(*n*) = ***P***1(*n*), ***P***k(*n*) = ***P***(***P***k-1(*n*)).

Among the permutations there is a very important one — that moves nothing:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| EN(n) = ( | 1 | 2 | 3 | … | N | ) |
| 1 | 2 | 3 | … | N |

It is clear that for every *k* the following relation is satisfied: (***EN***)*k* = ***EN***. The following less trivial statement is correct (we won’t prove it here, you may prove it yourself incidentally):

*Let* ***P****(n) be some permutation of an* ***N*** *elements set. Then there exists a natural number k, that* ***P****k =****EN****.*

The least natural *k* such that ***P****k =****EN*** is called *an order* of the permutation ***P***. The problem that your program should solve is formulated now in a very simple manner: “*Given a permutation find its order.*”

**Input.**

In the first line of the standard input an only natural number ***N*** (1 ≤ ***N*** ≤ 1000) is contained, that is a number of elements in the set that is rearranged by this permutation. In the second line there are ***N*** natural numbers of the range from 1 up to ***N***, separated by a space, that define a permutation — the numbers ***P***(1), ***P***(2),…, ***P***(***N***).

**Output.**

You should write an only natural number to the standard output, that is an order of the permutation. You may consider that an answer shouldn’t exceed 109.

|  |  |
| --- | --- |
| **Sample input #1.** | **Sample input #2.** |
| 5 | 8 |
| 4 1 5 2 3 | 1 2 3 4 5 6 7 8 |
| **Sample output #1.** | **Sample output #2.** |
| 6 | 1 |