Synonym Tree | 3 point(s)

Have you ever looked up a word for its synonyms, then looked up synonyms for the synonyms? Let's define this as a *synonym tree*. The root node of the tree is the original word and is considered to be *level 0*. All synonyms of the root are its children and considered to be *level 1*. All synonyms of *level 1* nodes not already in the tree are considered to be *level 2* and so on.

For example, given the following *synonym list*:

**one**: single, unique  
**single**: alone, unique  
**unique**: single, distinct

If the root node is **one**, the *level description* would be the following:

**one** 0  
**single** 1  
**unique** 1  
**alone** 2  
**distinct** 2

We can further condense this by indicating the number of words at each level. In this case: *1 2 2*.

It is noted that had **unique** not been a synonym for **single**, the *level description* would have remained the same. Further, if *word1* is a synonym of *word2*, *word2* does not need to be a synonym of *word1*.

Given the *condensed level description* for a set of words, determine the number of *synonym lists* that could have generated it.

Due to the size of the numbers involved in the computation and to avoid complex data structures not available in all languages, you should do all of your computations mod 1,000,000,007.

Input definition

The first line of input will be a single integer *N*, the number of levels in the *condensed level description*. The next line will contain *N*space-separated integers always starting with a 1. This will be the *condensed level description*. There will be at most 10000 levels and at most 1,000,000,000 words per level.

Output definition

Your output should contain a single integer *C*, the number of *synonym lists* that could have generated the *condensed level description* under mod 1,000,000,007.

Example input

2

1 2

Example output

16