

9.6.5 Edit Step Ladders

PC/UVa IDs: 110905/10029, **Popularity:** B, **Success rate:** low **Level:** 3

An *edit step* is a transformation from one word x to another word y such that x and y are words in the dictionary, and x can be transformed to y by adding, deleting, or changing one letter. The transformations from *dig* to *dog* and from *dog* to *do* are both edit steps. An *edit step ladder* is a lexicographically ordered sequence of words w_1, w_2, \dots, w_n such that the transformation from w_i to w_{i+1} is an edit step for all i from 1 to $n - 1$. For a given dictionary, you are to compute the length of the longest edit step ladder.

Input

The input to your program consists of the dictionary: a set of lowercase words in lexicographic order at one word per line. No word exceeds 16 letters and there are at most 25,000 words in the dictionary.

Output

The output consists of a single integer, the number of words in the longest edit step ladder.

Sample Input

```
cat
dig
dog
fig
fin
fine
fog
log
wine
```

Sample Output

```
5
```