

## 110905 Edit Step Ladders

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
```