

2777 k -longest Common Sequence

Finding the longest common subsequence between DNA/Protein sequences is one of the basic problems in modern computational molecular biology. We state the problem formally as follows:

A sequence $x = x_1x_2 \dots x_n$ over finite set $P = \{A, B, C, \dots, Z\}$ may be any combination of n characters from P , e.g. x_i in P and x in P^* . The length of x is denoted as $|x| = n$. Given a sequence x , we call another sequence $y = y_1y_2 \dots y_m$ a subsequence of x , if there exists an embedding $I = (i_1, i_2, \dots, i_m)$ so that $1 \leq i_1 < i_2 < \dots < i_m \leq |x|$ and $x_{i_k} = y_k$, for all $k = 1, 2, \dots, m$. In addition, we define $s(x) = \{y \mid y \text{ is a subsequence of } x\}$.

The problem of k -longest common sequence is that give k sequences $x(1), x(2), \dots, x(k)$, find the longest common subsequence y so that y in $s(x(i))$, for all $i = 1, 2, \dots, k$ and $|y|$ is maximized.

To help you understand the k -longest common sequence problem more clearly, there is an illustration. For two sequences "ATTA" and "CGGC", their 2-longest common sequence is none with length 0. For three sequences "GAACCACGCG", "ACCGAC" and "GCCACCAAGC", their 3-longests common sequence is "ACCAC" with length 5.

Your task is to write a program to help the scientist to find the length of the k -longest common sequence of a given k DNA/Protein sequences.

Note: one subsequence of x may have several embeddings in x . For example, "AG" is a subsequence of "AACGG", which has 4 embeddings: (1,4), (1,5), (2,4) and (2,5).

Input

The input file contains several test cases. In each case, the first line is an integer represents k ($1 < k < 100$). The following k lines contain the k sequences, one per line.

The maximal length of each sequence is 500.

The input file ends when k is equal to 0.

Output

For each case in the input file, simply output the length of the k -longest common sequence, one per line.

Sample Input

```
2
ATTA
CGGC
3
GAACCACGCG
ACCGAC
GCCACCAAGC
0
```

Sample Output

```
0
5
```