Mock CCC '18 Contest 5 S5 - Carol's Cute Construction

Carol wants to go to California!

Tudor recently gave Carol a game with similarities to Boggle. There is an $N \times N$ grid of letters, all of which are either `C`, `A`, `L`, or `I`. In a single turn, Carol must select a `C`, an `A`, an `L`, and an `I` such that the `C` and `A` touch in at least one corner, as do the `A` and `L` as well as the `L` and `I`. Carol gains one point for doing so, but cannot select any of those letters in future turns.

Compute the maximum number of points Carol can earn.

Constraints

$1 \leq N \leq 200$

In tests worth 3 marks, you may assume $N \leq 4$.

In tests worth an additional 5 marks, you may assume $N \leq 10$.

Input Specification

The first line of the input contains a single integer, N.

The next N lines contain N characters, all of which appear in `CALI`.

Output Specification

Output, on a single line, the maximum number of points Carol can earn if she plays optimally.

Sample Input

```
4
CALI
ILAC
CLLC
IAAI
```

Sample Output

```
4
```