



Winter Camp Contest 2023

Problem H Heritage in the PCCA Kingdom

Time limit: 4 seconds

Memory limit: 2048 megabytes

Problem Description

The PCCA kingdom has a world heritage site everybody knows: The Triangular Cave. Legend says there was an ancient civilization of triangles in the cave, and they left a powerful relic somewhere nobody knows. One day, you find a mysterious triangular stone plate, and it turns out to be the legendary relic of the Holy Triangle!

The relic is divided into n layers of small triangles which are enclosed by imprints. You notice that some imprints have been charged with ancient power while others have not. To fully empower the relic, you must restore it by making all the imprints charged.

However, you cannot charge the imprints directly. Instead, you can replace the small triangles with the energy runestones you prepared beforehand. An energy runestone is also in the shape of a triangle and can charge the imprints on the three sides of it once it is put onto the relic.

The figures below show examples of a relic before and after restoration:

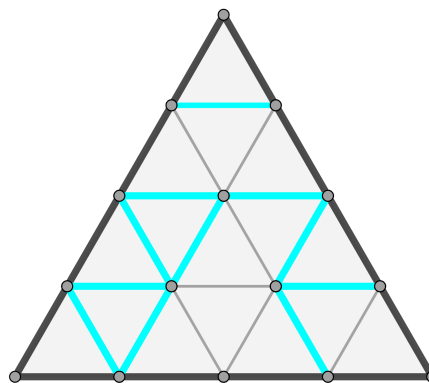


Figure 1: A partially charged relic before restoration. The blue edges are charged imprints and the grey edges are imprints not charged yet.

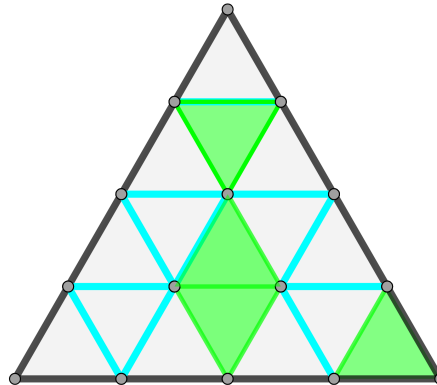


Figure 2: A fully charged relic after restoration. After putting 4 runestones onto the relic, all of the imprints are charged.

Here comes the problem: What is the minimum number of energy runestones required to empower the relic fully?

Input Format

The first line contains an integer n .

The following $2n$ lines indicate the status of the imprints. For each $i = 1, 2, \dots, n$, two lines follow, indicating the status of the imprints of the i -th layer. The format for the i -th layer is the following:

- Both of the two lines begin with $n - i$ spaces.
- Exactly $2i$ characters follow the spaces in the first line. Each character represents an imprint. `\` or `/` denotes a charged imprint, while `.` denotes an uncharged imprint.
- Exactly $2i$ characters follow the spaces in the second line. A consecutive pair of characters represents an imprint. `..` denotes an uncharged imprint, while `--` denotes a charged imprint.

The imprints on the boundary of the relic are guaranteed to be charged.

Output Format

Print the minimum number of runestones required.

Technical Specification

- $1 \leq n \leq 500$



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Sample Input 1

```
4
  /\
  --
 /\.\
 ----
 /\./.\
 --.---
 /\./.\.\
 -----
```

Sample Output 1

```
4
```

Sample Input 2

```
4
  /\
  ..
 /\.\
 ....
 /\....\
 .....
 /\.....\
 -----
```

Sample Output 2

```
6
```



Sample Input 3

```
6
  /\
  ..
 /\./\
  ..--
 /\....\
  --.....
 /\./.../\
  -----
 /\/\..../\
  -----
 /\..././\.../\
  -----
```

Sample Output 3

```
14
```

Note

The first sample corresponds to the figure in the statement.