Laser Cutter

Input File: `laserin.txt`
Output File: `laserout.txt`

Time and Memory Limits: 1 second, 1 GB

Cameron has a square piece of plywood **N** centimetres tall by **N** centimetres wide. He has a robotic laser cutter that can make cuts starting in the top-left corner and ending in the bottom-right corner.

To use the laser cutter, Cameron programs the robot with a sequence of **2N** instructions. There are two possible instructions, each represented by an uppercase character:

- `R` - the laser makes a cut by moving one centimetre to the right.
- `D` - the laser makes a cut by moving one centimetre down.

Cameron first gave the robot the sequence of instructions **A**, to cut out the lower boundary of the shape. Then, he gave the robot the sequence **B**, to cut out the upper boundary of the shape. *The two cuts did not intersect, except in the top-left and bottom-right corners.*

Help Cameron find *the side length of the largest square* that fits inside the shape that he cut out. The sides of the square must be parallel to the sides of the piece of plywood.

Input

- The first line of input contains the integer **N**.
- The second line of input contains the sequence of instructions **A**, as a string of **2N** characters.
- The third line of input contains the sequence of instructions **B**, as a string of **2N** characters.

Output

Your program should output a single integer, the side length of the largest square that fits inside the shape Cameron cut out.

Sample Input 1

```
10
DDDDRRDDDDRRRDRDRRRR
RRDRDRRRDDRRDDDDRDRD
```

Sample Output 1

```
4
```

Sample Input 2

```
6
DDDDDDRRRRRR
RDRRDDDRRRDD
```

Sample Output 2

```
3
```

Sample Input 3

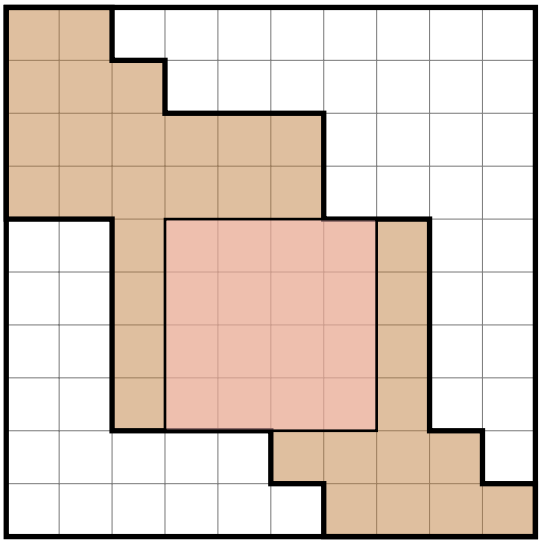
```
5
DDRRDDRDRR
RDRRDRDRDD
```

Sample Output 3

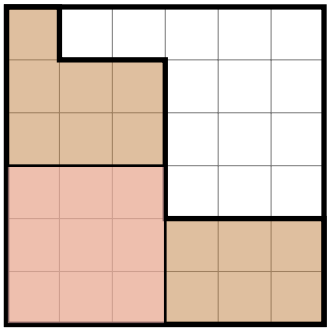
```
2
```

Explanation

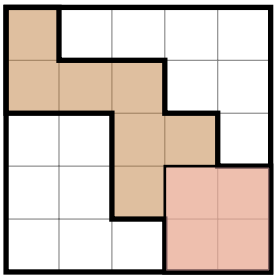
Each of the samples are shown below with one possible largest square.



Sample Input 1



Sample Input 2



Sample Input 3

Subtasks & Constraints

For all test cases:

- $\mathbf{2} \leq \mathbf{N} \leq \mathbf{200\,000}$.

Additionally:

- For Subtask 1 (28 marks), The bottom-left corner is always part of the cut out shape. See Sample Input 2 for an example.
- For Subtask 2 (16 marks), $\mathbf{N} \leq \mathbf{10}$.
- For Subtask 3 (26 marks), $\mathbf{N} \leq \mathbf{1000}$.
- For Subtask 4 (30 marks), no special constraints apply.