Tingle Towers

Tingle and his brothers (the collection of which I will henceforth refer to as "Tingles") want to make Tingle towers by climbing on each others's shoulders. Making Tingle towers is a Tingle family favorite, and they got so good at it that some rules have been imposed on the tower building to make things a little bit more interesting.

First, the Tingles split up into three groups. Each group has an arbitrary size, and the groups are not necessarily the same size. Then each Tingle puts on a colored shirt, red, blue, or green. Then the Tingles in each group line up in a specific order. For a given Tingle in line, any Tingle to the left of him may stand on his shoulders, and any Tingle to the right of him, he can stand on their shoulders. This condition is explained in more detail below. Each group of Tingles must make a tower following these rules, with the final stipulation being that each tower has the same order of shirt colors (thus each tower appears identical). What is the tallest tower that can be made using the given three groups of Tingles?

Input Format

Three lines of input, with each line appearing like the following:

$x_0 x_1 x_2 \ldots x_n$

Where $x_i \in \{\text{r,g,b}\}$

For a given Tingle at x_i, any Tingle at x_j where $j > i$ can stand on x_i's shoulders. Similarly, any Tingle at x_k where $k < i$ can be stood on by Tingle x_i.

To better illustrate this, consider four Tingles:

$x_1 x_2 x_3 x_4$

x_1 cannot stand on any other Tingle's shoulders, but $x_2, x_3, \text{ and } x_4$ can all stand on x_1's shoulders. x_2 can stand on x_1's shoulders, while $x_3 \text{ and } x_4$ can stand on x_2's shoulders. x_3 can stand on $x_1 \text{ or } x_2$ but not x_4. Lastly, x_4 can stand on $x_1, x_2, \text{ or } x_3$'s shoulders, and nobody can stand on x_4's shoulders.

Constraints

n is the number of tingles in one line of input.

$1 \leq n \leq 200$

Output Format

A single integer, indicating the tallest tower that the three groups of Tingles can make.

Sample Input 0

```
rgrgbg
rrbg
rbrgrrgb
```

Sample Output 0

```
3
```

Explanation 0

The tower `rbg` can be made with the Tingles in group 1, group 2, and group 3. Similarly `rrb` and `rrg` can be made in each group. All these towers have height 3. There exist no towers of height 4, thus our output is 3.

The only tower of height 4 that could exist is `rrbg`, but this cannot be made with the Tingles in group 3.

Sample Input 1

```
rrbbbgbr
rgrg
rggbg
```

Sample Output 1

```
2
```

Explanation 1

All three groups can make `rg`, which has length 2. The only possible groups of length 3 are `rrg`, `rgr`, `rgg`, and `grg` (from the second group). `rrg` cannot be made from group 3, `rgr` cannot be made from group three, `rgg` cannot be made from group 1, and `grg` cannot be made from group 3. Thus our answer is 2.