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:

$$x_0x_1x_2\ldots x_n$$

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

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:

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x_1 x_2 x_3 x_4
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 x_1 cannot stand on any other Tingle's shoulders, but x_2, x_3 , and x_4 can all stand on x_1 's shoulders. x_2 can stand on x_1 's shoulders, while x_3 and x_4 can stand on x_2 's shoulders. x_3 can stand on x_1 or x_2 but not x_4 . Lastly, x_4 can stand on x_1, x_2 , 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.

$$1 \le n \le 200$$

Output Format

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

Sample Input 0



Sample Output 0

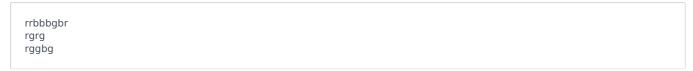
3

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



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.