Longest Palindromic Subsequence

time limit per test: 2 seconds (5 seconds for Python)
memory limit per test: 500 megabytes
input: standard input
output: standard output

points: 100 · problem code: palindromicsubseq

Given a string s, find the length of the longest subsequence of s that is a palindrome.

A subsequence is formed by deleting zero or more characters without changing the order of the remaining characters. A palindrome reads the same forwards and backwards.

Input

The first line contains an integer n, the length of the string.

The second line contains the string s.

Output

Output one integer: the length of the longest palindromic subsequence of s.

Constraints

- $1 \leq n \leq 5000$
- s consists only of lowercase English letters.

Subtasks

- For 20 points, $n \leq 20$.
- For 30 points, $n \leq 500$.
- For 50 points, no additional constraints.

Example 1

Input

```
5
bbbab
```

Output

```
4
```

Explanation

One longest palindromic subsequence is `bbbb`.

Example 2

Input

```
4
cbbd
```

Output

```
2
```

Explanation

One longest palindromic subsequence is `bb`.

Example 3

Input

```
6
agbdba
```

Output

```
5
```

Explanation

One longest palindromic subsequence is `abdba`.