VM7WC '15 #2 Silver - 4 Nations, 1 Secret

Time limit: 0.1s **Memory limit:** 256M
Java: 1.0s
Python: 1.0s

After the death of Avatar 安昂 (Aang), the world of Avatar changed forever. People did not feel safe anymore without him. Without a world leader, the Red Lotus was created with the intention of destroying all order and bringing the world back into "natural" chaos. Members of the Red Lotus are scattered throughout the world of Avatar and they communicate using a complicated system. The members send lines to each other, but only the longest palindrome has value. You must crack the code to keep the world safe until Korra grows up.

The message will consist of a single string of uppercase letters. You are to write a program which finds the longest palindrome in the given string of characters.

Hint: Each palindrome has a "center" around which one side of the palindrome is a mirror image of the palindrome. For example, for `abcba`, the center is the letter `c`, because `ab` is the reverse of `ba`. For `abba`, the center lies between the two `b`s, because `ab` is the reverse of `ba`. Try using this fact to come up with an algorithm that is fast enough.

Input Specification

The input file starts with a single integer N on the first line, the length of the string $(1 \leq N \leq 25\,000)$.

The next line is the message, a string of length N.

Output Specification

Your program should output a pair of lines with the longest palindrome on the first line and the length of the palindrome on the second line. In the event of a tie for the longest palindrome, the one closest to the beginning of the line should be printed.

Sample Input

```
36
AHAHJHFYUBNMLOIUYTRERTYUIOLMNBAGWOIS
```

Sample Output

```
BNMLOIUYTRERTYUIOLMNB
21
```