



USACO 2022 US OPEN CONTEST, PLATINUM PROBLEM 3. UP DOWN SUBSEQUENCE

[Return to Problem List](#)

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English (en) ▼

Farmer John's N cows ($2 \leq N \leq 3 \cdot 10^5$), conveniently numbered $1 \dots N$ as usual, have ordered themselves according to a permutation p_1, p_2, \dots, p_N of $1 \dots N$. You are also given a string of length $N - 1$ consisting of the letters U and D. Please find the maximum $K \leq N - 1$ such that there exists a subsequence a_0, a_1, \dots, a_K of p such that for all $1 \leq j \leq K$, $a_{j-1} < a_j$ if the j th letter in the string is U, and $a_{j-1} > a_j$ if the j th letter in the string is D.

INPUT FORMAT (input arrives from the terminal / stdin):

The first line contains N .

The second line contains p_1, p_2, \dots, p_N .

The last line contains the string.

OUTPUT FORMAT (print output to the terminal / stdout):

Write out maximum possible value of K .

SAMPLE INPUT:

```
5
1 5 3 4 2
UDUD
```

SAMPLE OUTPUT:

```
4
```

We can choose $[a_0, a_1, a_2, a_3, a_4] = [p_1, p_2, p_3, p_4, p_5]$; the entire permutation is consistent with the string.

SAMPLE INPUT:

```
5
1 5 3 4 2
UUDD
```

SAMPLE OUTPUT:

```
3
```

We can choose $[a_0, a_1, a_2, a_3] = [p_1, p_3, p_4, p_5]$.

SCORING:

- Test cases 3-4 satisfy $N \leq 500$.
- Test cases 5-8 satisfy $N \leq 5000$.
- In test cases 9-12, the string consists of Us followed by Ds.
- Test cases 13-22 satisfy no additional constraints.

Problem credits: Danny Mittal

