



TRAINING COMPETITION OF THE BULGARIAN EXTENDED NATIONAL TEAM

Bankya, 17 June 2025

group G

Task GT2. LIGHTS

3 sec. 256 MB

Kris chose a Christmas tree and decided to decorate it with Christmas lights. The set of lights consists of N LED lights, numbered with the natural numbers from 1 to N and connected by $N - 1$ wires, so that all the lights are connected. In addition, the color of each Christmas light is known. Kris is pleased to observe the beautiful tree and notices that the lit lights form interesting color combinations. Among them, Kris discovered the so-called palindromic segments. A palindromic segment is a sequence of lights between two stationary lights u and v , such that the sequence of colors on the path from u to v is exactly the same as the sequence of colors on the path from v to u .

Write the program **lights** that finds the number of lights in the longest palindrome segment.

Input

The first line of the standard input contains a natural number N – the number of bulbs in the set. The next line contains a sequence of N lowercase letters of the English alphabet, with each letter of the alphabet being associated with a different color. Each of the next $N - 1$ lines contains two integers A and B , which indicate that the bulbs with numbers A and B are directly connected by a wire.

Output

The single line of standard output should contain the length of the longest palindromic segment.

Constraints

- $1 \leq N \leq 50000$
- $1 \leq A, B \leq N, A \neq B$

Subtasks

Subtask	Points	Other constraints
1	15	$N \leq 3000$
2	20	Light i is directly connected with light $i + 1$ ($1 \leq i \leq N$).
3	30	At most 100 lights are directly connected with exactly one other light.
4	35	—

Examples

Input	Output	Explanation of the example
7 imanade 1 2 2 3 3 4 4 5 5 6 6 7	3	All the lights are connected in series. So the longest palindrome segment is $a - n - a$



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Input	Output
4 aabb 1 2 1 3 3 4	2
8 acdbabcbcd 1 6 6 7 6 3 3 4 4 5 5 2 8 5	5