

DMOPC '18 Contest 5 P4 - An Art Gallery Problem

Time limit: 1.0s **Memory limit:** 256M

Bob is admiring a beautiful postmodern exhibit at the local art gallery. The exhibit consists of N colourful neon lamps in a line, labelled 1 to N , and each lamp can be one of two colours: a vibrant **fuchsia** or a soothing **aquamarine**.

The exhibit also happens to be interactive. There are $N - 1$ buttons that the visitors can press, labelled 1 to $N - 1$. Pressing button i will simultaneously change the colours of lamps i and $i + 1$ (from fuchsia to aquamarine or aquamarine to fuchsia), but **only if those lamps are the same colour**. Obviously, this represents the profound fragility and changeable nature of the human condition.

Bob notices that the colours of the lamps currently form pattern A . He thinks they would look good in pattern B , so he wants to know if it is possible to get to B from A by a sequence of zero or more button presses.

Constraints

Subtask 1 [20%]

$$1 \leq N \leq 20$$

Subtask 2 [20%]

$$1 \leq N \leq 2\,000$$

Subtask 3 [60%]

$$1 \leq N \leq 200\,000$$

Input Specification

The first line will contain one integer, N .

The second line will contain a string of N characters, either **F** (fuchsia) or **A** (aquamarine), pattern A .

The third and final line will contain a string of N characters, either **F** or **A**, pattern B .

Output Specification

Output **YES** if it is possible to get to B from A and **NO** otherwise.

Sample Input 1

```
6
FAAFF
FFAFFF
```

Sample Output 1

YES

Sample Input 2

6
FAFAFA
AFAFAF

Sample Output 2

NO