An Interesting Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

You are given a string s. For a string t, let $|t|$ be the length of t and $f(t)$ be the number of times t appears in s as a substring*. For example, if $s = \texttt{abababc}$, then $f(\texttt{ab}) = 3$, $f(\texttt{abc}) = 1$ and $f(\texttt{aba}) = 2$.

We define string s as *interesting* if it satisfies a special property: for every non-empty substring t of the string, the length of t must be divisible by the number of occurrences of t in the original string s. Formally, $|t| \bmod f(t) = 0$ for all non-empty substrings t of s.

Your task is to determine whether the given string s is *interesting*.

* A string t is a substring of a string s if t can be obtained from s by deleting several (possibly, zero or all) characters from the beginning and several (possibly, zero or all) characters from the end.

Input

The first line contains an integer t ($1 \le t \le 10^5$) — the number of test cases.

The first line of each test case contains an integer n ($1 \le n \le 3 \cdot 10^5$) — the length of the string.

The second line contains a string s of length n, consisting of lowercase English letters.

It is guaranteed that the sum of n over all test cases does not exceed $3 \cdot 10^6$.

Output

For each test case, print `YES` if the string is *interesting*, and `NO` otherwise.

Example

standard input	standard output
2 2 ab 7 abababc	YES NO

Note

In the first test case, the string is *interesting* because:

- For $t = \texttt{a}$, $|t| = 1$ and $f(t) = 1$, so $|t| \bmod f(t) = 1 \bmod 1 = 0$.
- For $t = \texttt{b}$, $|t| = 1$ and $f(t) = 1$, so $|t| \bmod f(t) = 1 \bmod 1 = 0$.
- For $t = \texttt{ab}$, $|t| = 2$ and $f(t) = 1$, so $|t| \bmod f(t) = 2 \bmod 1 = 0$.

As the condition is satisfied for all non-empty substrings, the string is *interesting*.

In the second test case, the string is not *interesting*, because, for example, for the substring $t = \texttt{bab}$, $|t| = 3$ and $f(t) = 2$, so $|t| \bmod f(t) = 3 \bmod 2 = 1 \neq 0$.