Problem A. Polyglot

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Beksultan is polyglot and he studying new language. He know that, some unknown words could be recognized by some words's patterns (ex: polyglot could be described as poly-many glotta - language). So, to understand this word, he want to study little patterns. In dictionary he found a lot of patterns that appeared at least once in main word, but he do not want to learn them all, only most frequently appeared.
Beksultan is very lazy, so he asks you to help him find such patterns.

Input

The first line is an integer - N, the number of patterns, $1 \leqslant N \leqslant 150$. Each of the following N lines contains one pattern, whose length is in range [1,101].
Last line contains one large string, whose length is up to 10^5.

Output

First, print number of appearence most frequently appeared pattern, than print this pattern. If there is more than one, print all of them in input order.

Examples

standard input	standard output
2 aba bab abababababac	4 aba
6 beta alpha haha delta dede tata dedeltalphahahahototatalpha	2 alpha haha

Note

Note that in main string and in all patterns used only lower english letters.
In first sample 'aba' pattern appeared 4 times in main string.
In second sample 'haha' and 'alpha' patterns appeared in main string twice.

Problem B. Phone List

Input file:	standard input
Output file:	standard output
Time limit:	1.5 seconds
Memory limit:	256 megabytes

Arman works in a call center. He is now creating new phone numbers and when he creates these numbers he wants people to not have a problem with connections.

He has a number of cities and a list of phone numbers in each city and wants to make sure that all people have no connection problems. We say people have connection problems when the phone number of a person is in the suffix of another person when they are in the same city.

For example, if Arman has a phone number of 119 and Adina has 1119, so 119 is in the suffix 1119, there may be problems with connections. Arman asks you to help him determine if there are problems with connections in each city, print yes if there is problem, otherwise no

Input

The first line of input gives a single integer, 1 <= t <= 40, the number of cities. Each test case starts with n, the number of phone numbers, on a separate line, 1 <= n <= 10000. Then follows n lines with one unique phone number on each line. A phone number is a sequence of at most ten digits.

Output

For each test case, output "YES"if there are connection problems, or "NO"otherwise.

Example

standard input	standard output
2 3 119 99952679 25426119 5 311 04321 044321 54321 64389	NO YES

Problem C. Rikka and string

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Rikka found string s consisting of lowercase english letters. Then she made another string t that is some number of copies of s. She lost the string s, now she wonders, what is the minimum length of initial string s.

Input

The first line contains string t. $1 \leq |t| \leq 6000000$

Output

Output answer to the problem.

Example

standard input	standard output
abcabc	3

Note

In the first example t is 'abcabc', answer is 3 because 'abcabc' can be made from 2 copies of 'abc'.

Problem D. Plagiarism

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Alimzhan wanted to check his students for cheating and he added the parasite word to his exam

He believes that students cheat if the parasite word occurs in the same place in two different results of two students

Alimzhan heard that two of his most beloved students were copied from each other.

Help Alimzhan know how many times the parasite word is repeated in the same position in his beloved students' results

Note that results have the same length.

Input

The first line contains one string s1 (size<=100000) - result of first student.

The second line contains one string s2 (size<=100000) - result of second student.

The third line contains one string t (size<=100000) - parasite word.

Output

Output number of positions where parasite word meets in both students' results.

Examples

standard input	standard output
kbtuutbkkbtu utbkkbtukbtu kbtu	1
aaaaa aaaaa a	5
abracadabra abacabaabac ab	2

Note

Set 999999 elements for arrays