2. String Variation

Problem ID: 3808 | Required Problem | 100pt(s)

Time Limit: 1000ms **Memory Limit: 65535kB**

Description

There are two strings A and B and a set of string transformation rules (up to 6 rules), in the following form:

- A_1->B_1.
- A_2->B_2.

The meaning of the rules is: the substring A_1 in A can be transformed into B_1, A_2 can be transformed into B_2, and so on.
For example: $A = abcd, B = xyz$.
The transformation rules are:

- abc -> xu, ud -> y, y -> yz.

So, at this point, A can be transformed into B through a series of changes:

- $abcd$ -> xud -> xy -> xyz.

A total of 3 transformations were made to convert A into B.

Input

The first line has two strings A and B.

Then there are several lines, each containing two strings A_i and B_i, which represent a transformation rule.

Output

If you can transform A into B in 10 steps or less (including 10 steps), then output the minimum number of steps needed; otherwise, output "NO ANSWER!".

Examples

Input 1

```
abcd xyz
abc xu
ud y
y yz
```

Output 1

```
3
```

Examples Explanation

Tips: For unknown number lines of input, we use “while (cin>>data1>>data2)” to solve it. After we have finished typing, using "Ctrl+Z" can stop the program from continuing to read data.

Constraint

For 100% of the data, make sure that the maximum length of all strings is 20.