

## B. String LCM

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Let's define a multiplication operation between a string  $a$  and a positive integer  $x$ :  $a \cdot x$  is the string that is a result of writing  $x$  copies of  $a$  one after another. For example,  $\text{"abc"} \cdot 2 = \text{"abcabc"}$ ,  $\text{"a"} \cdot 5 = \text{"aaaaa"}$ .

A string  $a$  is divisible by another string  $b$  if there exists an integer  $x$  such that  $b \cdot x = a$ . For example,  $\text{"abababab"}$  is divisible by  $\text{"ab"}$ , but is not divisible by  $\text{"ababab"}$  or  $\text{"aa"}$ .

LCM of two strings  $s$  and  $t$  (defined as  $LCM(s, t)$ ) is the shortest non-empty string that is divisible by both  $s$  and  $t$ .

You are given two strings  $s$  and  $t$ . Find  $LCM(s, t)$  or report that it does not exist. It can be shown that if  $LCM(s, t)$  exists, it is unique.

### Input

The first line contains one integer  $q$  ( $1 \leq q \leq 2000$ ) — the number of test cases.

Each test case consists of two lines, containing strings  $s$  and  $t$  ( $1 \leq |s|, |t| \leq 20$ ). Each character in each of these strings is either 'a' or 'b'.

### Output

For each test case, print  $LCM(s, t)$  if it exists; otherwise, print  $-1$ . It can be shown that if  $LCM(s, t)$  exists, it is unique.

### Example

input	Copy
3 baba ba aa aaa aba ab	
output	Copy
baba aaaaaa -1	

### Note

In the first test case,  $\text{"baba"} = \text{"baba"} \cdot 1 = \text{"ba"} \cdot 2$ .

In the second test case,  $\text{"aaaaaa"} = \text{"aa"} \cdot 3 = \text{"aaa"} \cdot 2$ .

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Submission	Time	Verdict
<a href="#">104321416</a>	Jan/14/2021 18:36	Accepted
<a href="#">104318265</a>	Jan/14/2021 18:29	Wrong answer on test 3

#### → Problem tags

brute force math number theory  
strings \*1000

No tag edit access

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- Announcement



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