

## E. Arpa's abnormal DNA and Mehrdad's deep interest

time limit per test: 2 seconds  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

*All of us know that girls in Arpa's land are... ok, you've got the idea :D*

Anyone knows that Arpa isn't a normal man, he is ... well, sorry, I can't explain it more. Mehrdad is interested about the reason, so he asked Sipa, one of the best biology scientists in Arpa's land, for help. Sipa has a DNA editor.

Sipa put Arpa under the DNA editor. DNA editor showed Arpa's DNA as a string  $S$  consisting of  $n$  lowercase English letters. Also Sipa has another DNA  $T$  consisting of lowercase English letters that belongs to a normal man.

Now there are  $(n + 1)$  options to change Arpa's DNA, numbered from 0 to  $n$ .  $i$ -th of them is to put  $T$  between  $i$ -th and  $(i + 1)$ -th characters of  $S$  ( $0 \leq i \leq n$ ). If  $i = 0$ ,  $T$  will be put before  $S$ , and if  $i = n$ , it will be put after  $S$ .

Mehrdad wants to choose the most *interesting* option for Arpa's DNA among these  $n + 1$  options. DNA  $A$  is more *interesting* than  $B$  if  $A$  is lexicographically smaller than  $B$ . Mehrdad asked Sipa  $q$  questions:

Given integers  $l, r, k, x, y$ , what is the most interesting option if we only consider such options  $i$  that  $l \leq i \leq r$  and ? If there are several most interesting options, Mehrdad wants to know one with the smallest number  $i$ .

Since Sipa is a biology scientist but not a programmer, you should help him.

### Input

The first line contains strings  $S, T$  and integer  $q$  ( $1 \leq |S|, |T|, q \leq 10^5$ ) — Arpa's DNA, the DNA of a normal man, and the number of Mehrdad's questions. The strings  $S$  and  $T$  consist only of small English letters.

Next  $q$  lines describe the Mehrdad's questions. Each of these lines contain five integers  $l, r, k, x, y$  ( $0 \leq l \leq r \leq n, 1 \leq k \leq n, 0 \leq x \leq y < k$ ).

### Output

Print  $q$  integers. The  $j$ -th of them should be the number  $i$  of the most interesting option among those that satisfy the conditions of the  $j$ -th question. If there is no option  $i$  satisfying the conditions in some question, print  $-1$ .

### Examples

#### input

```
abc d 4
0 3 2 0 0
0 3 1 0 0
1 2 1 0 0
0 1 3 2 2
```

#### output

```
2 3 2 -1
```

#### input

```
abbbbbbaaa baababaaab 10
1 2 1 0 0
2 7 8 4 7
2 3 9 2 8
3 4 6 1 1
0 8 5 2 4
2 8 10 4 7
7 10 1 0 0
1 4 6 0 2
```

0	9	8	0	6
4	8	5	0	1

output

1	4	2	-1	2	4	10	1	1	5
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Note

Explanation of first sample case:

In the first question Sipa has two options:  $dabc$  ( $i = 0$ ) and  $abdc$  ( $i = 2$ ). The latter ( $abcd$ ) is better than  $abdc$ , so answer is 2.

In the last question there is no  $i$  such that  $0 \leq i \leq 1$  and .