

Alphabetic Rope2

The Alphabetic Rope is now available in the market. The Alphabetic Rope consists of alphabetic characters in each stripe which looks like string.

You are given an Alphabetic rope consists of lowercase alphabetic characters only, you have to perform some operations on rope and answer some queries on it and Time increases by 1.

Initial time is 0 and Queries are of 4 types:

- **1 X Y** : Cut the rope segment from X to Y and join at the front of rope.
- **2 X Y** : Cut the rope segment from X to Y and join at the back of rope.
- **3 Y** : Print on a new line the Alphabet on Yth position of current rope.
- **4 X Y** : Print on a new line the Alphabet on Yth position of rope configuration at Xth time.

Input

There is only one input. Input begins with single line giving Alphabetic Rope as a string **-S**. Next line containing **Q**, follows Q lines giving Queries as mentioned above. (Index used are 0-based)

Output

For each query of type 3 and type 4, Print a single character in a new line.

Constraints:

$1 \leq |S| \leq 10000$. (Length of string)

$1 \leq Q \leq 10000$. (Total Queries)

Example

Input:

```
gautambishal
5
3 0
2 0 5
3 1
4 0 0
4 3 0
```

Output:

```
g
i
g
b
```