Problem B. No Name

Program:	`strings.(cpp|java)`
Input:	`strings.in`
Balloon Color:	`Orange`

This is the most direct problem ever, you are required to implement some basic string operations like insert and substring.

In this problem $|S|$ means the length of the string S.

Note: We didn't find a good name for this problem.

Input

Your program will be tested on one or more test cases. The first line of the input will be a single integer T, the number of test cases ($1 \leq T \leq 100$). Followed by the test cases, each test case starts with a line containing a string S ($1 \leq |S| \leq 1{,}000{,}000$), followed by one or more lines each describing one of the following operations to perform on S (all indices are zero based, and the quotes are for clarity):

1. "I R X" means insert the string R ($1 \leq |R| \leq 1{,}000{,}000$) in S at index X ($0 \leq X \leq |S|$), when X equals $|S|$ this means append R at the end of S. For example, the result of inserting "xy" in "abc" at position 1 will be "axybc", and the result of inserting "xy" in "abc" at position 3 will be "abcxy", and the result of inserting "xy" in "abc" at position 0 will be "xyabc".
2. "P X Y" means print the substring of S from X to Y, inclusive ($0 \leq X \leq Y < |S|$). For example the substring from 0 to 2 of "abc" is "abc", and the string from 1 to 1 of "abc" is "b".
3. "END" Indicates the end of operations for the test case.

Strings S and R will consist of lower case English letters only ('a' to 'z'), and $|S|$ will never get greater than 1,000,000 as a result of the operations for any test case. Also, the total number of characters to be printed for any test case will not exceed 1,000,000.

Note: Make sure to use fast IO operations, because the input and output files are very large.

Output

For every "P X Y" operation in the input, print one line with the corresponding substring.

Examples

strings.in	Standard Output
1 acm I ac 3 P 0 3 I x 3 I xxxx 6 I pc 6 P 0 11 END	acma acmxacpcxxxx