Consecutive Letters

You are given a string S containing only uppercase English letters. There are Q queries. Each query can be of two types,

- **1 i**: Find the maximum size of the segment *[b, e]* where **0 ≤ b ≤ i ≤ e < |S|** and substring *S[b...e]* contains only the letter *S[i]*. A Substring is a contiguous sequences of characters in a string.

- **2 i**: Change the character in index *i* with the character '**#**'.

For both type of queries, **S[i]** will not contain the character '#'.The characters of the string are indexed from 0.

Input

The first line contains number of test cases **T (1 ≤ T ≤ 15)**.
For each test cases, the first line contains the string **S (1 ≤ |S| ≤ 200000)**. The 2nd line contains number of queries **Q (1 ≤ Q ≤ 100000)**. Each of the next **Q** lines contains one query in the format mentioned in the problem statement.

Output

For each test case, first print the test case number and output of every query of type 1 in a single line.

Sample Input	Output for Sample Input
2 AABBBCCCC 5 1 0 2 1 1 0 2 2 1 3 XXYYY 3 1 3 2 3 1 2	Case 1: 2 1 2 Case 2: 3 1

Warning: The input file is huge, please use fast I/O.

Note: The dataset and timelimit have been modified to fit SPOJ.

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