

Range Counting

Time Limit: 3s
Memory Limit: 512MB

Problem Description

You are given N upper-case letters. You are also given Q queries, each of which is one of two types:

1. Insert a word at a certain position, replacing the original content. The resulting position of the last letter of the word will not exceed N .
2. Given a start and end position, return the letter that shows up most frequently. If there are ties, return the one that comes first in the alphabet.

For example, given a string “ABCDEFGH”, inserting the word “BOB” at position 3 will result in the string “ABBOBFGH”.

For each query of type 2, return the answer.

Input Specification

Each test file starts with a line containing two integers N and Q . A line containing a string with N upper-case letters follow.

Then, Q lines follow, one for each query. The following describes the format:

1. The first query type has the format “1 i pos $_i$ j word $_i$ ” where i pos $_i$ is the starting position (between 1 and N inclusive). The string j word $_i$ is the word to be inserted.
2. The second query type has the format “2 i start $_i$ j end $_i$ ” where i start $_i$ and j end $_i$ define the range (between 1 and N , and i start $_i \leq j$ end $_i$).

Output Specification

Output a single line containing K letters, where K is the number of queries of the second type. The letters correspond to the answer to the query, processed in the same order as the input.

Constraints

$$1 \leq N \leq 10^5$$

$$1 \leq Q \leq 10^4$$

The length of the replacement string is at most 5.

Sample Input

```
10 6
ABBACDAFBA
2 1 10
2 1 4
2 2 9
1 4 BOB
2 1 10
2 2 9
```

Sample Output

```
AABBB
```