

# Text Editor

This question is graded for 1%!

## Statement

After finding the features of Windows Notepad rather lacking, Fluffy the Hamster has decided to create a new text editor. His text editor comes with a typical blinking cursor and a marker. Initially, the text editor contains no text, and both the cursor and the marker are at the beginning of the text. Fluffy wishes to support the following operations in his text editor. (In the examples below, the cursor is denoted by a red vertical bar **|** and the marker is denoted by a green vertical bar **|**.)

- **LEFT**: Move the cursor one position left.

For example, if the text and the position of the cursor and marker is currently:

|This i|s some text!

Then after moving the cursor left:

|This |is some text!

If the cursor is already at the beginning of the text, then nothing happens.

- **RIGHT**: Move the cursor one position right.

For example, if the text and the position of the cursor is currently:

|This i|s some text!

Then after moving the cursor right:

|This is| some text!

If the cursor is already at the end of the text, then nothing happens.

- **TYPE x**: Enter a new character at the current position of the cursor. After the new character is entered, the cursor will be positioned to the right of the new character.

For example, if the text and the position of the cursor and marker is currently:

|This i|s some text!

Then after **TYPE A**:

|This iA|s some text!

- **MARKER**: Changes the position of the marker to the current position of the cursor. If the marker is already at the same position as the cursor, then nothing happens.

For example, if the text and the position of the cursor and marker is currently:

```
|This i|s some text!
```

Then after changing the position of the marker:

```
This i||s some text!
```

Note that even though the cursor is shown to be to the right of the marker in the above example, the relative positions of the cursor and marker is irrelevant and they should be occupying the same position.

- **SHIFTFRONT**: Moves the text between the cursor and marker to the front of the text. The positions of the cursor and marker remain unchanged. If the cursor and marker are on the same position, nothing happens.

For example, if the text and the position of the cursor and marker is currently:

```
This i|s som|e text!
```

Then after performing **SHIFTFRONT**:

```
s somThis i||e text!
```

Once again, the relative positions of the cursor and marker shown above is irrelevant as they are on the same position.

- **SHIFTBACK**: Moves the text between the cursor and marker to the back of the text. The positions of the cursor and marker remain unchanged. If the cursor and marker are on the same position, nothing happens.

For example, if the text and the position of the cursor and marker is currently:

```
This i|s som|e text!
```

Then after performing **SHIFTBACK**:

```
This i||e text!s som
```

Again the relative positions of the cursor and marker shown above is irrelevant as they are on the same position.

- **PRINT**: Print out all the text that is currently in the text editor.

Fluffy will perform a total of  $Q$  operations on his text editor. Help Fluffy implement his text editor!

## Constraints

- $1 \leq Q \leq 10^6$
- In **TYPE x** operations,  $x$  will be an alphanumeric character, or a punctuation character.
- There will be at most 10 **PRINT** operations.

## Input

The first line of the input contains a single integer  $Q$ .

The next  $Q$  lines will each contain one operation.

## Output

For each **PRINT** operation, print out the contents of the text editor on a single line.

## Important Note

For the purposes of this lab, you may only use the following data structures:

- Java API `LinkedList`,
- Java API `String`,
- Your own self-implemented versions of linked lists, including those from lecture.

All other data structures (including built-in arrays) are **forbidden**. **Submissions which violate this rule will be given a score of 0.**

## Examples

Sample Input	Expected Output
16 TYPE A TYPE B MARKER TYPE C TYPE D TYPE E TYPE F TYPE G LEFT LEFT LEFT SHIFTFRONT RIGHT RIGHT SHIFTBACK PRINT	CDABGEF

## Notes

1. A skeleton file has been given to help you. You should not create a new file or rename the file provided. You should develop your program using this skeleton file.
2. You are free to define your own helper methods and classes (or remove existing ones) if it is suitable but you must put all the new classes, if any, in the same skeleton file provided.

## Skeleton File

You are given the skeleton file `Editor.java`. You should see the following contents when you open the file:

```
/**
 * Name      :
 * Matric. No :
 */

import java.util.*;

public class Editor {
    private void run() {
        // implement your "main" method here
    }

    public static void main(String args[]) {
        Editor runner = new Editor();
        runner.run();
    }
}
```