Problem

Author

Difficulty

Max Score

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Simple Text Editor ☆

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pkacprzak

Medium

18388

65

In this challenge, you must implement a simple text editor. Initially, your editor contains an empty string, S. You must perform $oldsymbol{Q}$ operations of the following $oldsymbol{4}$ types:

Discussions

Leaderboard

- 1. append(W) Append string W to the end of S.
- 2. delete(k) Delete the last k characters of S.
- 3. print(k) Print the k^{th} character of S.
- 4. undo() Undo the last (not previously undone) operation of type ${\bf 1}$ or ${\bf 2}$, reverting ${\bf S}$ to the state it was in prior to that operation.

Input Format

The first line contains an integer, $oldsymbol{Q}$, denoting the number of operations.

Each line i of the Q subsequent lines (where $0 \leq i < Q$) defines an operation to be performed. Each operation starts with a single integer, t (where $t \in \{1, 2, 3, 4\}$), denoting a type of operation as defined in the Problem Statement above. If the operation requires an argument, $m{t}$ is followed by its space-separated argument. For example, if $m{t}=m{1}$ and W ="abcd", line i will be 1 abcd.

Constraints

- $1 \le Q \le 10^6$
- $1 \le k \le |S|$
- The sum of the lengths of all W in the input $\leq 10^6$.
- The sum of k over all delete operations $\leq 2 \cdot 10^6$.
- All input characters are lowercase English letters.
- It is guaranteed that the sequence of operations given as input is possible to perform.

Output Format

Each operation of type ${f 3}$ must print the ${m k^{th}}$ character on a new line.

Sample Input

- 8
- 1 abc
- 2 3
- 1 xy 3 2

- 3 1

Sample Output

| Exi | pla | ına | tior |
|-----|-----|-----|------|

Initially, S is empty. The following sequence of S operations are described below:

1. S = "". We append abc to S, so S = "abc".

2. Print the S^{rd} character on a new line. Currently, the S^{rd} character is S.

3. Delete the last S characters in S (S^{rd}), so S = "".

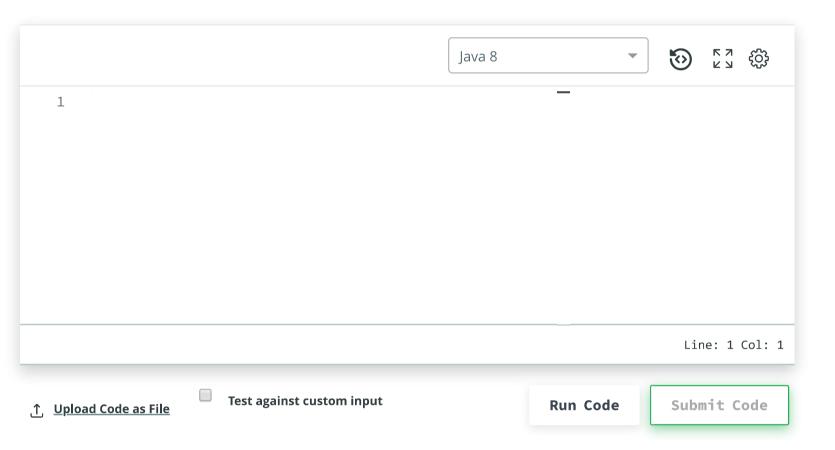
4. Append S^{rd} character on a new line. Currently, the S^{rd} character is S^{rd} .

5. Print the S^{rd} character on a new line. Currently, the S^{rd} character is S^{rd} .

6. Undo the last update to S^{rd} , making S^{rd} empty again (i.e., S^{rd}).

7. Undo the next to last update to S^{rd} (the deletion of the last S^{rd}) characters), making S^{rd} 0.

8. Print the S^{rd} 0 character on a new line. Currently, the S^{rd} 0 character is a.



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