

Task 1

You are given a string consisting of parentheses `()` and `[]`. A string of this type is said to be *correct*:

- (a) if it is the empty string
- (b) if A and B are correct, AB is correct,
- (c) if A is correct, `(A)` and `[A]` is correct.

Write a program that takes a sequence of strings of this type and check their correctness. Your program can assume that the maximum string length is 128.

Input

The file contains a positive integer n and a sequence of n strings of parentheses `()` and `[]`, one string a line.

Output

A sequence of `Yes` or `No` on the output file.

Input	Output
4	Yes
<code>([])</code>	No
<code>(([()]))</code>	Yes
<code>([() [] ()]) ()</code>	No
<code>([])</code>	

Task 2

Standard web browsers contain features to move backward and forward among the pages recently visited. One way to implement these features is to use two stacks to keep track of the pages that can be reached by moving backward and forward. You are asked to implement this. The commands are:

1. **BACK:** If the backward stack is empty, the command is ignored. Otherwise, push the current page on the top of the forward stack. Pop the page from the top of the backward stack, making it the new current page.
2. **FORWARD:** If the forward stack is empty, the command is ignored. Otherwise, push the current page on the top of the backward stack. Pop the page from the top of the forward stack, making it the new current page.
3. **VISIT <url>:** Push the current page on the top of the backward stack, and make the URL specified the new current page. The forward stack is emptied.
4. **QUIT:** Quit the browser.

The browser initially loads the web page at the URL '<http://www.lightoj.com/>'

Input

Input starts with an integer **T (≤ 100)**, denoting the number of test cases.

Each case contains some commands. The keywords BACK, FORWARD, VISIT, and QUIT are all in uppercase. URLs have no whitespace and have at most 50 characters. The end of case is indicated by the QUIT command and it shouldn't be processed. Each case contains at most 100 lines.

Output

For each case, print the case number first. For each command, print the URL of the current page (in a line) after the command is executed if the command is not ignored. Otherwise, print 'Ignored'.

Sample Input	Output for Sample Input
2 VISIT http://uva.onlinejudge.org/ VISIT http://topcoder.com/ BACK BACK BACK FORWARD VISIT http://acm.sgu.ru/ BACK BACK FORWARD FORWARD FORWARD QUIT FORWARD QUIT	Case 1: http://uva.onlinejudge.org/ http://topcoder.com/ http://uva.onlinejudge.org/ http://www.lightoj.com/ Ignored http://uva.onlinejudge.org/ http://acm.sgu.ru/ http://uva.onlinejudge.org/ http://www.lightoj.com/ http://uva.onlinejudge.org/ http://acm.sgu.ru/ Ignored Case 2: Ignored