Using **Regex**, we can easily match or search for patterns in a text. Before searching for a pattern, we have to specify one using some well-defined syntax.

In this problem, you are given a pattern. You have to check whether the syntax of the given pattern is valid.

Note: In this problem, a regex is only valid if you can compile it using the Pattern.compile method.

Input Format

The first line of input contains an integer N, denoting the number of test cases. The next N lines contain a string of any printable characters representing the pattern of a regex.

Output Format

For each test case, print `Valid` if the syntax of the given pattern is correct. Otherwise, print `Invalid`. Do not print the quotes.

Sample Input

```
3
([A-Z])(.+)
[AZ[a-z](a-z)
batcatpat(nat
```

Sample Output

```
Valid
Invalid
Invalid
```