Brackets

Your task is to determine if a sequence of opening and closing brackets is a valid expression. A valid expression is one where every opening bracket has a corresponding closing bracket.

Input

The input consists of several test cases. The first line of the input is an integer $0 < n < 500$. n lines follow, each one consisting of a sequence of brackets, which represents an expression.

Output

For each sequence in the input, print ":)" if the sequence is a valid expression, and ":(" otherwise.

Example

Input:
4
{}
}}{{{{{
{{}{}}{}
{{}}}}}

Output:
:)
:(
:)
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