Paren Police

Parens (parentheses) are very useful (so are their close relatives, square [] and curly braces {}). But parens live by a (very strict) code of conduct: every left paren must be paired with a right paren. Not only that, but before closing a left paren with a right paren, all inner parens must be closed. For example, ({[]}) is a perfectly fine use of parens. So is ()[](). On the other hand, ([)] is not. Nor is ((}.

As a member of the Paren Police, you must design an algorithm that detects whether a set of parens abides by the Paren Code of Conduct.

Input

Input consists of a single line of parens. All characters are strictly one of the following: (, [, {,),] or }. There are no whitespaces or punctuation in the input, only parens.

Output

Output the string 'true' if the input is a valid paren sequence, output 'false' if not. Note: do not output a boolean! You must output a string, all lower case with no whitespace.

Examples

Input	Output
(){}[]	true
{{	false