Parentheses Puzzle

Input file:	standard input
Output file:	standard output
Time limit:	0.5 seconds
Memory limit:	256 megabytes

Jake and Rosa have a very important case to solve. Since they can't communicate directly, Rosa sent a secret message to Jake. Jake needs to decipher the message soon, but he doesn't know how. Her message can only be deciphered by solving the following intermediate problem.

He has been given a string p containing only parentheses brackets '(' , ')', '{' and '}'. Such a string p is called a **bracket sequence**. Some bracket sequences are **valid and some aren't**. Formally p is a valid bracket sequence if -

- p is an empty string.

- Open brackets must be closed by the corresponding closing bracket.

- Open brackets must be closed in the correct order.

The puzzle is to find whether the bracket sequence is **valid or not**. Since Jake is not good at mathematics, he asked for your help.

Input

The first and only line of input contains a string p, consisting only of characters '(', ')', '{' and '}'.

$0 \leq |p| \leq 10^5$

Output

Print **1** if the bracket sequence is **valid**, otherwise print **0**.

Examples

standard input	standard output
{(})	0
{{()}}()	1
((}}	0