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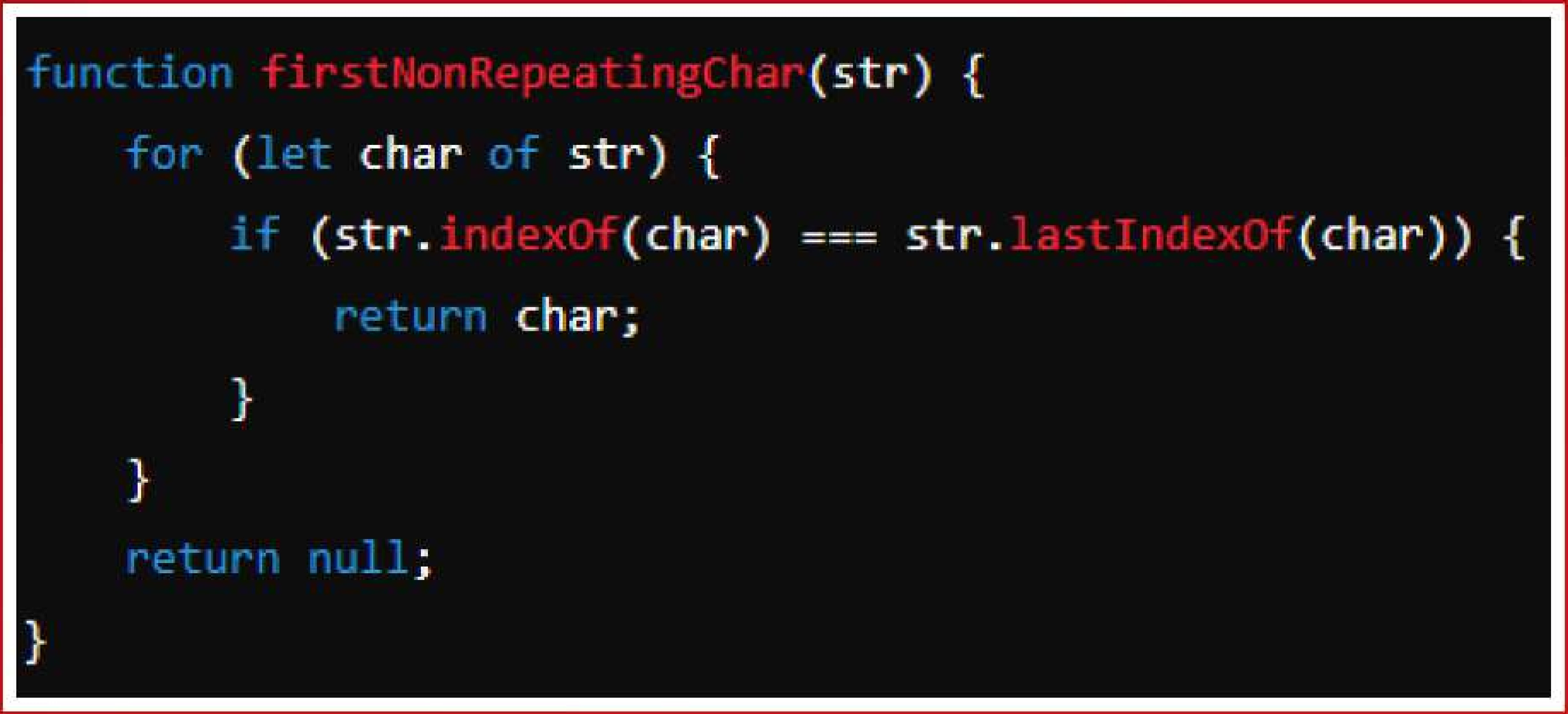
String Data Structure & Algorithms Questions in JavaScript

1 Find the First Non-Repeating Character

Explanation: Iterates over the string and checks if the character appears only once.



```javascript
function firstNonRepeatingChar(str) {
    for (let char of str) {
        if (str.indexOf(char) === str.lastIndexOf(char)) {
            return char;
        }
    }
    return null;
}
```

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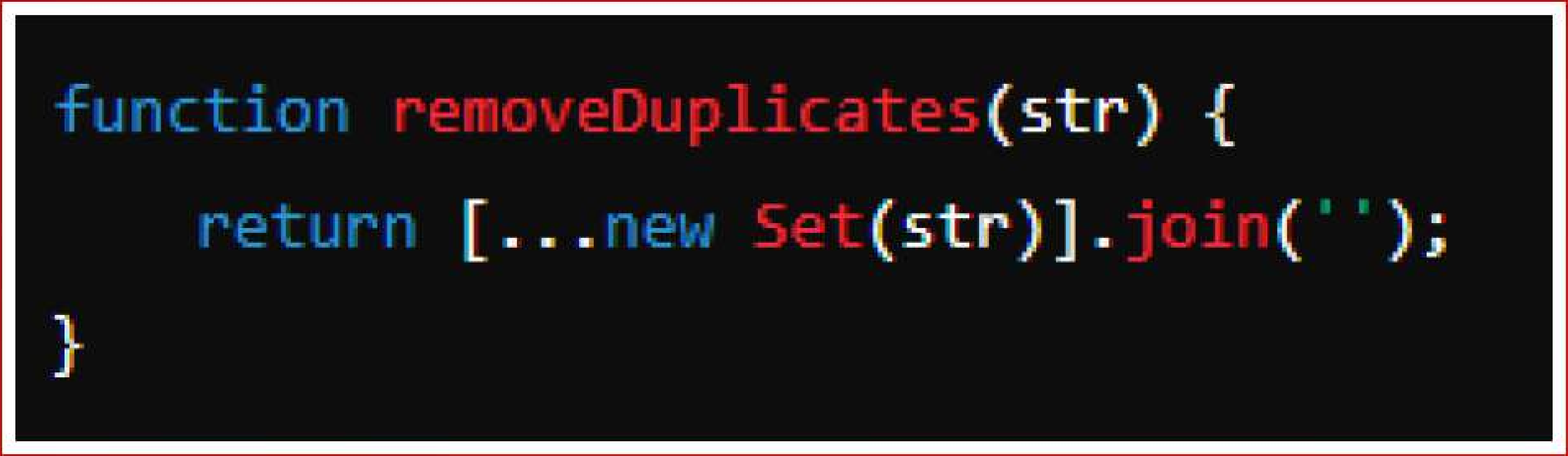
2 Remove Duplicates

Explanation: Uses a Set to remove duplicate characters.



```
function removeDuplicates(str) {
    return [...new Set(str)].join('');
}
```

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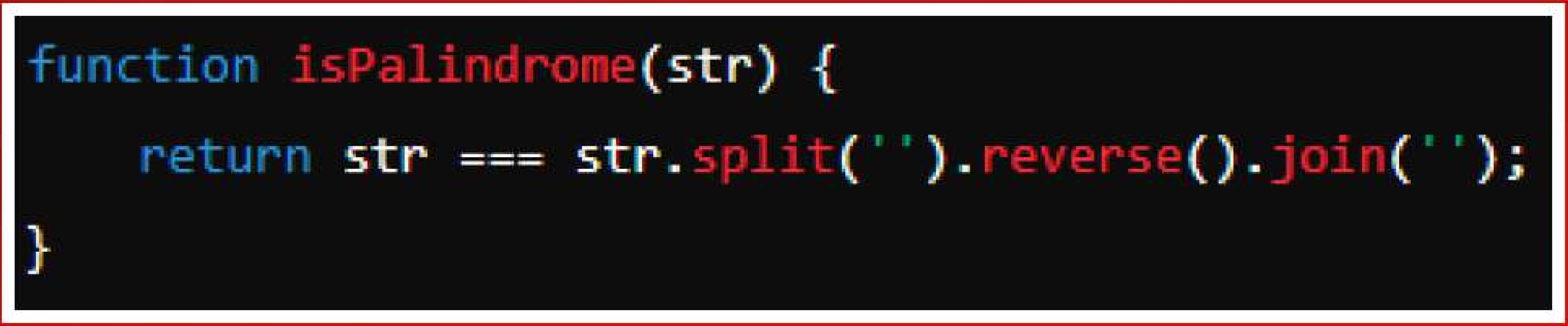
3 Palindrome Check

Explanation: palindrome string when we reads the same forward and backward.



```
function isPalindrome(str) {
    return str === str.split('').reverse().join('');
}
```

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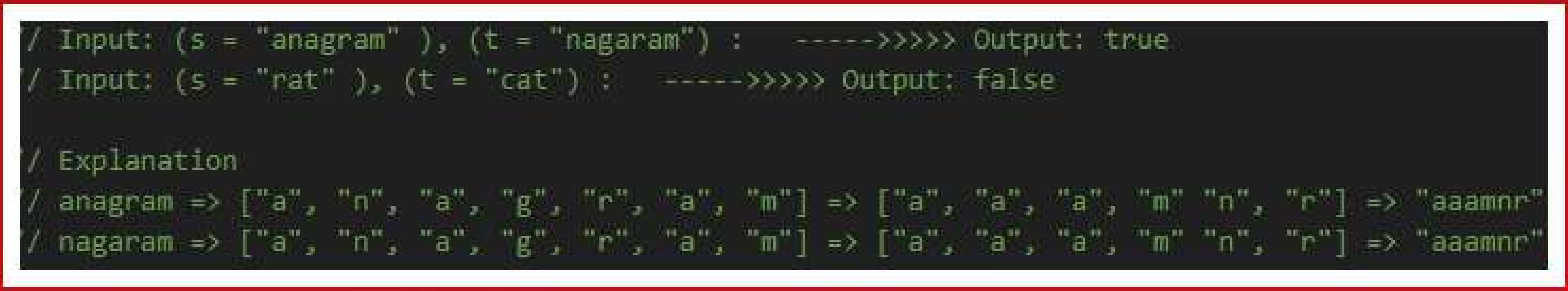
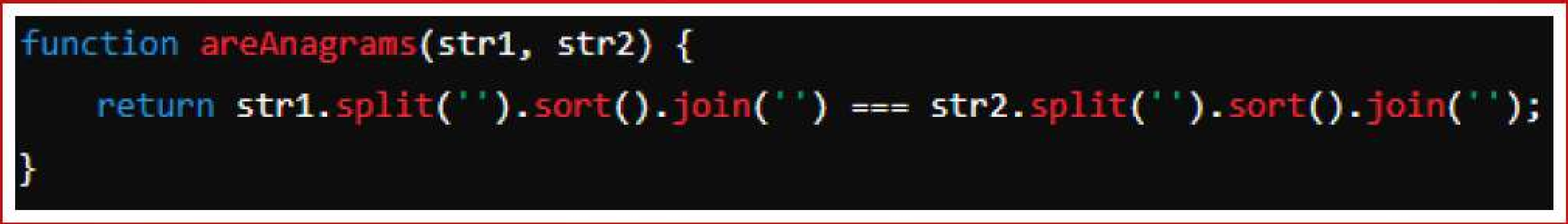
4 Anagram Check

Explanation: An Anagram is a word or phrase formed by rearranging the letters of a different word or phrase, using all the original letters exactly once.



```
/ Input: (s = "anagram" ), (t = "nagaram") :   ----->>>>> Output: true
/ Input: (s = "rat" ), (t = "cat") :   ----->>>>> Output: false

/ Explanation
/ anagram => ["a", "n", "a", "g", "r", "a", "m"] => ["a", "a", "a", "m" "n", "r"] => "aaamnr"
/ nagaram => ["a", "n", "a", "g", "r", "a", "m"] => ["a", "a", "a", "m" "n", "r"] => "aaamnr"
```



```
function areAnagrams(str1, str2) {
    return str1.split('').sort().join('') === str2.split('').sort().join('');
}
```

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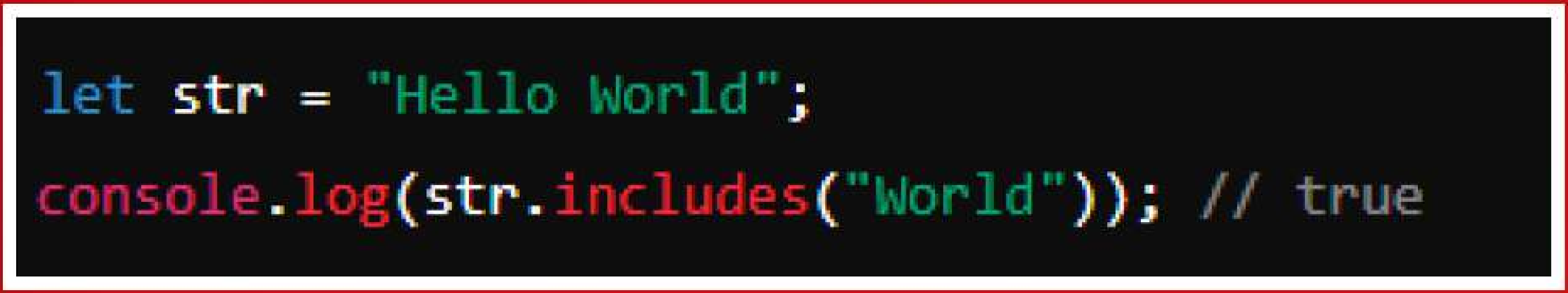
5 Check for Substring

Explanation: Uses the includes() method to check for the presence of a substring.



```
let str = "Hello World";
console.log(str.includes("World")); // true
```

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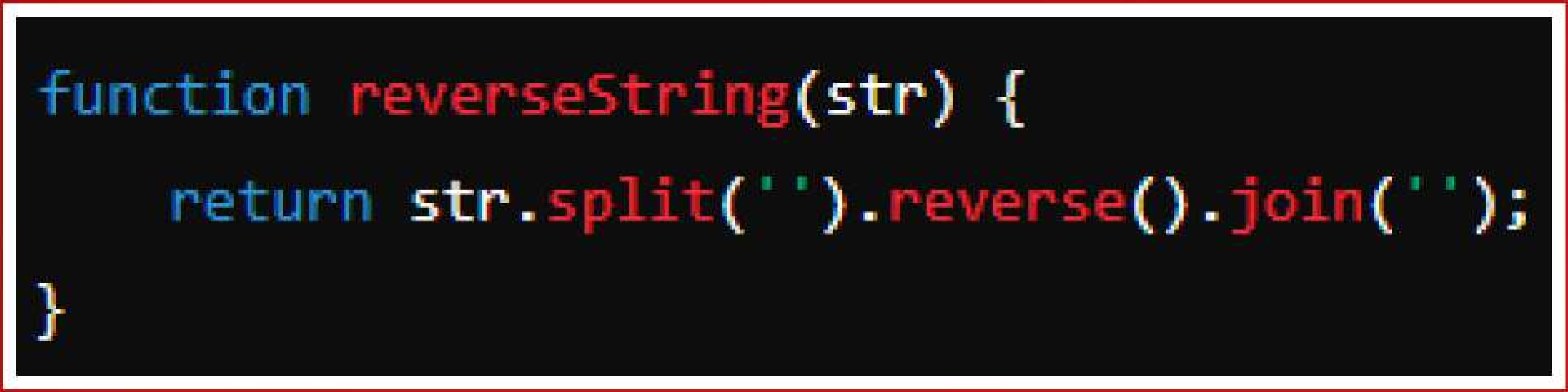
6 Reverse a String

Explanation: Splits the string into an array, reverses it, and joins it back into a string.



```
function reverseString(str) {
    return str.split('').reverse().join('');
}
```

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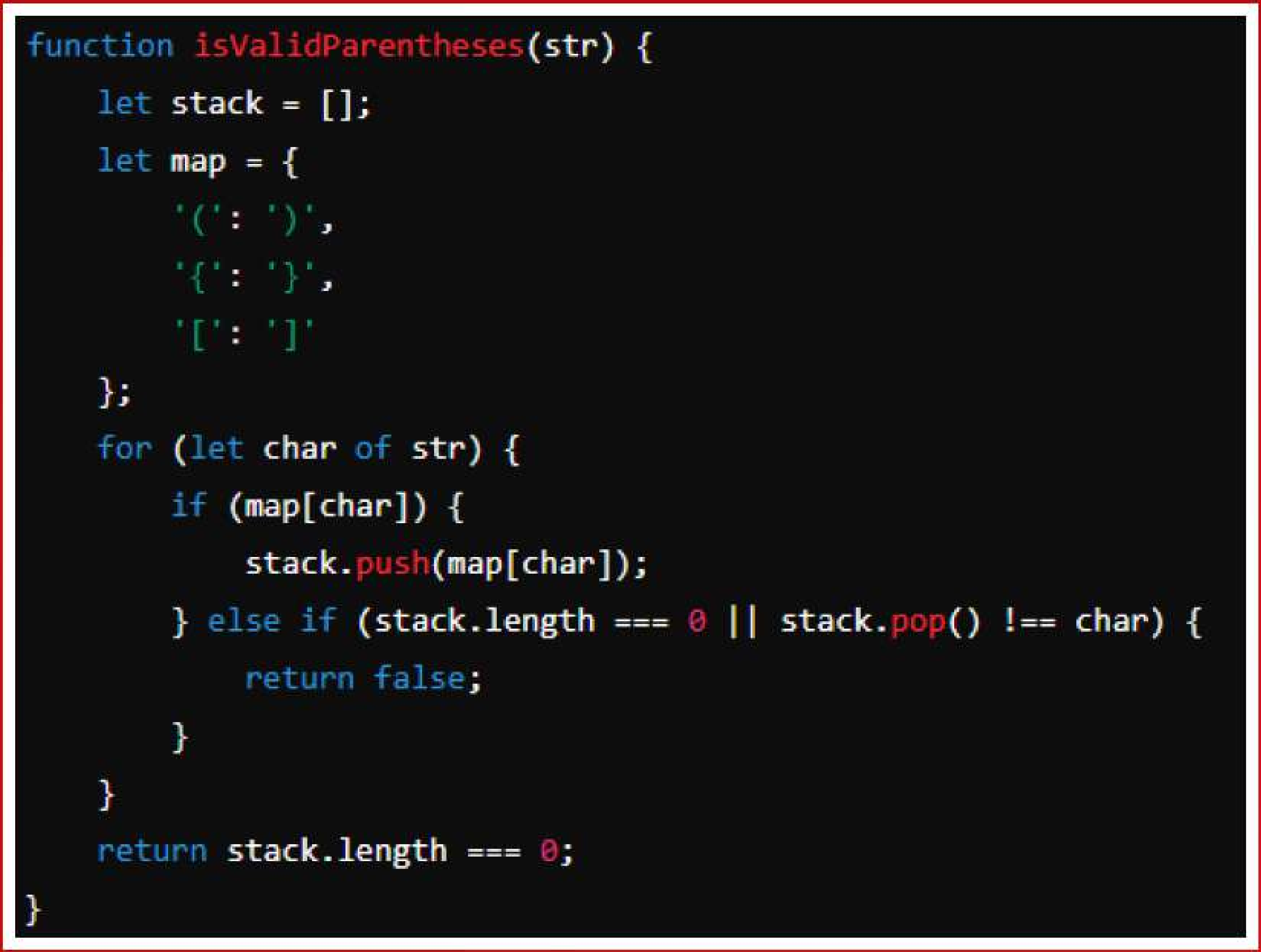
7 Valid Parentheses

Explanation: Uses a stack to ensure every opening bracket has a corresponding closing bracket.



```javascript
function isValidParentheses(str) {
    let stack = [];
    let map = {
        '(': ')',
        '{': '}',
        '[': ']'
    };
    for (let char of str) {
        if (map[char]) {
            stack.push(map[char]);
        } else if (stack.length === 0 || stack.pop() !== char) {
            return false;
        }
    }
    return stack.length === 0;
}
```

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