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Write a function that takes a string as input and determines whether it is a palindrome or not.

## Program In C

C

```
#include <stdio.h>
#include <stdbool.h>
#include <string.h>

bool isPalindrome(const char* str) {
    int length = strlen(str);
    int i, j;
    for (i = 0, j = length - 1; i < j; i++, j--) {
        if (str[i] != str[j]) {
            return false;
        }
    }
    return true;
}

int main() {
    const char* input = "madam";
```

```
if (isPalindrome(input)) {  
    printf("The string is a palindrome.\n");  
} else {  
    printf("The string is not a palindrome.\n");  
}  
return 0;  
}
```

## Explanation:

1. The function `isPalindrome` takes a `const char*` parameter `str`, representing the input string, and returns a boolean value (true if the string is a palindrome, and false otherwise).
2. The variable `length` is assigned the length of the input string using the `strlen` function from the `<string.h>` library.
3. Two integer variables `i` and `j` are declared. `i` starts from the beginning of the string (0 index), and `j` starts from the end of the string (`length - 1` index).
4. The for loop iterates through the string. The loop continues as long as `i` is less than `j`. In each iteration, `i` is incremented and `j` is decremented.
5. Inside the loop, the characters at positions `i` and `j` are compared. If they are not equal, the function immediately returns false, indicating that the string is not a palindrome.
6. If the loop completes without finding any unequal characters, the function returns true, indicating that the string is a palindrome.
7. In the main function, a sample input string "madam" is defined and passed to the `isPalindrome` function.
8. The function's return value is checked using an if statement. If it is true, the program prints "The string is a palindrome." Otherwise, it prints "The string is not a palindrome."

Write a function to detect palindromes in strings

9. Finally, the main function returns 0, indicating successful execution of the program.

C Output

```
The string is a palindrome.
```

---

## Program In Java

Java

```
public class PalindromeChecker {
    public static boolean isPalindrome(String str) {
        int length = str.length();
        int i, j;

        for (i = 0, j = length - 1; i < j; i++, j--) {
            if (str.charAt(i) != str.charAt(j)) {
                return false;
            }
        }

        return true;
    }

    public static void main(String[] args) {
```

```
String input = "jahaj";

if (isPalindrome(input)) {
    System.out.println("The string is a palindrome.");
} else {
    System.out.println("The string is not a palindrome.");
}
}
```

## Explanation:

1. The `isPalindrome` method takes a `String` parameter `str` and returns a boolean value indicating whether the string is a palindrome (true) or not (false).
2. The method calculates the length of the input string using the `length()` method of the `String` class.
3. Two integer variables `i` and `j` are declared. `i` starts from the beginning of the string (0 index), and `j` starts from the end of the string (`length - 1` index).
4. The for loop iterates through the string. It continues as long as `i` is less than `j`. In each iteration, `i` is incremented and `j` is decremented.
5. Inside the loop, the characters at positions `i` and `j` are compared using the `charAt()` method of the `String` class. If they are not equal, the method immediately returns false, indicating that the string is not a palindrome.
6. If the loop completes without finding any unequal characters, the method returns true, indicating that the string is a palindrome.
7. In the main method, a sample input string "jahaj" is assigned to the input variable.
8. The `isPalindrome` method is called with the input string. The return value is checked using an if statement. If it is true, the program prints "The string is a palindrome." Otherwise, it prints "The string is not a palindrome."

Write a function to detect palindromes in strings

Java Output

```
The string is a palindrome.
```

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