

PROGRAM:

```
public class Palindrome {

    public boolean isPalindrome(String input){
        for(int i=0;i<input.length()/2;i++){
            if(input.charAt(i)!=input.charAt(input.length()-1-i)){
                return false;
            }
        }
        return true;
    }
}

class Main{
    public static void main(String[] args){
        Palindrome p = new Palindrome();
        String input = "dad";
        boolean result = p.isPalindrome(input);
        System.out.println("result = "+result);
    }
}
```

TEST CASES:

The function `isPalindrome(String input)` is created to compare the characters from the start of the string and the end of the string. It compares the characters by incrementing and decrementing in the string step by step. If the chars are the same then it is a palindrome, if it fails then it is not a palindrome.

Scenario: Test the string input "null"

Given String input is "null"

When Checking the input string is palindrome or not

Then It returns the output as false

Scenario: Test the string input as empty string

Given String input is ""

When Checking the input string is palindrome or not

Then String accepts empty string

And It shows [] in the output

Scenario: Test the string input "mom"

Given String input is "mom"

When Checking the input string is palindrome or not

Then It shows true in the output

Scenario: Test the string input using special characters

Given String input is "#€%%€#"

When Checking the input string is palindrome or not

Then It shows true in the output

Scenario: Test the string input using numbers

Given String input is "12344321"

When Checking the input string is palindrome or not

Then It shows true in the output

Scenario: Test the string input using the combination of numbers, alphabets and special characters

Given String input is "12#€STTS€#21"

When Checking the input string is palindrome or not

Then It shows true in the output

Scenario: Test the string input using characters with single white space

Given String input is "l e v e l"

When Checking the input string is palindrome or not

Then It shows true in the output

Scenario: Test the string input using more than one whitespace

Given String input is "l e v e l"

When Checking the input string is palindrome or not

Then The string does not accepts duplicate whitespace

And It shows false in the output

Scenario: Test the string input using case sensitive characters

Given String input "Level"

When Checking the input string is palindrome or not

Then The string is case sensitivity

And It shows false in the output

Scenario: Test the string using single character

Given String input "a"

When Checking the input string is palindrome or not

Then It shows true in the output