PROBLEM STATEMENT:

Develop a Palindrome program to check whether the given input either word, number or a sentence reads the same backwards as forwards that is palindrome or not. Also perform Test Driven Development (TDD) using Python Unit Testing Framework.

USER STORIES:

1) **As a User, I want to identify if a basic word is palindrome or not.**

   Test Case:
   Input: madam
   Output: True

2) **As a User, I want to identify if phrases with spaces, ensuring that spaces are considered are palindrome or not.**

   Test Case:
   Input: Do geese see God
   Output: True

3) **As a User, I want to identify if a number is palindrome or not.**

   Test Case:
   Input: 1221
   Output: True

4) **As a User, I want to identify if the non-palindromic words are correctly identified.**

   Test Case:
   Input: hello
   Output: False

5) **As a User, I want to identify if an empty string is validated as palindrome or not.**

   Test Case:
   Input: ""
   Output: True

6) **As a User, I want to identify if a single character is identified as palindrome or not.**

   Test Case:
   Input: a
   Output: True

7) **As a User, I want to identify if the non-palindromic phrases are correctly identified.**

    Test Case:
    Input: Not a palindrome
    Output: False

8) **As a User, I want to identify if the non-palindromic numbers are correctly identified.**

    Test Case:
    Input: 123456
    Output: False

9) **As a User, I want to identify if sentences with Mixed cases are palindrome or not.**

    Test Case:
    Input: Able was I ere I saw Elba
    Output: True

10) **As a User, I want to identify if sentences with Special characters are palindrome or not.**

    Test Case:
    Input: A man, a plan, a canal, Panama!
    Output: False

REPORT:

Test Name	Test Description	Input	Expected Output	Actual Output
test_one	Perform Palindrome check for a word	madam	True	True
test_two	Perform Palindrome check for a phrase with spaces	Do geese see God	True	True

test_three	Perform Palindrome check for a number	1221	True	True
test_four	Perform Palindrome check for a Non-palindromic word	hello	False	False
test_five	Perform Palindrome check for an empty string	""	True	True
test_six	Perform Palindrome check for a single character	a	True	True
test_seven	Perform Palindrome check for a Non-palindromic phrase	Not a palindrome	False	False
test_eight	Perform Palindrome check for a Non-palindromic number	123456	False	False
test_nine	Perform Palindrome check for a sentence with mixed cases	Able was I ere I saw Elba	True	True
test_ten	Perform Palindrome check for a sentence with special characters	A man, a plan, a canal, Panama!	False	False

SUMMARY:

1. test_one() → Passed
2. test_two() → Passed
3. test_three() → Passed
4. test_four() → Passed
5. test_five() → Passed
6. test_six() → Passed
7. test_seven() → Passed
8. test_eight() → Passed
9. test_nine() → Passed
10. test_ten() → Passed

TEST RESULT:

```
PS C:\Users\bhuvana.s\Desktop\Exercise-1> & C:/Users/bhuvana.s/AppData/Local/Microsoft/WindowsApps/python3.12.exe
se-1/test.py
True
True
True
False
True
True
False
False
True
False
False
..........
----------------------------------------------------------------------
Ran 10 tests in 0.001s

OK
```