Assignment-8.5

Ht. No: 2303A51925

Name: V. Ajay

Batch: 23

Task Description #1

(Username Validator – Apply AI in Authentication Context) • Task: Use AI to generate at least 3 assert test cases for a function is_valid_username(username) and then implement the function using Test-Driven Development principles.

• Requirements:

o Username length must be between 5 and 15 characters. o Must contain only alphabets and digits. o Must not start with a digit.

o No spaces allowed.

Example Assert Test Cases:

assert is_valid_username("User123") == True

assert is_valid_username("12User") == False assert is_valid_username("Us er") == False

Expected Output #1:

• Username validation logic successfully passing all AI-generated test cases.

```python
def is_valid_username(username):
    if len(username) < 5 or len(username) > 15:
        return False
    if not username[0].isalpha():
        return False
    for char in username:
        if not (char.isalnum() or char == '_'):
            return False
    return True
#test cases for the is_valid_username function
assert is_valid_username("User123") == True
assert is_valid_username("12User") == False
assert is_valid_username("Us er") == False
print("All test cases for is_valid_username passed!")
```

```
ROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

S C:\Users\ajayv\OneDrive\Desktop\AI> & C:/Users/ajayv/AppData/Local/Python/pythoncore-3.14-64/python.exe
c:/Users/ajayv/OneDrive/Desktop/AI/Untitled-10000.py
ll test cases for is_valid_username passed!
S C:\Users\ajayv\OneDrive\Desktop\AI>
```

Task Description #2

(Even–Odd & Type Classification – Apply AI for Robust Input Handling)

• Task: Use AI to generate at least 3 assert test cases for a function classify_value(x) and implement it using conditional logic and loops.

• Requirements:

o If input is an integer, classify as "Even" or "Odd".

o If input is 0, return "Zero".

o If input is non-numeric, return "Invalid Input".

Example Assert Test Cases:

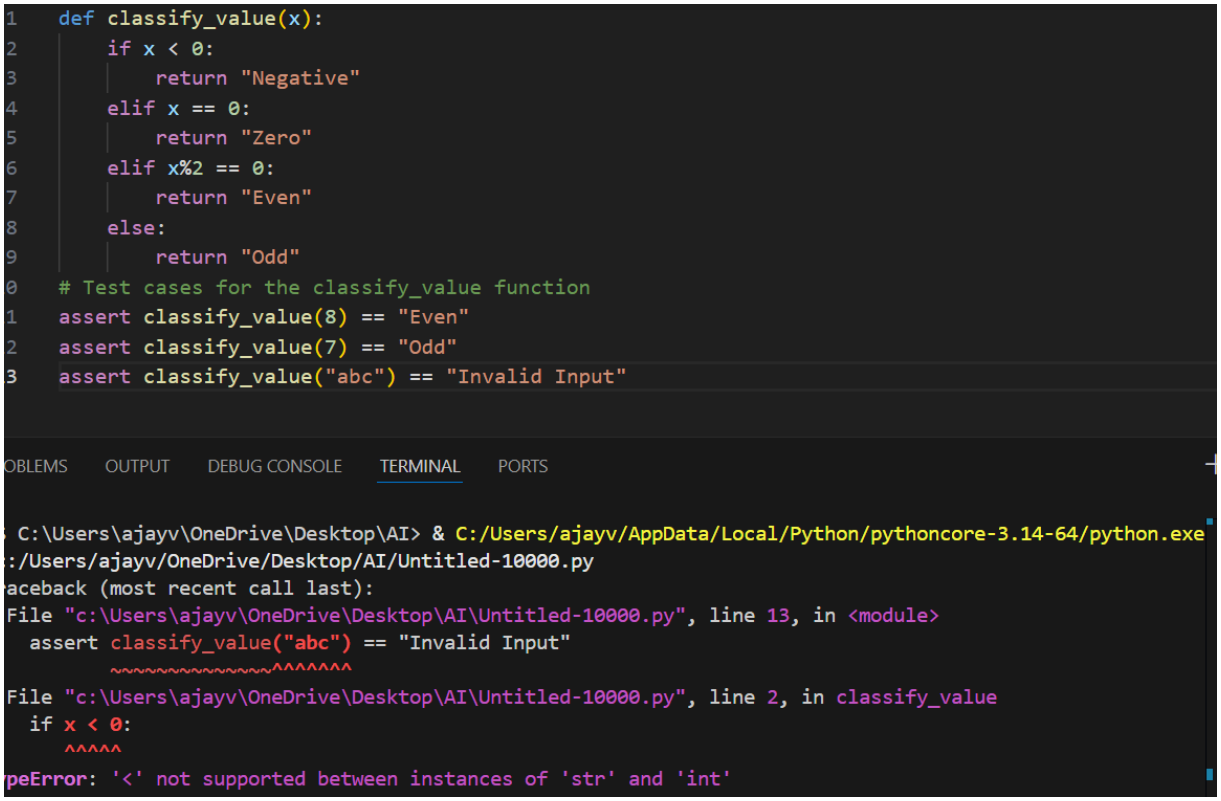
assert classify_value(8) == "Even"

assert classify_value(7) == "Odd" assert

classify_value("abc") == "Invalid Input"

Expected Output #2:

• Function correctly classifying values and passing all test cases.



Task Description #3

(Palindrome Checker – Apply AI for String Normalization) •

Task: Use AI to generate at least 3 assert test cases for a

function is_palindrome(text) and implement the function.

• Requirements:

o Ignore case, spaces, and punctuation.

o Handle edge cases such as empty strings and single

characters.

Example Assert Test Cases:

assert is_palindrome("Madam") == True assert

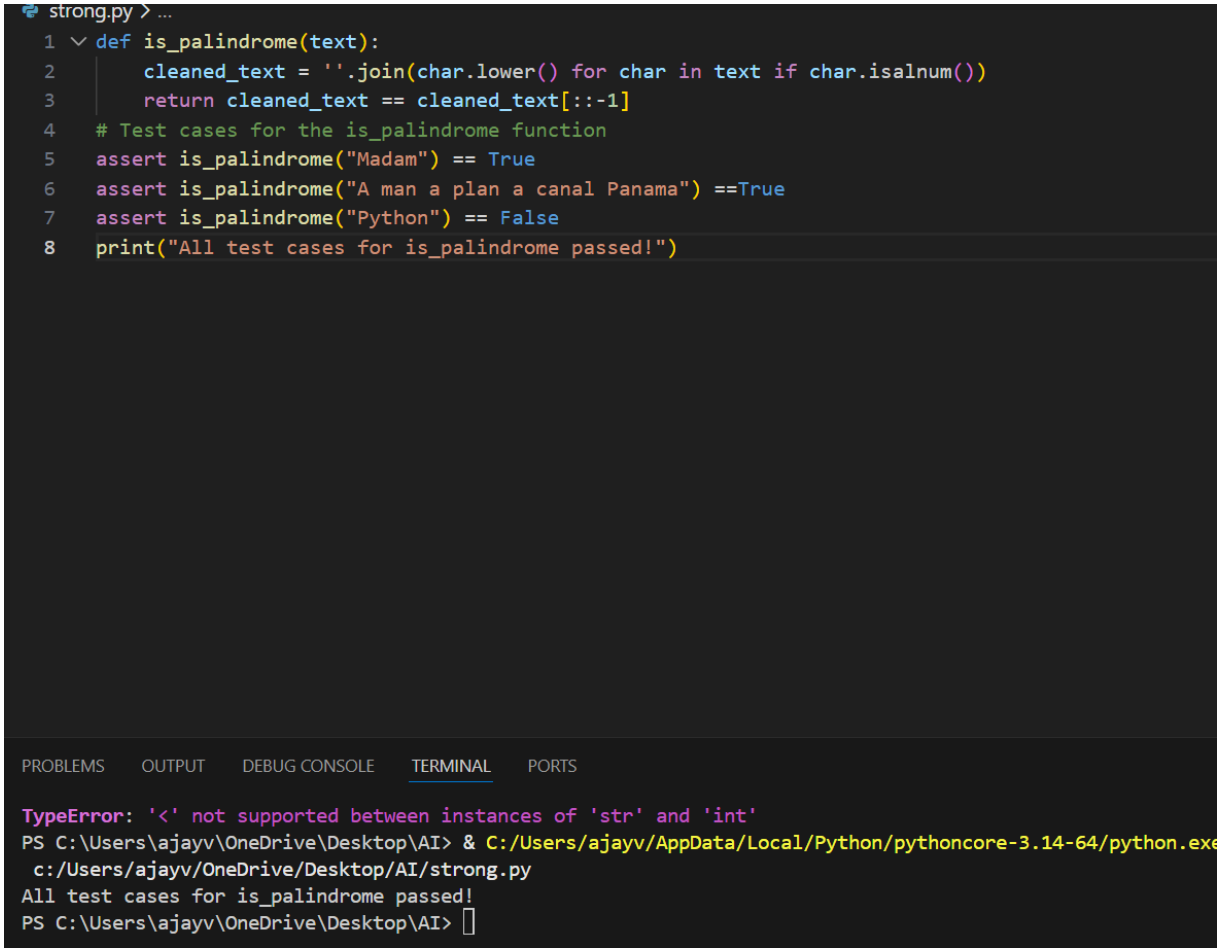
is_palindrome("A man a plan a canal Panama") == True

assert is_palindrome("Python") == False

Expected Output #3:

• Function correctly identifying palindromes and passing all AI-

generated tests.



Task Description #4

(BankAccount Class – Apply AI for Object-Oriented Test-Driven Development)

• Task: Ask AI to generate at least 3 assert-based test cases for

a BankAccount class and then implement the class.

• Methods:

o deposit(amount) o

withdraw(amount) o

get_balance()

Example Assert Test Cases: acc

= BankAccount(1000)

acc.deposit(500) assert

acc.get_balance() == 1500

acc.withdraw(300) assert

acc.get_balance() == 1200

Expected Output #4:

• Fully functional class that passes all AI-generated assertions

```python
class BankAccount:
    def __init__(self, account_number, balance=0):
        self.account_number = account_number
        self.balance = balance

    def deposit(self, amount):
        if amount > 0:
            self.balance += amount
            return True
        return False

    def withdraw(self, amount):
        if 0 < amount <= self.balance:
            self.balance -= amount
            return True
        return False
    def get_balance(self):
        return self.balance
# Test cases for the BankAccount class
acc = BankAccount(1000)
acc.deposit(500)
assert acc.get_balance() == 1500
acc.withdraw(300)
assert acc.get_balance() == 1200
print("All test cases for BankAccount passed!")
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\ajayv\OneDrive\Desktop\AI> & C:/Users/ajayv/AppData/Local/Python/pythoncore-3.14-64/python.exe c:/Users/ajayv/OneDrive/Desktop/AI/s
trong.py
Traceback (most recent call last):
  File "c:\Users\ajayv\OneDrive\Desktop\AI\strong.py", line 22, in <module>
    assert acc.get_balance() == 1500
           ^^^^^^^^^^^^^^^^^^^^^^^^^
AssertionError
PS C:\Users\ajayv\OneDrive\Desktop\AI>
```

Task Description #5

(Email ID Validation – Apply AI for Data Validation) •

Task: Use AI to generate at least 3 assert test cases for a

function validate_email(email) and implement the function.

• Requirements:

o Must contain @ and . o Must not start or end

with special characters. o Should handle

invalid formats gracefully.

Example Assert Test Cases:

assert validate_email("user@example.com") == True

assert validate_email("userexample.com") == False assert

validate_email("@gmail.com") == False

Expected Output #5:

• Email validation function passing all AI-generated test cases

and handling edge cases correctly.