Assignment-8.5

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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!")
```

```
PROBLEMS 83  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS D:\AI> & "C:/Users/sande/miniconda3/sr univ/python.exe" "d:/AI/binary to decimal.py"
All test cases for is_valid_username passed!
PS D:\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

```
def classify_value(x):
    if x < 0:
        return "Negative"
    elif x == 0:
        return "Zero"
    elif x%2 == 0:
        return "Even"
    else:
        return "Odd"
# Test cases for the classify_value function
assert classify_value(8) == "Even"
assert classify_value(7) == "Odd"
assert classify_value("abc") == "Invalid Input"
```

```
PROBLEMS 83  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS D:\AI> & "C:/Users/sande/miniconda3/sr univ/python.exe" "d:/AI/binary to decimal.py"
Traceback (most recent call last):
  File "d:\AI\binary to decimal.py", line 42, in <module>
    assert classify_value("abc") == "Invalid Input"
           ^^^^^^^^^^^^^^^^^^^^^
  File "d:\AI\binary to decimal.py", line 31, in classify_value
    if x < 0:
       ^^^^^
TypeError: '<' not supported between instances of 'str' and 'int'
PS D:\AI>
```

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

```
44  def is_palindrome(text):
45      cleaned_text = ''.join(char.lower() for char in text if char.isalnum())
46      return cleaned_text == cleaned_text[::-1]
47  # Test cases for the is_palindrome function
48  assert is_palindrome("Madam") == True
49  assert is_palindrome("A man a plan a canal Panama") ==True
50  assert is_palindrome("Python") == False
51  print("All test cases for is_palindrome passed!")
```

```
PROBLEMS 83   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

PS D:\AI> & "C:/Users/sande/miniconda3/sr univ/python.exe" "d:/AI/binary to decimal.py"
All test cases for is_palindrome passed!
PS D:\AI>
```

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

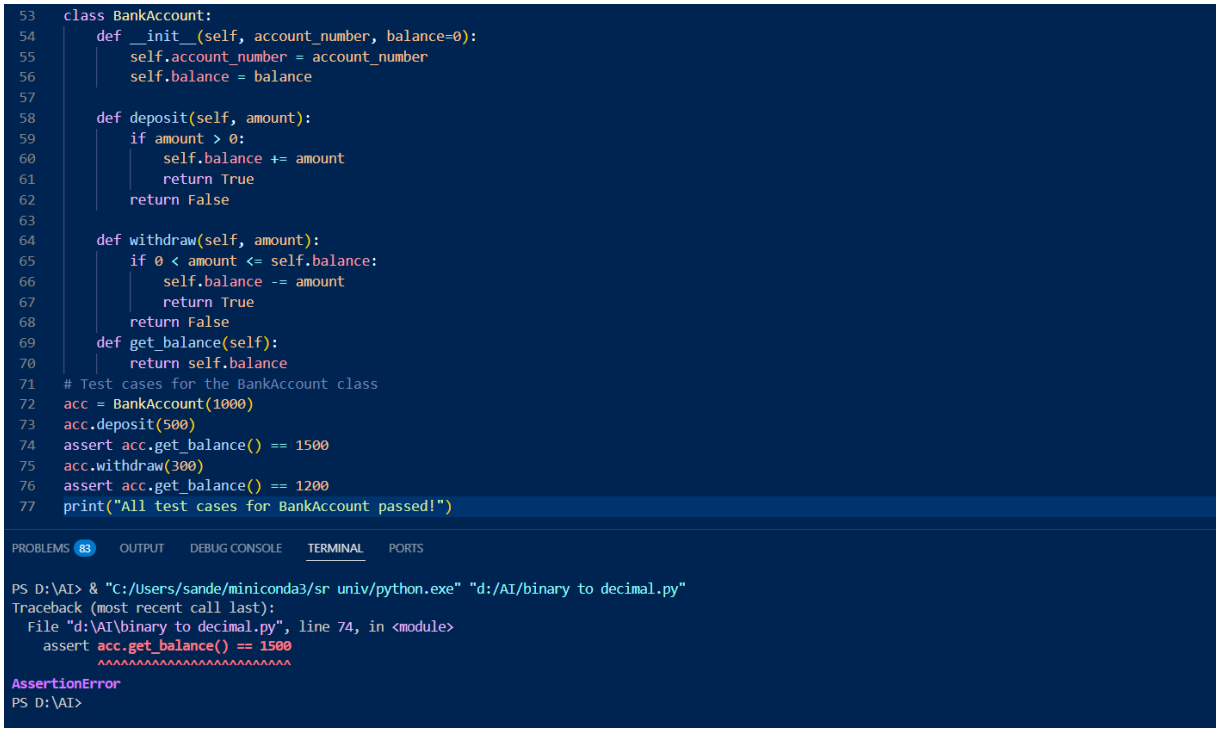
acc.get_balance() == 1500

acc.withdraw(300) assert

acc.get_balance() == 1200

Expected Output #4:

• Fully functional class that passes all AI-generated assertions.



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.

```python
def validate_email(email):
    if '@' not in email or '.' not in email:
        return False
    at_index = email.index('@')
    dot_index = email.rindex('.')
    if at_index < 1 or dot_index < at_index + 2 or dot_index >= len(email) - 1:
        return False
    return True
# Test cases for the validate_email function
assert validate_email("user@example.com") == True
assert validate_email("userexample.com") == False
assert validate_email("@gmail.com") == False
print("All test cases for validate_email passed!")
```

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```
PS D:\AI> & "C:/Users/sande/miniconda3/sr univ/python.exe" "d:/AI/binary to decimal.py"
All test cases for validate_email passed!
PS D:\AI>
```