Assignment

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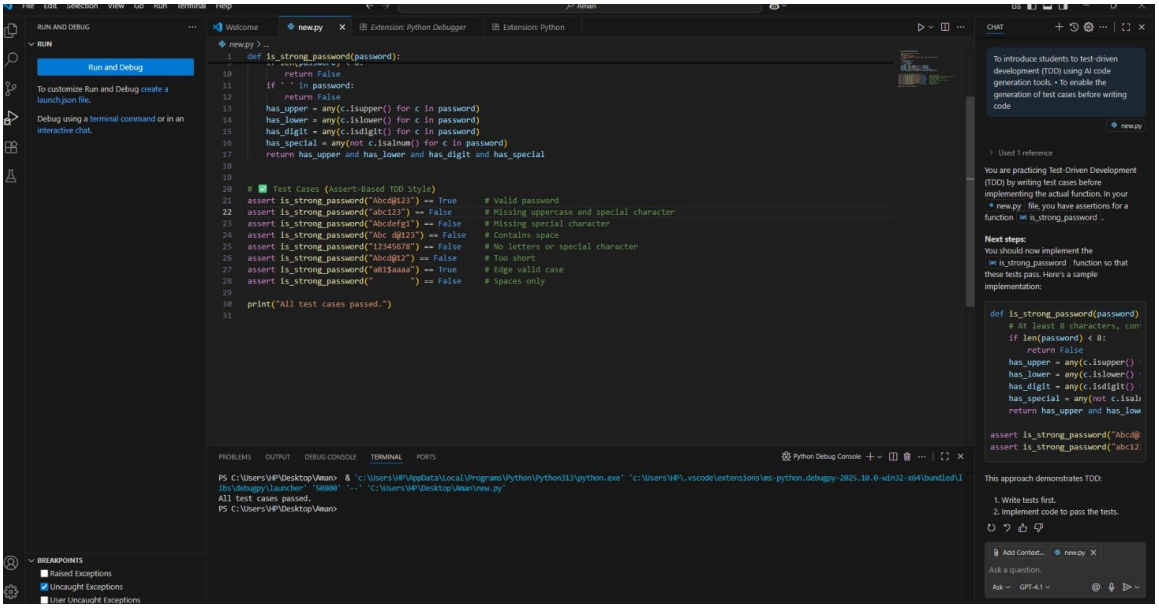
Test-Driven Development with AI – Generating and Working with Test Cases :

Task #1 :

(Password Strength Validator – Apply AI in
Security Context)
• **Task:** Apply AI to generate at least 3 assert test cases for is_strong_password(password) and implement the validator function.
• **Requirements:**
o Password must have at least 8 characters.
o Must include uppercase, lowercase, digit, and special character.
o Must not contain spaces.
Example Assert Test Cases:
assert is_strong_password("Abcd@123") == True
assert is_strong_password("abcd123") == False
assert is_strong_password("ABCD@1234") == True

Expected Output #1:
• Password validation logic passing all AI-generated test cases

Code , Output :



Task #2 :

(Number Classification with Loops – Apply AI for

Edge Case Handling)

- **Task:** Use AI to generate at least 3 assert test cases for a classify_number(n) function. Implement using loops.

• **Requirements:**

- Classify numbers as Positive, Negative, or Zero.
- Handle invalid inputs like strings and None.
- Include boundary conditions (-1, 0, 1).

Example Assert Test Cases:

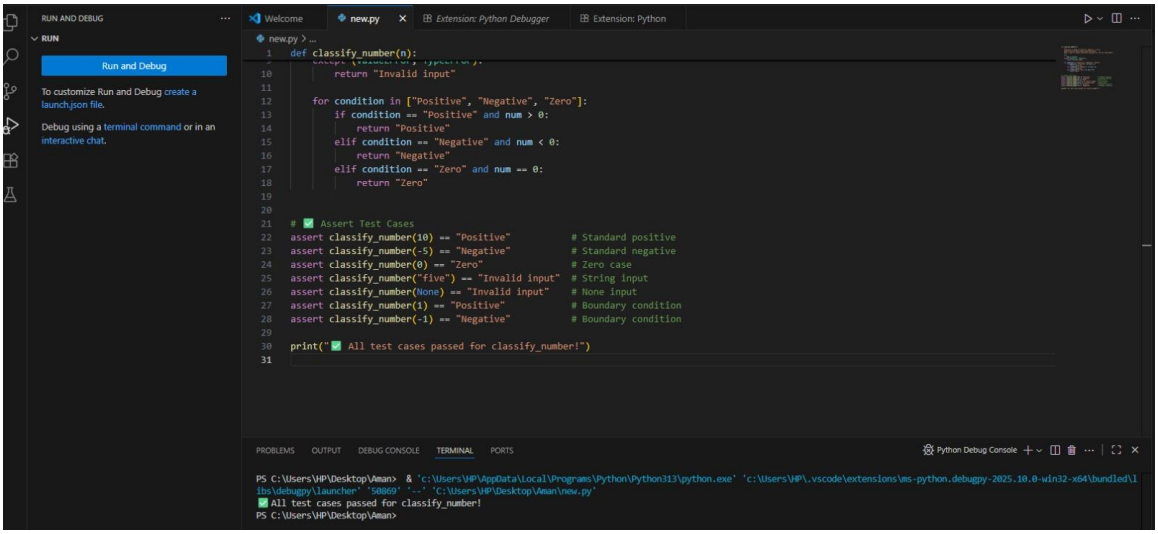
assert classify_number(10) == "Positive"

assert classify_number(-5) == "Negative"

assert classify_number(0) == "Zero"

Expected Output #2:

• Classification logic passing all assert tests.



Task #3 :

(Anagram Checker – Apply AI for String Analysis)

• **Task:** Use AI to generate at least 3 assert test cases for is_anagram(str1, str2) and implement the function.

• **Requirements:**

o Ignore case, spaces, and punctuation.

o Handle edge cases (empty strings, identical words).

Example Assert Test Cases:

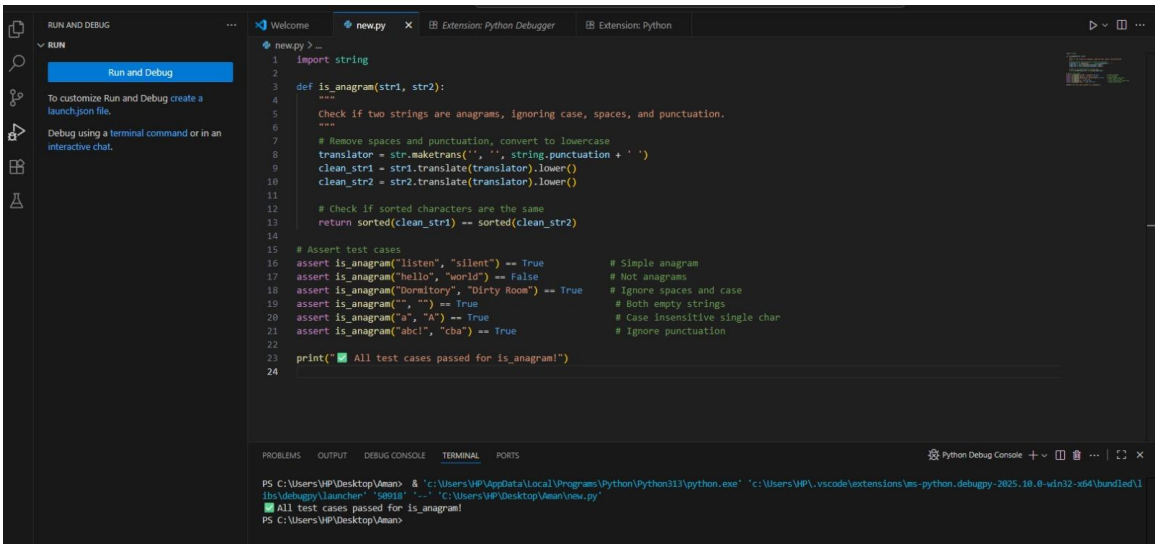
assert is_anagram("listen", "silent") == True

assert is_anagram("hello", "world") == False

assert is_anagram("Dormitory", "Dirty Room") == True

Expected Output #3:

• Function correctly identifying anagrams and passing all AI-generated tests.



Task #4 :

(Inventory Class – Apply AI to Simulate Real-World Inventory System)

• **Task:** Ask AI to generate at least 3 assert-based tests for an Inventory class with stock management.

• **Methods:**

o add_item(name, quantity)

o remove_item(name, quantity)

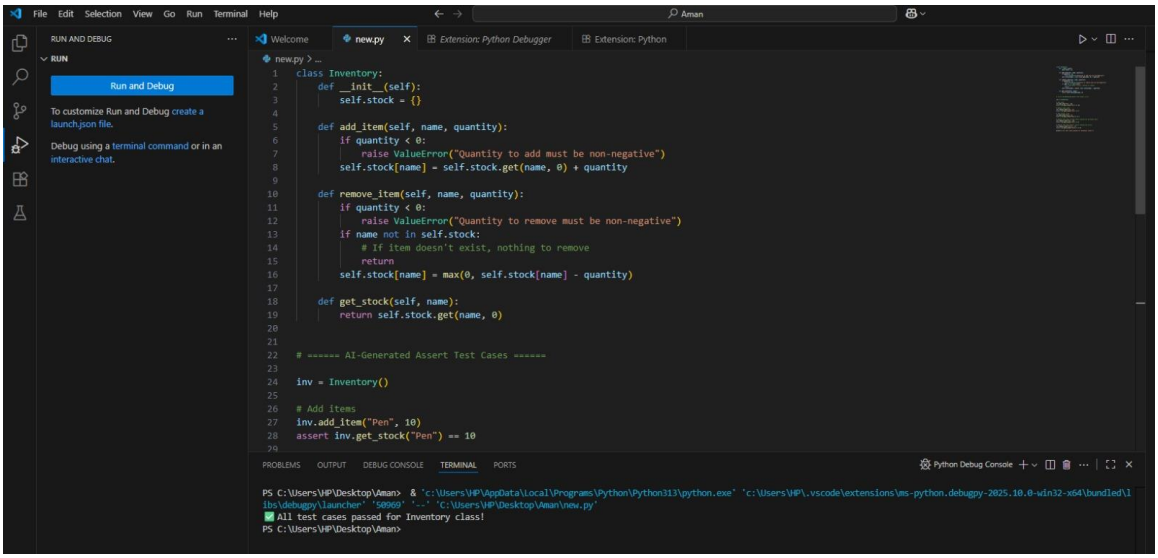
o get_stock(name)

Example Assert Test Cases:

```
inv = Inventory()
inv.add_item("Pen", 10)
assert inv.get_stock("Pen") == 10
inv.remove_item("Pen", 5)
assert inv.get_stock("Pen") == 5
inv.add_item("Book", 3)
assert inv.get_stock("Book") == 3
```

Expected Output #4:

• Fully functional class passing all assertions



Task #5:

(Date Validation & Formatting – Apply AI for Data Validation)

• **Task:** Use AI to generate at least 3 assert test cases for validate_and_format_date(date_str) to check and convert dates.

• **Requirements:**

o Validate "MM/DD/YYYY" format.

o Handle invalid dates.

o Convert valid dates to "YYYY-MM-DD".

Example Assert Test Cases:

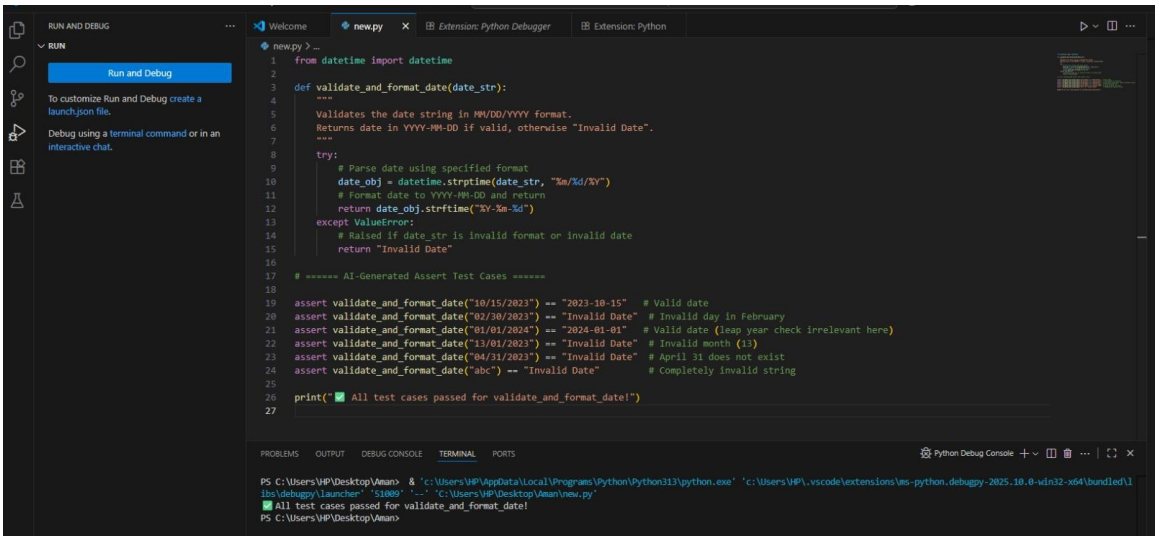
assert validate_and_format_date("10/15/2023") == "2023-10-15"

assert validate_and_format_date("02/30/2023") == "Invalid Date"

assert validate_and_format_date("01/01/2024") == "2024-01-01"

Expected Output #5:

• Function passes all AI-generated assertions and handles edge cases.



<u>Observation:</u>

Task 1 – Password Strength Validator
The function successfully validated password strength using rules for length, uppercase, lowercase, digits, special characters, and no spaces. All test cases passed.

Task 2 – Number Classification
The function correctly classified numbers as Positive, Negative, or Zero, and handled invalid inputs like strings and None. Boundary conditions (-1, 0, 1) worked as expected.

Task 3 – Anagram Checker
The function correctly identified anagrams while ignoring spaces, case, and punctuation. Edge cases like empty strings and identical words were handled properly.

Task 4 – Inventory Class
The inventory system supported adding, removing, and checking stock. It also handled invalid quantities, missing items, and insufficient stock. All assertions passed.

Task 5 – Date Validation & Formatting
The function validated dates in MM/DD/YYYY format and converted them to YYYY-MM-DD. Invalid dates (like Feb 30, month=0, wrong day count) were rejected successfully.