

AI ASSISTED CODING

Lab 8.1

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Task Description #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.

Prompt:

```
def is_strong_password():
```

Give 3 assert test cases

Given Code:

```

lab8.py > ...
1  def is_strong_password(password):
2      if len(password) < 8:
3          return False
4
5      has_upper = any(c.isupper() for c in password)
6      has_lower = any(c.islower() for c in password)
7      has_digit = any(c.isdigit() for c in password)
8      has_special = any(not c.isalnum() for c in password)
9
10     return has_upper and has_lower and has_digit and has_special
11
12 # Generate 3 assert test cases
13 assert is_strong_password("StrongP@ss1") == True
14 assert is_strong_password("weakpass") == False
15 assert is_strong_password("NoSpecialChar1") == False

```

Task Description #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"

```

Prompt:

#classify_number(n): give 3 assert test cases and also implement the function with loops

Given Code:

```
#classify_number(n): give 3 assert test cases and also implement the function with loops
def classify_number(n):
    if n>0:
        return "Positive"
    elif n<0:
        return "Negative"
    else:
        return "Zero"
# Test cases
assert classify_number(5) == "Positive"
assert classify_number(-3) == "Negative"
assert classify_number(0) == "Zero"
```

Task Description #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:

- Ignore case, spaces, and punctuation.
- 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.

Prompt:

#is_anagram(str1,str2) give 3 assert test cases and also implement the function

Given Code:

```
#is_anagram(str1,str2) give 3 assert test cases and also implement the function
def is_anagram(str1, str2):
    # Remove spaces and convert to lowercase
    str1 = str1.replace(" ", "").lower()
    str2 = str2.replace(" ", "").lower()

    # Sort the characters of both strings and compare
    return sorted(str1) == sorted(str2)
# Test cases
assert is_anagram("listen", "silent") == True
assert is_anagram("triangle", "integral") == True
assert is_anagram("apple", "pale") == False
```

Task Description #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:

- add_item(name, quantity)
- remove_item(name, quantity)
- 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.

Prompt:

"""Give python code for inventory class with stock management

methods:

```
add_item(name, quantity)  
remove_item(name, quantity)  
get_stock(name)
```

give 3 assert test cases for it"""

Given Code:

```

1  """Give python code for inventory class with stock management
2  methods:
3  add_item(name, quantity)
4  remove_item(name, quantity)
5  get_stock(name)
6  give 3 assert test cases for it"""
7  class Inventory:
8      def __init__(self):
9          self.stock = {}
10
11     def add_item(self, name, quantity):
12         if name in self.stock:
13             self.stock[name] += quantity
14         else:
15             self.stock[name] = quantity
16
17     def remove_item(self, name, quantity):
18         if name in self.stock and self.stock[name] >= quantity:
19             self.stock[name] -= quantity
20             if self.stock[name] == 0:
21                 del self.stock[name]
22             else:
23                 raise ValueError("Not enough stock to remove or item does not exist.")
24
25     def get_stock(self, name):
26         return self.stock.get(name, 0)
27
# Test cases
28 inventory = Inventory()
29 inventory.add_item("apple", 10)
30 inventory.add_item("banana", 5)
31 assert inventory.get_stock("apple") == 10
32 assert inventory.get_stock("banana") == 5
33 inventory.remove_item("apple", 3)
34 assert inventory.get_stock("apple") == 7
35 inventory.remove_item("banana", 5)
36 assert inventory.get_stock("banana") == 0
37 assert inventory.get_stock("orange") == 0 # Item not added yet
38 inventory.add_item("orange", 8)
39 assert inventory.get_stock("orange") == 8
40 inventory.remove_item("orange", 8)
41 assert inventory.get_stock("orange") == 0

```

Task Description #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:

- Validate "MM/DD/YYYY" format.
- Handle invalid dates.
- 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.

Prompt:

#validate_and_format_date(date_str) give python code and 3 assert test cases

Given Code:

```
#validate_and_format_date(date_str) give python code and 3 assert test cases
def validate_and_format_date(date_str):
    from datetime import datetime

    try:
        # Try to parse the date string
        date_obj = datetime.strptime(date_str, '%Y-%m-%d')
        # Return the date in the desired format
        return date_obj.strftime('%d/%m/%Y')
    except ValueError:
        # If parsing fails, return None
        return None
# Test cases
assert validate_and_format_date("2023-03-15") == "15/03/2023"
assert validate_and_format_date("1999-12-31") == "31/12/1999"
assert validate_and_format_date("2023-02-30") is None # Invalid date
```