

# AI ASSISTED CODING

## Assignment 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 AND CODE:

```
# generate a python code for isstrongpassword function that checks if a password is strong
# using validator function, taking dynamic input.

def validator(password):
    if len(password) < 8:
        return False
    has_upper = False
    has_lower = False
    has_digit = False
    has_special = False
    special_chars = "!@#$%^&*()"
    for ch in password:
        if ch.isupper():
            has_upper = True
        if ch.islower():
            has_lower = True
        if ch.isdigit():
            has_digit = True
        if ch in special_chars:
            has_special = True
    return has_upper and has_lower and has_digit and has_special

def isStrongPassword():
    password = input("Enter password: ")
    return validator(password)

# generate 3 assert testcases to validate the function.
assert validator("Abcd@123") == True
assert validator("abcd123") == False
assert validator("ABCD@1234") == 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"
```

Expected Output #2:

- Classification logic passing all assert tests.

**PROMPT AND CODE:**

```
# generate a python code with function classify number that takes a number as input
# and classifies it as positive, negative, or zero.

def classify_number(num):
    if num > 0:
        return "Positive"
    elif num < 0:
        return "Negative"
    else:
        return "Zero"

print(classify_number(5))

# generate 3 assert testcases to validate the function.
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
```

**PROMPT AND CODE:**

Expected Output #3:

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

```
# write a function isanagram that takes two strings as input and checks if they are anagrams

def isanagram(str1, str2):
    import re

    # Remove spaces and punctuation, and convert to lowercase
    str1_clean = re.sub(r'[\W_]+', '', str1).lower()
    str2_clean = re.sub(r'[\W_]+', '', str2).lower()

    # Sort the characters of both strings and compare
    return sorted(str1_clean) == sorted(str2_clean)

# generate 3 assert testcases to validate the function.
assert isanagram("listen", "silent") == True
assert isanagram("hello", "world") == False
assert isanagram(["dirty room", "dormitory"]) == True
```

#### **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:

- 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.

#### **PROMPT AND CODE:**

```

# generate an inventory class that allows to add_items, remove_items and get_stock.

class Inventory:
    def __init__(self):
        self.stock = {}

    def add_items(self, item, quantity):
        if item in self.stock:
            self.stock[item] += quantity
        else:
            self.stock[item] = quantity

    def remove_items(self, item, quantity):
        if item in self.stock and self.stock[item] >= quantity:
            self.stock[item] -= quantity
            if self.stock[item] == 0:
                del self.stock[item]
            return True
        return False

    def get_stock(self, item):
        return self.stock.get(item, 0)

# generate 3 assert testcases to validate the function.
inv = Inventory()
inv.add_items("pen", 10)
assert inv.get_stock("pen") == 10
inv.remove_items("pen", 5)
assert inv.get_stock("pen") == 5
inv.add_items("notebook", 3)
assert inv.get_stock("notebook") == 3

```

#### 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 AND CODE:

```
# write a validate_and_format_date function

from datetime import datetime

def validate_and_format_date(date_str):
    try:
        date_obj = datetime.strptime(date_str, "%m/%d/%Y")
        return date_obj.strftime("%Y-%m-%d")
    except ValueError:
        return "Invalid date"

# Test cases
assert validate_and_format_date("12/31/2020") == "2020-12-31"
assert validate_and_format_date("02/29/2020") == "2020-02-29" # Leap year
assert validate_and_format_date("13/01/2020") == "Invalid date"
assert validate_and_format_date("04/31/2020") == "Invalid date" # April has 30 days

print("All tests passed ✅")
```