

Lab Assignment-08

Name:Anand

Hallticket:2303A51090

Batch-02

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:
 - Password must have at least 8 characters.
 - Must include uppercase, lowercase, digit, and special character.
 - 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.

```
❶ assg_08.py
❷ 1  def password_check(password):
    if Len(password) < 8:
        return False
    if not any(char.isupper() for char in password):
        return False
    if not any(char.islower() for char in password):
        return False
    if not any(char.isdigit() for char in password):
        return False
    if not any(char in "!@#$%^&*()-_=+[{}]/;:\\"',.<>?/" for char in password):
        return False
    return True
```

```
assg_08.py > ...
1 def password_check(password):
2     if len(password) < 8:
3         return False
4     if not any(char.isupper() for char in password):
5         return False
6     if not any(char.islower() for char in password):
7         return False
8     if not any(char.isdigit() for char in password):
9         return False
10    if not any(char in "!@#$%^&*()-_=+[{}];:'\\",.<>?/" for char in password):
11        return False
12    return True
13 #assert testcases
14 assert password_check("Password123!") == True
15 assert password_check("pass") == False
16 assert password_check("PASSWORD123") == False
17 assert password_check("password123") == False
18 assert password_check("Password") == False
19 assert password_check("Password123") == False
20 assert password_check("Password!") == False
21 assert password_check("12345678") == False
22 assert password_check("!@#$%^&*") == False
23 print("All test cases passed!")
24
```

Code:

```
def password_check(password):
    if len(password) < 8:
        return False
    if not any(char.isupper() for char in password):
        return False
    if not any(char.islower() for char in password):
        return False
    if not any(char.isdigit() for char in password):
        return False
    if not any(char in "!@#$%^&*()-_=+[{}];:'\\",.<>?/" for char in
password):
        return False
    return True
#assert testcases
assert password_check("Password123!") == True
assert password_check("pass") == False
assert password_check("PASSWORD123") == False
assert password_check("password123") == False
assert password_check("Password") == False
assert password_check("Password123") == False
assert password_check("Password!") == False
assert password_check("12345678") == False
assert password_check("!@#$%^&*") == False
print("All test cases passed!")
```

output:

```
PS C:\Users\arell\Music\aiac> python -u "c:\Users\arell\Music\aiac\assg_08.py"
All test cases passed!
PS C:\Users\arell\Music\aiac> []
```

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.

```
25
26  def classify_number(n):
27      if n > 0:
28          return "Positive"
29      elif n < 0:
30          return "Negative"
31      else:
32          return "Zero"
33 assert classify_number(10) == "Positive"
```

```

25
26 def classify_number(n):
27     if n > 0:
28         return "Positive"
29     elif n < 0:
30         return "Negative"
31     else:
32         return "Zero"
33 assert classify_number(10) == "Positive"
34 assert classify_number(-5) == "Negative"
35 assert classify_number(0) == "Zero"
36 print("All test cases passed!")

```

Code:

```

def classify_number(n):
    if n > 0:
        return "Positive"
    elif n < 0:
        return "Negative"
    else:
        return "Zero"
assert classify_number(10) == "Positive"
assert classify_number(-5) == "Negative"
assert classify_number(0) == "Zero"
print("All test cases passed!")

```

output:

```

PS C:\Users\arell\Music\aiac> python -u "c:\Users\arell\Music\aiac\assg_08.py"
All test cases passed!
PS C:\Users\arell\Music\aiac> []

```

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.

```
38 def is_anagram(str1, str2):
    return sorted(str1.replace(" ", "")).lower() == sorted(str2.replace(" ", "")).lower()
```

```
38 def is_anagram(str1, str2):
39     return sorted(str1.replace(" ", "").lower()) == sorted(str2.replace(" ", "").lower())
40 assert is_anagram("listen", "silent") == True
41 assert is_anagram("hello", "world") == False
42 assert is_anagram("Dormitory", "Dirty Room") == True
43 assert is_anagram("The eyes", "They see") == True
44 assert is_anagram("Astronomer", "Moon starer") == True
45 assert is_anagram("Conversation", "Voices rant on") == True
46 print("All test cases passed!")
```

Code:

```
def is_anagram(str1, str2):
    return sorted(str1.replace(" ", "").lower()) == sorted(str2.replace(" ", "").lower())
assert is_anagram("listen", "silent") == True
assert is_anagram("hello", "world") == False
assert is_anagram("Dormitory", "Dirty Room") == True
assert is_anagram("The eyes", "They see") == True
assert is_anagram("Astronomer", "Moon starer") == True
assert is_anagram("Conversation", "Voices rant on") == True
print("All test cases passed!")
```

output:

```
All test cases passed!
```

```
PS C:\Users\arell\Music\aiac> []
```

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.

```
48  class inventory:
49  |  def __init__(self):
      self.items = {}
def add_item(self, item, quantity):
    if item in self.items:
        self.items[item] += quantity
    else:
        self.items[item] = quantity
def remove_item(self, item, quantity):
    if item in self.items and self.items[item] >= quantity:
        self.items[item] -= quantity
        if self.items[item] == 0:
            del self.items[item]
    else:
        raise ValueError("Not enough items in inventory")
def get_quantity(self, item):
    return self.items.get(item, 0)
```

```

48 class inventory:
49     def __init__(self):
50         self.items = {}
51
52     def add_item(self, item, quantity):
53         if item in self.items:
54             self.items[item] += quantity
55         else:
56             self.items[item] = quantity
57
58     def remove_item(self, item, quantity):
59         if item in self.items:
60             if self.items[item] >= quantity:
61                 self.items[item] -= quantity
62                 if self.items[item] == 0:
63                     del self.items[item]
64             else:
65                 raise ValueError("Not enough quantity to remove")
66         else:
67             raise ValueError("Item not found in inventory")
68
69     def get_stock(self, item):
70         return self.items.get(item, 0)
71 inv = inventory()
72
73 inv.add_item("apple", 10)
74 assert inv.get_stock("apple") == 10
75
76 inv.add_item("banana", 5)
77 assert inv.get_stock("banana") == 5
78
79 inv.remove_item("apple", 3)
80 assert inv.get_stock("apple") == 7
81
82 inv.remove_item("banana", 5)
83 assert inv.get_stock("banana") == 0
84
85 print("All test cases passed!")
86

```

Code:

```

class inventory:
    def __init__(self):
        self.items = {}

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

    def remove_item(self, item, quantity):
        if item in self.items:
            if self.items[item] >= quantity:
                self.items[item] -= quantity
                if self.items[item] == 0:
                    del self.items[item]
            else:
                raise ValueError("Not enough quantity to remove")

```

```

    else:
        raise ValueError("Item not found in inventory")

    def get_stock(self, item):
        return self.items.get(item, 0)
inv = inventory()

inv.add_item("apple", 10)
assert inv.get_stock("apple") == 10

inv.add_item("banana", 5)
assert inv.get_stock("banana") == 5

inv.remove_item("apple", 3)
assert inv.get_stock("apple") == 7

inv.remove_item("banana", 5)
assert inv.get_stock("banana") == 0

print("All test cases passed!")

```

output:

```

All test cases passed!
PS C:\Users\arell\Music\aiac> []

```

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.

```

87 def validate_and_format_date(date_str):
88     import re
89     from datetime import datetime
90     pattern = r'^\d{2}/\d{2}/\d{4}$'
91     if not re.match(pattern, date_str):
92         raise ValueError("Date must be in the format DD/MM/YYYY")

```

```

87 def validate_and_format_date(date_str):
88     import re
89     from datetime import datetime
90     pattern = r'^\d{2}/\d{2}/\d{4}$'
91     if not re.match(pattern, date_str):
92         return "Invalid Date"
93     try:
94         date_obj = datetime.strptime(date_str, "%m/%d/%Y")
95         return date_obj.strftime("%Y-%m-%d")
96     except ValueError:
97         return "Invalid Date"
98 assert validate_and_format_date("12/31/2020") == "2020-12-31"
99 assert validate_and_format_date("31/12/2020") == "Invalid Date"
100 assert validate_and_format_date("02/30/2020") == "Invalid Date"
101 assert validate_and_format_date("01/01/2021") == "2021-01-01"
102 assert validate_and_format_date("13/01/2020") == "Invalid Date"
103 print(["All test cases passed!"])
104

```

Code:

```

def validate_and_format_date(date_str):
    import re
    from datetime import datetime
    pattern = r'^\d{2}/\d{2}/\d{4}$'
    if not re.match(pattern, date_str):
        return "Invalid Date"
    try:
        date_obj = datetime.strptime(date_str, "%m/%d/%Y")
        return date_obj.strftime("%Y-%m-%d")
    except ValueError:
        return "Invalid Date"
assert validate_and_format_date("12/31/2020") == "2020-12-31"
assert validate_and_format_date("31/12/2020") == "Invalid Date"
assert validate_and_format_date("02/30/2020") == "Invalid Date"
assert validate_and_format_date("01/01/2021") == "2021-01-01"
assert validate_and_format_date("13/01/2020") == "Invalid Date"
print("All test cases passed!")

```

output:

```

PS C:\Users\arell\Music\aiac> python -u "c:\Users\arell\Music\aiac\assg_08.py"
All test cases passed!
PS C:\Users\arell\Music\aiac> []

```