

ASSIGNMENT – 8.1

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Batch-28

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.

#Apply AI to generate at least 3 assert test cases for is_strong_password(password) and implement the validator function

```
def is_strong_password(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 test cases
assert is_strong_password("Password123!") == True, "Test case 1 failed"
assert is_strong_password("weakpass") == False, "Test case 2 failed"
assert is_strong_password("Short1!") == False, "Test case 3 failed"
print("All test cases passed!")
```

#Task Description #2 (Number Classification with Loops – Apply AI for Edge Case Handling)

#Write a Python function classify_numbers(n) that classifies numbers from 1 to n as 'Even', 'Odd', or 'Prime'. Use loops to iterate through the numbers and apply AI techniques to handle edge cases, such as negative numbers or non-integer inputs. Provide the implementation of the function along with test cases.

```
def classify_numbers(n):
    if not isinstance(n, int) or n < 1:
        return "Input must be a positive integer."

    classifications = {}
```

```

    for num in range(1, n + 1):
        if num % 2 == 0:
            classifications[num] = 'Even'
        else:
            classifications[num] = 'Odd'

    if num > 1 and all(num % i != 0 for i in range(2, int(num**0.5) + 1)):
        classifications[num] += ' and Prime'

    return classifications # Test
cases
print(classify_numbers(10))
print(classify_numbers(-5))
print(classify_numbers(5.5))

```

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:**
 - o Ignore case, spaces, and punctuation.
 - o Handle edge cases (empty strings, identical words).

```

import string
def is_anagram(str1, str2):
    # Remove spaces and punctuation, and convert to lowercase
    translator = str.maketrans("", "", string.punctuation + ' ')
    str1_cleaned = str1.translate(translator).lower()
    str2_cleaned = str2.translate(translator).lower()
    return sorted(str1_cleaned) == sorted(str2_cleaned)

# Assert test cases
assert is_anagram("Listen", "Silent") == True, "Test case 1 failed"
assert is_anagram("Triangle", "Integral") == True, "Test case 2 failed"
assert is_anagram("Apple", "Pabble") == False, "Test case 3 failed"
assert is_anagram("", "") == True, "Test case 4 failed"
assert is_anagram("Dormitory", "Dirty Room") == True, "Test case 5 failed"
print("All test cases passed!")

```

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

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

def remove_item(self, name, quantity):    if name in
self.stock and self.stock[name] >= quantity:
self.stock[name] -= quantity
return True
return False

def get_stock(self, name):
return self.stock.get(name, 0)
# Assert test cases inventory =
Inventory()
inventory.add_item("Apple", 10)
assert inventory.get_stock("Apple") == 10, "Test case 1 failed" inventory.remove_item("Apple", 5)
assert inventory.get_stock("Apple") == 5, "Test case 2 failed" assert
inventory.remove_item("Apple", 10) == False, "Test case 3 failed" assert
inventory.get_stock("Banana") == 0, "Test case 4 failed" print("All test cases
passed!")

```

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:**
 - o Validate "MM/DD/YYYY" format. o Handle invalid dates.
 - o Convert valid dates to "YYYY-MM-DD".

```
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 format. Please use MM/DD/YYYY."

# Assert test cases
assert validate_and_format_date("12/31/2020") == "2020-12-31", "Test case 1 failed"
assert validate_and_format_date("02/30/2020") == "Invalid date format. Please use MM/DD/YYYY.",
"Test case 2 failed"
assert validate_and_format_date("2020/12/31") == "Invalid date format. Please use MM/DD/YYYY.",
"Test case 3 failed"
assert validate_and_format_date("01/01/2021") == "2021-01-01", "Test case 4 failed"
print("All test cases passed!")
```