

ASSIGNMENT-8.5

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Batch:36

Task Description #1 (Username Validator – Apply AI in Authentication Context)

- Task: Use AI to generate at least 3 assert test cases for a function `is_valid_username(username)` and then implement the function using Test-Driven Development principles.

- Requirements:

- Username length must be between 5 and 15 characters.
- Must contain only alphabets and digits.
- Must not start with a digit.
- No spaces allowed.

Example Assert Test Cases:

```
assert is_valid_username("User123") == True
```

```
assert is_valid_username("12User") == False
```

```
assert is_valid_username("Us er") == False
```

Expected Output #1:

- Username validation logic successfully passing all AI-generated test cases.

Output:

The screenshot shows the Gemini AI development environment. The main area displays a Python script named 'username validator' with the following code:

```

# Function
def is_valid_username(username):
    if not isinstance(username, str):
        return False
    if len(username) < 5:
        return False
    if not username.isalnum():
        return False
    if username[0].isdigit():
        return False
    return True

# Test cases
assert is_valid_username('user1')
assert is_valid_username('user_1')
assert is_valid_username('user1_')

```

A modal window titled '#1 (Username Validator – Apply AI in Authentication Context)' is open over the code. It contains the following text:

- <> Empty cell
- Let's implement the username validator function and its test cases in the selected cell.

At the bottom of the modal are buttons: 'Accept & Run' (with a play icon), 'Accept' (with a checkmark icon), and 'Cancel' (with a cross icon). Below the modal, a message says 'What can I help you build?' followed by a plus sign '+'. To the right, it says 'Gemini 2.5 Flash ▾ >'.

Task Description #2 (Even–Odd & Type Classification – Apply AI for Robust Input Handling)

- Task: Use AI to generate at least 3 assert test cases for a function `classify_value(x)` and implement it using conditional logic and loops.
- Requirements:
 - o If input is an integer, classify as "Even" or "Odd".
 - o If input is 0, return "Zero".
 - o If input is non-numeric, return "Invalid Input".

Example Assert Test Cases:

```

assert classify_value(8) == "Even"
assert classify_value(7) == "Odd"
assert classify_value("abc") == "Invalid Input"

```

Expected Output #2:

- Function correctly classifying values and passing all test cases.

Output:

The screenshot shows the Gemini AI interface. On the left, there's a code editor window titled 'Gemini' containing Python code for a 'classify_input' function and some test cases. A tooltip box is overlaid on the code, providing instructions: 'Let's create a Python function classify_input that determines if an input is an even or odd integer, or classifies its type if it's not an integer, and add some test cases.' Below the code editor, a text input field says 'What can I help you build?'. At the bottom right, it says 'Gemini 2.5 Flash'.

```
+# Function
+def classify_input(value):
+    if isinstance(value, int):
+        if value % 2 == 0:
+            return f"{value} is an even integer."
+        else:
+            return f"{value} is an odd integer."
+    else:
+        return f"{value} is not an integer."
+
+# Test cases
+assert classify_input(4) == "4 is an even integer."
+assert classify_input(7) == "7 is an odd integer."
+assert classify_input("hello") == "hello is not an integer."
+assert classify_input(3.14) == "3.14 is not an integer."
+assert classify_input([1, 2]) == "[1, 2] is not an integer."
```

Task Description #3 (Palindrome Checker – Apply AI for String Normalization)

- Task: Use AI to generate at least 3 assert test cases for a function `is_palindrome(text)` and implement the function.
- Requirements:
 - Ignore case, spaces, and punctuation.
 - Handle edge cases such as empty strings and single characters.

Example Assert Test Cases:

```
assert is_palindrome("Madam") == True
```

```
assert is_palindrome("A man a plan a canal Panama") ==  
True
```

```
assert is_palindrome("Python") == False
```

Expected Output #3:

- Function correctly identifying palindromes and passing all

AI-generated tests.

Output:

The screenshot shows a code editor interface with a sidebar on the left containing icons for file operations like New, Open, Save, and Run. The main area is titled "Task-03" and contains a code block labeled "Gemini". The code is as follows:

```
+# Function
+# Function
+def is_palindrome(text):
+    # Normalize the string: convert to lowercase and remove non-alphanumeric characters
+    normalized_text = text.lower().replace(" ", "")
+    # Check if the normalized text is equal to its reverse
+    return normalized_text == normalized_text[::-1]
+
+# Test cases
+assert is_palindrome("Racecar") == True
+assert is_palindrome("A man a plan a canal Panama") == True
+assert is_palindrome("Hello") == False
+assert is_palindrome("No") == True
+assert is_palindrome("Python") == False
+assert is_palindrome("Was it a car or a cat I saw") == True
```

A modal window titled "#3 (Palindrome Checker – Apply AI for String Normalization)" is open, containing the following text:

Let's create a Python function `is_palindrome` that checks if a string is a palindrome, ignoring non-alphanumeric characters and case, and add some test cases.

Accept & Run Accept Cancel

What can I help you build?

Gemini 2.5 Flash

Task Description #4 (BankAccount Class – Apply AI for Object-Oriented Test-Driven Development)

- Task: Ask AI to generate at least 3 assert-based test cases for

a BankAccount class and then implement the class.

- Methods:

- o `deposit(amount)`

- o `withdraw(amount)`

- o `get_balance()`

Example Assert Test Cases:

```
acc = BankAccount(1000)
```

```
acc.deposit(500)
```

```
assert acc.get_balance() == 1500
```

```
acc.withdraw(300)
```

```
assert acc.get_balance() == 1200
```

Expected Output #4:

- Fully functional class that passes all AI-generated assertions.

Output:

The screenshot shows a code editor interface with a sidebar on the left containing icons for search, code, text, run, and settings. The main area has tabs for 'Task-04' and 'Gemini'. The 'Gemini' tab is active, displaying a Python class definition for a 'BankAccount' class with methods for deposit and withdraw. A tooltip from Gemini suggests creating a class with deposit and withdraw methods. Below the class definition is a code completion box asking 'What can I help you build?'. The 'try:' block below contains several test cases for the BankAccount class, including assertions for negative initial balance, float amounts, and withdrawal. The output pane at the bottom shows the message 'All BankAccount tests passed!'. The top right of the window shows system status for RAM and Disk.

```
+# Function: BankAccount Class
+class BankAccount:
+    def __init__(self, initial_balance=0):
+        if not isinstance(initial_balance, (int, float)) or initial_balance < 0:
+            raise ValueError
+        self.balance = initial_balance
+
+    def deposit(self, amount):
+        if not isinstance(amount, (int, float)):
+            raise ValueError
+        self.balance += amount
+        return self.balance
+
+    def withdraw(self, amount):
+        if not isinstance(amount, (int, float)):
+            raise ValueError
+        if amount > self.balance:
+            raise ValueError
+        self.balance -= amount
+        return self.balance
```

```
[5] 0s
try:
    account10 = BankAccount(-50)
    assert False, "Test 10 Failed: Expected ValueError for negative initial balance"
except ValueError as e:
    assert str(e) == "Initial balance must be a non-negative number.", f"Test 10 Failed: Wrong error message: {e}"

# Test 11: Initial balance as float
account11 = BankAccount(100.50)
assert account11.get_balance() == 100.50, f"Test 11 Failed: Expected 100.50, got {account11.get_balance()}"

# Test 12: Deposit float amount
account12 = BankAccount(50)
account12.deposit(25.75)
assert account12.get_balance() == 75.75, f"Test 12 Failed: Expected 75.75, got {account12.get_balance()}"

# Test 13: Withdraw float amount
account13 = BankAccount(100.25)
account13.withdraw(18.15)
assert account13.get_balance() == 82.1, f"Test 13 Failed: Expected 82.1, got {account13.get_balance()}"

print("All BankAccount tests passed!")
```

... All BankAccount tests passed!

Task Description #5 (Email ID Validation – Apply AI for Data Validation)

- Task: Use AI to generate at least 3 assert test cases for a function validate_email(email) and implement the function.
- Requirements:

- o Must contain @ and .
 - o Must not start or end with special characters.
 - o Should handle invalid formats gracefully.

Example Assert Test Cases:

```
assert validate_email("user@example.com") == True
```

```
assert validate_email("user@example.com") == False
```

```
assert validate_email("@gmail.com") == False
```

Expected Output #5:

- Email validation function passing all AI-generated test cases and handling edge cases correctly.

Output:

The screenshot shows a code editor with a Python script for validating emails. The script includes a function `is_valid_email` that uses regular expressions to check if an input is a valid email address. Below the function, there are test cases using the `assert` keyword. To the right of the code, a Gemini AI interface is open, displaying a task to create a similar validation function. The AI interface includes a text input field, a "Gemini 2.5 Flash" button, and a note about potential mistakes.

```
+# Function
+import re
+
+def is_valid_email(email):
+    if not isinstance(email, str):
+        return False
+    # Regular expression for validating an Email
+    # This pattern checks
+    # It allows letters, numbers, and underscores
+    # The top-level domain
+    pattern = r"^[a-zA-Z0-9_.+-]+@[a-zA-Z0-9-]+\.[a-zA-Z0-9-.]+$"
+    if re.fullmatch(pattern, email):
+        return True
+    else:
+        return False
+
+# Test cases
+assert is_valid_email("test@example.com")
+assert is_valid_email("job@handshake.com")
+assert is_valid_email("interview@handshake.com")
```

M #5 (Email ID Validation – Apply AI for Data Validation)

<> Empty cell

<> Let's create a Python function `is_valid_email` that validates email addresses based on common patterns, and include test cases for various

<> Accept & Run ✓ Accept ✕ Cancel

What can I help you build?

+

Gemini 2.5 Flash ▾ ▶

Gemini can make mistakes so double-check it and use code with caution. [Learn more](#)