AI ASSISTED CODING

ASSIGNMENT-6.3

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BATCH-45

Task Description #1: Classes (Student Class)

Scenario

You are developing a simple student information management module.

Task

• Use an AI tool (GitHub Copilot / Cursor AI / Gemini) to complete a Student class.

• The class should include attributes such as name, roll number, and branch.

• Add a method display_details() to print student information.

• Execute the code and verify the output.

• Analyze the code generated by the AI tool for correctness and clarity.

Expected Output #1

• A Python class with a constructor (__init__) and a display_details() method.

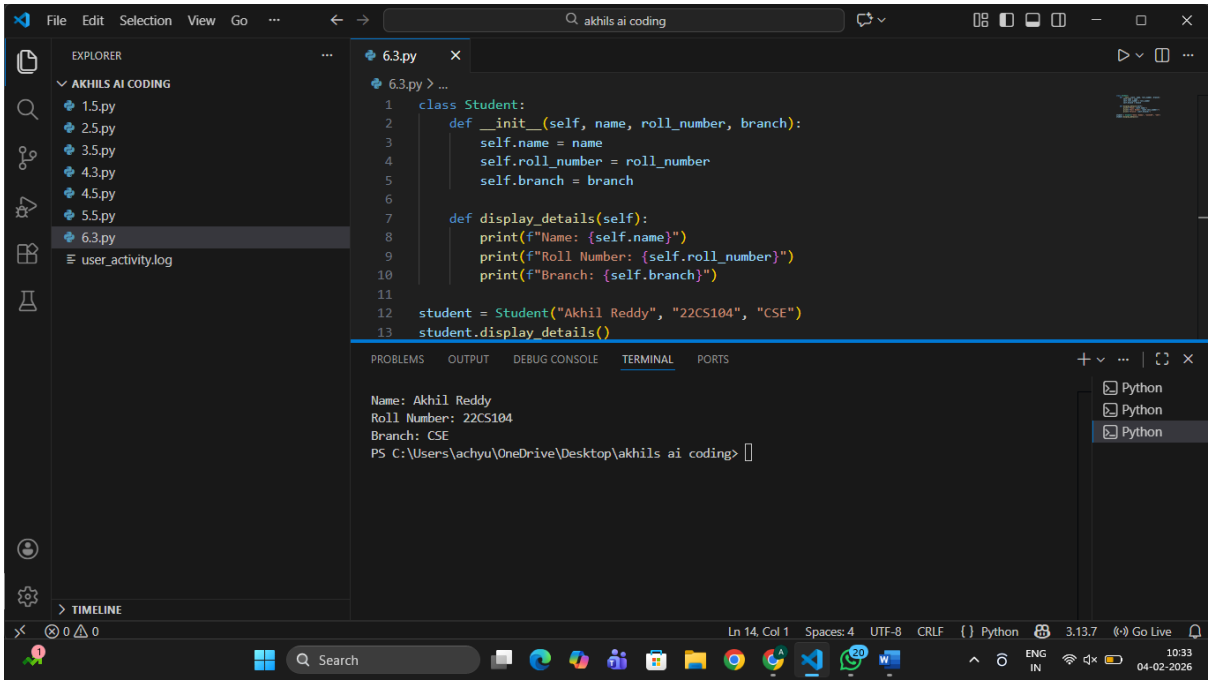
• Sample object creation and output displayed on the console.

• Brief analysis of AI-generated code.

PROMPT:

Write a Python class named Student with attributes for name, roll number, and branch. Include a constructor (init) to initialize these attributes and a method display_details() to print the student's information in a formatted way. Also, provide sample code to create an object of the class and call the display_details() method. Do not include any additional explanations or comments outside the code.

EXPECTED OUTPUT:



Task Description #2: Loops (Multiples of a Number)

Scenario

You are writing a utility function to display multiples of a given number.

Task

• Prompt the AI tool to generate a function that prints the first 10 multiples of a given number using a loop.

• Analyze the generated loop logic.

• Ask the AI to generate the same functionality using another controlled looping structure (e.g., while instead of for).

Expected Output #2

• Correct loop-based Python implementation.

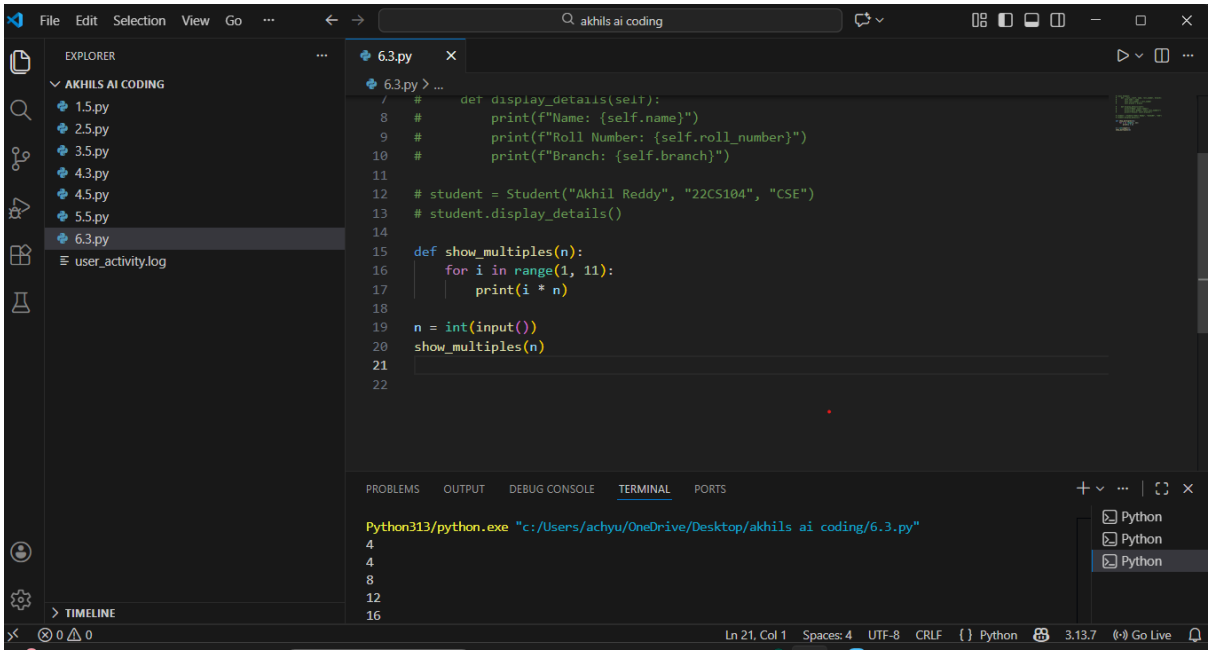
• Output showing the first 10 multiples of a number.

• Comparison and analysis of different looping approaches.

PROMPT:

Write a Python function called `show_multiples` that takes an integer `n` as an argument. Use a `for` loop to calculate and print the first 10 multiples of that number (starting from 1 * n). After the code, provide a brief explanation of how the loop range is defined.

EXPECTED OUTPUT:



Task Description #3: Conditional Statements (Age Classification)

Scenario

You are building a basic classification system based on age.

Task

• Ask the AI tool to generate nested if-elif-else conditional statements to classify age groups

(e.g., child, teenager, adult, senior).

• Analyze the generated conditions and logic.

• Ask the AI to generate the same classification using alternative conditional structures (e.g.,

simplified conditions or dictionary-based logic).

Expected Output #3

• A Python function that classifies age into appropriate groups.

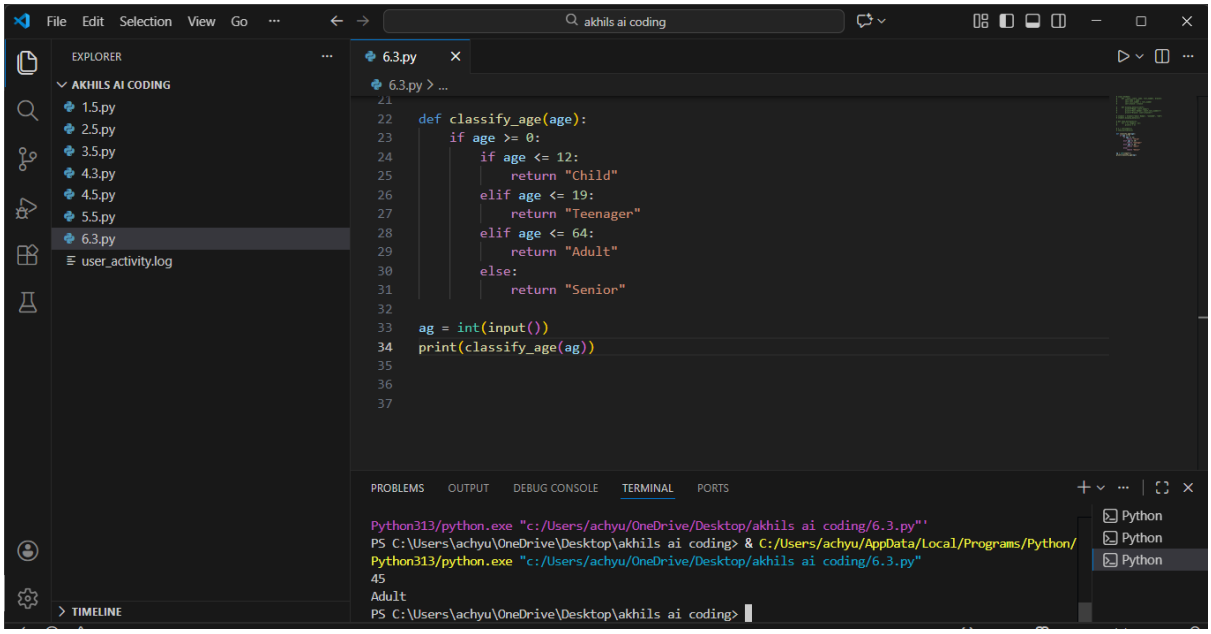
• Clear and correct conditional logic.

• Explanation of how the conditions work.

PROMPT:

Write a Python function called `classify_age` that takes an integer `age` as an input. Use a nested `if-elif-else` structure to return a category: 'Child' (0–12), 'Teenager' (13–19), 'Adult' (20–64), and 'Senior' (65+). After the code, analyze why the order of conditions matters and then provide an alternative version using a dictionary-based approach or simplified logical boundaries.

EXPECTED OUTPUT:



Task Description #4: For and While Loops (Sum of First n Numbers)

Scenario

You need to calculate the sum of the first n natural numbers.

Task

• Use AI assistance to generate a sum_to_n() function using a for loop.

• Analyze the generated code.

• Ask the AI to suggest an alternative implementation using a while loop or a mathematical formula.

Expected Output #4

• Python function to compute the sum of first n numbers.

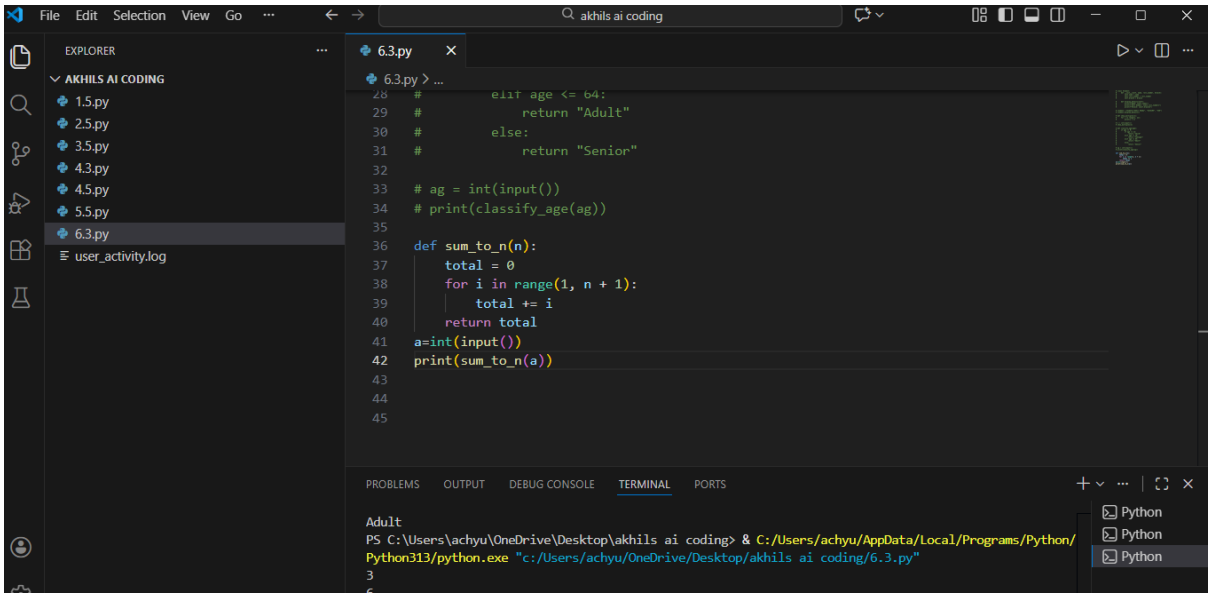
• Correct output for sample inputs.

• Explanation and comparison of different approaches.

PROMPT:

Write a Python function `sum_to_n(n)` that calculates the sum of the first `n` natural numbers using a `for` loop. After providing the code, analyze the logic behind the accumulator variable. Finally, provide two alternative implementations: one using a `while` loop and one using the mathematical formula (Arithmetic Progression), and compare the performance and readability of all three methods.

EXPECTED OUTPUT:



Task Description #5: Classes (Bank Account Class)

Scenario

You are designing a basic banking application.

Task

• Use AI tools to generate a Bank Account class with methods such as deposit(), withdraw(),

and check_balance().

• Analyze the AI-generated class structure and logic.

• Add meaningful comments and explain the working of the code.

Expected Output #5

• Complete Python Bank Account class.

• Demonstration of deposit and withdrawal operations with updated balance.

• Well-commented code with a clear explanation.
PROMPT:

create a Python class named `BankAccount`. The class should initialize with an `account_holder` name and a `balance` (defaulting to 0). Implement three methods: `deposit(amount)`, `withdraw(amount)`, and `check_balance()`. Ensure the `withdraw` method includes logic to prevent overdrafts. Please provide the code with meaningful comments, a brief analysis of the class structure, and a demonstration of the class in action with multiple transactions.

EXPECTED OUTPUT: