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School of Computer Science and Artificial Intelligence

Lab Assignment # 1

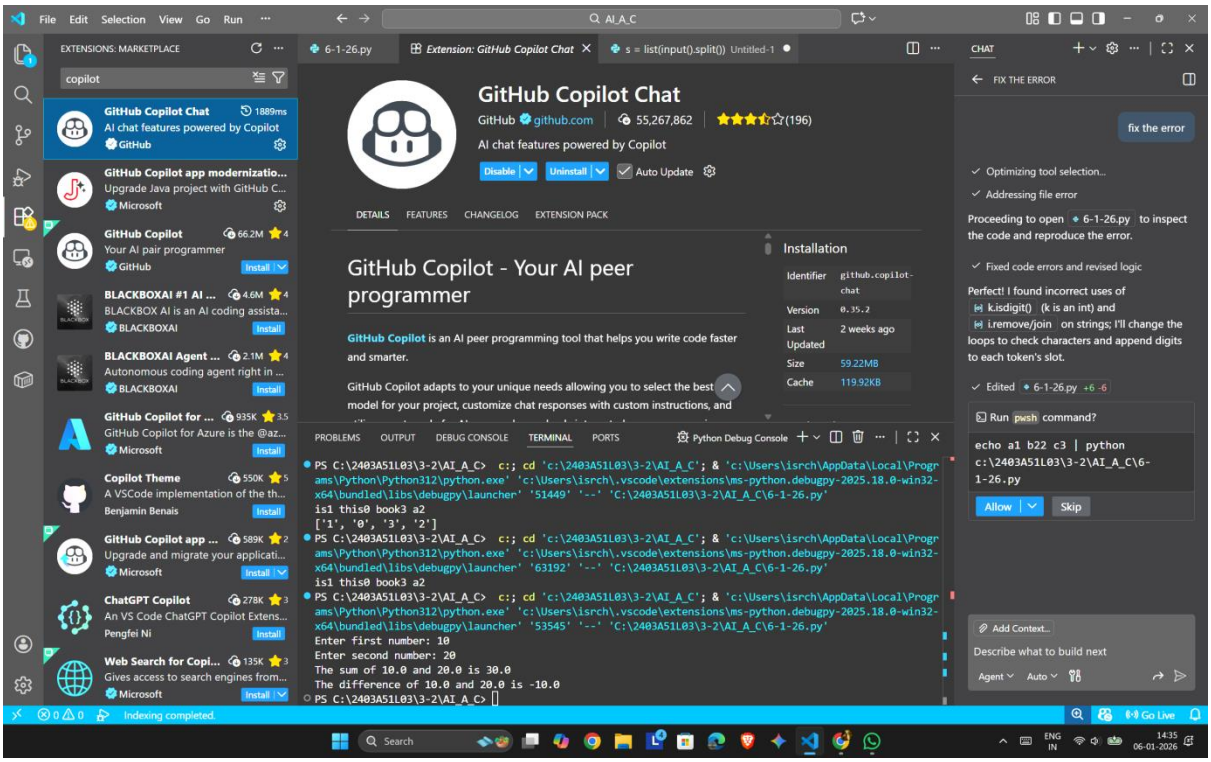
Program	**: B. Tech (CSE)**
Specialization	**:**
Course Title	**: AI Assisted Coding**
Course Code	**: 23CS002PC304**
Semester	**: II**
Academic Session	**: 2025-2026**
Name of Student	**: J Harshith yadav**
Enrollment No.	**: 2403A51L49**
Batch No.	**: 52**
Date	**: 06/01/26**

Submission Starts here

Screenshots:

TASK - 0

- Install “Github Copilot” in Visual Studio Code



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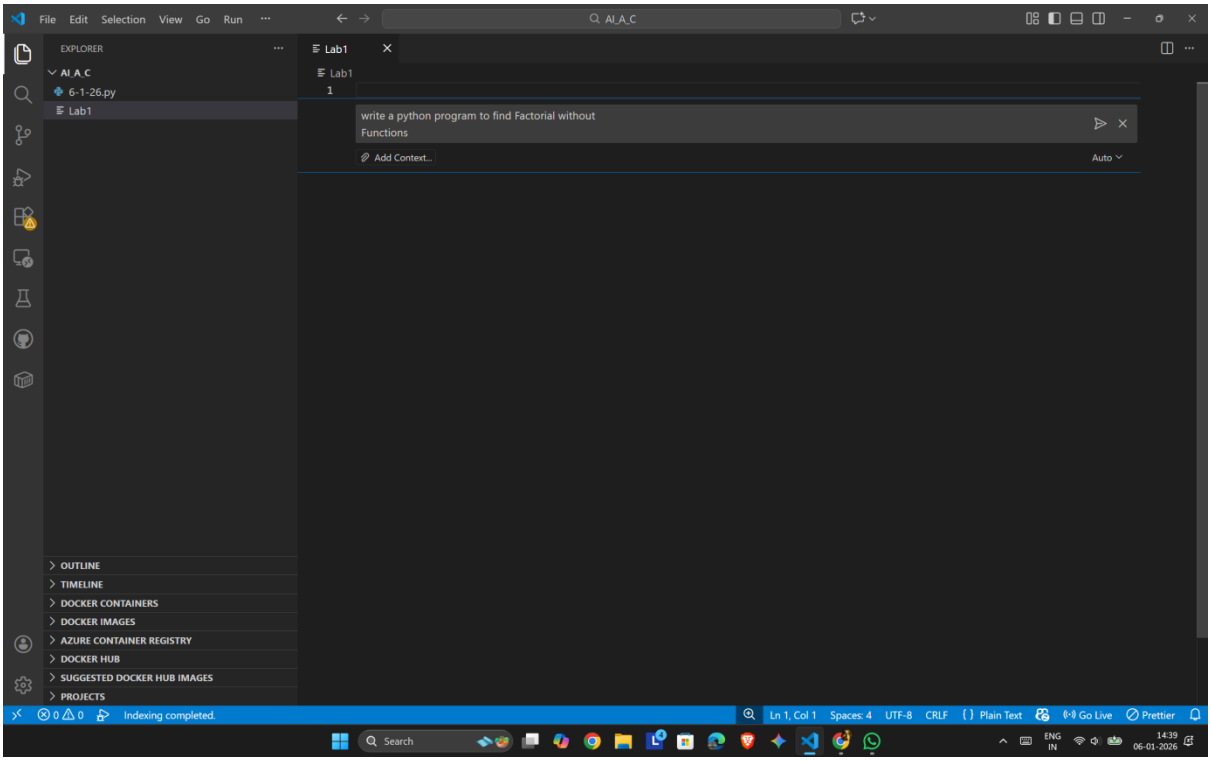
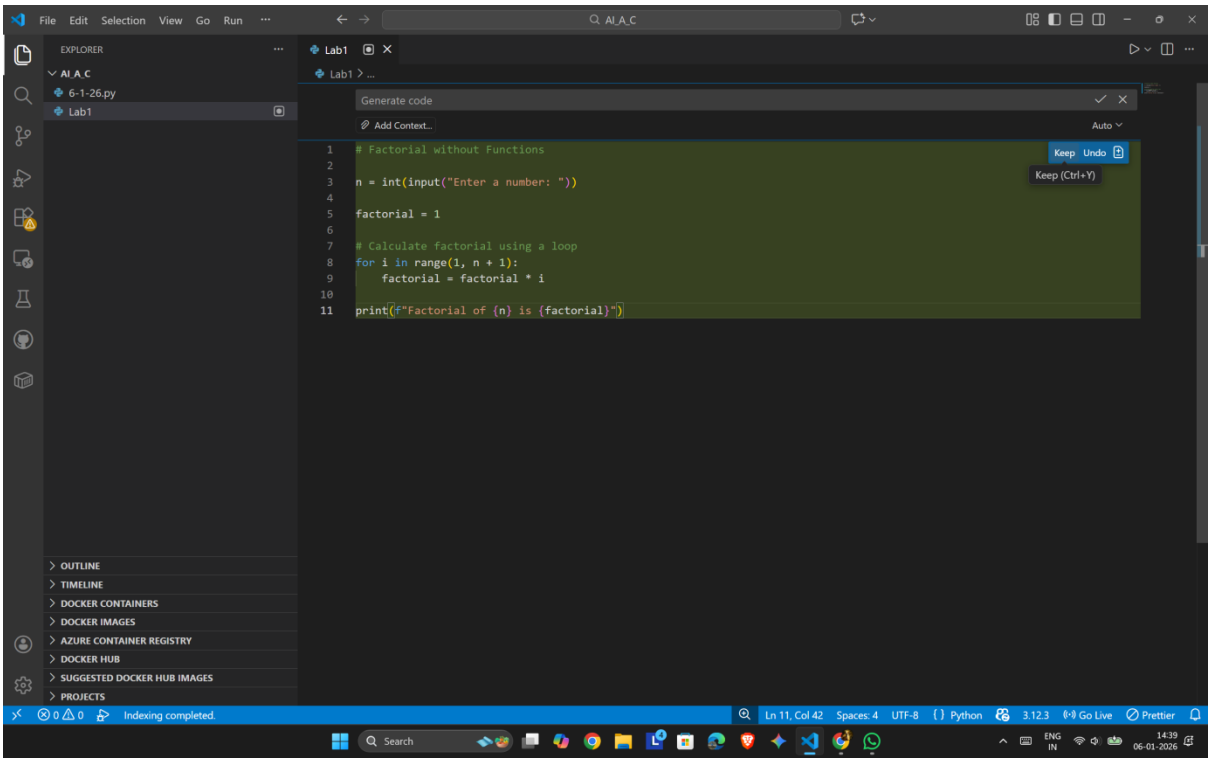
TASK - 1

- Task Description

Use GitHub Copilot to generate a Python program that computes a mathematical product-based value (factorial-like logic) directly in the main execution flow, without using any user-defined functions.





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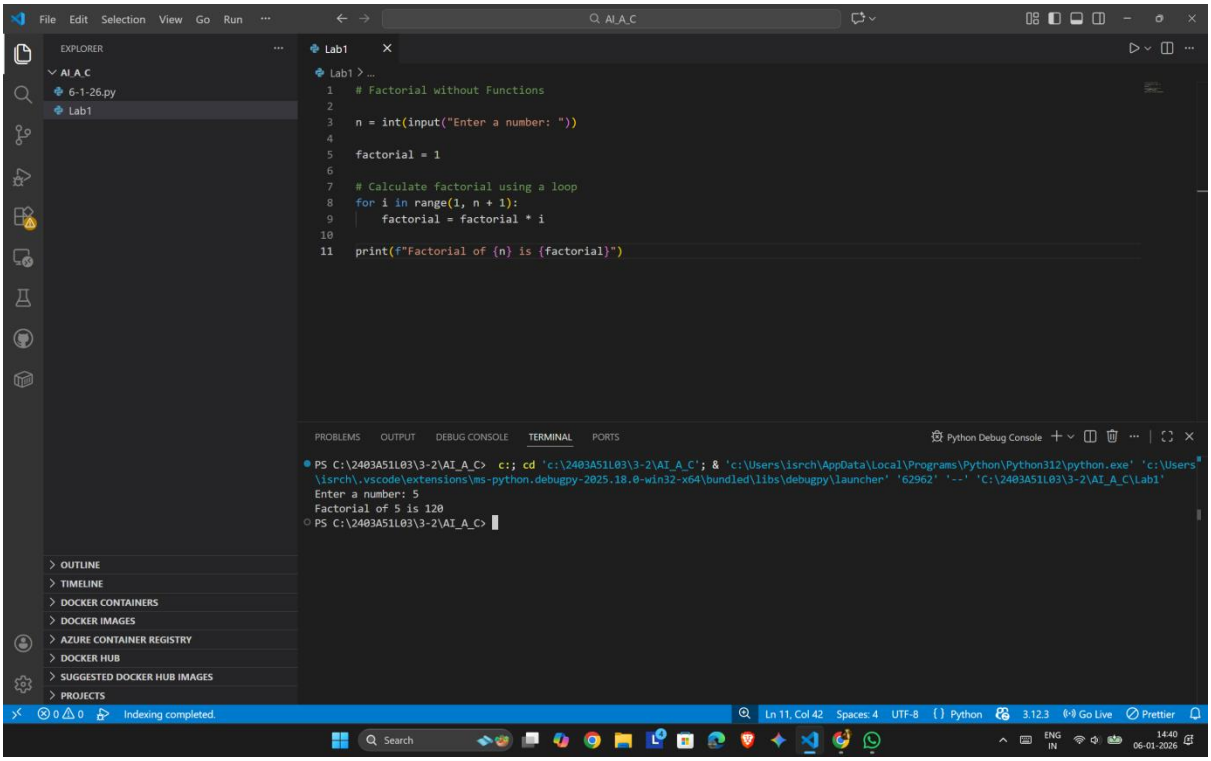
OUTPUT:



- The Copilot is very helpful because we can generate code by just giving a prompt in Copilot Chat (ctrl + I)

- The code generated was as requested in the prompt

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TASK - 2

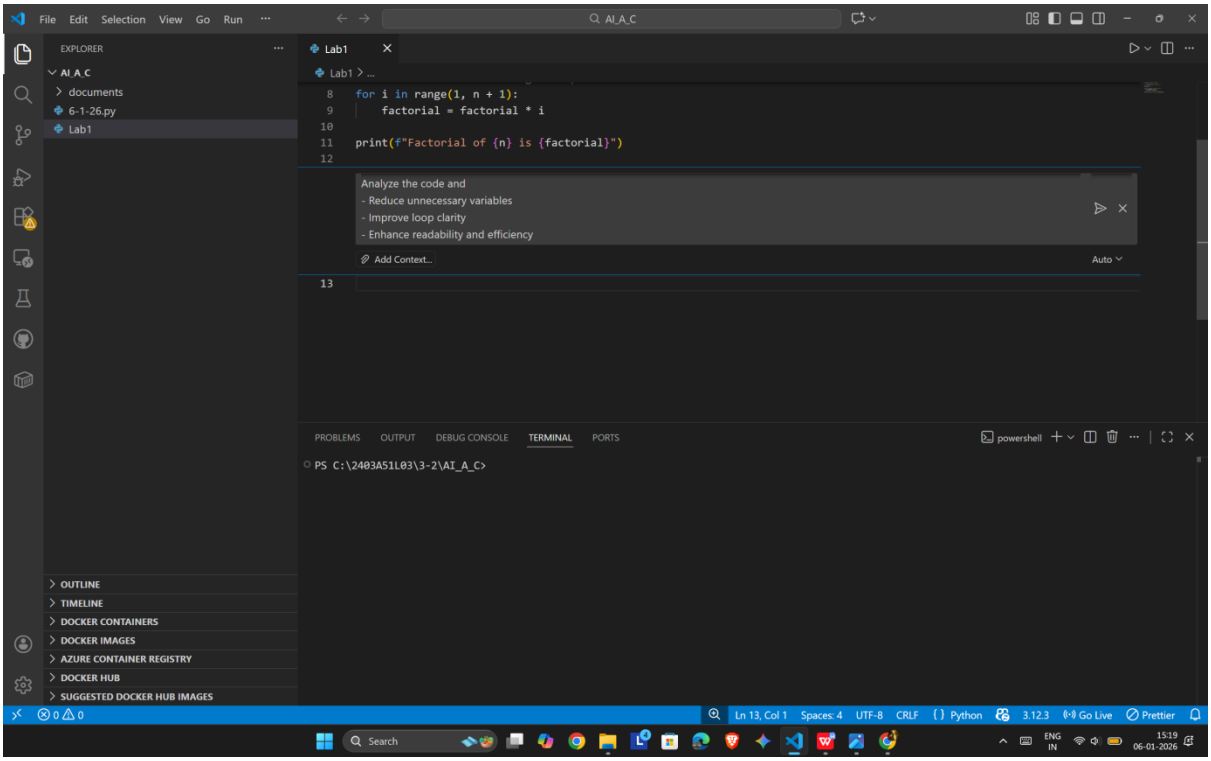
Task Description

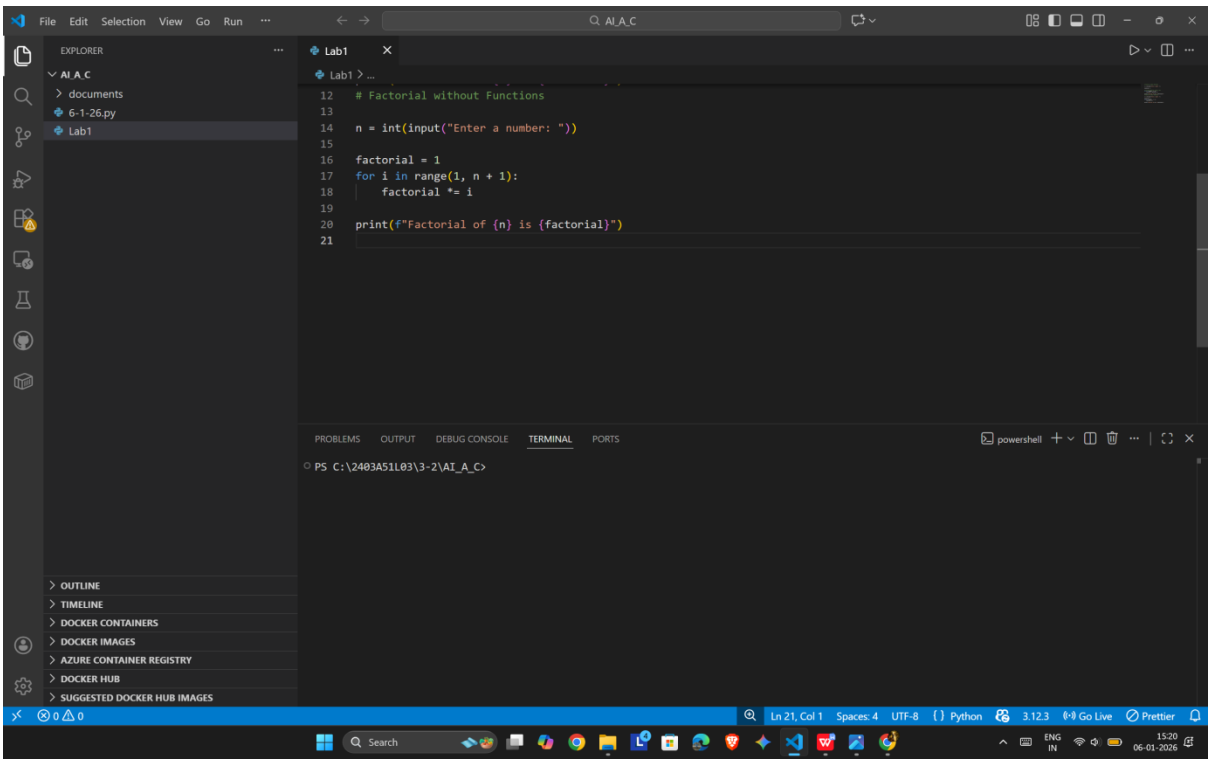
Analyze the code generated in Task 1 and use Copilot again to:

➢Reduce unnecessary variables

➢Improve loop clarity

➢Enhance readability and efficiency





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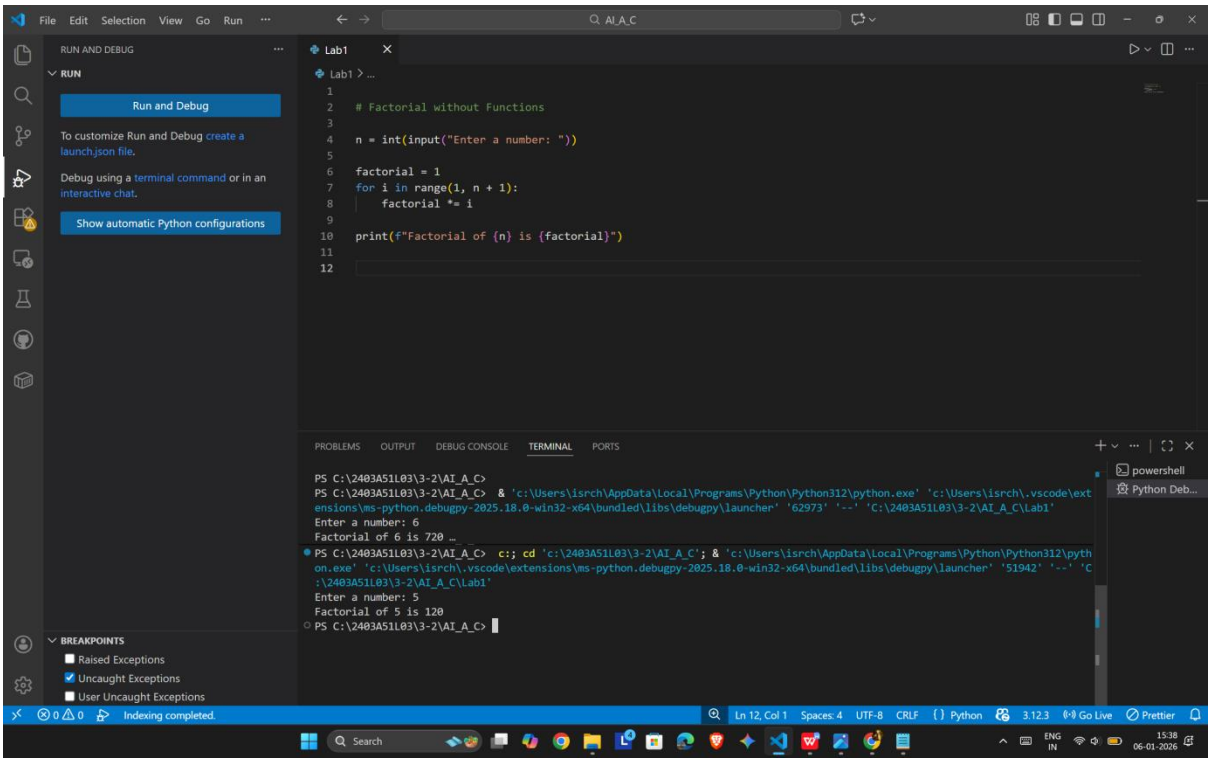

 # What was improved?

- Shorter multiplication statement
- factorial = factorial * i → factorial *= i
- Removed unnecessary comment
- The loop logic is self-explanatory, so the comment was removed.

 # Why the new version is better?

1. Readability
***= is clearer and more concise.**

- Fewer lines and less clutter make the code easier to read.

2. Maintainability
- Cleaner code is easier to modify and debug.
- Reduced redundancy lowers the chance of mistakes.

3. Performance
- Performance is effectively the same.

***= is marginally optimized at the bytecode level, but the difference is negligible.**

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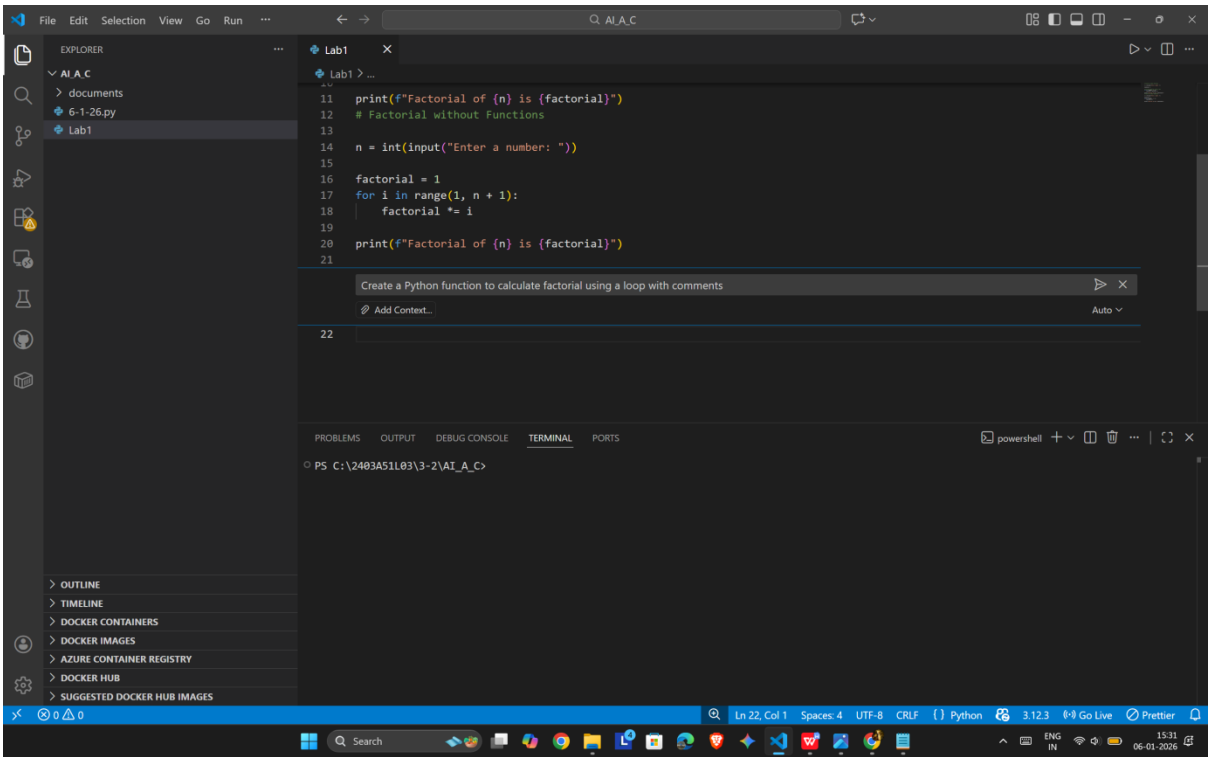
TASK - 3

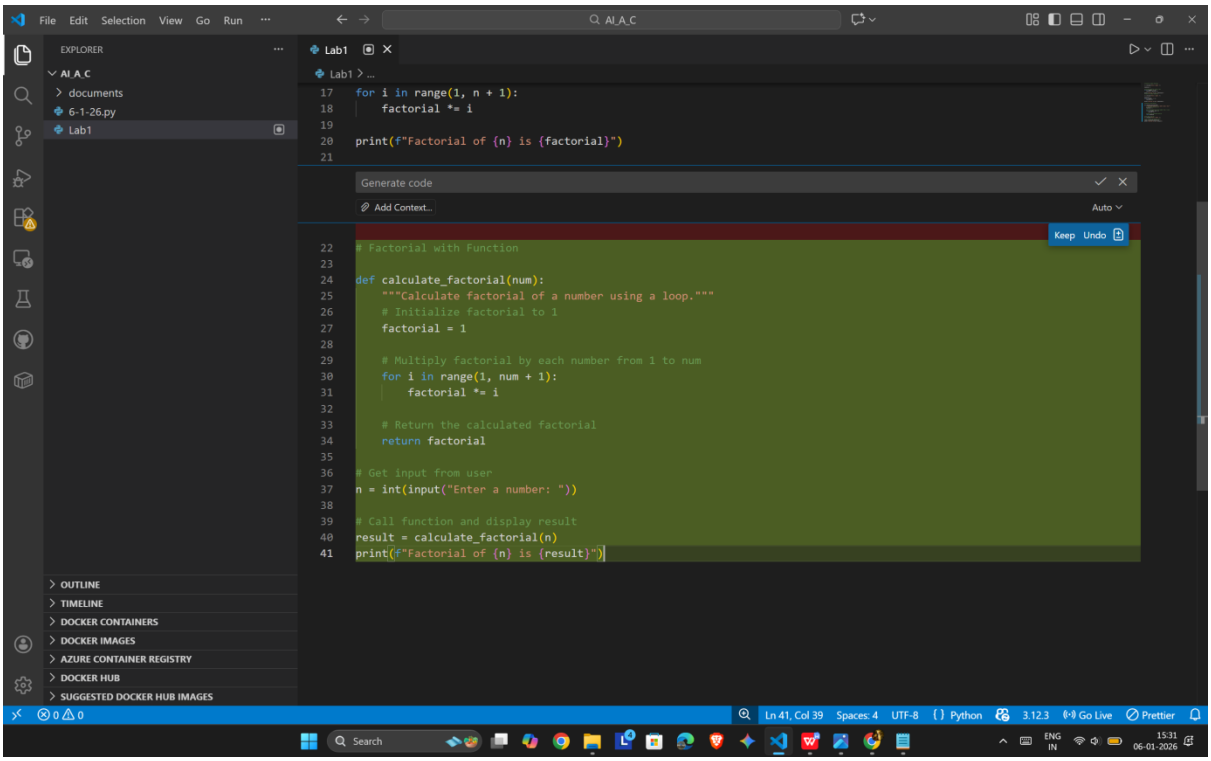
Task Description

Use GitHub Copilot to generate a modular version of the program by:

➢Creating a user-defined function

➢Calling the function from the main block





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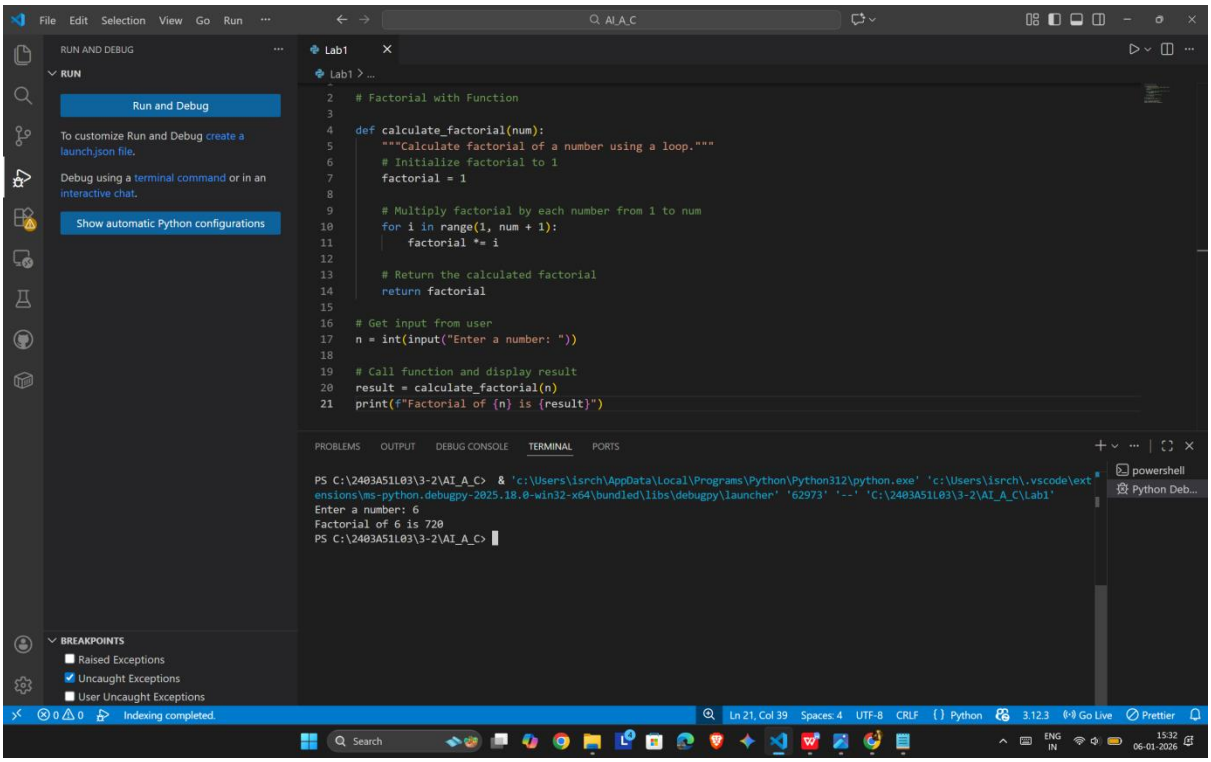

- Modularity improves reusability by:

Allowing the calculate_factorial() function to be reused in multiple programs without rewriting code.

Making the program easier to test, update, and debug.

Improving code organization, where logic is separated from input/output handling.

Supporting scalability, as the same function can be extended or integrated into larger projects.

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TASK - 4

Task Description

Compare the non-function and function-based Copilot-generated programs on the following criteria:

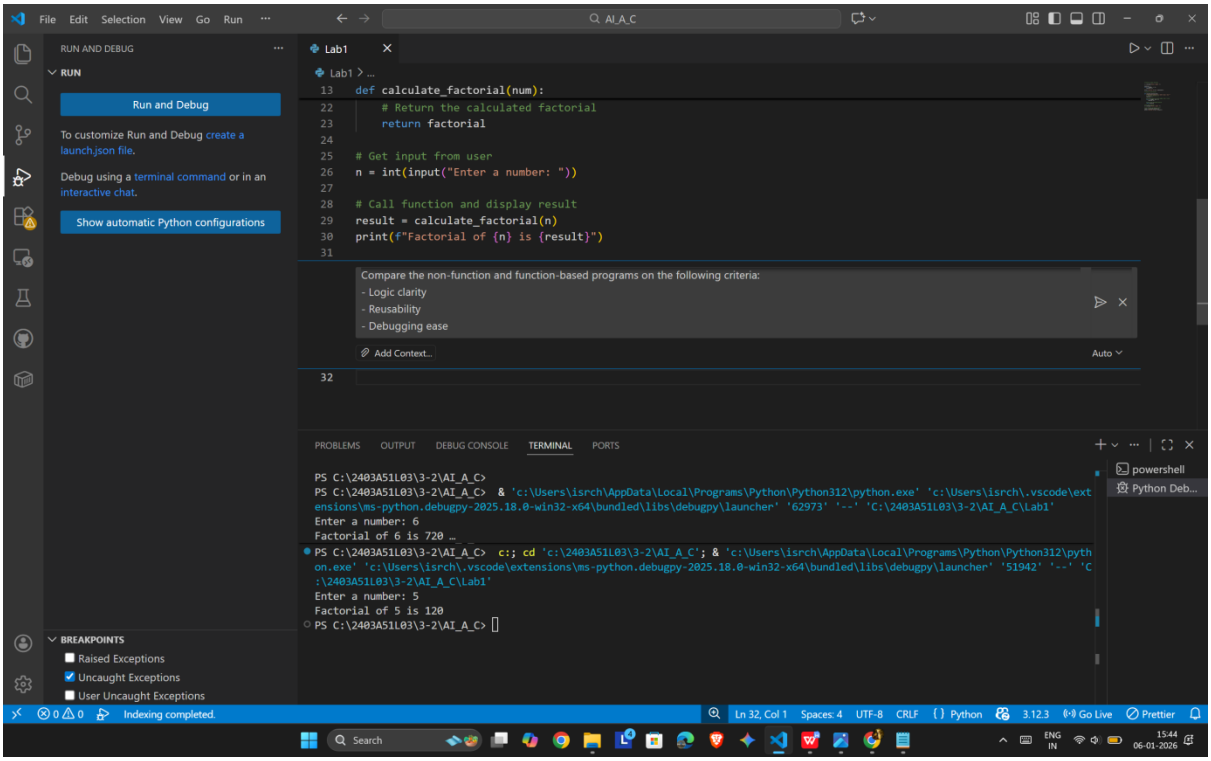
➢Logic clarity

➢Reusability

➢Debugging ease

➢Suitability for large projects

➢AI dependency risk



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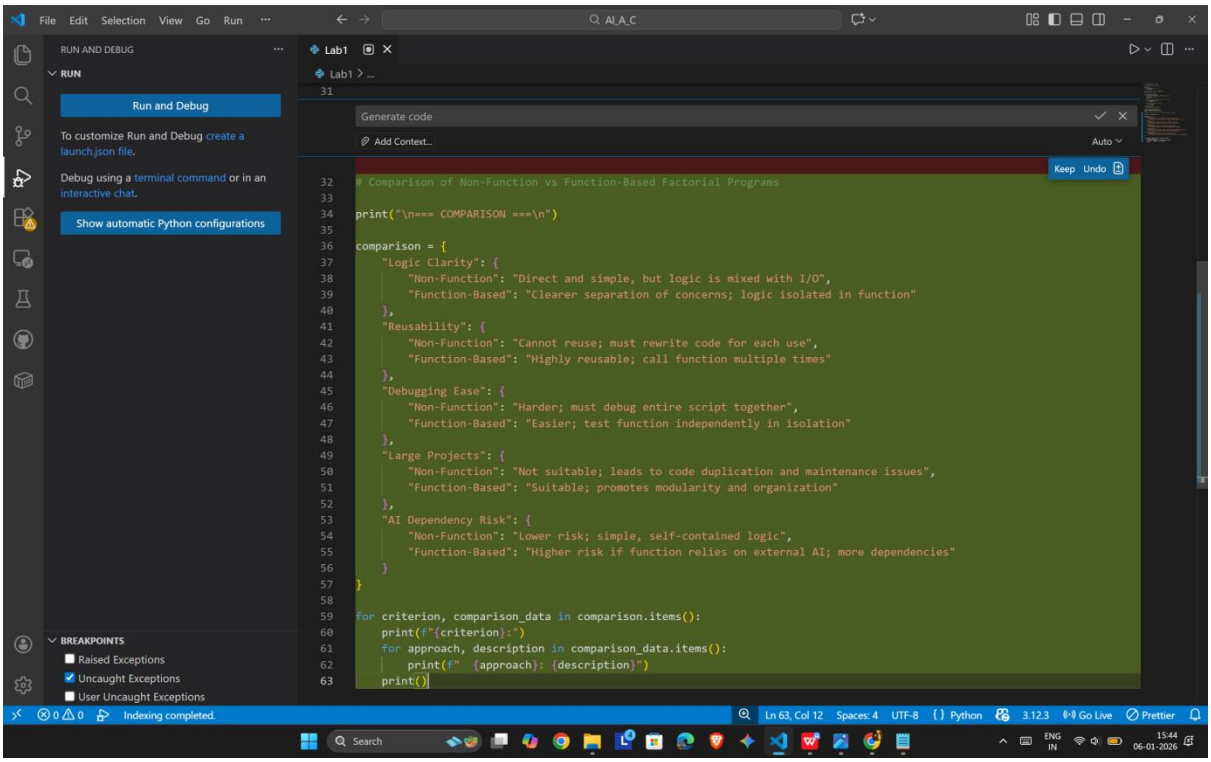
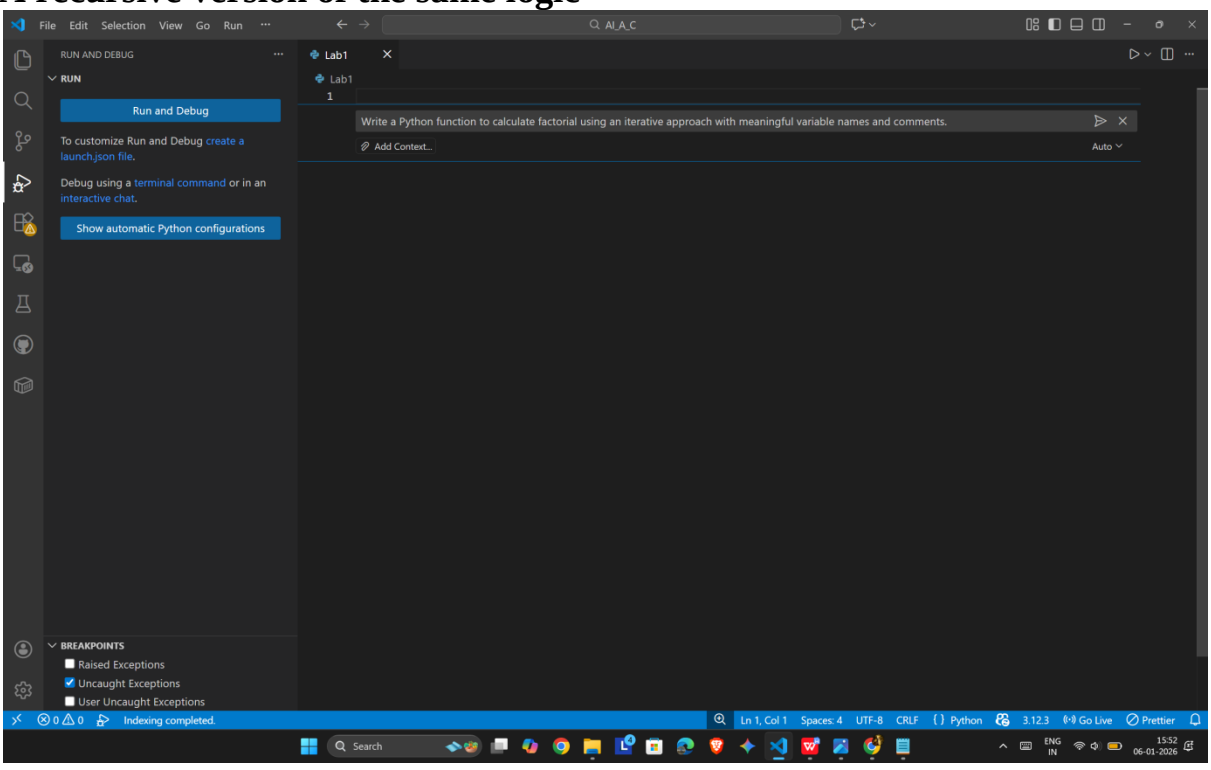


TASK - 5

Task Description
Prompt Copilot to generate:
An iterative version of the logic
A recursive version of the same logic



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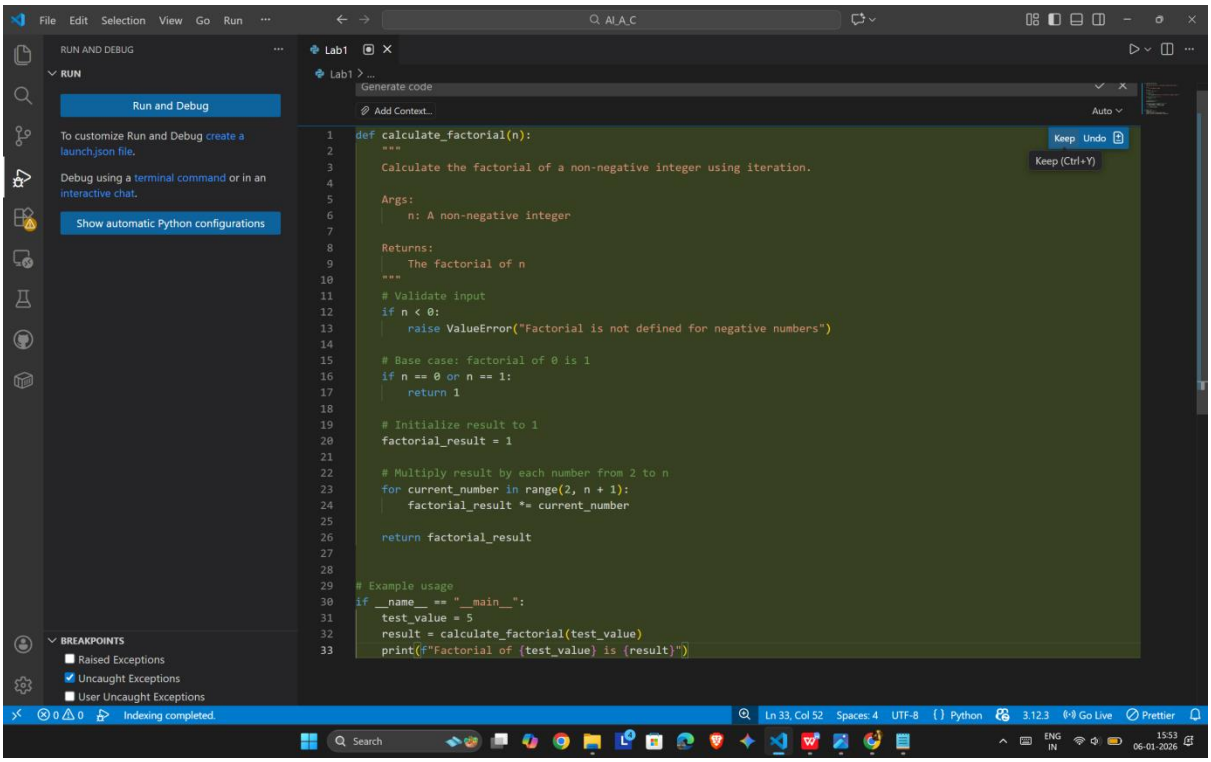

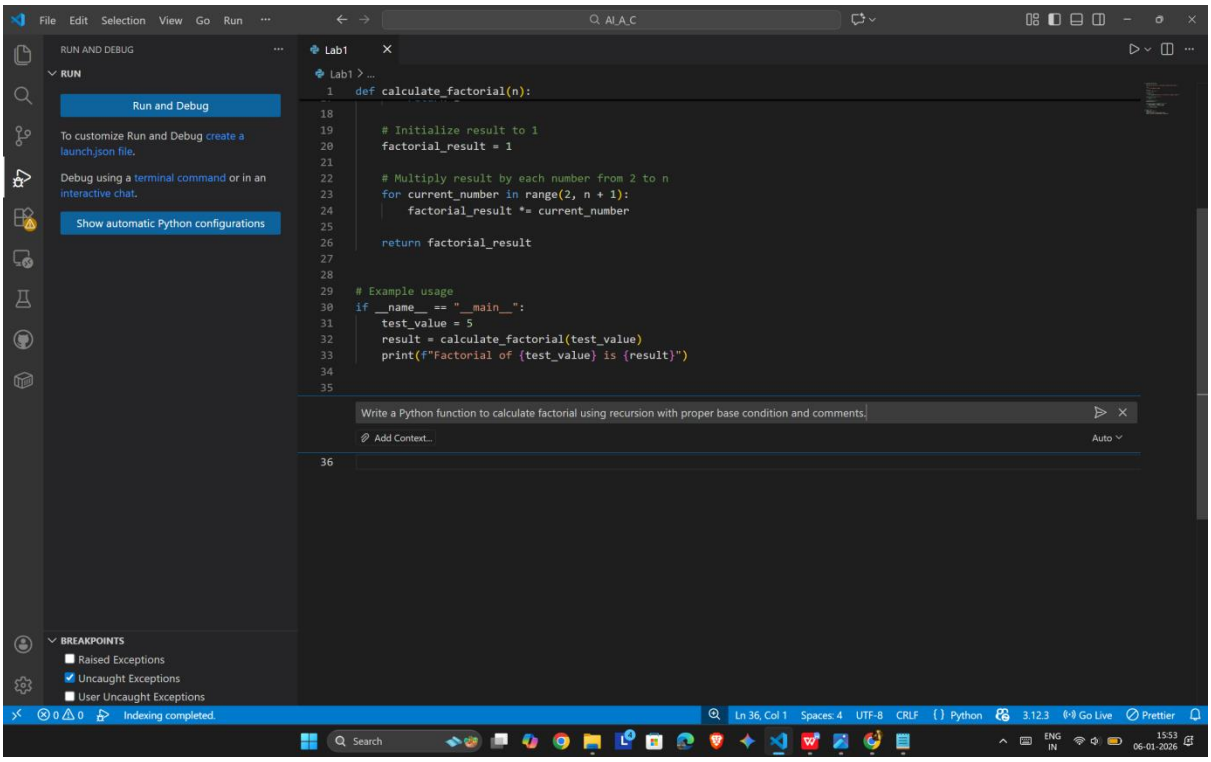

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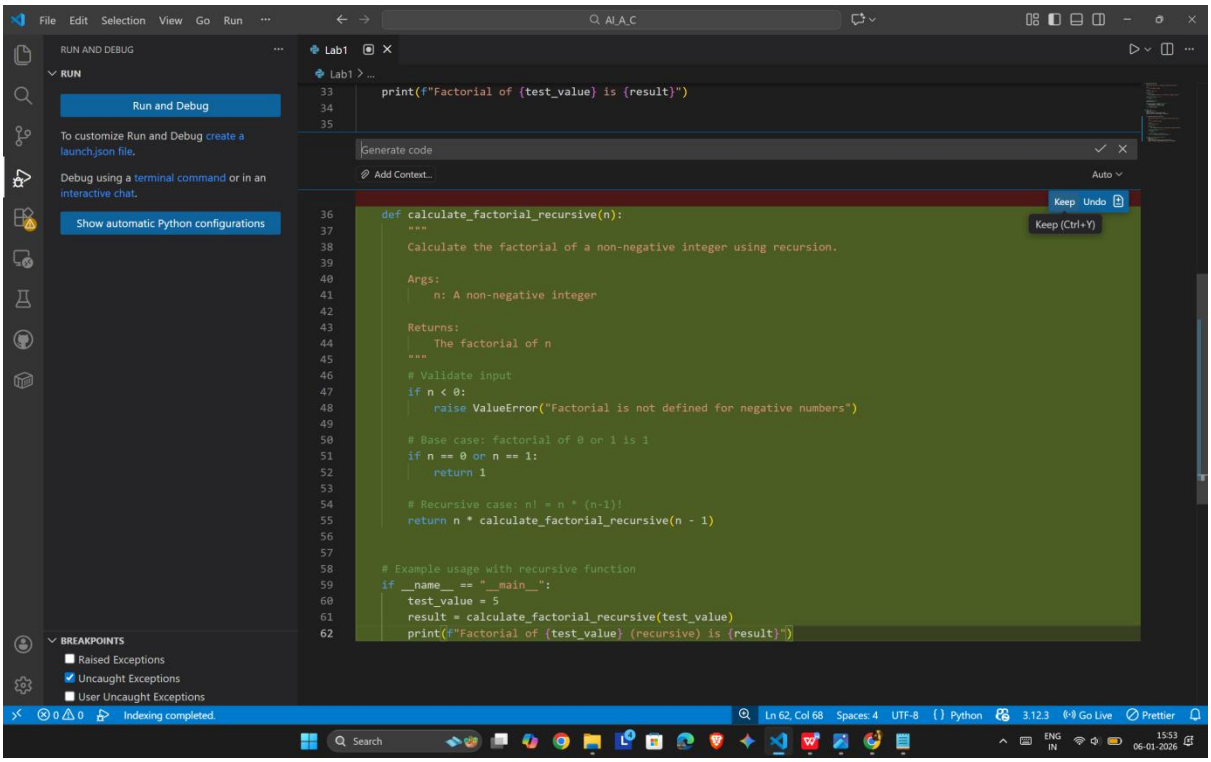
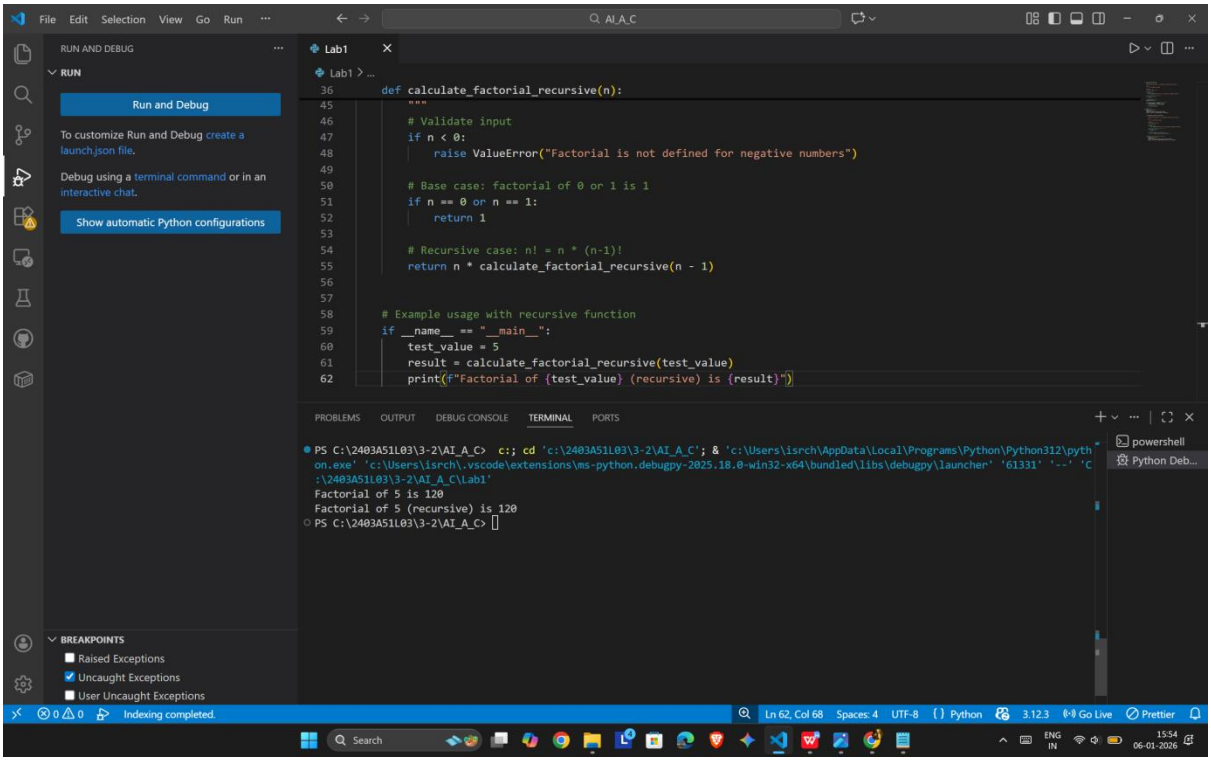


OUTPUT:



 # Explaination

- Iterative Approach

- **Starts with a result value of 1.**
- **Repeats multiplication from 1 up to the given number using a loop.**
- **Stores the intermediate result in the same variable.**
- **Executes sequentially without extra memory overhead.**

- Recursive Approach

- **Breaks the problem into smaller subproblems.**
- **Each function call multiplies the current number by the factorial of the previous number.**
- **Stops when it reaches the base case (0 or 1).**
- **Uses the call stack to remember previous function calls.**