Assignment 10.4

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BATCH-16

Task 1: AI-Assisted Syntax and Code Quality Review :

Task Description

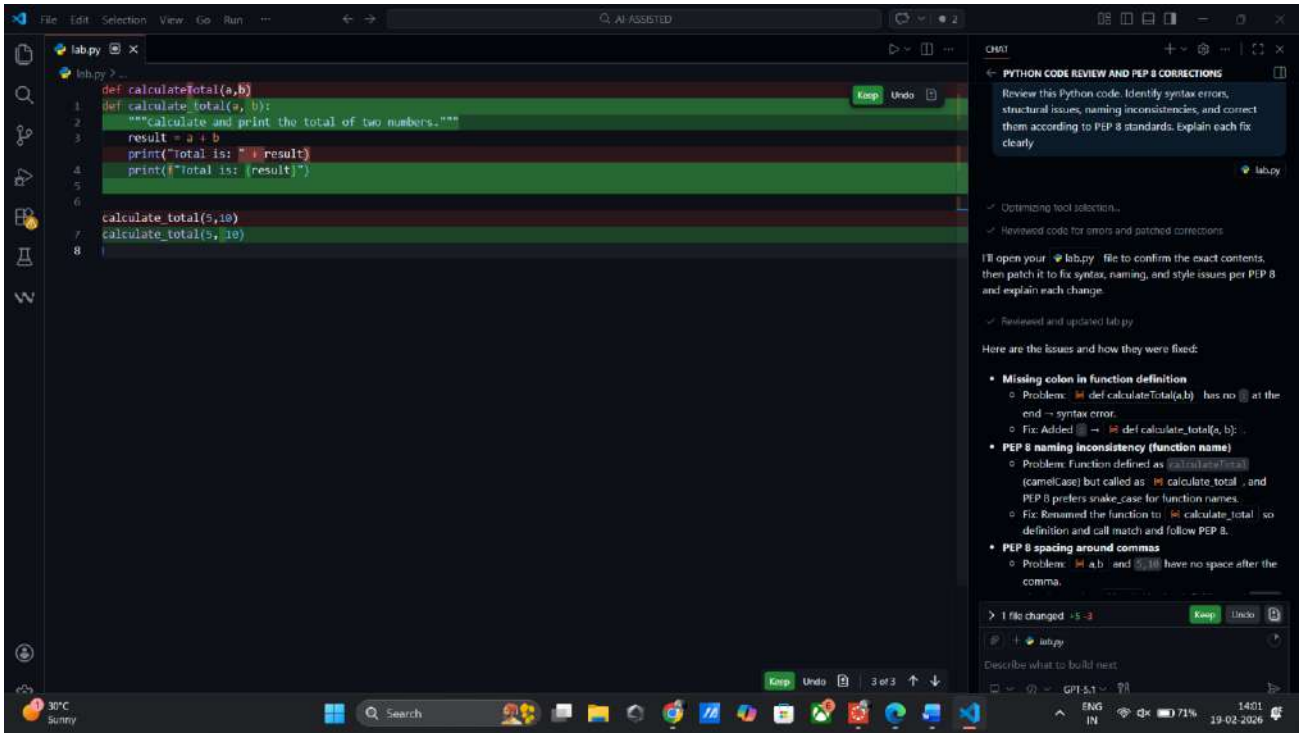
You are given a Python script containing:

• Syntax errors

• Indentation issues

• Incorrect variable names

• Faulty function calls



Issues Identified by AI

1. Missing colon after function definition
2. Function name mismatch (calculateTotal vs calculate_total)

3. String concatenation with integer (TypeError)
4. Naming convention not following snake_case

Task 2: Performance-Oriented Code Review

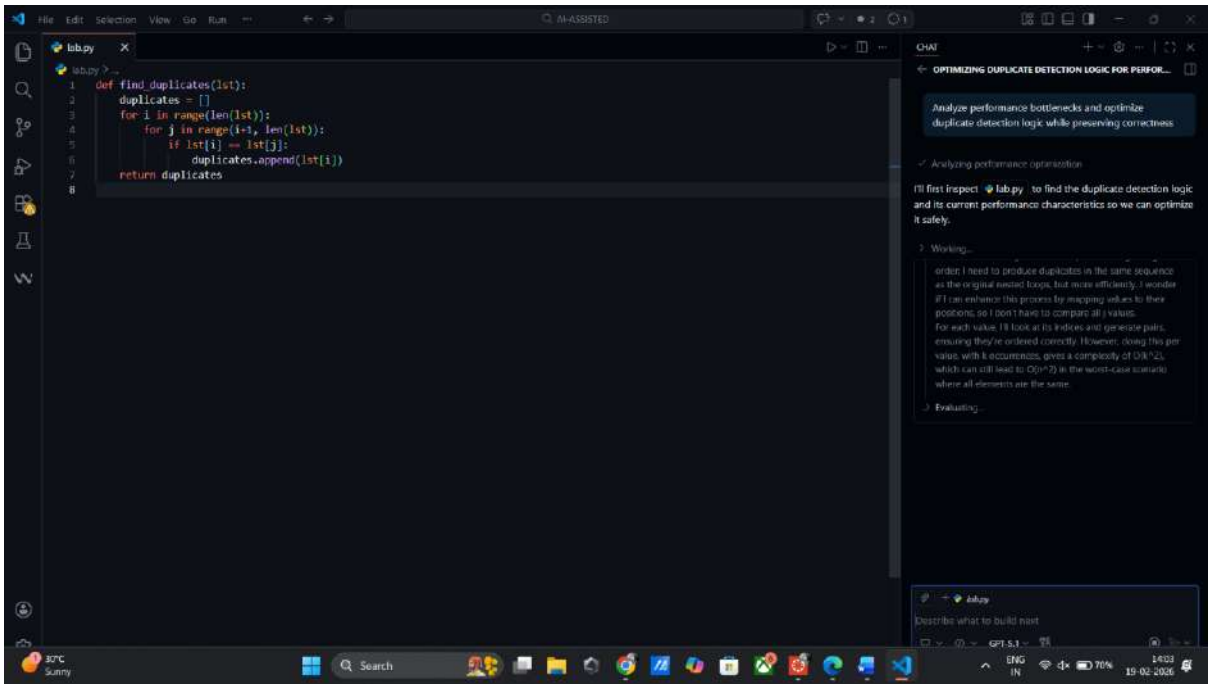
You are provided with a function that identifies duplicate values in a list using inefficient nested loops.

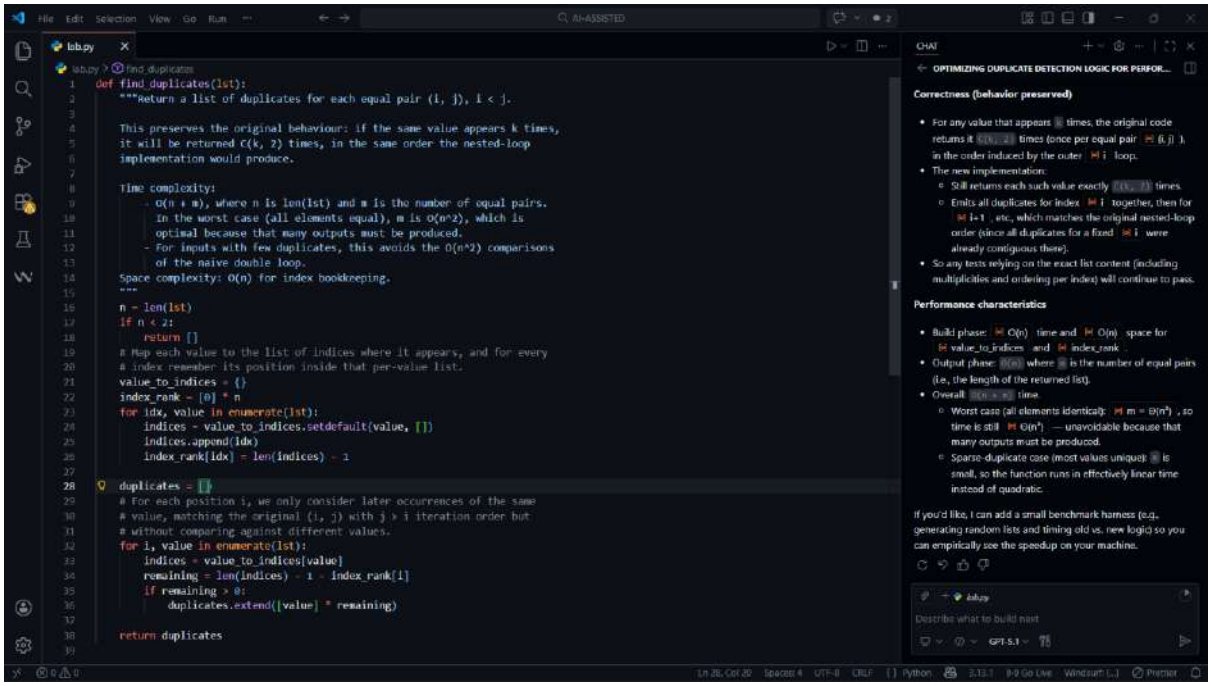
Using AI-assisted code review:

• Analyze the logic for performance bottlenecks

• Refactor the code for better time complexity

• Preserve the correctness of the output





Task 3: Readability & Maintainability Refactoring

Task Description

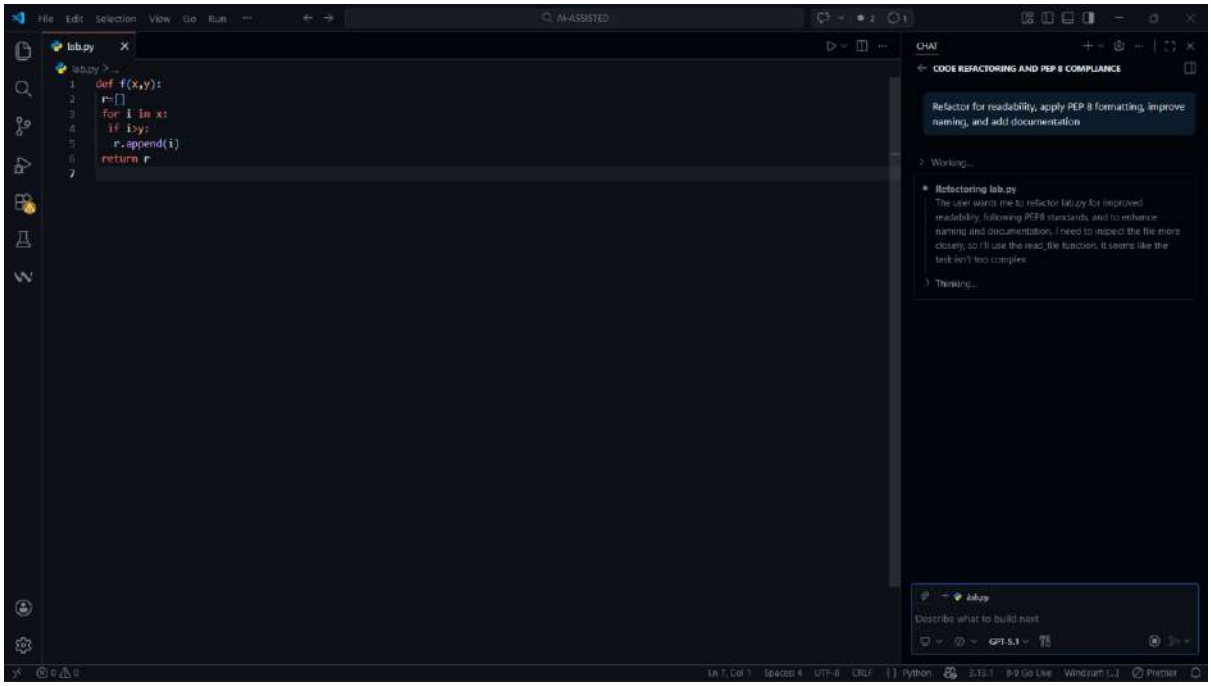
You are given a poorly structured Python function with:

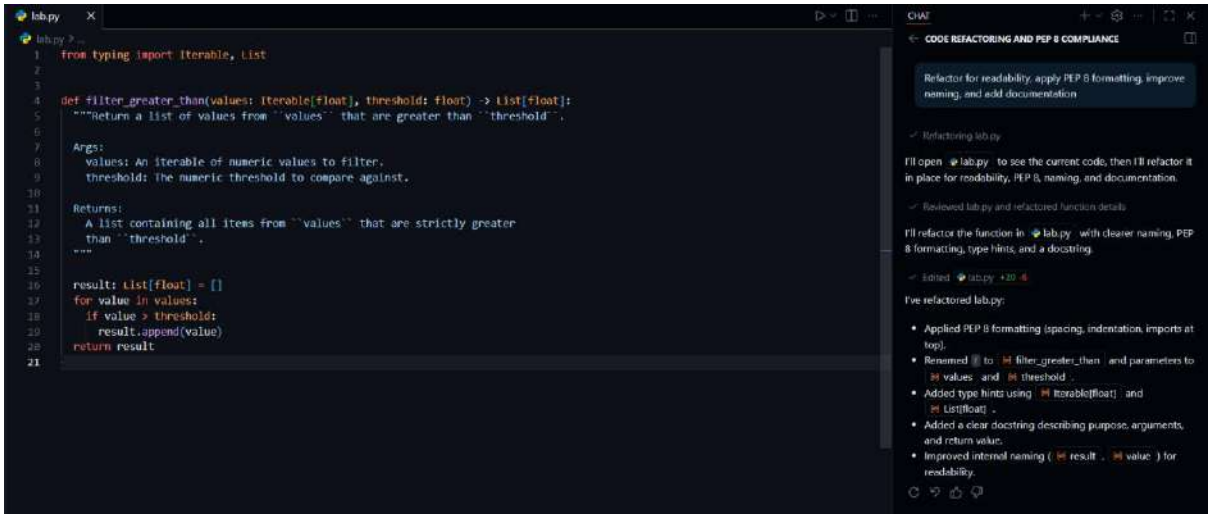
• Cryptic function names

• Poor indentation

• Unclear variable naming

• No documentation





Improvements Made : Descriptive function name ,Clear variable naming, Proper indentation ,Docstring added ,Type hints included.

Task 4: Secure Coding and Reliability Review

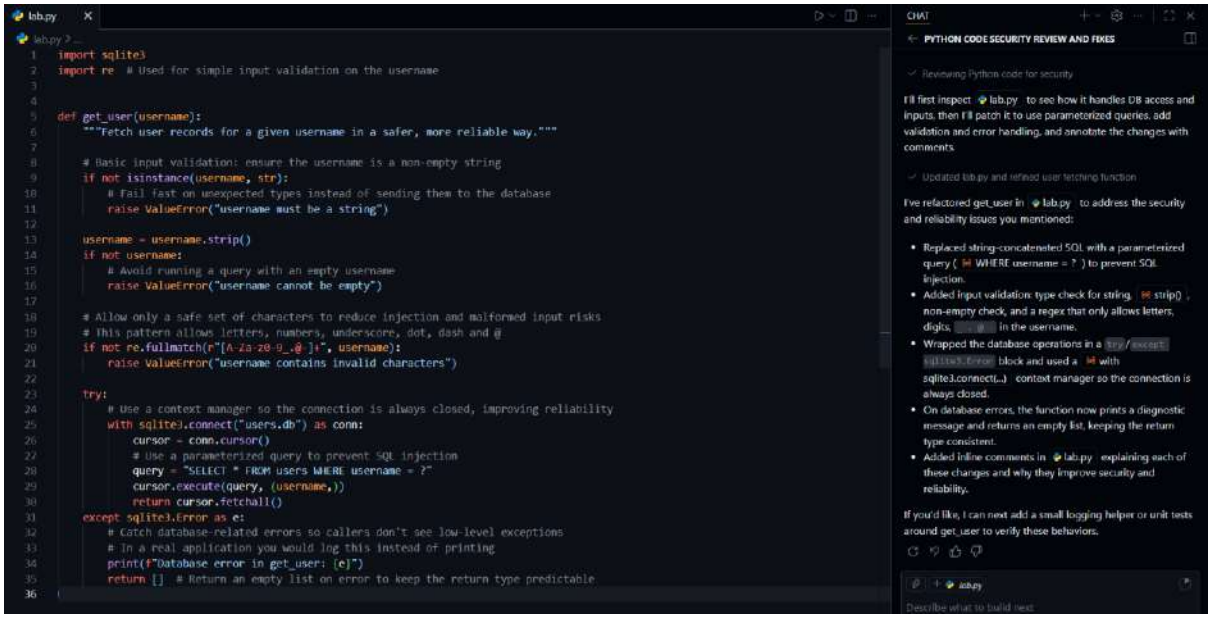
Task Description

You are given a Python script that:

• Uses unsafe SQL query construction

• Has no input validation

• Lacks exception handling



Security Improvements

Parameterized query (prevents SQL injection)
Input validation
Try-except for safety
Proper resource cleanup

Task 5: AI-Based Automated Code Review Report

Task Description

You are provided with a poorly written Python script.

Using AI-assisted review:

• Generate a structured code review report that evaluates:

Code readability

Naming conventions

Formatting and style consistency

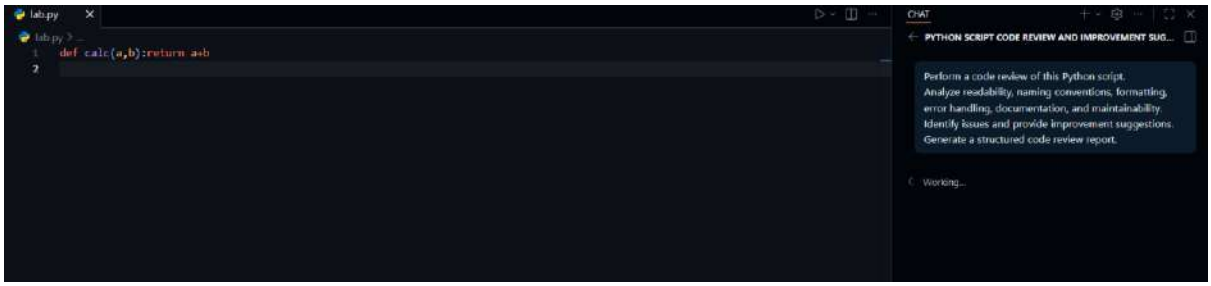
Error handling

Documentation quality

Maintainability

The task is not just to fix the code, but to analyze and report on quality

issues



🔹 **AI-Generated Code Review Report**

1️⃣ **Readability**

- Poor formatting
- No indentation
- One-line implementation reduces clarity

2️⃣ **Naming Issues**

- calc is unclear
- Variables a and b not descriptive

3️⃣ **Documentation**

- No docstring
- No explanation of purpose

4️⃣ **Maintainability Risk**

- Hard to scale
- Difficult for team collaboration

Actionable Recommendations

- Rename calc to something more descriptive (e.g., add_numbers).
- Reformat the function to a multi-line definition with proper spaces around operators and after commas.
- Add a clear docstring describing purpose, parameters, and return value.
- Add type hints for parameters and return type.

- (Optional, depending on context) Add basic type validation to guard against incorrect usage.
- (Optional) If this module is to grow, add a module-level docstring and consider adding simple unit tests in a separate test fil