Assignment 10.4

# Lab 10 – Code Review and Quality: Using AI to Improve Code Quality and Readability

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* Date – 15-09-2025
* Subject – AI Assisted Coding
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Task 1: Syntax and Error Detection

Task: Identify and fix syntax, indentation, and variable errors in the  
given script.

# buggy\_code\_task1.py  
def add\_numbers(a, b)  
result = a + b  
return reslt  
print(add\_numbers(10 20))

Expected Output:

• Corrected code with proper syntax (: after function, fixed variable name, corrected function call).

• AI should explain what was fixed

Screenshots :

A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.

Task 2: Logical and Performance Issue Review

Task: Optimize inefficient logic while keeping the result correct.

# buggy\_code\_task2.py  
def find\_duplicates(nums):  
duplicates = []  
for i in range(len(nums)):  
for j in range(len(nums)):  
if i != j and nums[i] == nums[j] and nums[i] not in duplicates:  
duplicates.append(nums[i])  
return duplicates  
numbers = [1,2,3,2,4,5,1,6,1,2]  
print(find\_duplicates(numbers))

Expected Output:

• More efficient duplicate detection (e.g., using sets).

• AI should explain the optimization

Screenshots :

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Task 3: Code Refactoring for Readability

Task: Refactor messy code into clean, PEP 8–compliant, well- structured code.

# buggy\_code\_task3.py

def c(n):  
x=1  
for i in range(1,n+1):  
x=x\*i  
return x  
print(c(5))

Expected Output:

Function renamed to calculate\_factorial.  
Proper indentation, variable naming, docstrings, and formatting.

AI should provide a more readable version

Screenshots :

A screenshot of a computer program

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A screenshot of a computer

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Task 4: Security and Error Handling Enhancement

Task: Add security practices and exception handling to the code.

# buggy\_code\_task4.py  
import sqlite3  
def get\_user\_data(user\_id):  
conn = sqlite3.connect("users.db")  
cursor = conn.cursor()  
query = f"SELECT \* FROM users WHERE id = {user\_id};" #  
Potential SQL injection risk  
cursor.execute(query)  
result = cursor.fetchall()  
conn.close()  
return result  
user\_input = input("Enter user ID: ")  
print(get\_user\_data(user\_input))

Expected Output:

Safe query using parameterized SQL (? placeholders).

Try-except block for database errors.  
Input validation before query execution.

Screenshots :

A screenshot of a computer

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A screenshot of a computer program

AI-generated content may be incorrect.

A black background with colorful lights

AI-generated content may be incorrect.

Task 5: Automated Code Review Report Generation

Task: Generate a review report for this messy code.

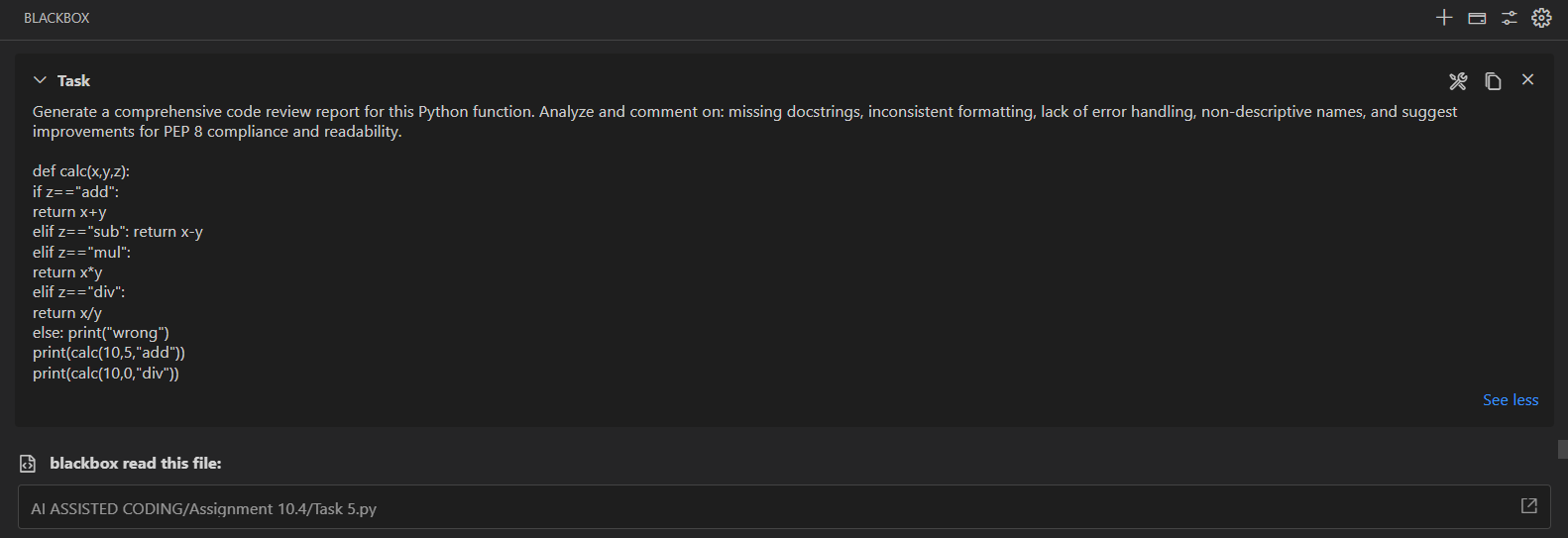
# buggy\_code\_task5.py

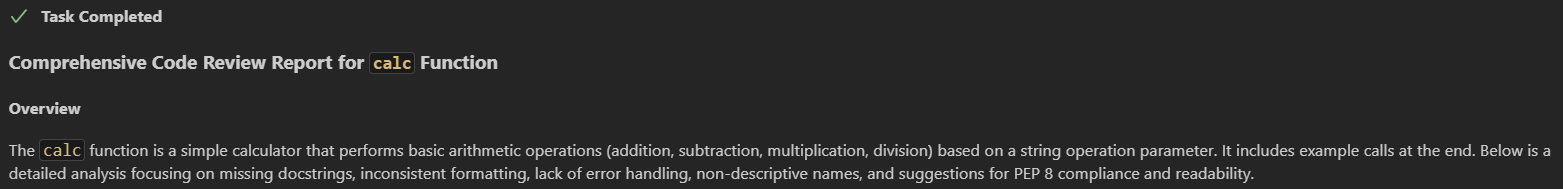
def calc(x,y,z):  
if z=="add":  
return x+y  
elif z=="sub": return x-y  
elif z=="mul":  
return x\*y  
elif z=="div":  
return x/y  
else: print("wrong")  
print(calc(10,5,"add"))  
print(calc(10,0,"div"))

Expected Output:

AI-generated review report should mention:  
o Missing docstrings  
o Inconsistent formatting (indentation, inline return)  
o Missing error handling for division by zero  
o Non-descriptive function/variable names  
o Suggestions for readability and PEP 8 compliance

AI – Generated Report :





A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.

A computer screen with white text

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

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AI-generated content may be incorrect.

Screenshots of the task :

A screenshot of a computer program

AI-generated content may be incorrect.

A computer code on a black background

AI-generated content may be incorrect.

A screenshot of a computer error

AI-generated content may be incorrect.