AI ASSISTED CODING

LAB ASSIGNMENT – 10.4

NAVYA MASADI

2403A53020

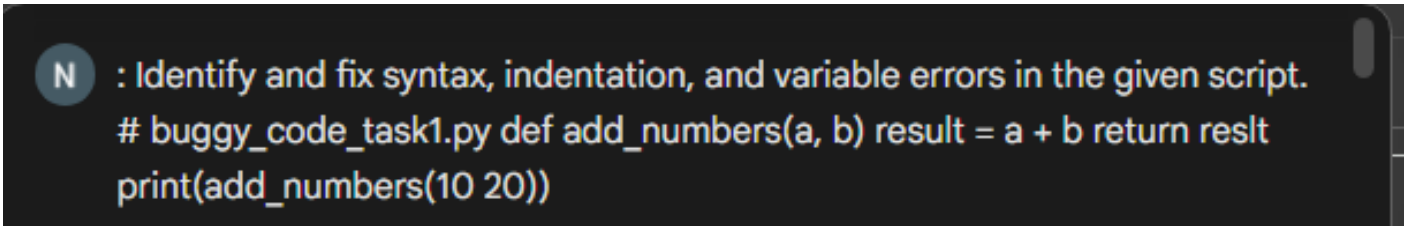
24BTCAICYB01-2-1

#TASK-1

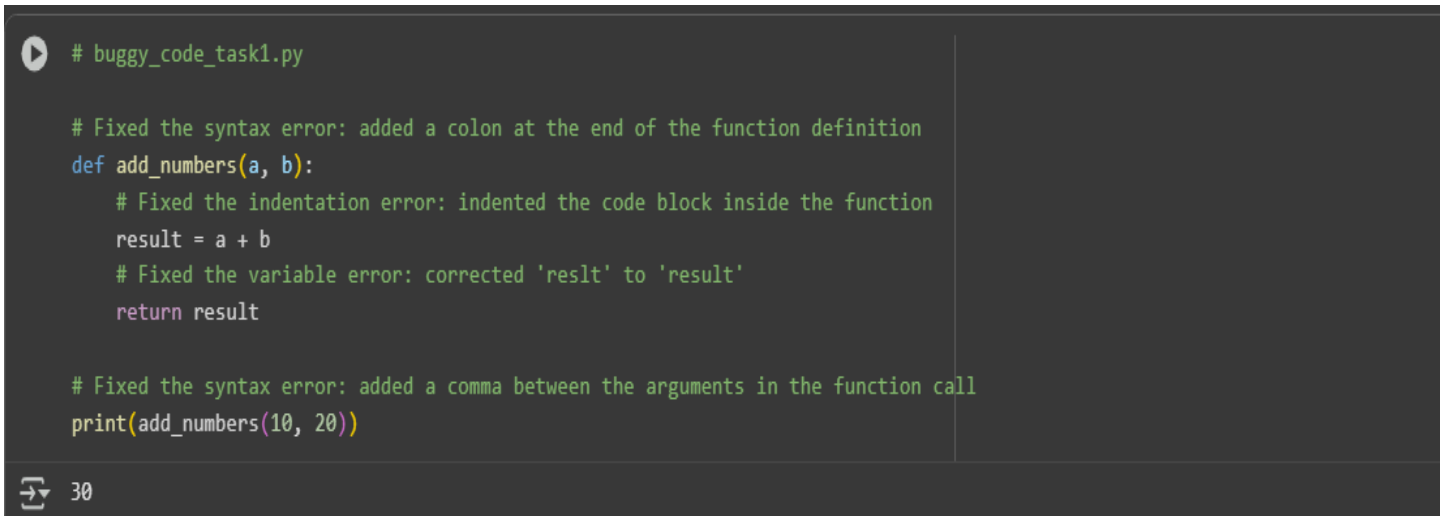
: Identify and fix syntax, indentation, and variable errors in the given script.

```
# buggy_code_task1.py
def add_numbers(a, b)
    result = a + b
    return reslt
print(add_numbers(10 20))
```

PROMPT:



OUTPUT:



```
# buggy_code_task1.py

# Fixed the syntax error: added a colon at the end of the function definition
def add_numbers(a, b):
    # Fixed the indentation error: indented the code block inside the function
    result = a + b
    # Fixed the variable error: corrected 'reslt' to 'result'
    return result

# Fixed the syntax error: added a comma between the arguments in the function call
print(add_numbers(10, 20))
```

```
30
```

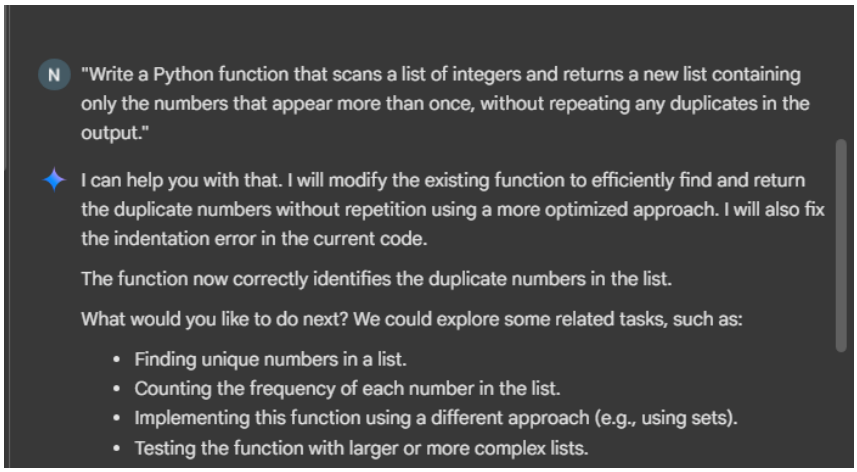
#TASK-2

Optimize inefficient logic while keeping the result correct.

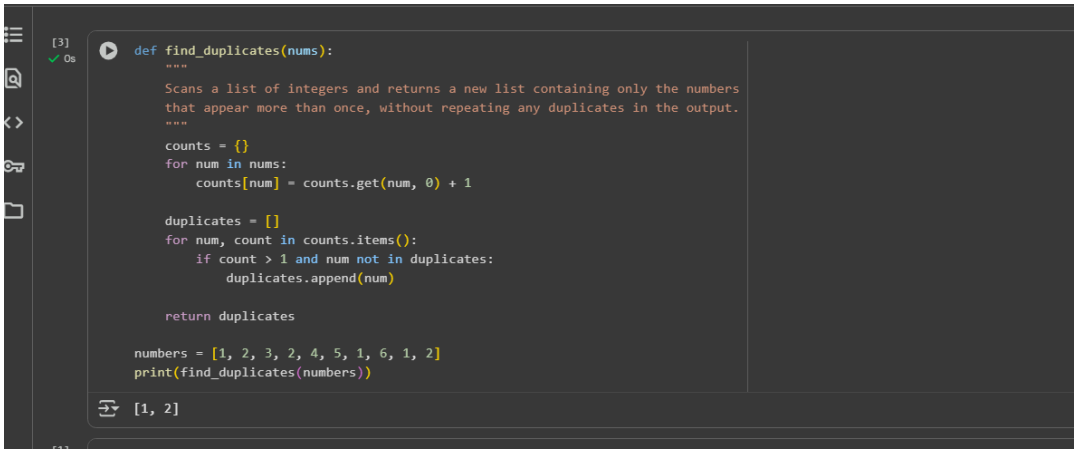
```
# buggy_code_task2.py
def find_duplicates(nums):
    duplicates = []
    for i in range(len(nums)):
        for j in range(len(nums)):
            if i != j and nums[i] == nums[j] and nums[i] not in duplicates:
duplicates.append(nums[i])
    return duplicates
```

numbers = [1,2,3,2,4,5,1,6,1,2]
print(find_duplicates(numbers))

PROMPT:



OUTPUT:



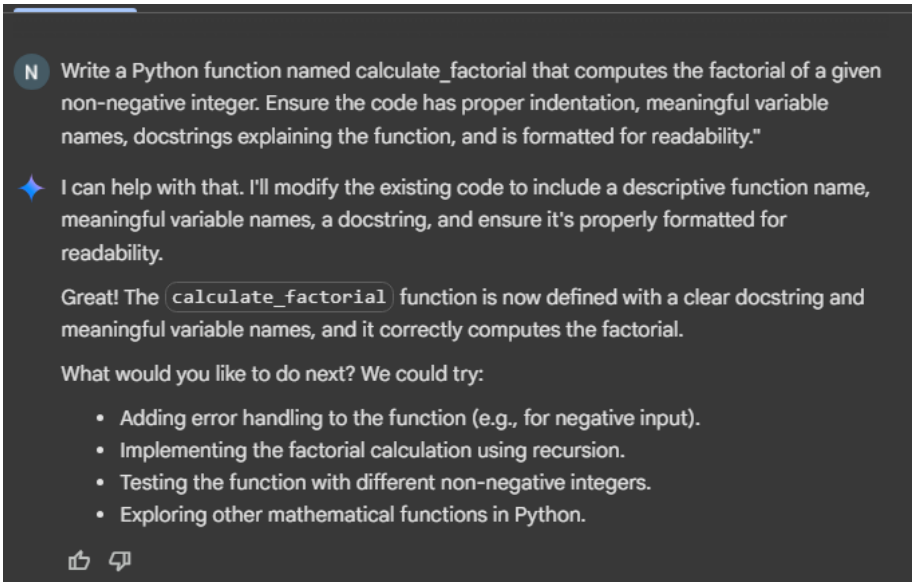
#TASK-3

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))
```

PROMPT:



OUTPUT:

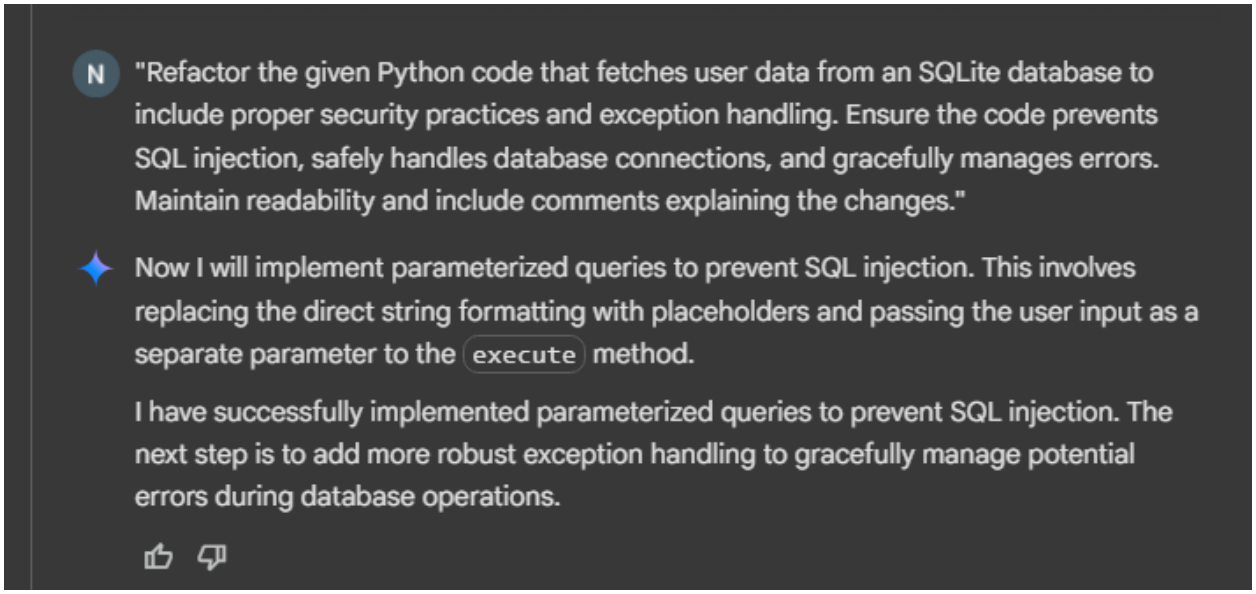
#TASK-4

Add security practices and exception handling to the code.

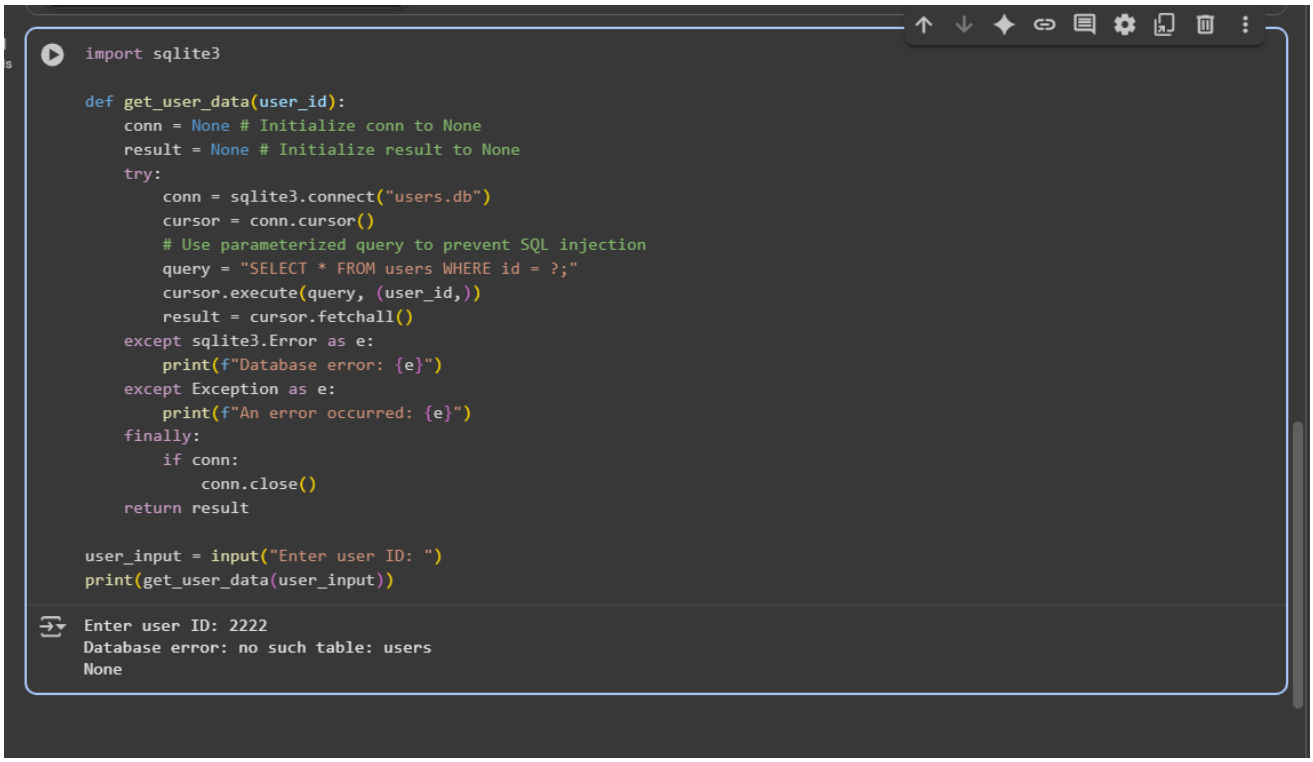
```
# buggy_code_task4.py
import sqlite3
def get_user_data(user_id):
    conn = sqlite3.connect("users.db")
    cursor = conn.cursor()
    query = f"SELECT * FROM users WHERE id = {user_id};"  # Potential SQL injection risk
cursor.execute(query)
    result = cursor.fetchall()
conn.close()
    return result
```

```
user_input = input("Enter user ID: ")
print(get_user_data(user_input))
```

PROMPT:



OUTPUT:



```python
import sqlite3

def get_user_data(user_id):
    conn = None # Initialize conn to None
    result = None # Initialize result to None
    try:
        conn = sqlite3.connect("users.db")
        cursor = conn.cursor()
        # Use parameterized query to prevent SQL injection
        query = "SELECT * FROM users WHERE id = ?;"
        cursor.execute(query, (user_id,))
        result = cursor.fetchall()
    except sqlite3.Error as e:
        print(f"Database error: {e}")
    except Exception as e:
        print(f"An error occurred: {e}")
    finally:
        if conn:
            conn.close()
    return result

user_input = input("Enter user ID: ")
print(get_user_data(user_input))
```

```
Enter user ID: 2222
Database error: no such table: users
None
```

#TASK-5

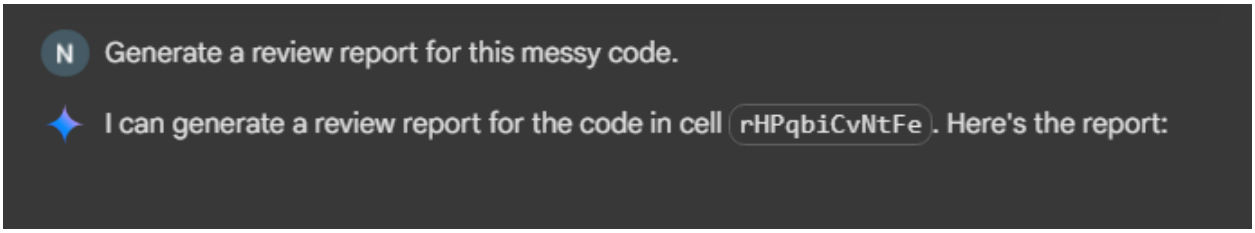
Generate a **review report** for this messy code.
buggy_code_task5.py

```
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"))
```

PROMPT:



OUTPUT:

Code Review Report for cell `rHPqbiCvNtFe`

Here is a review of the provided Python code:

Readability and Formatting:

- **Inconsistent Indentation:** The indentation is inconsistent throughout the function, making it difficult to read and understand the code blocks. Python relies heavily on indentation, so this is a significant issue.
- **Lack of Comments:** There are no comments explaining the purpose of the function or specific parts of the logic.
- **Concise Variable Names:** While the variable names `x`, `y`, and `z` are short, they are not very descriptive of their purpose. `z` being used for the operation name is acceptable in this context, but more descriptive names for `x` and `y` would improve clarity.

Potential Issues and Improvements:

- **Error Handling for Division by Zero:** The code does not handle the case where the user attempts to perform division by zero. This will result in a `ZeroDivisionError`, as seen in the execution output. You should add a check to see if the denominator `y` is zero when the operation is "div" and handle this case appropriately (e.g., return an error message or raise a specific exception).
- **Handling Invalid Operations:** The `else` block currently only prints "wrong" for an invalid operation. It might be more useful to return a specific value (like `None`) or raise an exception to indicate that an invalid operation was provided.
- **Docstring:** The function is missing a docstring. A docstring should be included to explain what the function does, its arguments, and what it returns.

Refactoring Suggestions:

- Implement consistent indentation (use 4 spaces as the standard).
- Add a docstring to explain the function's purpose.
- Add error handling for division by zero within the "div" condition.
- Consider returning a more informative value or raising an exception for invalid operations.
- Add comments where necessary to explain the logic.