SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		**Assignment Type: Lab**	**Academic Year:**2025-2026
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Course Code	24CS002PC215	**Course Title**	AI Assisted Coding
Year/Sem	II/I	**Regulation**	R24
Date and Day of Assignment	Week5 - Thursday	**Time(s)**	
Duration	2 Hours	**Applicable to Batches**	
AssignmentNumber:10.4(Present assignment number)/**24**(Total number of assignments)			

Q.No.	Question	*Expected Time to complete*
1	**Lab 10 – Code Review and Quality: Using AI to Improve Code Quality and Readability** **Lab Objectives** • Use AI for automated code review and quality enhancement. • Identify and fix syntax, logical, performance, and security issues in Python code. • Improve readability and maintainability through structured refactoring and comments.	Week5 - Thursday

- Apply prompt engineering for targeted improvements.
- Evaluate AI-generated suggestions against PEP 8 standards and software engineering best practices

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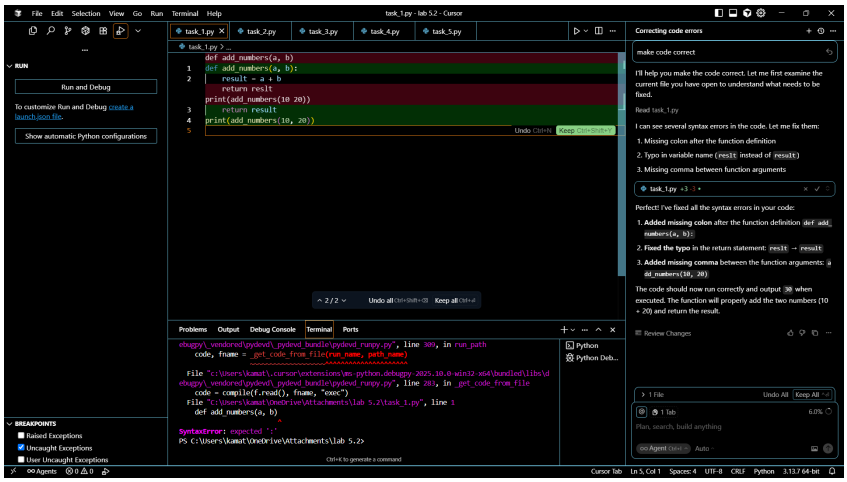
Task 1: Syntax and Error Detection

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.



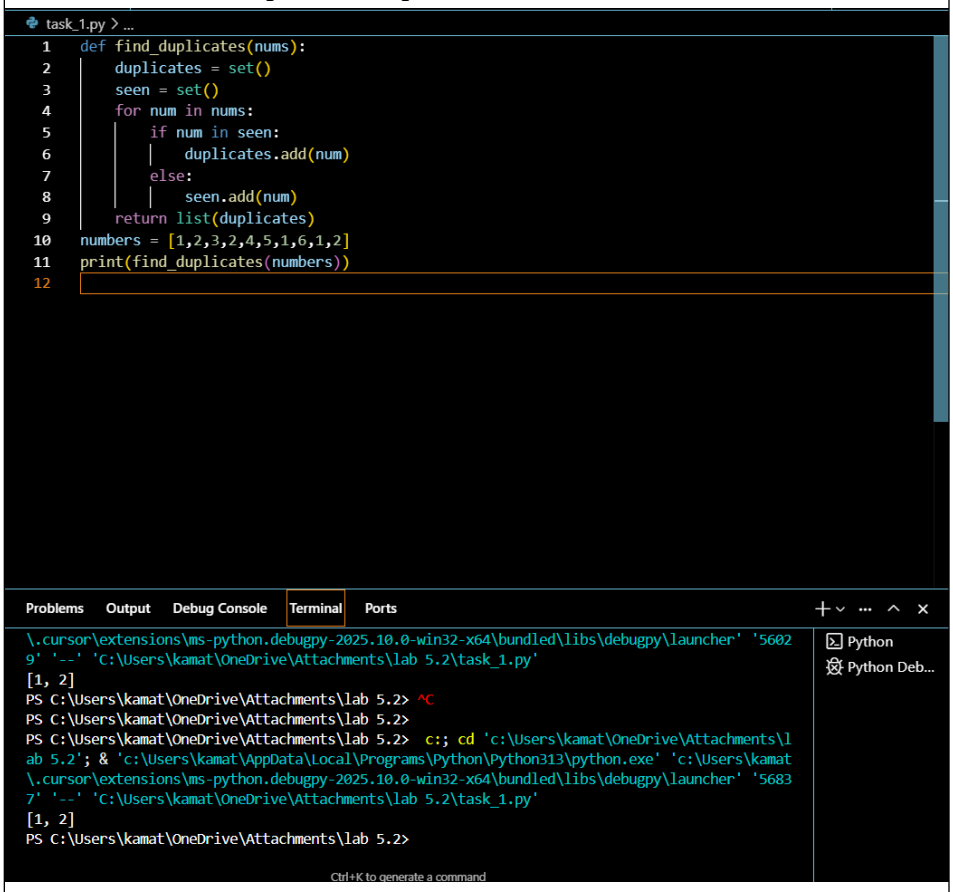
Task 2: Logical and Performance Issue Review

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.



Task 3: Code Refactoring for Readability

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

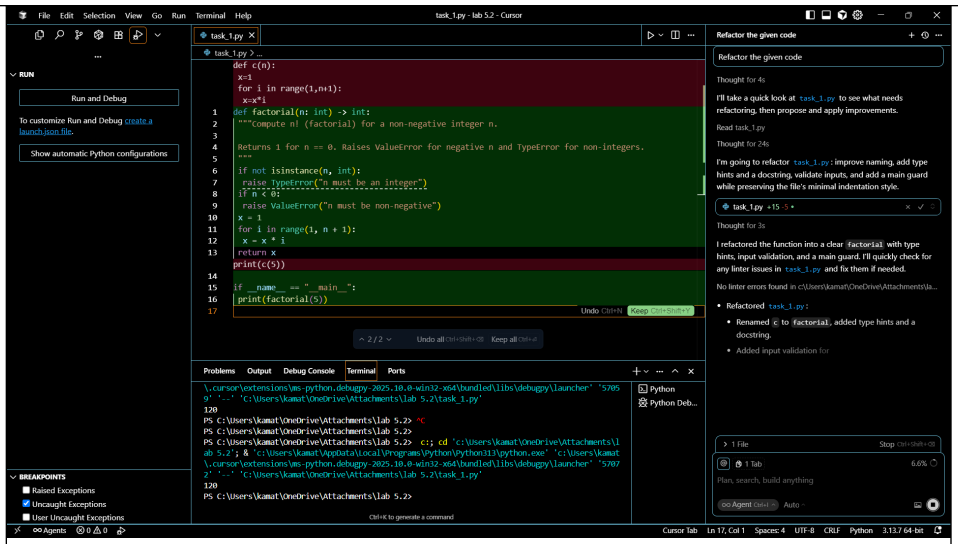
```
# buggy_code_task3.py

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.



Task 4: Security and Error Handling Enhancement

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

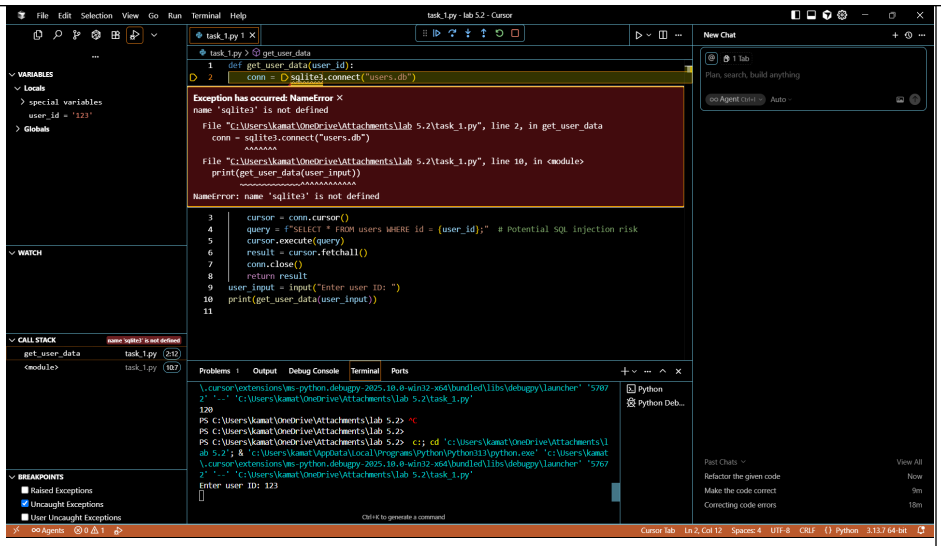
```
# buggy_code_task4.py
import sqlite3
def get_user_data(user_id):
    conn = sqlite3.connect("users.db")
    cursor = conn.cursor()
    query = f"SELECT * FROM users WHERE id = {user_id};"  # Potential SQL injection risk
    cursor.execute(query)
    result = cursor.fetchall()
    conn.close()
  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

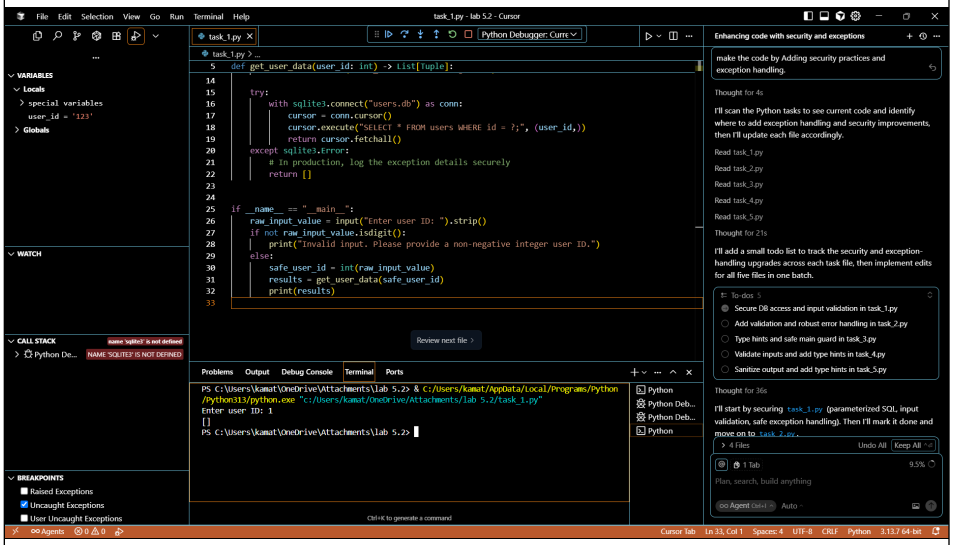
Expected Output:

Safe query using parameterized SQL (? placeholders).

Try-except block for database errors.

Input validation before query execution.





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:

- Missing docstrings
- Inconsistent formatting (indentation, inline return)
- Missing error handling for division by zero
- Non-descriptive function/variable names
- Suggestions for readability and PEP 8 compliance