SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE	**DEPARTMENT OF COMPUTER SCIENCE ENGINEERING**

ProgramName:B. Tech	**Assignment Type: Lab**	**AcademicYear:**2025-2026

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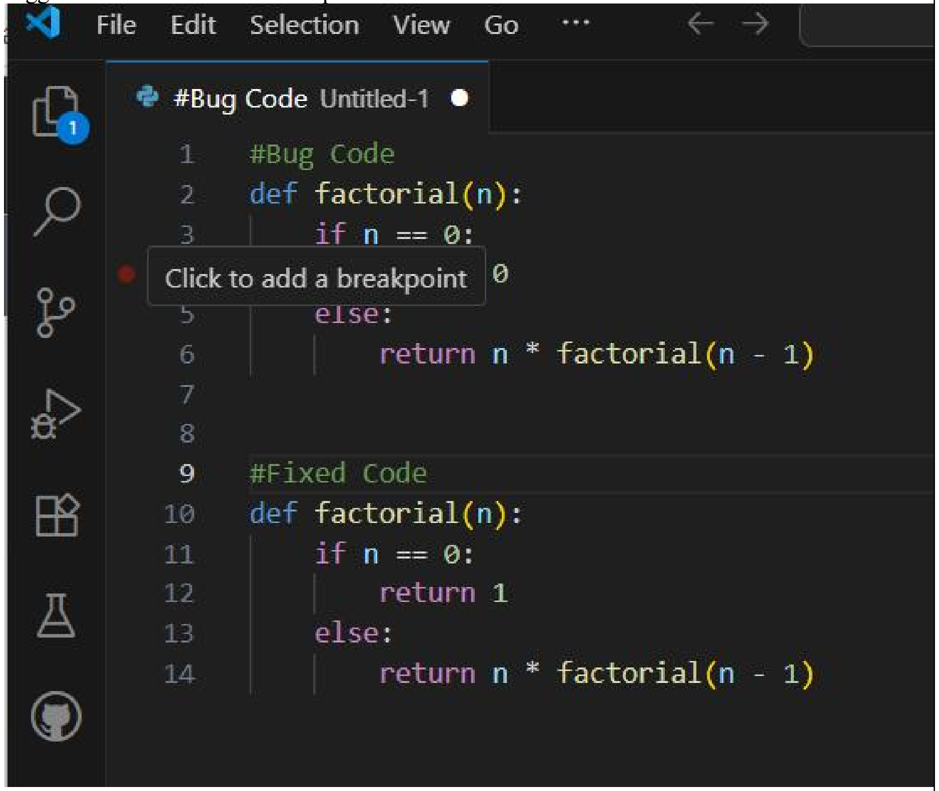
CourseCode	24CS002PC215	**CourseTitle**	AI Assisted Coding
Year/Sem	II/I	**Regulation**	R24
Date and Day of Assignment	Week4 - Thursday	**Time(s)**	
Duration	2 Hours	**Applicableto Batches**	
AssignmentNumber:7.4(Present assignment number)/**24**(Total number of assignments)			

Q.No.	**Question**	***ExpectedTime to complete***
1	Lab 7: Error Debugging with AI – Systematic Approaches to Finding and Fixing Bugs Lab Objectives: • To identify and correct syntax, logic, and runtime errors in Python programs using AI tools.	Week4 - Thursday

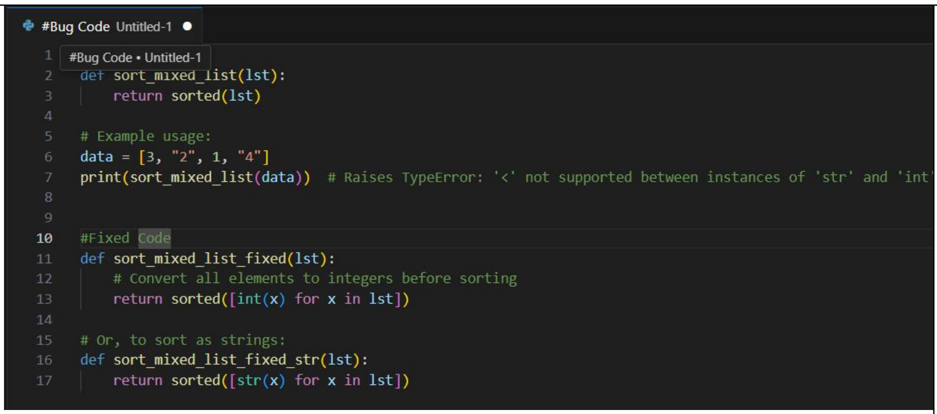
- To understand common programming bugs and AI-assisted debugging suggestions.
- To evaluate how AI explains, detects, and fixes different types of coding errors.
- To build confidence in using AI to perform structured debugging practices.
  Lab Outcomes (LOs):
  After completing this lab, students will be able to:
- Use AI tools to detect and correct syntax, logic, and runtime errors.
- Interpret AI-suggested bug fixes and explanations.
- Apply systematic debugging strategies supported by AI-generated insights.
- Refactor buggy code using responsible and reliable programming patterns.

Task Description #1:
• Introduce a buggy Python function that calculates the factorial of a number using recursion. Use Copilot or Cursor AI to detect and fix the logical or syntax errors.
Expected Outcome #1:
• Copilot or Cursor AI correctly identifies missing base condition or incorrect recursive call and suggests a functional factorial implementation.



```python
#Bug Code
def factorial(n):
    if n == 0:
                                0
    else:
        return n * factorial(n - 1)


#Fixed Code
def factorial(n):
    if n == 0:
        return 1
    else:
        return n * factorial(n - 1)
```

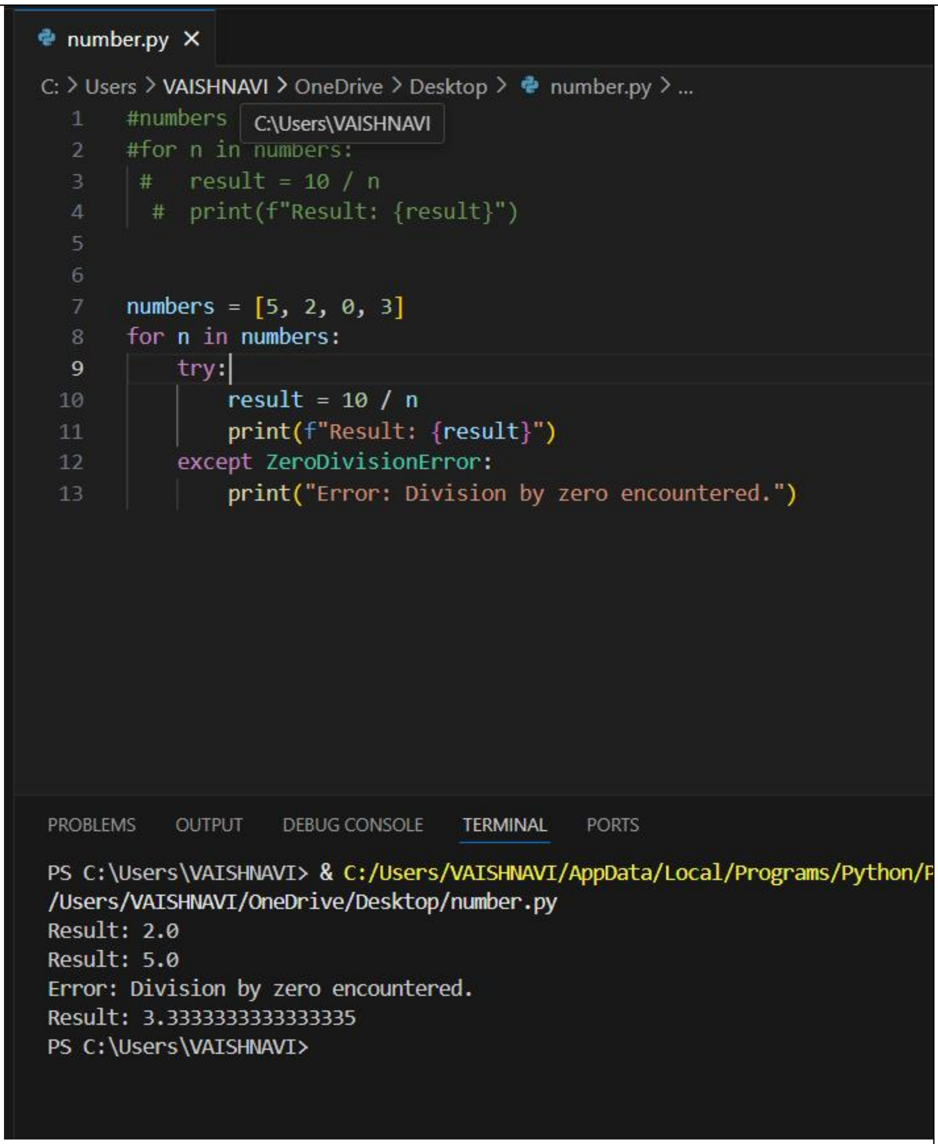
Task Description #2:
• Provide a list sorting function that fails due to a type error (e.g., sorting list with mixed integers and strings). Prompt AI to detect the issue and fix the code for consistent sorting**.**
Expected Outcome #2:
• AI detects the type inconsistency and either filters or converts list elements, ensuring successful sorting without a crash.



```python
def sort_mixed_list(lst):
    return sorted(lst)

# Example usage:
data = [3, "2", 1, "4"]
print(sort_mixed_list(data))  # Raises TypeError: '<' not supported between instances of 'str' and 'int'


#Fixed Code
def sort_mixed_list_fixed(lst):
    # Convert all elements to integers before sorting
    return sorted([int(x) for x in lst])

# Or, to sort as strings:
def sort_mixed_list_fixed_str(lst):
    return sorted([str(x) for x in lst])
```

Task Description #3:
• Write a Python snippet for file handling that opens a file but forgets to close it. Ask Copilot or Cursor AI to improve it using the best practice (e.g., with open() block).
Expected Outcome #3:
• AI refactors the code to use a context manager, preventing resource leakage and runtime warnings.

Task Description #4:
• Provide a piece of code with a ZeroDivisionError inside a loop. Ask AI to add error handling using try-except and continue execution safely.
Expected Outcome #4:
• Copilot adds a try-except block around the risky operation, preventing crashes and printing a meaningful error message.



```python
#numbers
#for n in numbers:
 #   result = 10 / n
  #  print(f"Result: {result}")


numbers = [5, 2, 0, 3]
for n in numbers:
    try:
        result = 10 / n
        print(f"Result: {result}")
    except ZeroDivisionError:
        print("Error: Division by zero encountered.")
```

```
PS C:\Users\VAISHNAVI> & C:/Users/VAISHNAVI/AppData/Local/Programs/Python/P
/Users/VAISHNAVI/OneDrive/Desktop/number.py
Result: 2.0
Result: 5.0
Error: Division by zero encountered.
Result: 3.3333333333333335
PS C:\Users\VAISHNAVI>
```

OBSERVATION:

- The original code attempted to divide 100 by each number in the list, which caused a ZeroDivisionError when it encountered 0.

- The revised version uses a `try-except` block to catch this specific error, allowing the program to continue executing without interruption.
- Instead of crashing, the program now prints a clear message: "`Cannot divide by zero. Skipping value: 0`", which improves user experience and debugging.
- The loop continues smoothly after handling the error, demonstrating **robustness** and **fault tolerance** in the code design.

Task Description #5:

• Include a buggy class definition with incorrect __init__ parameters or attribute references. Ask AI to analyze and correct the constructor and attribute usage.

Expected Outcome #5:

• Copilot identifies mismatched parameters or missing self references and rewrites the class with accurate initialization and usage.

Note: Report should be submitted a word document for all tasks in a single document with prompts, comments & code explanation, and output and if required, screenshots

Evaluation Criteria:

Criteria	Max Marks
Logic	0.5
Type mismatch in list elements during sorting	0.5
Resource	0.5
Runtime	0.5
Syntax	0.5
Total	**2.5 Marks**