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SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		Assignment Type: Lab	Academic Year:2025-2026
Course Coordinator Name		Dr. Rishabh Mittal	
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Mr. Bingi Raju			
Course Code	23CS002PC304	Course Title	AI Assisted Coding
Year/Sem	III/II	Regulation	R23
Date and Day of Assignment	Week4 – Wednesday	Time(s)	23CSBTB01 To 23CSBTB52
Duration	2 Hours	Applicable to Batches	All batches
AssignmentNumber:7.3(Present assignment number)/24(Total number of assignments)			
Q.No.	Question		Expected Time to complete
1	Lab 7: Error Debugging with AI: Systematic approaches to finding and fixing bugs		Week4 - Wednesday
	Lab Objectives • To identify and correct syntax, logic, and runtime errors in Python programs using AI tools		

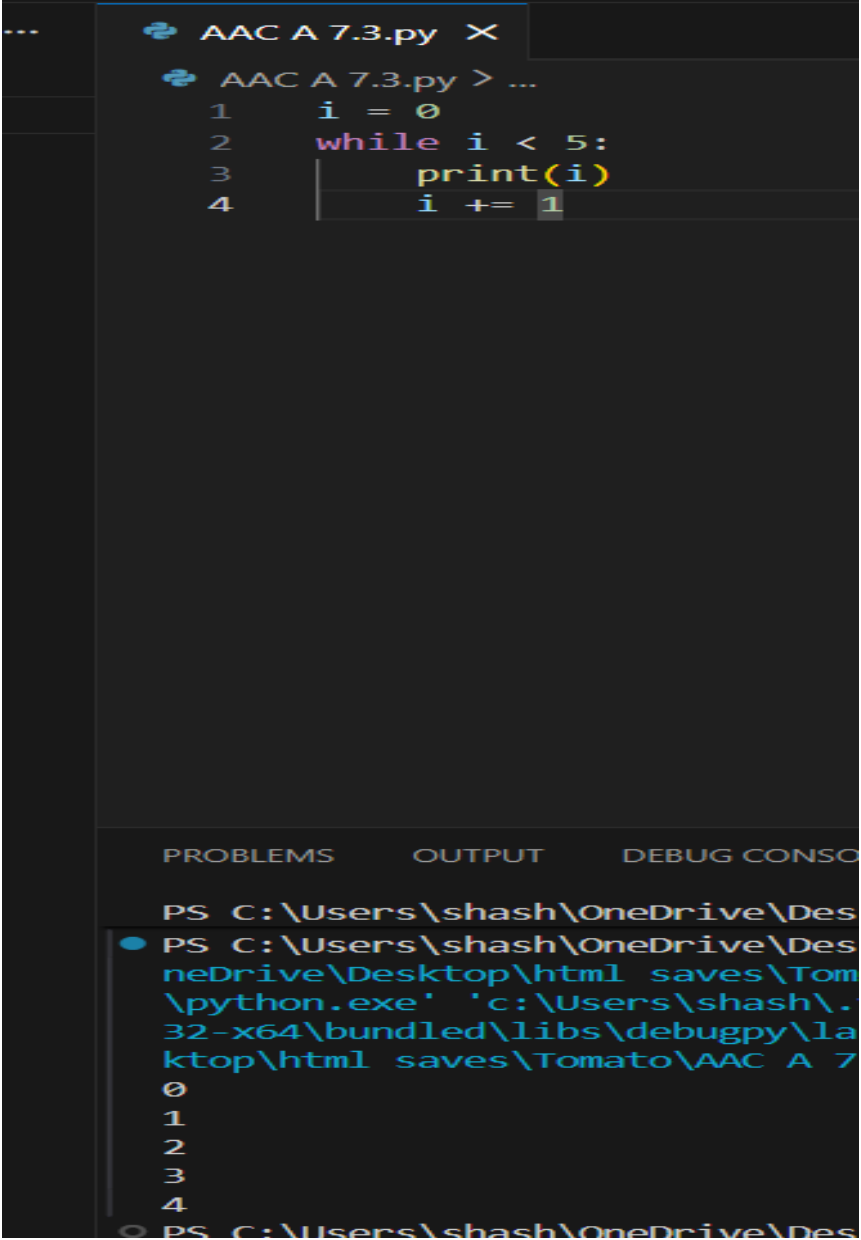
	<ul style="list-style-type: none">• To understand common programming bugs and AI-assisted debugging suggestions• To evaluate how AI explains, detects, and fixes different types of coding errors• To build confidence in using AI for structured debugging practices	
	Lab Outcomes (LOs) After completing this lab, students will be able to: <ul style="list-style-type: none">• Use AI tools to detect and correct syntax, logic, and runtime errors• Interpret AI-suggested bug fixes and explanations• Apply systematic debugging strategies using AI-generated insights• Refactor buggy code using reliable programming patterns	
	Task 1: Fixing Syntax Errors Scenario You are reviewing a Python program where a basic function definition contains a syntax error. <pre>python def add(a, b) return a + b</pre> Requirements <ul style="list-style-type: none">• Provide a Python function add(a, b) with a missing colon• Use an AI tool to detect the syntax error• Allow AI to correct the function definition• Observe how AI explains the syntax issue Expected Output <ul style="list-style-type: none">• Corrected function with proper syntax• Syntax error resolved successfully• AI-generated explanation of the fix	

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	<div><div><div>...</div><div>AAC A 7.3.py</div><div>AAC A 7.3.py > ...</div><div><pre>1 def add(a, b): 2 return a + b 3 print(add(2, 3))</pre></div></div><div><div>PROBLEMS</div><div>OUTPUT</div><div>DEBUG CONSOLE</div><div>TERMINAL</div><div>PORTS</div><div>PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato\ve\Desktop\html saves\Tomato"; python lab7_debuggi</div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div><div>Index out of range</div><div>PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato\ve\Desktop\html saves\Tomato"; python "AAC A 7.3.py</div><div>● PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato</div><div>● 5</div><div>PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato</div></div></div>	
	<div>Task 2: Debugging Logic Errors in Loops</div> <div>Scenario</div> <div>You are debugging a loop that runs infinitely due to a logical mistake.</div>	

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	<div data-bbox="388 205 800 424"><pre>python def count_down(n): while n >= 0: print(n) n += 1 # Should be n -= 1</pre></div> <div data-bbox="373 451 920 724"><p>Requirements</p><ul style="list-style-type: none">• Provide a loop with an increment or decrement error• Use AI to identify the cause of infinite iteration• Let AI fix the loop logic• Analyze the corrected loop behavior<p>Expected Output</p><ul style="list-style-type: none">• Infinite loop issue resolved• Correct increment/decrement logic applied• AI explanation of the logic error</div>	
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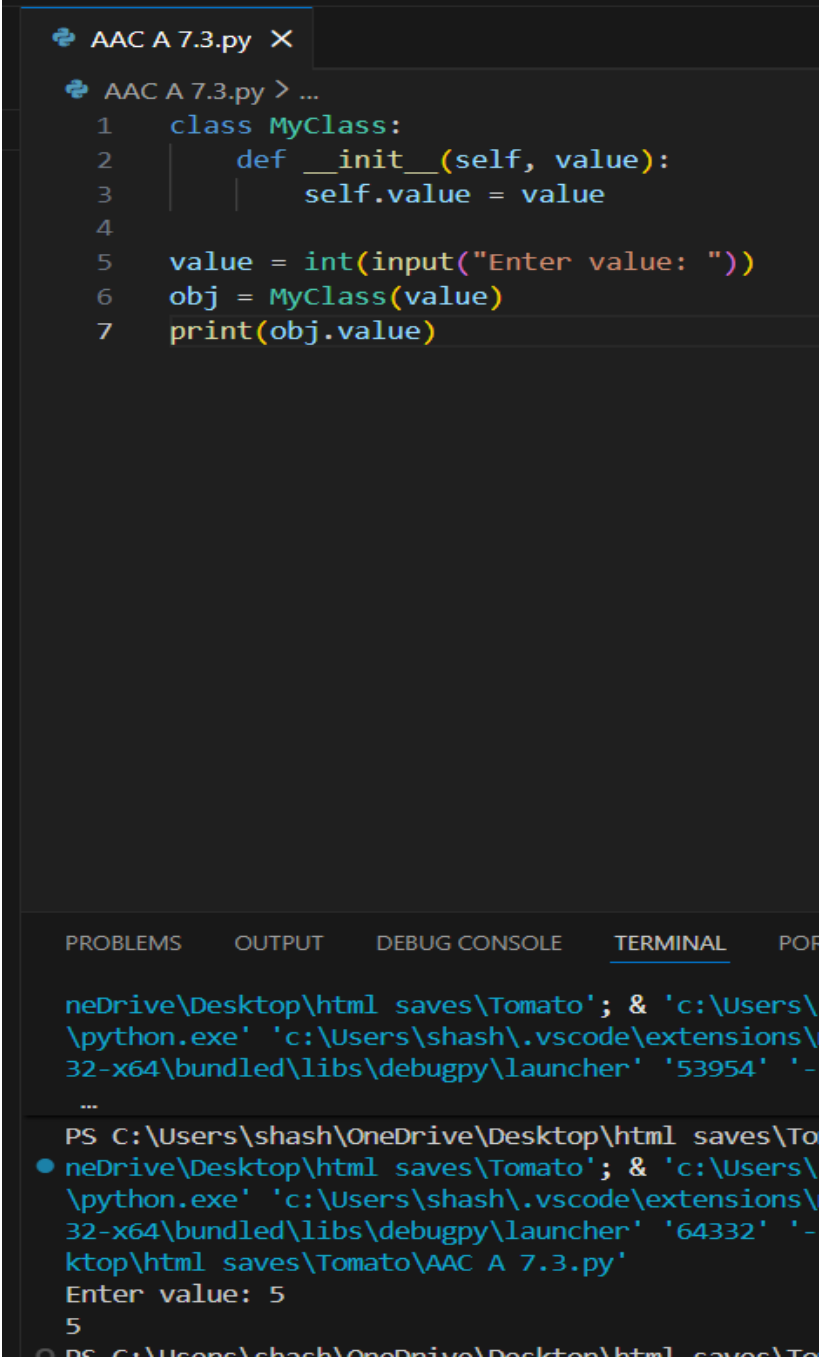
	 <p>The screenshot shows a Python IDE with a file named 'AAC A 7.3.py'. The code is a while loop that prints the value of 'i' from 0 to 4. The output window shows the numbers 0, 1, 2, 3, and 4, each on a new line.</p> <pre>1 i = 0 2 while i < 5: 3 print(i) 4 i += 1</pre> <p>PROBLEMS OUTPUT DEBUG CONSOLE</p> <p>PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato\AAC A 7.3.py</p> <p>● PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato\AAC A 7.3.py</p> <p>0 1 2 3 4</p>	
	<p>Task 3: Handling Runtime Errors (Division by Zero)</p> <p>Scenario A Python function crashes during execution due to a division by zero error.</p> <pre># Debug the following code def divide(a, b): return a / b print(divide(10, 0))</pre> <p>Requirements</p> <ul style="list-style-type: none">• Provide a function that performs division without validation• Use AI to identify the runtime error• Let AI add try-except blocks for safe execution	

	<ul style="list-style-type: none">• Review AI's error-handling approach <p>Expected Output</p> <ul style="list-style-type: none">• Function executes safely without crashing• Division by zero handled using try-except• Clear AI-generated explanation of runtime error handling  <pre>def divide(a, b): try: return a / b except ZeroDivisionError: return "Cannot divide by zero" print(divide(10, 0))</pre> <p>Terminal output:</p> <pre>PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato> python lab7_debugging.py 3 4 Index out of range PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato> python "AAC A 7.3.py" 5 PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato> Cannot divide by zero PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato></pre>	
	<p>Task 4: Debugging Class Definition Errors</p> <p>Scenario</p> <p>You are given a faulty Python class where the constructor is incorrectly defined.</p>	

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	<div>python</div> <pre>class Rectangle: def __init__(length, width): self.length = length self.width = width</pre>	
	<p>Requirements</p> <ul style="list-style-type: none">• Provide a class definition with missing self-parameter• Use AI to identify the issue in the <code>__init__()</code> method• Allow AI to correct the class definition• Understand why self is required <p>Expected Output</p> <ul style="list-style-type: none">• Corrected <code>__init__()</code> method• Proper use of self in class definition• AI explanation of object-oriented error	

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	 <pre>AAC A 7.3.py X AAC A 7.3.py > ... 1 class MyClass: 2 def __init__(self, value): 3 self.value = value 4 5 value = int(input("Enter value: ")) 6 obj = MyClass(value) 7 print(obj.value) PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL POP neDrive\Desktop\html saves\Tomato'; & 'c:\Users\ \python.exe' 'c:\Users\shash\.vscode\extensions\ 32-x64\bundled\libs\debugpy\launcher' '53954' '- ... PS C:\Users\shash\OneDrive\Desktop\html saves\To • neDrive\Desktop\html saves\Tomato'; & 'c:\Users\ \python.exe' 'c:\Users\shash\.vscode\extensions\ 32-x64\bundled\libs\debugpy\launcher' '64332' '- ktop\html saves\Tomato\AAC A 7.3.py' Enter value: 5 5 PS C:\Users\shash\OneDrive\Desktop\html saves\To</pre>	
	<p>Task 5: Resolving Index Errors in Lists</p> <p>Scenario A program crashes when accessing an invalid index in a list.</p> <pre>python numbers = [1, 2, 3] print(numbers[5])</pre> <p>Requirements</p>	

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- Provide code that accesses an **out-of-range list index**
- Use AI to identify the Index Error
- Let AI suggest safe access methods
- Apply bounds checking or exception handling

Expected Output

- Index error resolved
- Safe list access logic implemented
- AI suggestion using length checks or exception handling

```
AAC A 7.3.py > ...
1 my_list = [1, 2, 3]
2 try:
3     print(my_list[5])
4 except IndexError:
5     print("Index out of range")
```

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PROBLEMS      OUTPUT      DEBUG CONSOLE      TERMINAL
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ktop\html saves\Tomato\AAC A 7.3.py'
Index out of range

```

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