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SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		Assignment Type: Lab	
Course Coordinator Name		Dr. Rishabh Mittal	
Instructor(s) Name		Mr. S Naresh Kumar Ms. B. Swathi Dr. Sasanko Shekhar Gantayat Mr. Md Sallauddin Dr. Mathivanan Mr. Y Srikanth Ms. N Shilpa Dr. Rishabh Mittal (Coordinator) Dr. R. Prashant Kumar Mr. Ankushavali MD Mr. B Viswanath Ms. Sujitha Reddy Ms. A. Anitha Ms. M.Madhuri Ms. Katherashala Swetha Ms. Velpula sumalatha 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	

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	<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	
	<p>Lab Outcomes (LOs)</p> <p>After completing this lab, students will be able to:</p> <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	
	<p>Task 1: Fixing Syntax Errors</p> <p>Scenario</p> <p>You are reviewing a Python program where a basic function definition contains a syntax error.</p> <pre>python def add(a, b) return a + b</pre> <p>Requirements</p> <ul style="list-style-type: none">• Provide a Python function <code>add(a, b)</code> 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 <p>Expected Output</p> <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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The screenshot shows a terminal window with the following content:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato
ve\Desktop\html saves\Tomato"; python lab7_debuggi
1
2
3
4
Index out of range
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato
ve\Desktop\html saves\Tomato"; python "AAC A 7.3.py"
● PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato
● 5
❖ PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato
```

Below the terminal window, there is a table with two rows:

	Task 2: Debugging Logic Errors in Loops	
	Scenario You are debugging a loop that runs infinitely due to a logical mistake.	

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	<pre>python def count_down(n): while n >= 0: print(n) n += 1 # Should be n -= 1</pre>	
	<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	

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The screenshot shows a code editor with a dark theme. In the top right corner of the editor, there is a small icon with three dots and a minus sign, followed by the text "...". Below the editor, the file name "AAC A 7.3.py" is displayed with a "X" icon to its right. The code itself is:

```
1 i = 0
2 while i < 5:
3     print(i)
4     i += 1
```

Below the code editor is a terminal window with the following text:

```
PROBLEMS OUTPUT DEBUG CONSO
PS C:\Users\shash\OneDrive\Desktop\html saves\Tom\python.exe 'c:\Users\shash\32-x64\bundled\libs\debugpy\laptop\html saves\Tomato\AAC A 7.0
1
2
3
4
O PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato\AAC A 7.0
```

The terminal output shows the numbers 0 through 4 printed sequentially.

Task 3: Handling Runtime Errors (Division by Zero)

Scenario

A Python function crashes during execution due to a division by zero error.

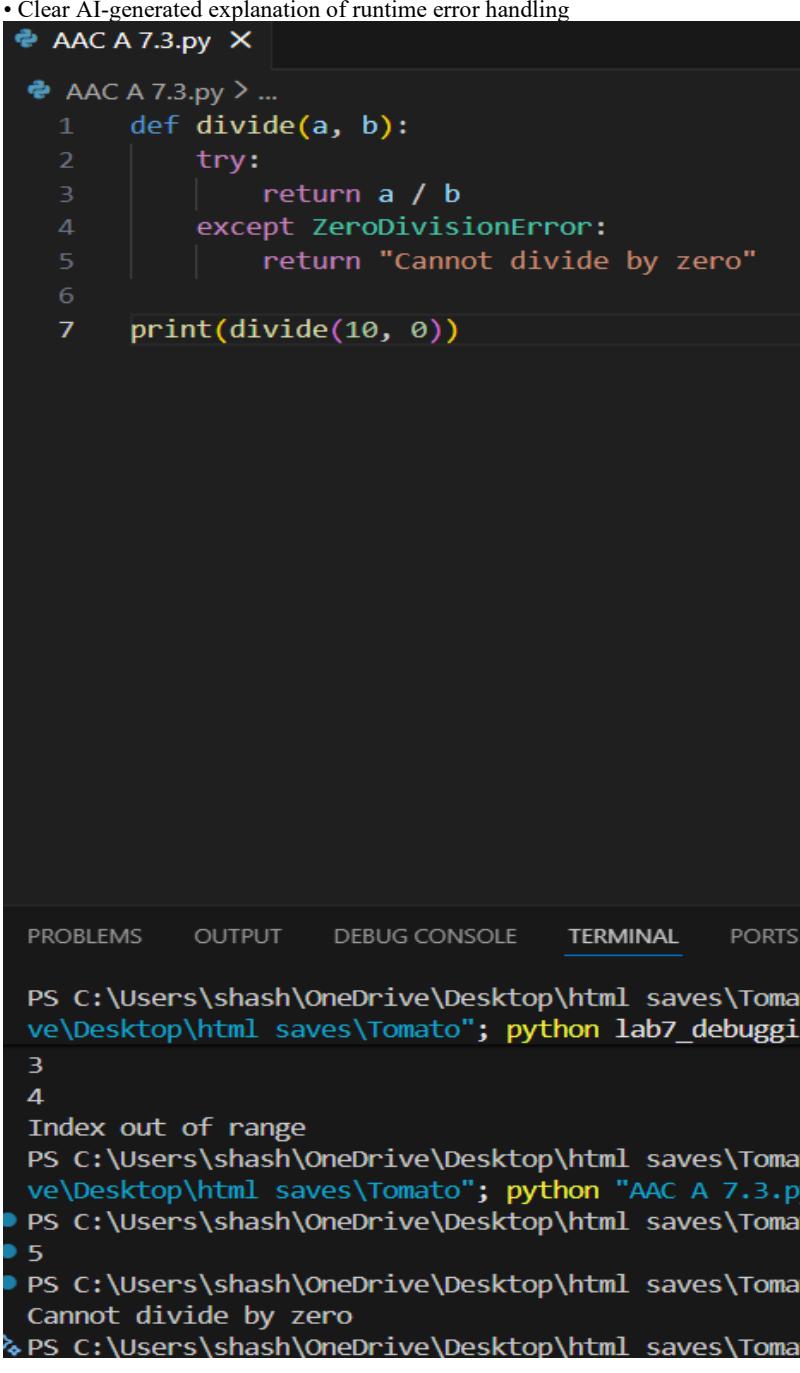
```
# Debug the following code
def divide(a, b):
    return a / b

print(divide(10, 0))
```

Requirements

- Provide a function that performs division without validation
- Use AI to identify the runtime error
- Let AI add try-except blocks for safe execution

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	<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>AAC A 7.3.py > ... 1 def divide(a, b): 2 try: 3 return a / b 4 except ZeroDivisionError: 5 return "Cannot divide by zero" 6 7 print(divide(10, 0)) PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato\Desktop\html saves\Tomato"; python lab7_debugging 3 4 Index out of range PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato\Desktop\html saves\Tomato"; python "AAC A 7.3.py" ● PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato ● 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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	<pre>python 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 <code>self</code> is required <p>Expected Output</p> <ul style="list-style-type: none">• Corrected <code>__init__()</code> method• Proper use of <code>self</code> in class definition• AI explanation of object-oriented error	
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Task 5: Resolving Index Errors in Lists

Scenario

Scenario A program crashes when accessing an invalid index in a list.

python

```
numbers = [1, 2, 3]  
print(numbers[5])
```

Requirements

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- | | | |
|--|--|--|
| | <ul style="list-style-type: none">Provide code that accesses an out-of-range list indexUse AI to identify the Index ErrorLet AI suggest safe access methodsApply bounds checking or exception handling | |
|--|--|--|

Expected Output

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

The screenshot shows a code editor window with a dark theme. A file named 'AAC A 7.3.py' is open, containing the following code:

```
my_list = [1, 2, 3]
try:
    print(my_list[5])
except IndexError:
    print("Index out of range")
```

Below the code editor is a terminal window with the following output:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
neDrive\Desktop\html saves\Tomato'; & 'c:\Users\python.exe' 'c:\Users\shash\vscode\extensions\32-x64\bundled\libs\debugpy\launcher' '64332'
...
5
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato'; & 'c:\Users\python.exe' 'c:\Users\shash\vscode\extensions\32-x64\bundled\libs\debugpy\launcher' '64395'
ktop\html saves\Tomato\AAC A 7.3.py'
Index out of range
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomato'
```

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