2303A51823 B-26	DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

Program Name: B. Tech	Assignment Type: Lab	Academic Year:2025-2026

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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** **Lab Objectives** • To identify and correct syntax, logic, and runtime errors in Python programs using AI tools	Week4 - Wednesday

• 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:
• 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

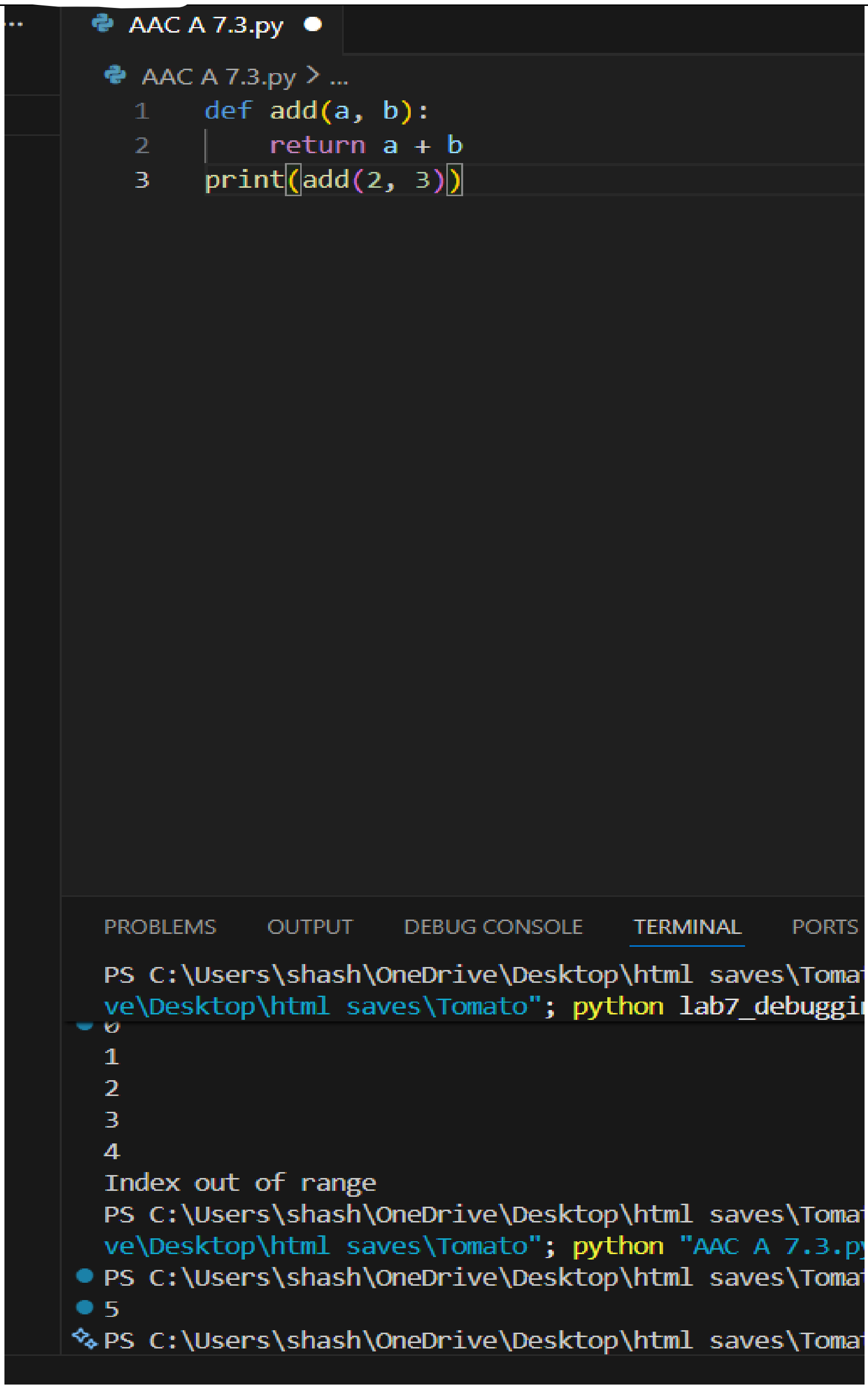
Task 1: Fixing Syntax Errors

Scenario
You are reviewing a Python program where a basic function definition contains a syntax error.

```python
def add(a, b)
    return a + b
```

Requirements
• 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
• Corrected function with proper syntax
• Syntax error resolved successfully
• AI-generated explanation of the fix



```python
def add(a, b):
    return a + b
print(add(2, 3))
```

```
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Index out of range
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5
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomat
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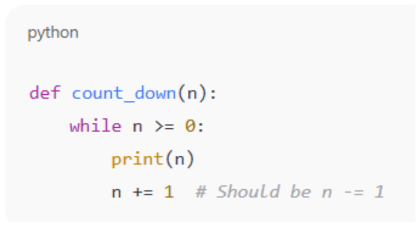
Task 2: Debugging Logic Errors in Loops

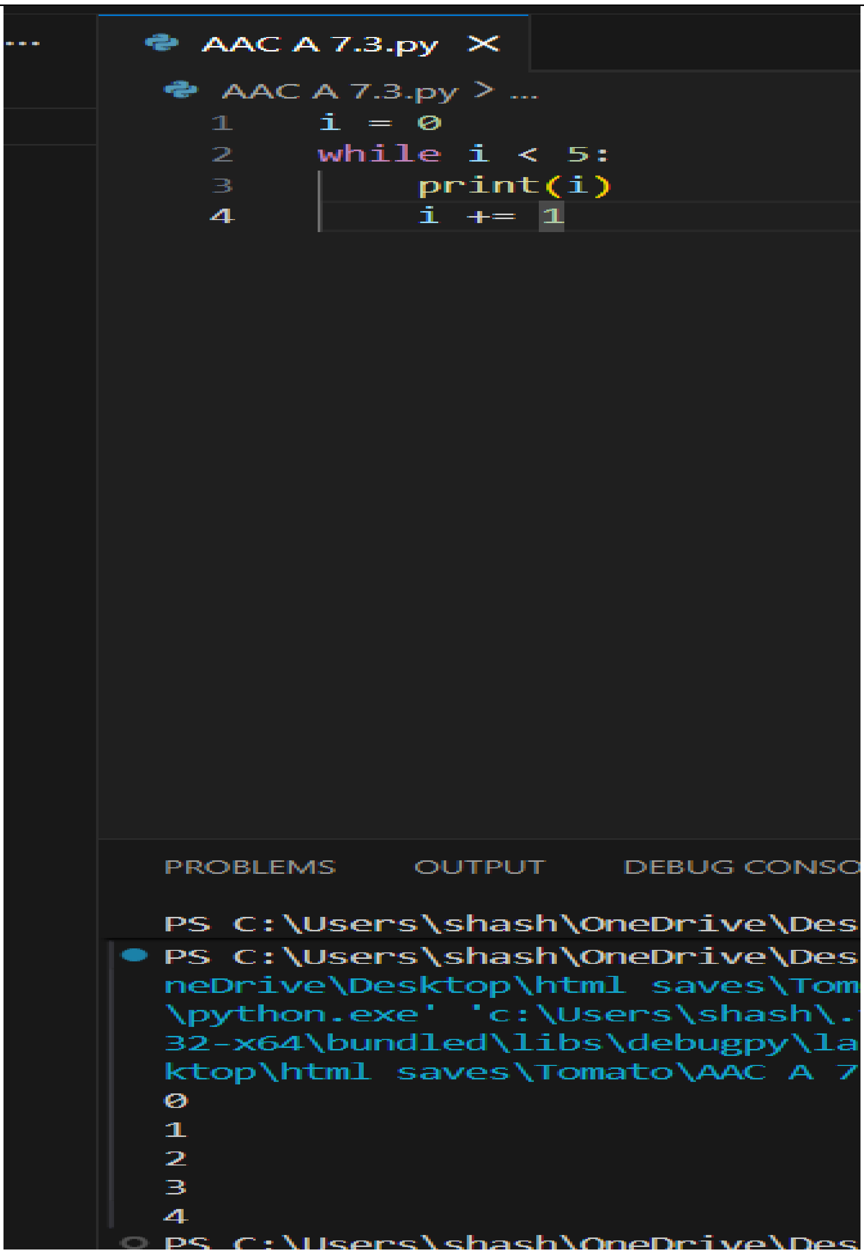
Scenario
You are debugging a loop that runs infinitely due to a logical mistake.



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

Requirements
• 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

Expected Output
• Infinite loop issue resolved
• Correct increment/decrement logic applied
• AI explanation of the logic error



```python
i = 0
while i < 5:
    print(i)
    i += 1
```

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```

Task 3: Handling Runtime Errors (Division by Zero)

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

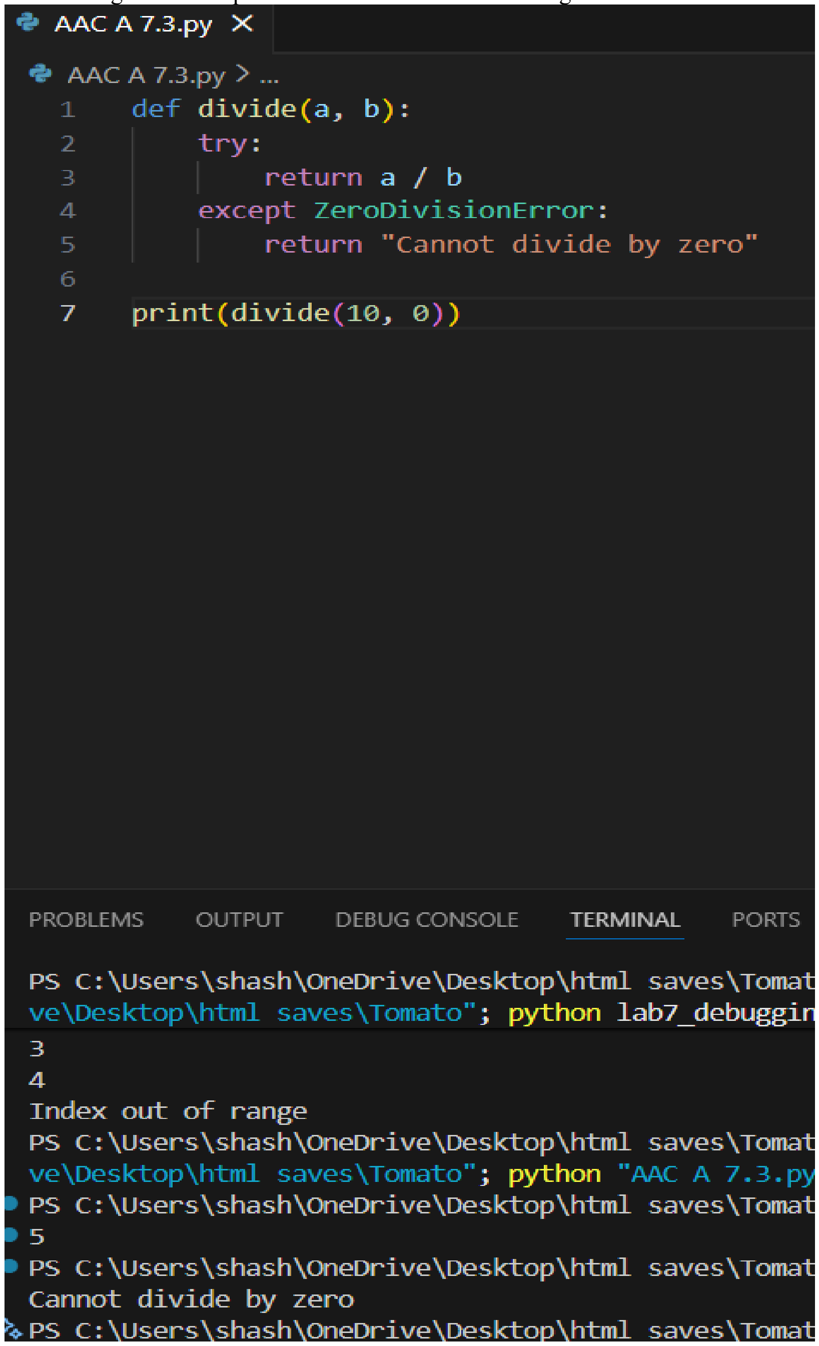
```python
# Debug the following code
def divide(a, b):
    return a / b

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

• Review AI’s error-handling approach

Expected Output
• Function executes safely without crashing
• Division by zero handled using try-except
• Clear AI-generated explanation of runtime error handling



AAC A 7.3.py

```python
def divide(a, b):
    try:
        return a / b
    except ZeroDivisionError:
        return "Cannot divide by zero"

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

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomat
ve\Desktop\html saves\Tomato"; python lab7_debuggin
3
4
Index out of range
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomat
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PS C:\Users\shash\OneDrive\Desktop\html saves\Tomat
5
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomat
Cannot divide by zero
PS C:\Users\shash\OneDrive\Desktop\html saves\Tomat
```
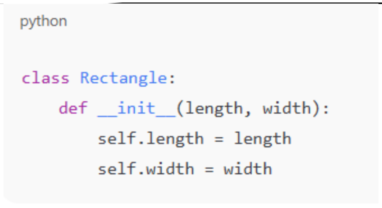

Task 4: Debugging Class Definition Errors

Scenario
You are given a faulty Python class where the constructor is incorrectly defined.

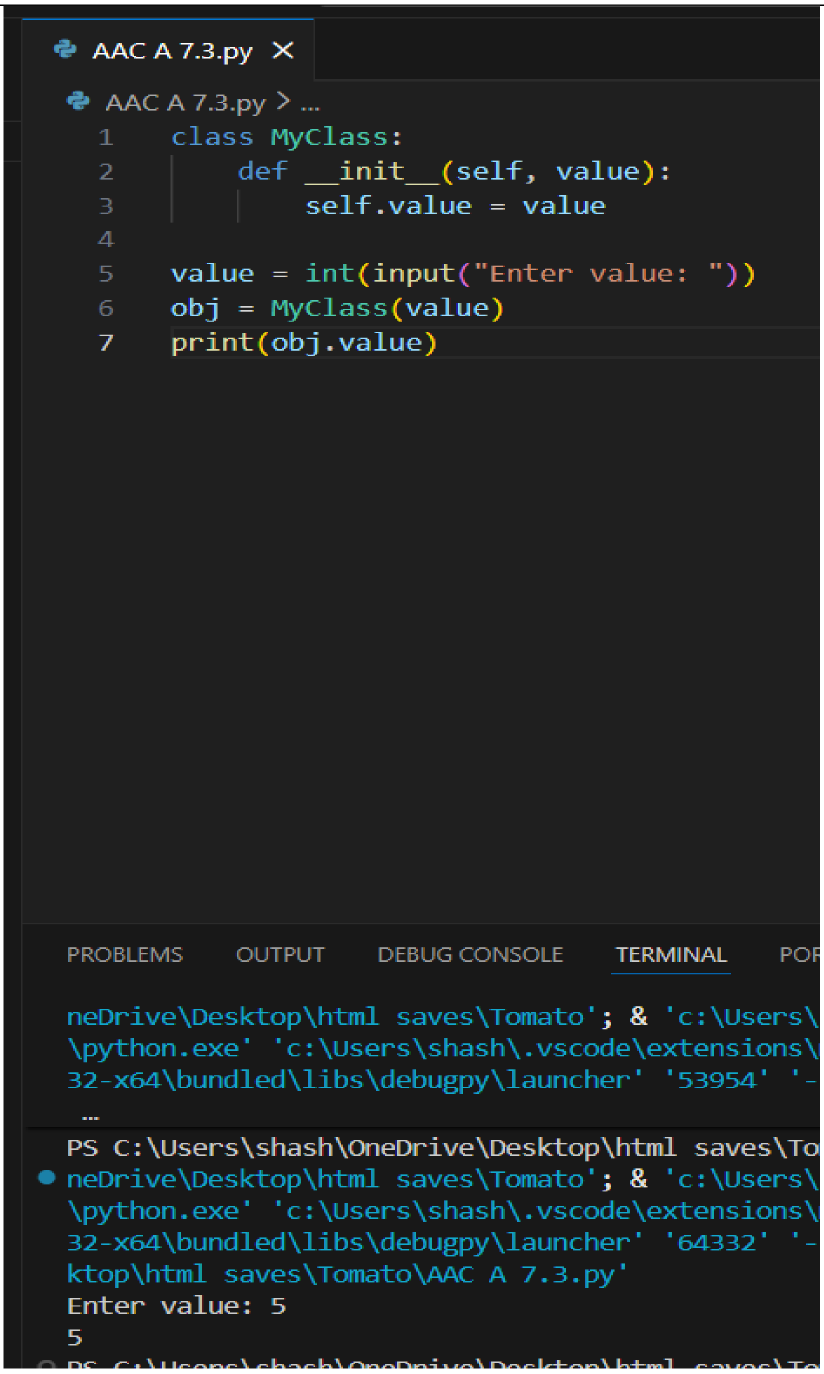


python

```python
class Rectangle:
    def __init__(length, width):
        self.length = length
        self.width = width
```

Requirements
• Provide a class definition with **missing self-parameter**
• Use AI to identify the issue in the __init__() method
• Allow AI to correct the class definition
• Understand why self is required

Expected Output
• Corrected __init__() method
• Proper use of self in class definition
• AI explanation of object-oriented error



AAC A 7.3.py

```python
class MyClass:
    def __init__(self, value):
        self.value = value

value = int(input("Enter value: "))
obj = MyClass(value)
print(obj.value)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL POR

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\python.exe' 'c:\Users\shash\.vscode\extensions\
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32-x64\bundled\libs\debugpy\launcher' '64332' '-
ktop\html saves\Tomato\AAC A 7.3.py'
Enter value: 5
5
```

Task 5: Resolving Index Errors in Lists

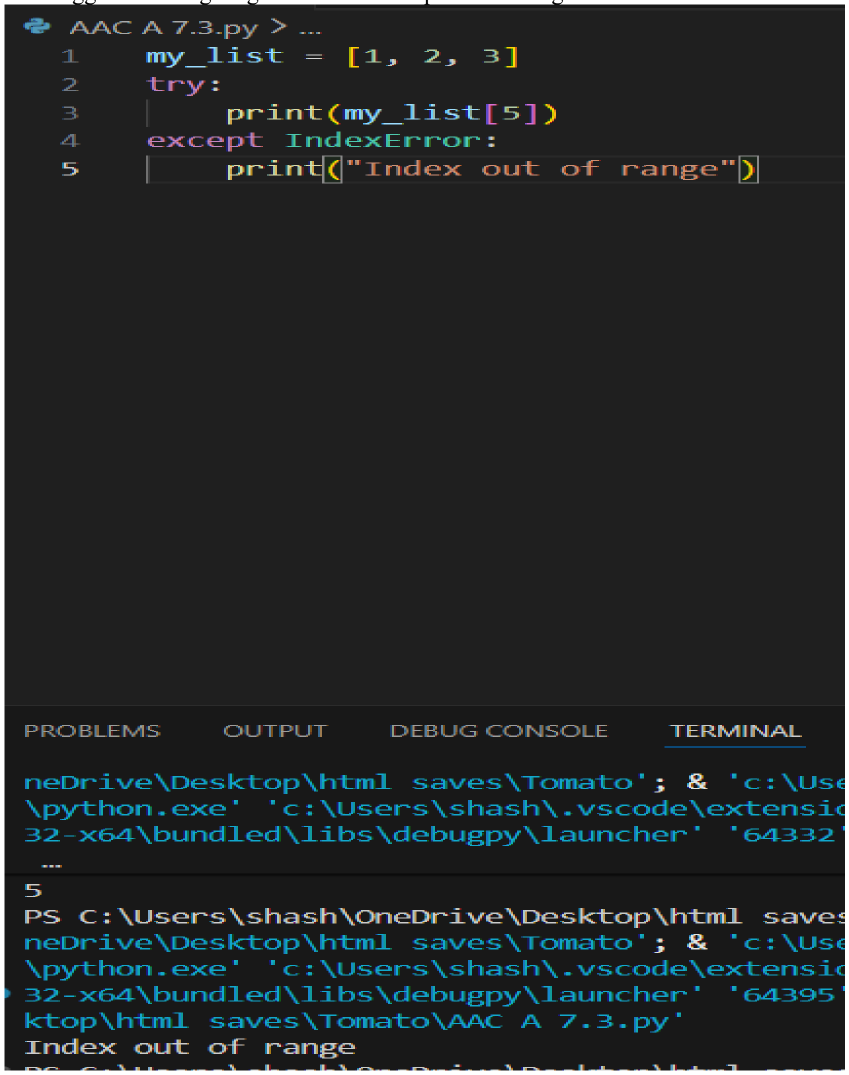
Scenario
A program crashes when accessing an invalid index in a list.

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

Requirements

• 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



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

```
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32-x64\bundled\libs\debugpy\launcher' '64332'
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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