AI ASSISTANT CODING

ASSIGNMENT-7

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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.**

• 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 1 (Mutable Default Argument – Function Bug)

Task: Analyze given code where a mutable default argument causes unexpected behavior. Use AI to fix it.

 # Bug: Mutable default argument

```
def add_item(item, items=[]):
items.append(item)
```

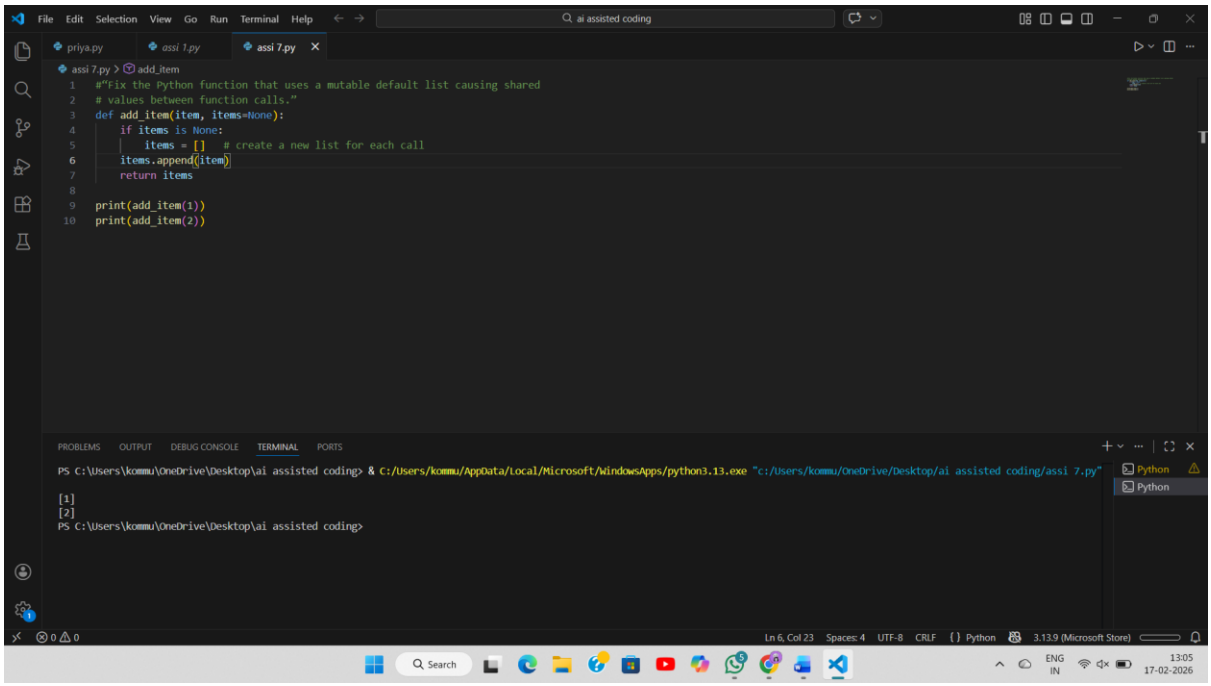
return items

print(add_item(1))

print(add_item(2))

Expected Output: Corrected function avoids shared list bug.

code:



Task 2 (Floating-Point Precision Error)

Task: Analyze given code where floating-point comparison fails.

Use AI to correct with tolerance.

 # Bug: Floating point precision issue

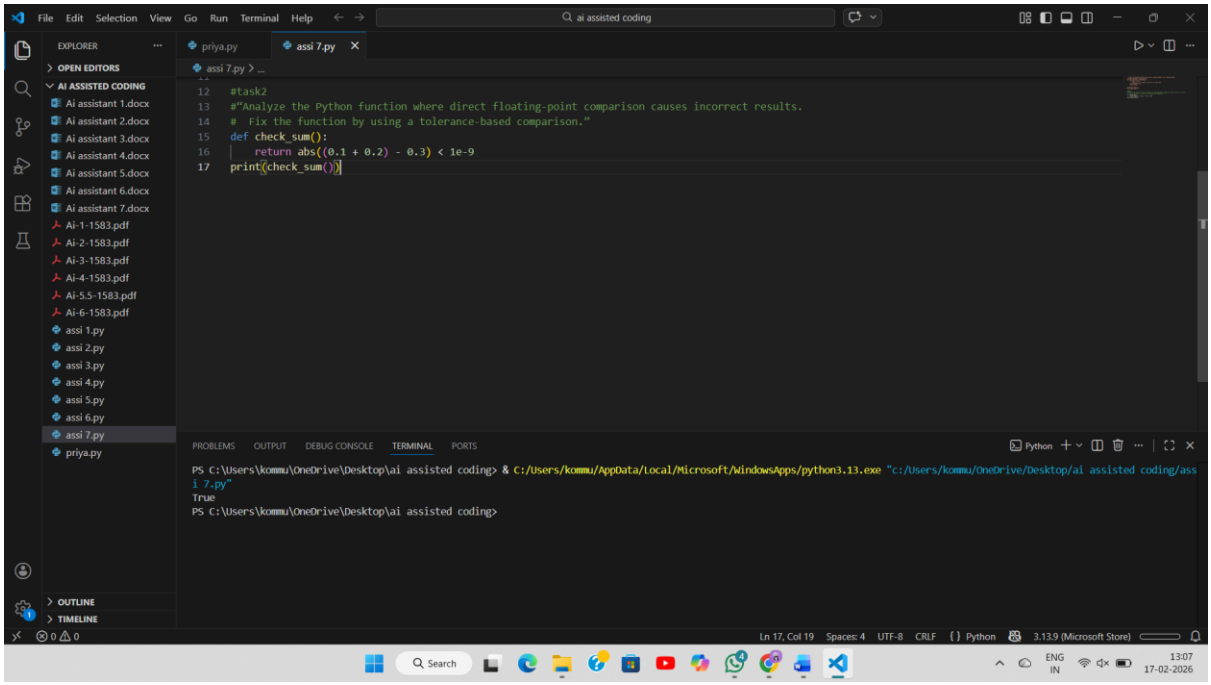
def check_sum():

return (0.1 + 0.2) == 0.3

print(check_sum())

Expected Output: Corrected function

code:



Task 3 (Recursion Error – Missing Base Case)

Task: Analyze given code where recursion runs infinitely due to

missing base case. Use AI to fix.

Bug: No base case

def countdown(n):

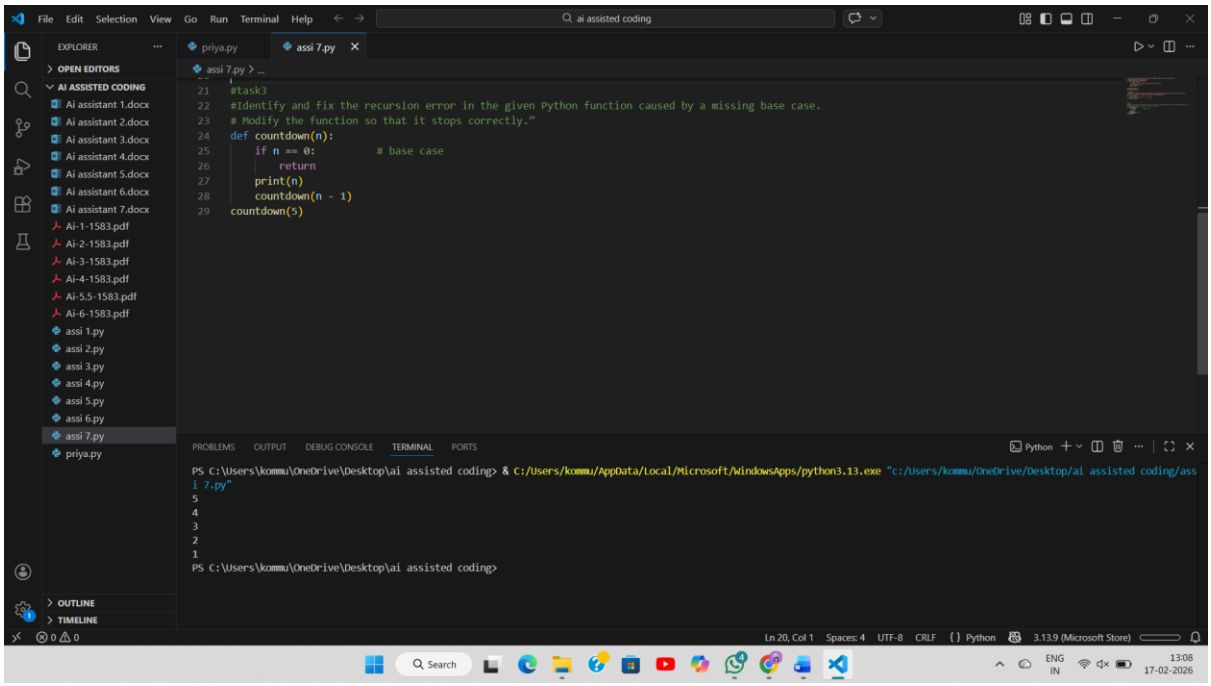
print(n)

return countdown(n-1)

countdown(5)

Expected Output : Correct recursion with stopping condition.

code:



Task 4 (Dictionary Key Error)

Task: Analyze given code where a missing dictionary key causes

error. Use AI to fix it.

Bug: Accessing non-existing key

def get_value():

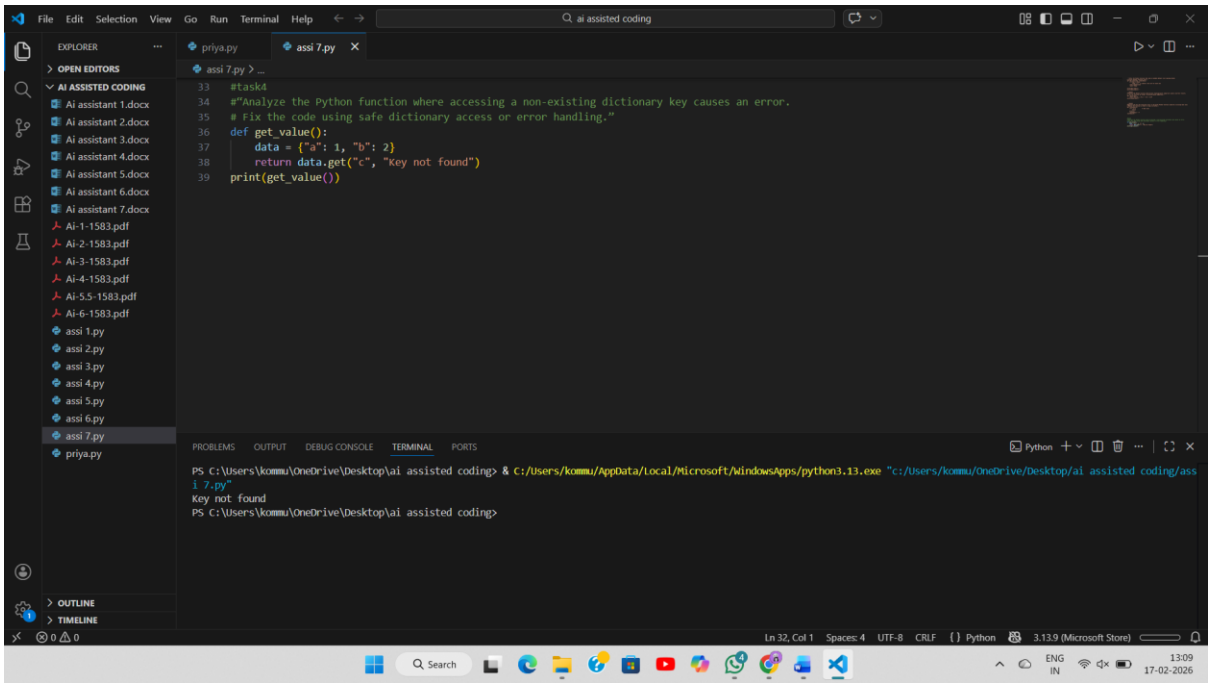
data = {"a": 1, "b": 2}

return data["c"]

print(get_value())

Expected Output: Corrected with .get() or error handling.

code:



Task 5 (Infinite Loop – Wrong Condition)

Task: Analyze given code where loop never ends. Use AI to detect

and fix it.

Bug: Infinite loop

def loop_example():

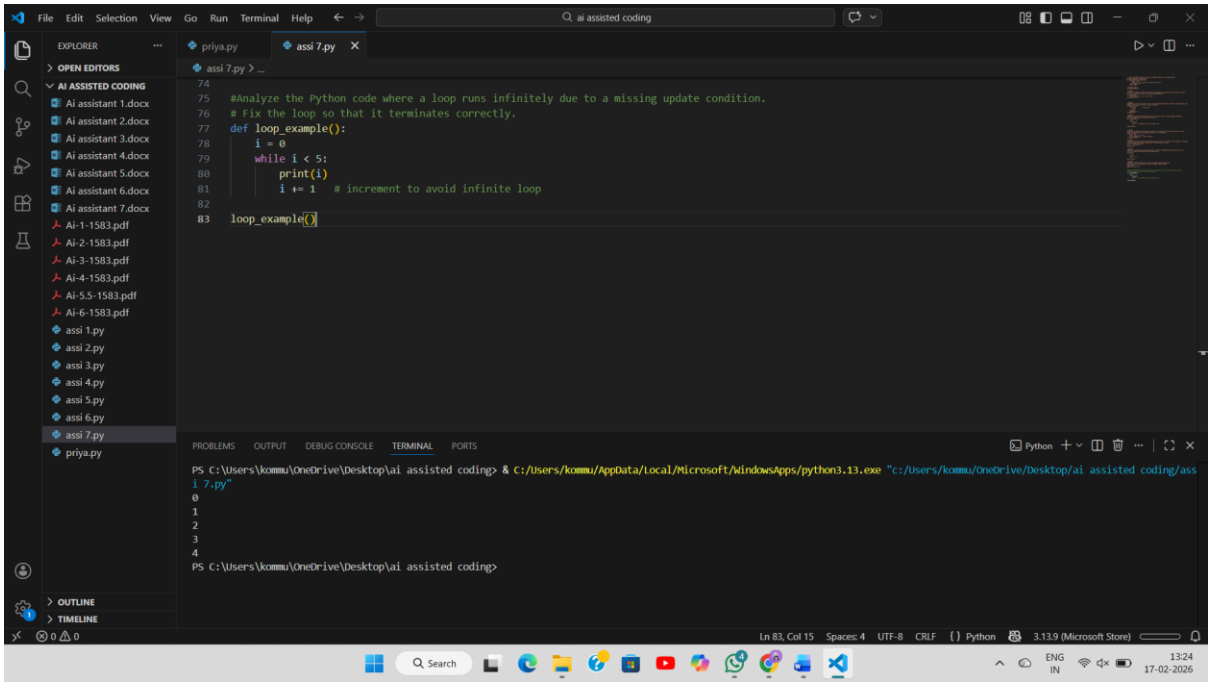
i = 0

while i < 5:

print(i)

Expected Output: Corrected loop increments i.

Code:



Task 6 (Unpacking Error – Wrong Variables)

Task: Analyze given code where tuple unpacking fails. Use AI to

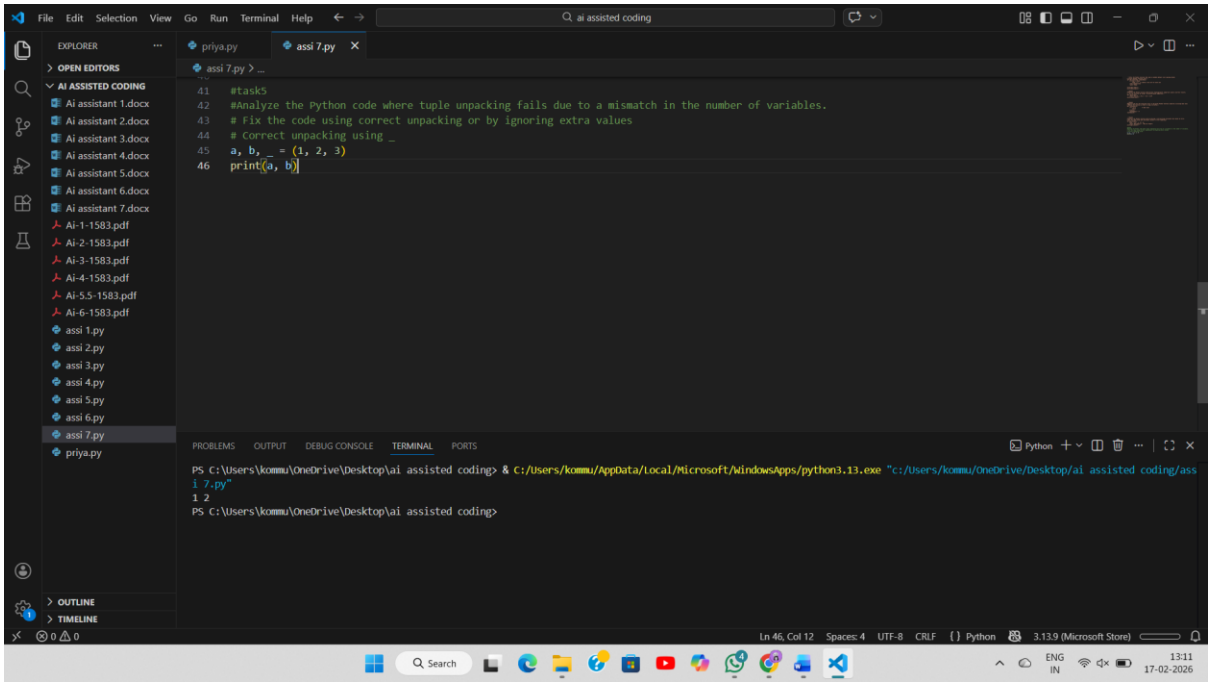
fix it.

Bug: Wrong unpacking

a, b = (1, 2, 3)

Expected Output: Correct unpacking or using _ for extra values.

Code:



Task 7 (Mixed Indentation – Tabs vs Spaces)

Task: Analyze given code where mixed indentation breaks

execution. Use AI to fix it.

 # Bug: Mixed indentation

def func():

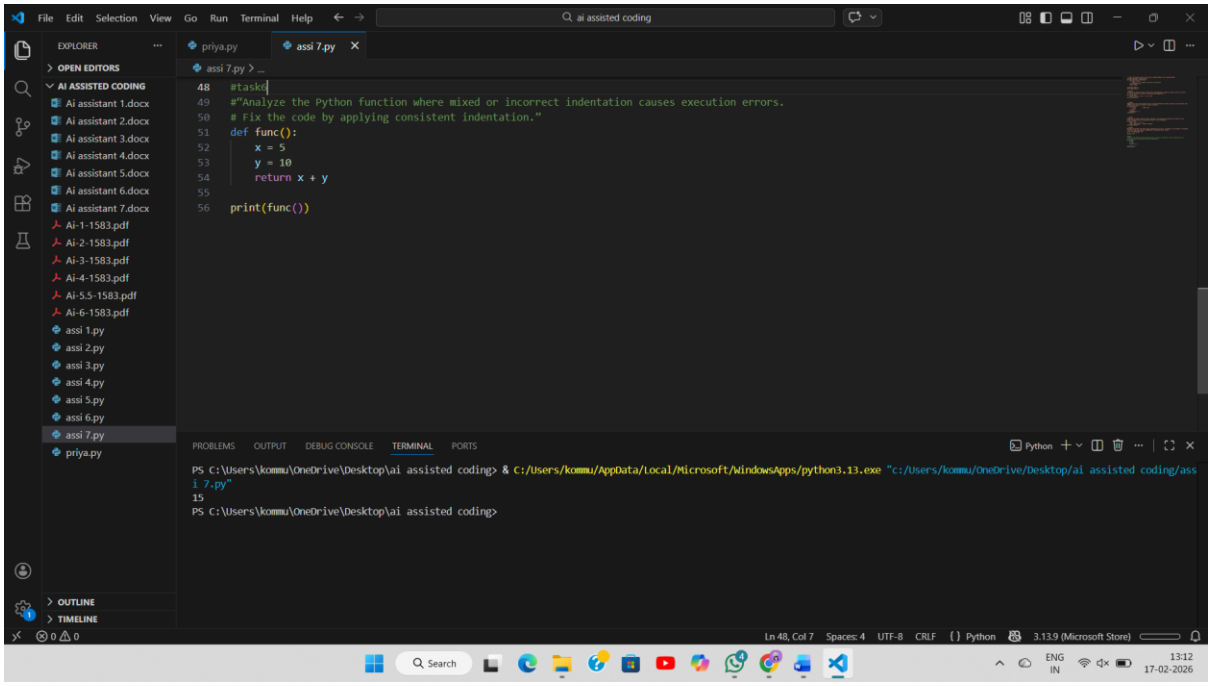
x = 5

y = 10

return x+y

Expected Output : Consistent indentation applied.

code:



Task 8 (Import Error – Wrong Module Usage)

Task: Analyze given code with incorrect import. Use AI to fix.

 # Bug: Wrong import

import maths

print(maths.sqrt(16))

Expected Output: Corrected to import math

Code: