AI ASSISTED CODING

ASSIGNMENT-7.5

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Batch-23

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.

```python
def add_item(item,items=None):
    if items is None:
        items=[]
    items.append(item)
    print(items)
add_item(3)
add_item(1)
```

```
PS C:\Users\SONY REDDY\OneDrive\Desktop\AI ASSISTANT CODING> & "C:/Users/SONY REDDY/AppData/Local/Programs/Python/Python313/python.exe" "c:/Users/SONY REDDY/OneDrive/Desktop/AI ASSISTANT CODING/lab-7.1.py"
[3]
[1]
```

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

```
11  import math
12  def check_sum():
13      return math.isclose(0.1 + 0.2,0.3)
14  print(check_sum())
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                                   Python
PS C:\Users\SONY REDDY\OneDrive\Desktop\AI ASSISTANT CODING> & "C:/Users/SONY REDDY/AppData/Local/Programs/Python/Python313/python.e
PS C:\Users\SONY REDDY\OneDrive\Desktop\AI ASSISTANT CODING> & "C:/Users/SONY REDDY/AppData/Local/Programs/Python/Python313/python.e
True
```

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.

```
16  def countdown(n):
17      if n<0:
18          return
19      print(n)
20      return countdown(n-1)
21  countdown(3)
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                                   Python
PS C:\Users\SONY REDDY\OneDrive\Desktop\AI ASSISTANT CODING> & "C:/Users/SONY REDDY/AppData/Local/Programs/Python/Python313/python.e
xe" "c:/Users/SONY REDDY/OneDrive/Desktop/AI ASSISTANT CODING/lab-7.1.py"
3
2
1
0
```

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.

```
23  def getvalue():
24      data={"a":1,"b":2,"c":3}
25      return data.get("d","not found")
26  print(getvalue())
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS                                   Python
PS C:\Users\SONY REDDY\OneDrive\Desktop\AI ASSISTANT CODING> & "C:/Users/SONY REDDY/AppData/Local/Programs/Python/Python313/python.e
xe" "c:/Users/SONY REDDY/OneDrive/Desktop/AI ASSISTANT CODING/lab-7.1.py"
not found
```

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

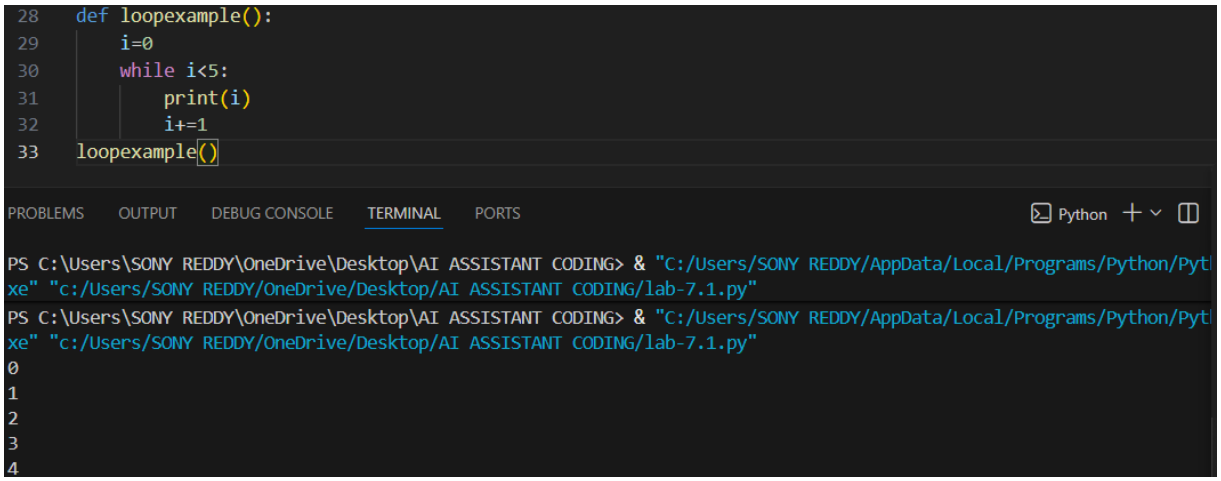
loop_example():

i = 0 while i

< 5:

print(i)

Expected Output: Corrected loop increments i.



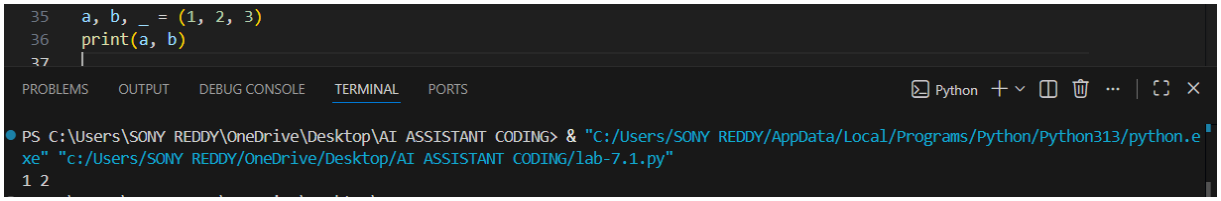
Task 6 (Unpacking Error – Wrong Variables)

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.



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.

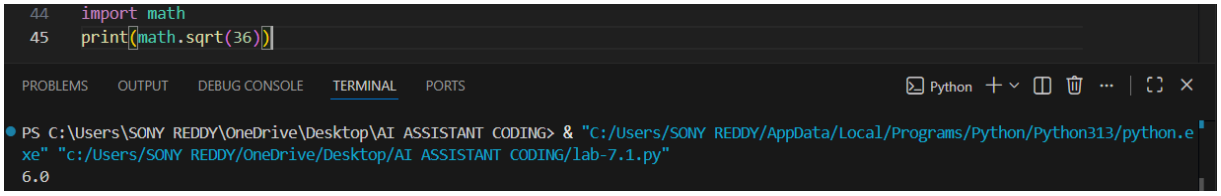
Task 8 (Import Error – Wrong Module Usage)

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



Task 9 (Unreachable Code – Return Inside Loop)

Task: Analyze given code where a return inside a loop prevents full iteration. Use AI to fix it.

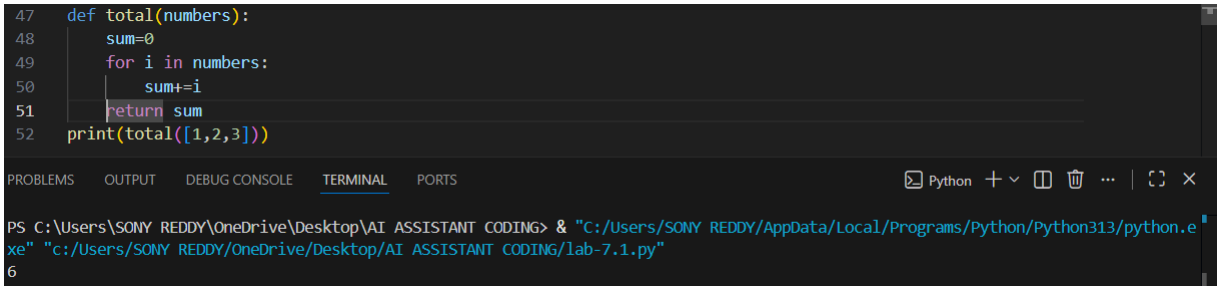
Bug: Early return inside loop

def total(numbers): for n in

numbers: return n

print(total([1,2,3]))

Expected Output: Corrected code accumulates sum and returns after loop.



Task 10 (Name Error – Undefined Variable)

Task: Analyze given code where a variable is used before being defined. Let AI detect and fix the error.

Bug: Using undefined variable

def calculate_area(): return

length * width

print(calculate_area())

Requirements:

• Run the code to observe the error.

• Ask AI to identify the missing variable definition.

• Fix the bug by defining length and width as parameters.

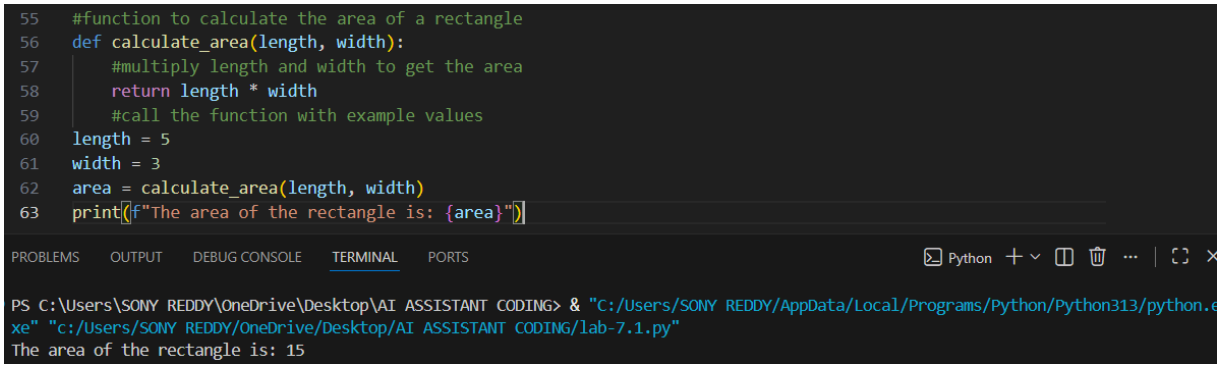
• Add 3 assert test cases for correctness.

Expected Output :

• Corrected code with parameters.

• AI explanation of the bug.

Successful execution of assertions.



Task 11 (Type Error – Mixing Data Types Incorrectly)

Task: Analyze given code where integers and strings are added incorrectly. Let AI detect and fix the error.

Bug: Adding integer and string

def add_values(): return 5 +

"10" print(add_values())

Requirements:

• Run the code to observe the error.

• AI should explain why int + str is invalid.

• Fix the code by type conversion (e.g., int("10") or str(5)).

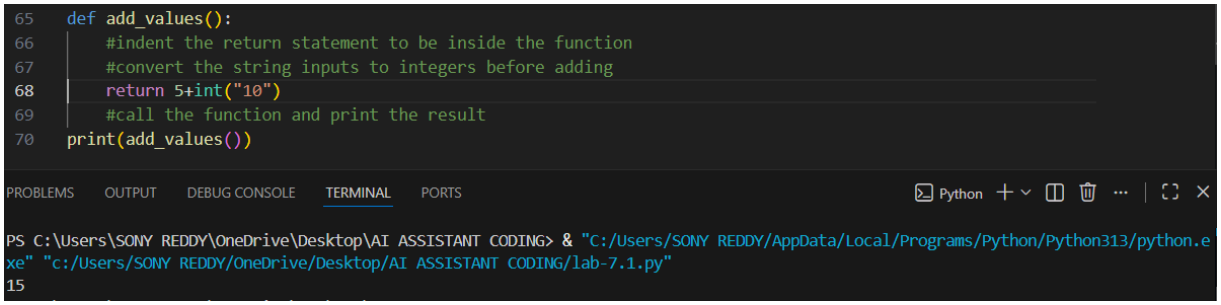
• Verify with 3 assert cases.

Expected Output #6:

• Corrected code with type handling.

• AI explanation of the fix.

Successful test validation.



Task 12 (Type Error – String + List Concatenation)

Task: Analyze code where a string is incorrectly added to a list.

Bug: Adding string and list

def combine(): return

"Numbers: " + [1, 2, 3]

print(combine())

Requirements:

• Run the code to observe the error.

• Explain why str + list is invalid.

• Fix using conversion (str([1,2,3]) or " ".join()).

• Verify with 3 assert cases.

Expected Output:

• Corrected code

• Explanation

• Successful test validation

```python
# str + list is invalid because Python cannot concatenate a string with a list directly
# strings and lists are different types, and the + operator doesn't know how to combine them
# You must convert the list to a string first using str() or join()
def combine():
    # Fix: Convert list to string using str()
    return "Numbers: " + str([1, 2, 3])
print(combine())
# verify with 3 assert cases
assert combine() == "Numbers: [1, 2, 3]", "Test 1 failed"
assert isinstance(combine(), str), "Test 2 failed"
assert "Numbers:" in combine(), "Test 3 failed"
print("All assertions passed!")
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\SONY REDDY\OneDrive\Desktop\AI ASSISTANT CODING> & "C:/Users/SONY REDDY/AppData/Local/Programs/Python/Python313/python.exe" "c:/Users/SONY REDDY/OneDrive/Desktop/AI ASSISTANT CODING/lab-7.1.py"
Numbers: [1, 2, 3]
All assertions passed!
```

Task 13 (Type Error – Multiplying String by Float)

Task: Detect and fix code where a string is multiplied by a float.

Bug: Multiplying string by float

def repeat_text(): return "Hello"

* 2.5 print(repeat_text())

Requirements:

• Observe the error.

• Explain why float multiplication is invalid for strings.

• Fix by converting float to int.

• Add 3 assert test cases

```python
# str * float is invalid because Python cannot multiply a string by a float
# The * operator for strings only works with integers to repeat the string
# You must convert the float to an integer first using int()
def repeat_text():
    # Fix: Convert float to int
    return "Hello" * int(2.5)
print(repeat_text())
# Verify with 3 assert cases
assert repeat_text() == "HelloHello", "Test 1 failed"
assert isinstance(repeat_text(), str), "Test 2 failed"
assert len(repeat_text()) == 10, "Test 3 failed"
print("All assertions passed!")
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\SONY REDDY\OneDrive\Desktop\AI ASSISTANT CODING> & "C:/Users/SONY REDDY/AppData/Local/Programs/Python/Python313/python.exe" "c:/Users/SONY REDDY/OneDrive/Desktop/AI ASSISTANT CODING/lab-7.1.py"
HelloHello
All assertions passed!
```

Task 14 (Type Error – Adding None to Integer)

Task: Analyze code where None is added to an integer.

Bug: Adding None and integer

def compute(): value = None

return value + 10

print(compute())

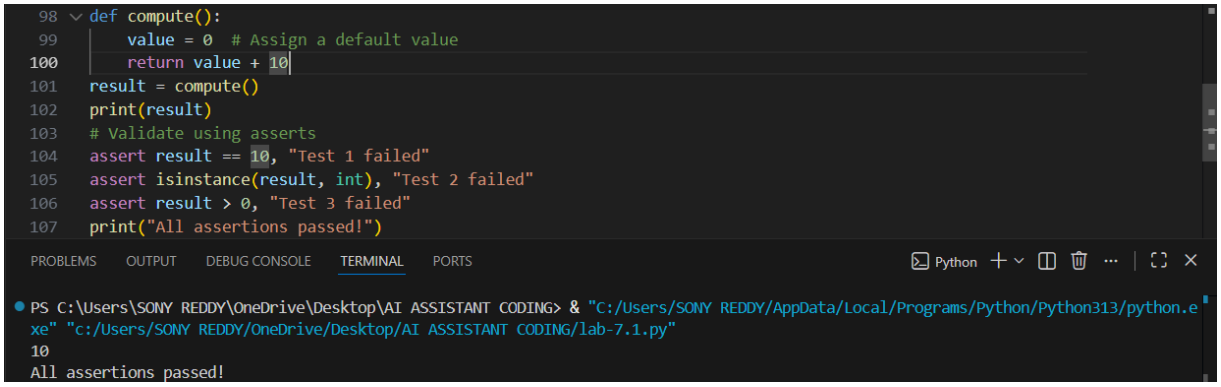
Requirements:

• Run and identify the error.

• Explain why NoneType cannot be added.

• Fix by assigning a default value.

• Validate using asserts.



Task 15 (Type Error – Input Treated as String Instead of Number)

Task: Fix code where user input is not converted properly.

Bug: Input remains string def

sum_two_numbers():

a = input("Enter first number: ") b

= input("Enter second number: ")

return a + b

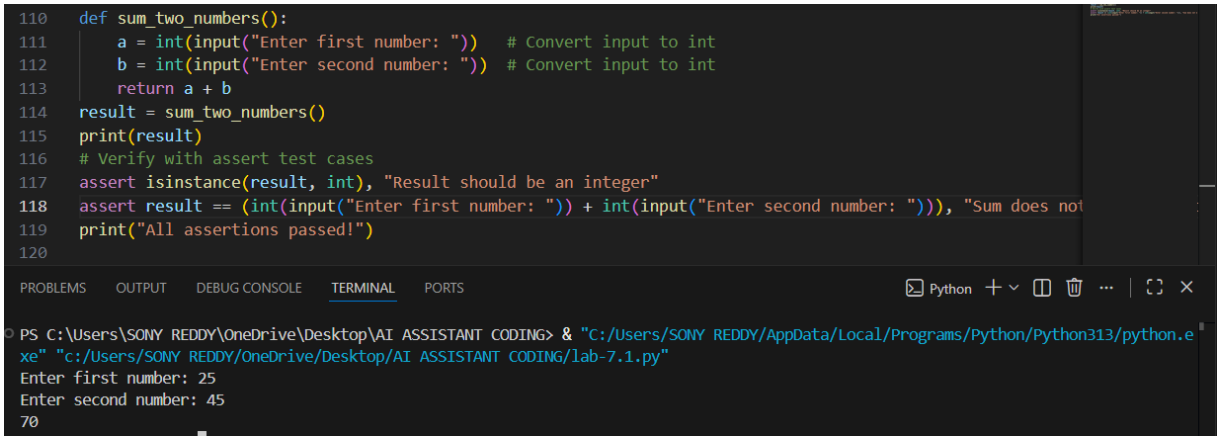
print(sum_two_numbers())

Requirements:

• Explain why input is always string.

• Fix using int() conversion.

• Verify with assert test cases.


def sum_two_numbers():
a = int(input("Enter first number: ")) # Convert input to int
b = int(input("Enter second number: ")) # Convert input to int
return a + b
result = sum_two_numbers()
print(result)
# Verify with assert test cases
assert isinstance(result, int), "Result should be an integer"
assert result == (int(input("Enter first number: ")) + int(input("Enter second number: "))), "Sum does not
print("All assertions passed!")
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
Python
PS C:\Users\SONY REDDY\OneDrive\Desktop\AI ASSISTANT CODING> & "C:/Users/SONY REDDY/AppData/Local/Programs/Python/Python313/python.exe" "c:/Users/SONY REDDY/OneDrive/Desktop/AI ASSISTANT CODING/lab-7.1.py"
Enter first number: 25
Enter second number: 45
70