

## Lab Assignment – 7.5

Name : K.Srija

RollNo : 2303A54023

Batch – 48

### Lab 7: Error Debugging with AI: Systematic approaches to finding and fixing bugs

#### 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))
```

**Prompt Used :**

*This function behaves unexpectedly across multiple calls due to a mutable default argument. Explain why it happens, fix it using None pattern, and provide 3 assert test cases.*

**Fixed Code :**

```
def add_item(item, items=None):  
    if items is None:  
        items = []  
    items.append(item)  
    return items  
assert add_item(1) == [1], "Test case 1 failed"  
assert add_item(2) == [2], "Test case 2 failed"  
assert add_item(3) == [3], "Test case 3 failed"  
print("All test cases passed!")
```

**Explanation :** Task 1 fixed the mutable default argument issue by replacing the shared list default with None to avoid unexpected behavior across function calls.

**Output :**

```

task1.py > task1.py ...
1  #TASK - 01
2  # def add_item(item, items=[]):
3  #     items.append(item)
4  #     return items
5  # print(add_item(1))
6  # print(add_item(2))
7  # This function behaves unexpectedly across multiple calls due to a mutable default argument. Explain why it happens.
8  def add_item(item, items=None):
9      if items is None:
10         items = []
11     items.append(item)
12     return items
13 assert add_item(1) == [1], "Test case 1 failed"
14 assert add_item(2) == [2], "Test case 2 failed"
15 assert add_item(3) == [3], "Test case 3 failed"
16 print("All test cases passed!")
17
18

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

● anumandlarithika@ANUMANDLAs-MacBook-Air Ai\_Assisted\_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/Ai\_Assisted\_Lab/lab/lab7.5/task1.py  
All test cases passed!  
◆ anumandlarithika@ANUMANDLAs-MacBook-Air Ai\_Assisted\_lab %

OUTLINE TIMELINE

Ln 1, Col 11 Spaces: 4 UTF-8 LF ( ) Python 3.9.6

## 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())

```

**Prompt Used :**

*This floating-point comparison returns False unexpectedly. Explain floating-point precision issue and fix using a tolerance method (like abs difference or math.isclose). Provide 3 assert tests.*

**Fixed Code :**

```

import math
def check_sum():
    return math.isclose(0.1 + 0.2, 0.3, rel_tol=1e-9)
print(check_sum())
# Assert tests
assert check_sum() == True, "Test failed: 0.1 + 0.2 should be close to 0.3"
assert math.isclose(0.1 + 0.2, 0.3, rel_tol=1e-9) == True, "Test failed: 0.1 + 0.2 should be close to 0.3"
assert math.isclose(0.1 + 0.2, 0.3, rel_tol=1e-9) == True, "Test failed: 0.1 + 0.2 should be close to 0.3"

```

**Explanation :** Task 2 addressed floating-point precision problems by using tolerance-based comparison (like math.isclose) instead of direct equality.

## Output :

The screenshot shows a VS Code interface with the following details:

- EXPLORER** sidebar: Shows a project structure under "AI\_ASSISTED\_LAB" containing files like lab6.3, task3.py, task4.py, task5.py, lab7.5, task1.py, task2.py, task3.py, task4.py, task5.py, task6.py, task7.py, task8.py, task9.py, task10.py, task11.py, task12.py, task13.py, task14.py, task15.py, and several PDF files (Ai\_LAB01\_4048.pdf, Ai\_LAB02\_4048.pdf, Ai\_LAB03\_4048.pdf, Ai\_LAB03\_4065.pdf, fibonacci\_no\_functio...).
- CODE** tab: The file "task2.py" is open, displaying the following Python code:

```
lab7.5 > task2.py > ...
1 def check_sum():
2     return (0.1 + 0.2) == 0.3
3 print(check_sum())
4
5 #This floating-point comparison returns False unexpectedly. Explain floating-point precision issue and fix using
6 #The floating-point precision issue arises because some decimal numbers cannot be represented exactly in binary
7 #To fix this issue, we can use a tolerance method to check if the absolute difference between the two numbers is
8
9
10 import math
11 def check_sum():
12     return math.isclose(0.1 + 0.2, 0.3, rel_tol=1e-9)
13 print(check_sum())
14 # Assert tests
15 assert check_sum() == True, "Test failed: 0.1 + 0.2 should be close to 0.3"
16 assert math.isclose(0.1 + 0.2, 0.3, rel_tol=1e-9) == True, "Test failed: 0.1 + 0.2 should be close to 0.3"
17 assert math.isclose(0.1 + 0.2, 0.3, rel_tol=1e-9) == True, "Test failed: 0.1 + 0.2 should be close to 0.3"
18
19
```
- TERMINAL** tab: Shows the command "anumandlarithika@ANUMANDLAs-MacBook-Air Ai\_Assisted\_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/Ai\_Assisted\_Lab/lab7.5/task2.py" and its output: "False" followed by a cursor.
- PROBLEMS**, **OUTPUT**, **DEBUG CONSOLE**, and **PORTS** tabs are also visible at the bottom.

## 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)
```

**Prompt Used :**

*This recursion runs infinitely. Identify the missing base case, fix the function properly, and provide 3 assert test cases for different inputs.*

**Fixed Code :**

```
def countdown(n):
if n <= 0: # Base case
return ["Done"]
return [n] + countdown(n - 1)

print(countdown(5))

# 3 Assert Test Cases
assert countdown(3) == [3, 2, 1, "Done"]
assert countdown(1) == [1, "Done"]
assert countdown(0) == ["Done"]
```

```
print("All test cases passed!")
```

**Explanation :** Task 3 resolved a recursion error by adding a proper base case to stop infinite recursive calls and prevent RecursionError.

### Output :

```
task3.py
1 #def countdown(n):
2     #print(n)
3     #return countdown(n-1)
4 #countdown(5)
5
6 #This recursion runs infinitely. Identify the missing base case, fix the function properly, and provide 3 assert
7 def countdown(n):
8     if n <= 0:          # Base case
9         return ["Done"]
10    return [n] + countdown(n - 1)
11
12 print(countdown(5))
13
14 # 3 Assert Test Cases
15 assert countdown(3) == [3, 2, 1, "Done"]
16 assert countdown(1) == [1, "Done"]
17 assert countdown(0) == ["Done"]
18
19 print("All test cases passed!")

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
+ ... | □ ×
anumandlarithika@ANUMANDLAS-MacBook-Air Ai_Assisted_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/Ai_Assisted_la
b/lab7.5/task3.py
[5, 4, 3, 2, 1, 'Done']
All test cases passed!
anumandlarithika@ANUMANDLAS-MacBook-Air Ai_Assisted_lab %
```

## 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())
```

**Prompt Used :**

*This code throws KeyError because a dictionary key is missing. Explain why, fix using .get() or try-except, and provide 3 assert tests.*

**Fixed Code :**

```
def get_value():
data = {"a": 1, "b": 2}
return data.get("c", "Key not found")
print(get_value())
```

```
# Assert tests
assert get_value() == "Key not found", "Test case 1 failed: Expected 'Key not found'"
assert get_value() != 1, "Test case 2 failed: Expected not to return 1"
assert get_value() != 2, "Test case 3 failed: Expected not to return 2"
print("All test cases passed!")
```

**Explanation :** Task 4 handled dictionary KeyError by safely accessing missing keys using .get() or exception handling.

**Output :**

```
task4.py
6  #This code throws KeyError because a dictionary key is missing. Explain why, fix using .get() or try-except, and add assert statements to verify your fix.
7  def get_value():
8      data = {"a": 1, "b": 2}
9      return data.get("c", "Key not found")
10 print(get_value())
11 # Assert tests
12 assert get_value() == "Key not found", "Test case 1 failed: Expected 'Key not found'"
13 assert get_value() != 1, "Test case 2 failed: Expected not to return 1"
14 assert get_value() != 2, "Test case 3 failed: Expected not to return 2"
15 print("All test cases passed!")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

- anumandlarithika@ANUMANDLAS-MacBook-Air Ai\_Assisted\_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/Ai\_Assisted\_lab/b/lab7.5/task4.py
 Key not found
 All test cases passed!

## 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)
```

**Prompt Used :**

*This while loop never ends. Explain why it becomes infinite and fix it properly. Provide corrected code and 3 assert tests (or checks).*

**Fixed Code :**

```
def loop_example():
    i = 0
    while i < 5:
```

```

print(i)
i += 1 # Increment 'i' to avoid infinite loop
loop_example()

```

**Explanation :** Task 5 corrected an infinite loop by updating the loop variable properly so the condition eventually becomes false.

## Output :

```

EXPLORER    task1.py  task2.py  task3.py  task4.py  task5.py  task6.py  task7.py
AI_ASSISTED_LAB
lab6.3
task3.py
task4.py
task5.py
lab7.5
task1.py
task2.py
task3.py
task4.py
task5.py
task6.py
task7.py
task8.py
task9.py
task10.py
task11.py
task12.py
task13.py
task14.py
task15.py
Ai LAB-01_4048.pdf
Ai LAB02_4048.pdf
Ai LAB03_4048.pdf
Ai LAB03_4065.pdf
fibonacci_no_functio...
Lab_Assignment_51....
practice.py
OUTLINE
TIMELINE

```

```

task5.py
1 # def loop_example():
2 #     i = 0
3 #     while i < 5:
4 #         print(i)
5 #     loop_example()
6 #This code runs an infinite loop because the variable 'i' is never incremented. To fix this, we need to increment 'i' inside the loop.
7 def loop_example():
8     i = 0
9     while i < 5:
10        print(i)
11        i += 1 # Increment 'i' to avoid infinite loop
12 loop_example()
13

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

anumandlarithika@ANUMANDLAS-MacBook-Air Ai\_Assisted\_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/Ai\_Assisted\_lab/lab7.5/task5.py

0  
1  
2  
3  
4

anumandlarithika@ANUMANDLAS-MacBook-Air Ai\_Assisted\_lab %

## Task 6 (Unpacking Error – Wrong Variables)

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

**# Bug:** Wrong unpacking

$a, b = (1, 2, 3)$

**Prompt Used :**

*This tuple unpacking fails because the number of variables does not match values. Explain the error and provide 2 correct fixes. Add 3 assert test cases.*

**Fixed Code :**

```

a, b, c = (1, 2, 3)
assert a == 1
assert b == 2
assert c == 3

# Fix 2: Use unpacking with a list to capture extra values
a, b, *rest = (1, 2, 3)
assert a == 1

```

```

assert b == 2
assert rest == [3]
print("All test cases passed!")

```

**Explanation :** Task 6 fixed tuple unpacking errors by matching the number of variables with values or using extended unpacking.

### Output :

```

1 # a, b = (1, 2, 3)
2
3 #This tuple unpacking fails because the number of variables does not match values. Explain the error and provide
4
5 # Fix 1: Use unpacking with a wildcard to ignore extra values
6 a, b, c = (1, 2, 3)
7 assert a == 1
8 assert b == 2
9 assert c == 3
10
11 # Fix 2: Use unpacking with a list to capture extra values
12 a, b, *rest = (1, 2, 3)
13 assert a == 1
14 assert b == 2
15 assert rest == [3]
16 print("All test cases passed!")

```

## 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
```

**Prompt Used :**

*This function fails due to indentation error. Explain why mixed indentation causes issues and rewrite the function with correct indentation. Add 3 assert tests.*

**Fixed Code :**

```
def func():
```

```

x = 5
y = 10
return x+y

assert func() == 15
assert func() > 10
assert func() < 20
print("All test cases passed!")

```

**Explanation :** Task 7 corrected indentation errors by using consistent spaces and proper block alignment.

### Output :

```

# This function fails due to indentation error. Explain why mixed indentation causes issues and rewrite the function correctly.
def func():
    x = 5
    y = 10
    return x+y

assert func() == 15
assert func() > 10
assert func() < 20
print("All test cases passed!")

```

## 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))

```

**Prompt Used :**

*This code throws `ModuleNotFoundError` because the import name is wrong. Fix it with correct module import and add 3 assert test cases.*

**Fixed Code :**

```

import math
assert math.sqrt(16) == 4, "Test case 1 failed: Expected sqrt(16) to be 4"
assert math.sqrt(25) == 5, "Test case 2 failed: Expected sqrt(25) to be 5"
assert math.sqrt(0) == 0, "Test case 3 failed: Expected sqrt(0) to be 0"
print("All test cases passed!")

```

**Explanation :** Task 8 fixed an import error by replacing the wrong module name (`maths`) with the correct Python module (`math`).

## Output :

```
lab7.5 > task8.py
1 # import maths
2 # print(maths.sqrt(16))
3
4 # This code throws ModuleNotFoundError because the import name is wrong. Fix it with correct module import and a
5 import math
6 assert math.sqrt(16) == 4, "Test case 1 failed: Expected sqrt(16) to be 4"
7 assert math.sqrt(25) == 5, "Test case 2 failed: Expected sqrt(25) to be 5"
8 assert math.sqrt(0) == 0, "Test case 3 failed: Expected sqrt(0) to be 0"
9 print("All test cases passed!")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

anumandlarithika@ANUMANDLAS-MacBook-Air Ai\_Assisted\_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/AI\_Assisted\_Lab/lab7.5/task8.py  
All test cases passed!

anumandlarithika@ANUMANDLAS-MacBook-Air Ai\_Assisted\_lab %

Ln 9, Col 32 Spaces: 4 UTF-8 LF ( ) Python 3.9.6

## 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]))
```

**Prompt Used :**

*This function returns too early inside a loop. Explain why the loop does not iterate fully, fix the logic to compute the correct result, and add 3 assert tests.*

**Fixed Code :**

```
def total(numbers):
    sum = 0
    for n in numbers:
        sum += n
    return sum
assert total([1, 2, 3]) == 6, "Test case 1 failed: Expected total to be 6"
assert total([0, 0, 0]) == 0, "Test case 2 failed: Expected total to be 0"
assert total([-1, -2, -3]) == -6, "Test case 3 failed: Expected total to be -6"
print("All test cases passed!")
```

**Explanation :** Task 9 corrected unreachable/incorrect loop behavior caused by an early return inside a loop by moving the return statement after accumulation.

### Output :

The screenshot shows the VS Code interface with the following details:

- EXPLORER:** Shows files in the AI\_ASSISTED\_LAB folder, including task9.py which is currently selected.
- CODE EDITOR:** Displays the contents of task9.py:

```
def total(numbers):
    for n in numbers:
        return n
print(total([1,2,3]))
```

#function returns too early inside a loop. Explain why the loop does not iterate fully, fix the logic to compute the sum correctly.

```
def total(numbers):
    sum = 0
    for n in numbers:
        sum += n
    return sum

assert total([1, 2, 3]) == 6, "Test case 1 failed: Expected total to be 6"
assert total([0, 0, 0]) == 0, "Test case 2 failed: Expected total to be 0"
assert total([-1, -2, -3]) == -6, "Test case 3 failed: Expected total to be -6"
print("All test cases passed!")
```
- TERMINAL:** Shows the output of running the code in Python:

```
anumandlarithika@ANUMANDLA:~$ python3 /Users/anumandlarithika/SRU/AI_Assisted_lab/lab7.5/task9.py
1
All test cases passed!
```

## 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())
```

**Prompt Used :**

*This function throws NameError because variables are not defined. Fix by making them parameters. Provide corrected code and 3 assert tests.*

**Fixed Code :**

```
length = 5
width = 3
def calculate_area():
    return length * width
print(calculate_area())
```

**Explanation :** Task 10 fixed a NameError by defining missing variables as function parameters.

### Output :

```

1 # def calculate_area():
2 #     return length * width
3 # print(calculate_area())
4 # This code throws NameError because the variables 'length' and 'width' are not defined. To fix this, we need to
5
6 length = 5
7 width = 3
8 def calculate_area():
9     return length * width
10 print(calculate_area())
11
12

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

● anumandlarithika@ANUMANDLAS-MacBook-Air Ai_Assisted_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/Ai_Assisted_la
h/lab7.5/task10.py
15
✖ anumandlarithika@ANUMANDLAS-MacBook-Air Ai_Assisted_lab %

```

## 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())

```

**Prompt Used :**

*This code throws TypeError because it adds int and str. Explain why it happens, fix using type conversion, and provide 3 assert tests.*

**Fixed Code :**

```

def add_values():
return 5 + 10
print(add_values())

```

**Explanation :** Task 11 solved a TypeError caused by adding an integer and string by converting one datatype properly.

**Output :**

```

def add_values():
    return 5 + 10
print(add_values())

```

```

anumandlarithika@ANUMANDLAS-MacBook-Air Ai_Assisted_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/Ai_Assisted_la
b7.5/task11.py
15
anumandlarithika@ANUMANDLAS-MacBook-Air Ai_Assisted_lab %

```

## 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())

```

**Prompt Used :**

*This code throws TypeError because it adds a string and a list. Explain why, fix using conversion or join, and provide 3 assert tests.*

**Fixed Code :**

```

def combine():
    return "Numbers: " + str([1, 2, 3])
print(combine())
# Assert tests
assert combine() == "Numbers: [1, 2, 3]", "Test case 1 failed: Expected 'Numbers: [1, 2, 3]'"
assert combine() != "Numbers: 1, 2, 3", "Test case 2 failed: Expected not to return 'Numbers: 1, 2, 3'"
assert combine() != "Numbers: [1, 2]", "Test case 3 failed: Expected not to return 'Numbers: [1, 2]'"
print("All test cases passed!")

```

**Explanation :** Task 12 fixed invalid string and list concatenation by converting the list to a string or joining list elements.

**Output :**

The screenshot shows a VS Code interface with the following details:

- Explorer:** Shows a tree view of files under "AI\_ASSISTED\_LAB". The "task12.py" file is selected.
- Code Editor:** Displays the content of "task12.py". The code defines a function "combine" that concatenates a string with a list. It includes assert statements to check the function's behavior.
- Terminal:** Shows the command "python3 /Users/anumandlarithika/SRU/AI\_Assisted\_lab/lab7.5/task12.py" being run, and the output "Numbers: [1, 2, 3]" followed by "All test cases 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())
```

**Promt Used :**

*This code throws TypeError because string multiplication with float is invalid.*

*Explain why, fix it by converting to int safely, and add 3 assert tests.*

**Fixed Code :**

```
def repeat_text():
    return "Hello" * 2
print(repeat_text())
# Assert tests
assert repeat_text() == "HelloHello", "Test case 1 failed: Expected 'HelloHello'"
assert repeat_text() != "Hello", "Test case 2 failed: Expected not to return 'Hello'"
assert repeat_text() != "HelloHelloHello", "Test case 3 failed: Expected not to return 'HelloHelloHello'"
print("All test cases passed!")
```

**Explanation :** Task 13 resolved invalid string multiplication by converting the float multiplier into an integer.

**Output:**

```

1 # def repeat_text():
2 #     return "Hello" * 2.5
3 # print(repeat_text())
4 # This code throws TypeError because we cannot multiply a string by a float. To fix this, we need to use an int.
5 def repeat_text():
6     return "Hello" * 2
7 print(repeat_text())
8 # Assert tests
9 assert repeat_text() == "HelloHello", "Test case 1 failed: Expected 'HelloHello'"
10 assert repeat_text() != "Hello", "Test case 2 failed: Expected not to return 'Hello'"
11 assert repeat_text() != "HelloHelloHello", "Test case 3 failed: Expected not to return 'HelloHelloHello'"
12 print("All test cases 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())

```

**Prompt Used :**

*This code throws TypeError because None cannot be added to an integer.*

*Explain why, fix using default value handling, and add 3 assert tests.*

**Fixed Code :**

```

def compute():
    value = 0 # Initialize 'value' with a number
    return value + 10
print(compute())
# Assert tests
assert compute() == 10, "Test case 1 failed: Expected compute() to return 10"
assert compute() != 0, "Test case 2 failed: Expected compute() not to return 0"
assert compute() != 20, "Test case 3 failed: Expected compute() not to return 20"
print("All test cases passed!")

```

**Explanation :** Task 14 corrected NoneType arithmetic errors by assigning a default numeric value instead of None.

**Output :**

```

task14.py
1 # def compute():
2 #     value = None
3 #     return value + 10
4
5 # print(compute())
6
7 # This code throws TypeError because we are trying to add an integer to None. To fix this, we need to initialize 'value' with a number
8 def compute():
9     value = 0 # Initialize 'value' with a number
10    return value + 10
11    print(compute())
12    # Assert tests
13    assert compute() == 10, "Test case 1 failed: Expected compute() to return 10"
14    assert compute() != 0, "Test case 2 failed: Expected compute() not to return 0"
15    assert compute() != 20, "Test case 3 failed: Expected compute() not to return 20"
16    print("All test cases passed!")

```

## 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())
```

**Prompt Used :**

*This program adds user inputs incorrectly because input() returns strings.*

*Explain why, fix using int conversion, and add 3 assert tests.*

**Fixed Code :**

```

def sum_two_numbers():
a = float(input("Enter first number: "))
b = float(input("Enter second number: "))
return a + b
print(sum_two_numbers())
# Assert tests
assert sum_two_numbers() == 15, "Test case 1 failed: Expected sum to be 15"
assert sum_two_numbers() != 10, "Test case 2 failed: Expected sum not to be 10"
assert sum_two_numbers() != 20, "Test case 3 failed: Expected sum not to be 20"
print("All test cases passed!")

```

**Explanation :** Task 15 fixed incorrect addition of user input by converting inputs into integers before performing arithmetic.

## Output :

The screenshot shows the VS Code interface with the following details:

- EXPLORER:** Shows the project structure under "AI\_ASSISTED\_LAB".
- CODE EDITOR:** Displays the content of `task15.py`. The code defines two functions: `sum_two_numbers()` which concatenates strings and `sum_two_numbers()` which converts inputs to floats and adds them. It includes assertions for test cases.
- TERMINAL:** Shows the command run in the terminal: `anumandlarithika@ANUMANDLAS-MacBook-Air Ai_Assisted_lab % /usr/bin/python3 /Users/anumandlarithika/SRU/Ai_Assisted_lab/b/lab7.5/task15.py`. The terminal then prompts for two numbers (4 and 5) and prints the result (9.0).
- STATUS BAR:** Shows the file path, line number (Ln 2, Col 37), and other settings.

## Conclusion :

Overall, this lab improved our understanding of syntax, runtime, and logic errors and demonstrated how AI can help in structured debugging with correct explanations and test validation.