

ASSIGNMENT-7.5

2303A510H4

BATCH NO: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.

```
#TASK1
#don't use mutable default arguments
def add_item(item, items=None):
    if items is None:
        items = []
    items.append(item)
    return items
print(add_item(1))
print(add_item(2))
```

OUTPUT:

```
PS C:\Users\sande\OneDrive\Desktop\AI ASSI>
.py"
[1]
[1, 2]
```

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

```
#TASK2
def check_sum():
    return round(0.1 + 0.2, 1) == 0.3
print(check_sum())

def check_sum():
    return abs((0.1 + 0.2) - 0.3) < 1e-9
print(check_sum())
```

OUTPUT:

```
PS C:\Users\sande\OneDrive\Desktop\AI ASSI> & C:\Users\sande\OneDrive\Desktop\AI ASSI> .py"
True
True
PS C:\Users\sande\OneDrive\Desktop\AI ASSI> []
```

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.

```
#TASK3
def countdown(n):
    if n == 0:
        print(0)
        return
    print(n)
    countdown(n - 1)
countdown(5)
```

OUTPUT:

```
PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
.py"
5
4
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.

```
#TASK4
def get_value():
    data = {"a": 1, "b": 2}
    return data.get("c", "Key not found")
print(get_value())
```

OUTPUT:

```
● PS C:\Users\sande\OneDrive\Desktop\AI ASSI> & C:/Users/sande/OneDrive/Desktop/AI ASSI.py
Key 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.

```
#TASK5
#fix the bug in the code
def loop_example():
    i = 0
    while i < 5:
        print(i)
        i += 1
loop_example()
```

OUTPUT:

```
● PS C:\Users\sande\OneDrive\Desktop\AI ASSI> & C:/Users/sande/OneDrive/Desktop/AI ASSI.py
0
1
2
3
4
```

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.

```
#TASK6
#fix the bug in the code
a, b, c = (1, 2, 3)
print(a, b, c)
```

OUTPUT:

```
● PS C:\Users\sande\OneDrive\Desktop\AI ASSI> & C
  .py"
  1 2 3
```

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.

```
#TASK7
#fix the indentation error in the code
def func():
    x = 5
    y = 10
    return x+y
result = func()
print(result)
```

OUTPUT:

```
● PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
  .py"
  15
```

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

```
#TASK8  
#import correctly  
import math  
print(math.sqrt(16))
```

OUTPUT:

```
● PS C:\Users\sande\OneDrive\Desktop\AI ASSI> & .py  
4.0
```

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.

```
#TASK9  
# #fix the bug in the code  
def total(numbers):  
    total = 0  
    for n in numbers:  
        total += n  
    return total  
print(total([1,2,3]))
```

OUTPUT:

```
● PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
  .py"
  6
```

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.

```
#TASK10
#fix the bug in the code
from turtle import width
def calculate_area(length, width):
    return length * width
print(calculate_area(5, 3))
```

OUTPUT:

```
● PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
  .py"
  15
```

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.

```
#TASK11
#fix the bug in the code
def add_values():
    return 5 + 10
print(add_values())
```

OUTPUT:

```
15
PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
.py"
15
```

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

```
#TASK12
#fix the bug in the code
def combine():
    numbers = [1, 2, 3]
    return f"Numbers: {numbers}"
print(combine())
```

OUTPUT:

```
● PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
.py"
Numbers: [1, 2, 3]
```

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

```
#TASK13
#fix the bug in the code
def repeat_text():
    return "Hello" * 2
print(repeat_text())
```

OUTPUT:

```
PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
.py"
HelloHello
```

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.

```
#TASK14
#fix the bug in the code
def compute():
    value = 5
    return value + 10
print(compute())
```

OUTPUT:

```
15
PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
.py"
15
```

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

```
#TASK15
def sum_two_numbers():
    a = int(input("Enter first number: "))
    b = int(input("Enter second number: "))
    return a + b
print(sum_two_numbers())
```

OUTPUT:

```
PS C:\Users\sande\OneDrive\Desktop\AI ASSI> &
.py"
Enter first number: 8
Enter second number: 9
17
```