ASSIGNMENT-7.5

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BATCH NO:23

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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:

```
.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

```python
#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:

```
.py"
True
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.

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

OUTPUT:

```
.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:

```
.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:

```
.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:

```
.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:

```
.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:

```
.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:

```
.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.

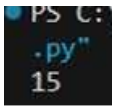
Expected Output :

- 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:



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:

```
.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:

```
.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:

```
.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.

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

OUTPUT:

```
.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

```python
#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:

```
.py"
Enter first number: 8
Enter second number: 9
17
```