ASSIGNMENT- 7.5

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Batch: 19

Task 1: Mutable Default Argument – Function Bug

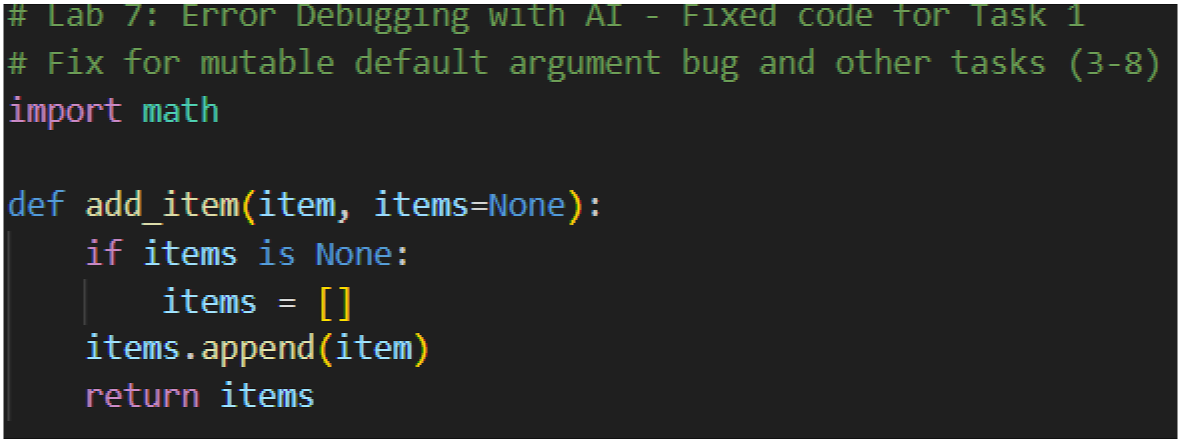
The given function uses a mutable default argument, which causes data to persist across function calls and leads to unexpected behavior

```
# Bug: Mutable default argument def
add_item(item, items=[]):
items.append(item) return
items print(add_item(1))
print(add_item(2))
```

.**Prompt: #Fix the Python function where a mutable default argument causes**

unexpected behavior.

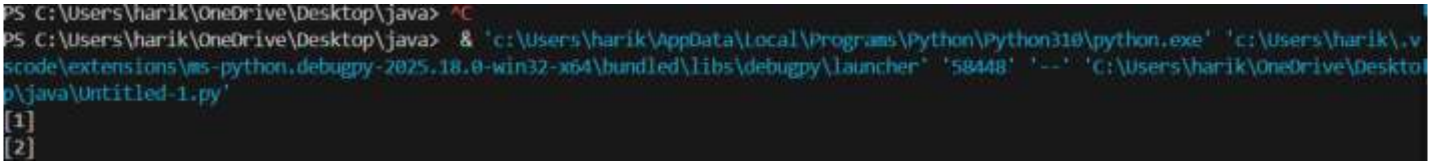
Code:



```
# Lab 7: Error Debugging with AI - Fixed code for Task 1
# Fix for mutable default argument bug and other tasks (3-8)
import math

def add_item(item, items=None):
    if items is None:
        items = []
    items.append(item)
    return items
```

Result:



```
PS C:\Users\harik\OneDrive\Desktop\java> ^C
PS C:\Users\harik\OneDrive\Desktop\java>  & 'c:\Users\harik\AppData\Local\Programs\Python\Python310\python.exe' 'c:\Users\harik\.v
scode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '58448' '--' 'C:\Users\harik\OneDrive\Deskto
p\java\Untitled-1.py'
[1]
[2]
```

Observation:
The AI correctly identified that mutable default arguments are shared across function calls. Replacing the default list with `None` and initializing it inside the function prevents unintended data sharing and ensures correct behavior.

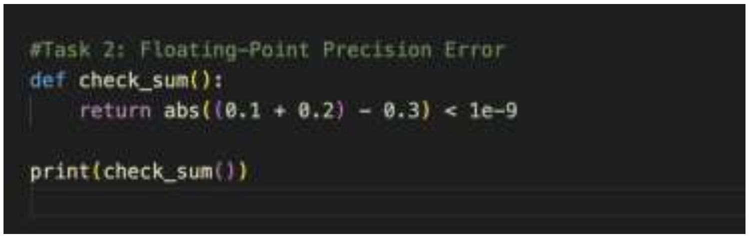
Task 2: Task 2: Floating-Point Precision Error

Direct comparison of floating-point numbers leads to incorrect results due to precision limitations.

# Bug: Floating point precision issue
def check_sum(): return (0.1 + 0.2)
== 0.3
print(check_sum())

Prompt: #Fix the floating-point comparison issue

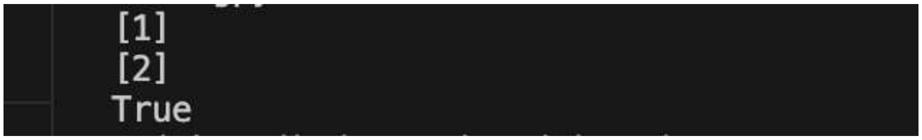
using tolerance **Code:**



```
#Task 2: Floating-Point Precision Error
def check_sum():
    return abs((0.1 + 0.2) - 0.3) < 1e-9

print(check_sum())
```

Result:



```
[1]
[2]
True
```

Observation:
The AI correctly addressed floating-point precision issues by using a tolerance-based comparison instead of direct equality, which is a recommended and reliable approach in numerical computing.

Task 3: Task 3: Recursion Error – Missing Base Case. The recursive function lacks a base case, resulting in infinite recursion.

Prompt: # Fix the recursion error caused by a missing base case.

# Bug: No base case

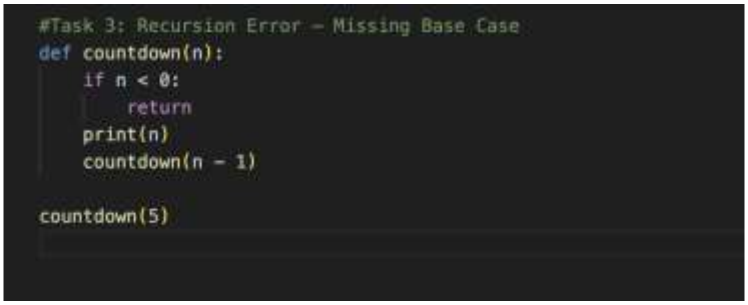
def countdown(n):

print(n)

return countdown(n-1)

countdown(5)

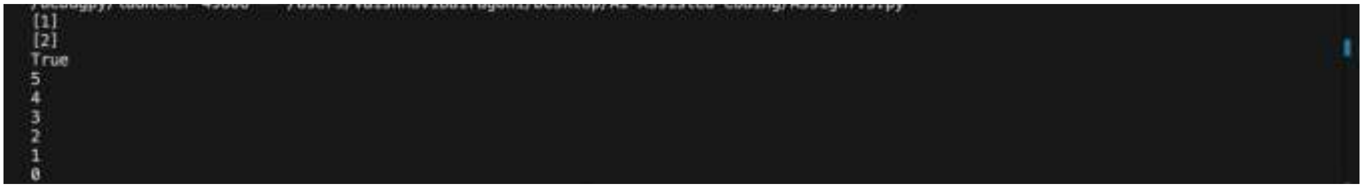
Code:



```
#Task 3: Recursion Error – Missing Base Case
def countdown(n):
    if n < 0:
        return
    print(n)
    countdown(n - 1)

countdown(5)
```

Result:



```
/debugpy/launcher 49000 -- /Users/[illegible]/Desktop/AI Assisted Coding/Assign[illegible].py
[1]
[2]
True
5
4
3
2
1
0
```

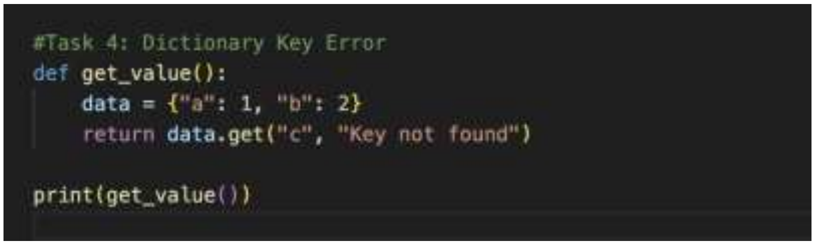
Observation:
The AI correctly identified the absence of a base condition and added a stopping condition, preventing infinite recursion and ensuring safe execution.

Task 4: Task 4: Dictionary Key Error. Accessing a non-existent key in a dictionary causes a runtime `KeyError`.

```
# Bug: Accessing non-existing key
def get_value(): data = {"a": 1,
"b": 2} return data["c"]
print(get_value())
```

Prompt: #Fix the dictionary KeyError using safe access methods..

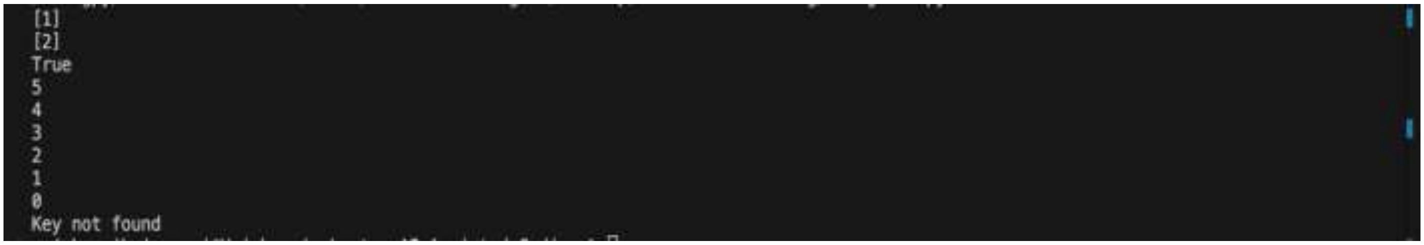
Code:



```
#Task 4: Dictionary Key Error
def get_value():
    data = {"a": 1, "b": 2}
    return data.get("c", "Key not found")

print(get_value())
```

Result:



```
[1]
[2]
True
5
4
3
2
1
0
Key not found
```

Observation

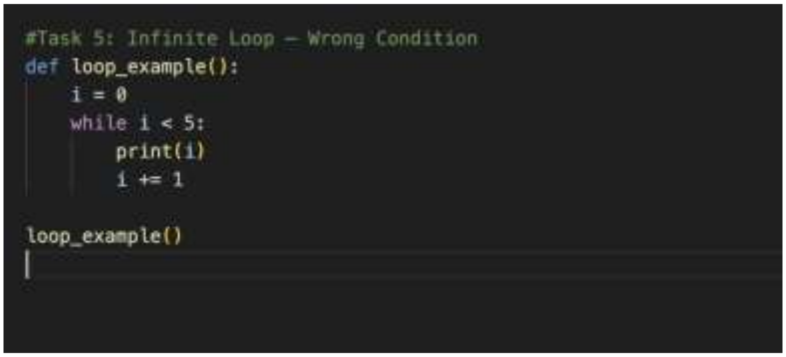
The AI resolved the issue by using the `.get()` method, which safely handles missing keys and prevents runtime errors.

Task 5: Task 5: Infinite Loop – Wrong Condition. The loop never terminates because the loop variable is not updated.

```
# Bug: Infinite loop def
loop_example():
i = 0 while
i < 5:
print(i)
```

Prompt: #Fix the infinite loop by correcting the loop condition.

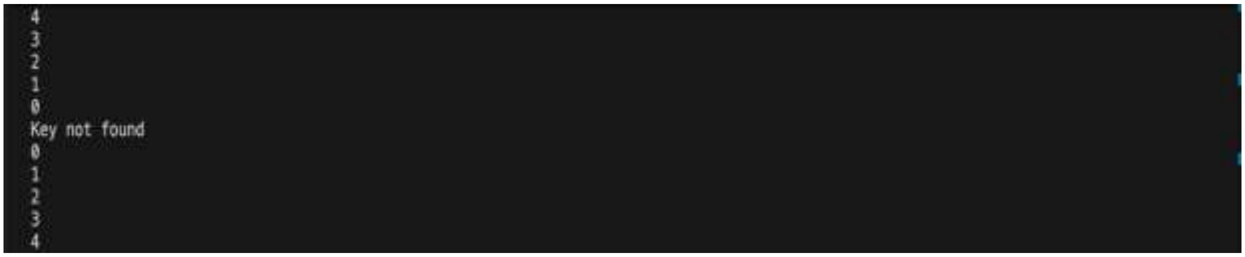
Code:



```
#Task 5: Infinite Loop – Wrong Condition
def loop_example():
    i = 0
    while i < 5:
        print(i)
        i += 1

loop_example()
```

Result:



```
4
3
2
1
0
Key not found
0
1
2
3
4
```

Observation:
The AI correctly identified the missing increment statement and fixed the infinite loop by updating the loop variable inside the loop
Task 6: Task 6: Unpacking Error – Wrong Variables

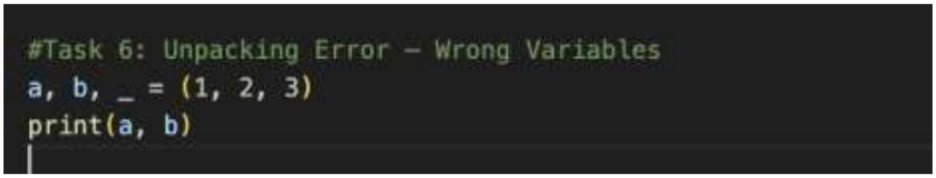
Tuple unpacking fails because the number of variables does not match the tuple size

# Bug: Wrong unpacking

a, b = (1, 2, 3)

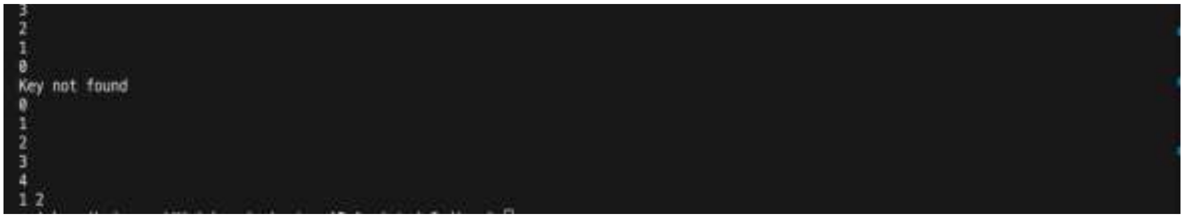
Prompt: # Fix the tuple unpacking error caused by mismatched variables.

Code:



```
#Task 6: Unpacking Error – Wrong Variables
a, b, _ = (1, 2, 3)
print(a, b)
```

Result:



```
3
2
1
0
Key not found
0
1
2
3
4
1 2
```

Observation:

The AI fixed the unpacking issue by using an underscore (_) to ignore extra values, which is a Pythonic and safe practice
Task 7: Task 7: Mixed Indentation – Tabs vs Spaces. Inconsistent indentation causes syntax or runtime errors in Python. # Bug: Mixed indentation

def func():

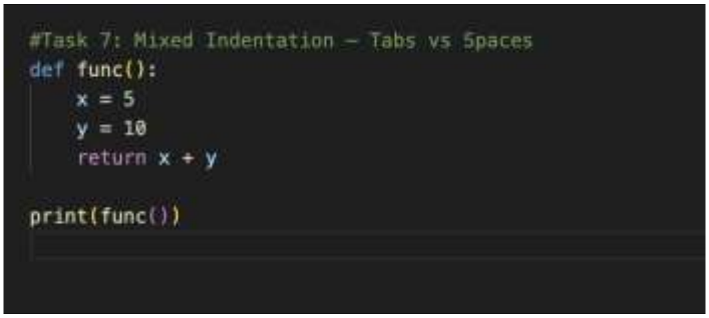
x = 5

y = 10

return x+y

Prompt: # Fix the Python code with mixed indentation.

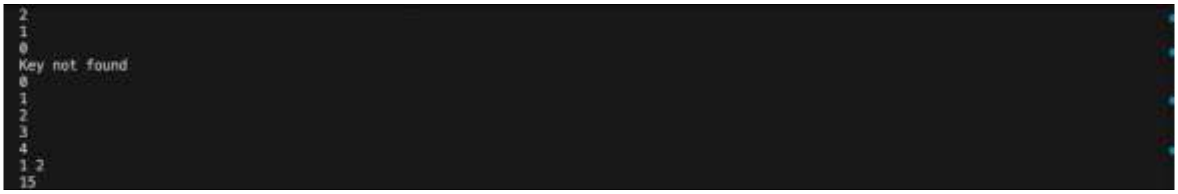
Code:



```
#Task 7: Mixed Indentation – Tabs vs Spaces
def func():
    x = 5
    y = 10
    return x + y

print(func())
```

Result:



```
2
1
0
Key not found
0
1
2
3
4
1 2
15
```

Observation:
The AI resolved the issue by applying consistent indentation using spaces, which is the recommended Python coding standard.

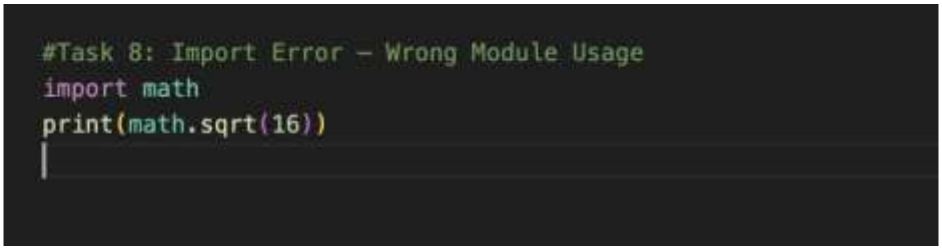
Task 8: Task 8: Import Error – Wrong Module Usage. The code attempts to import a nonexistent module, causing an import error.

Prompt: # Fix the incorrect module import in the Python code.
# Bug: Wrong import

import maths

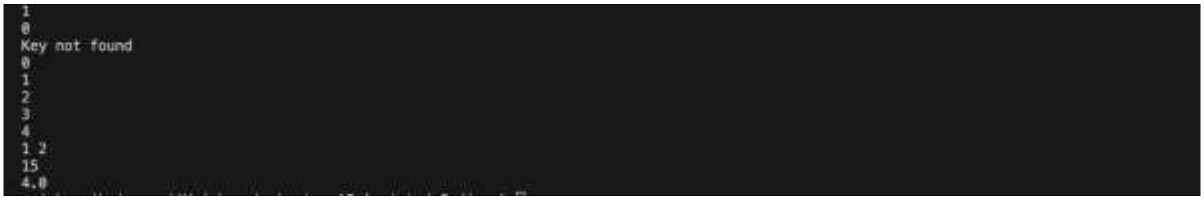
print(maths.sqrt(16))

Code:



```
#Task 8: Import Error – Wrong Module Usage
import math
print(math.sqrt(16))
```

Result:



```
1
0
Key not found
0
1
2
3
4
1 2
15
4.0
```

Observation:

The AI correctly identified the incorrect module name and replaced it with the standard `math` module, resolving the import error.