ASSIGNMENT- 7.5

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Batch: 21

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)

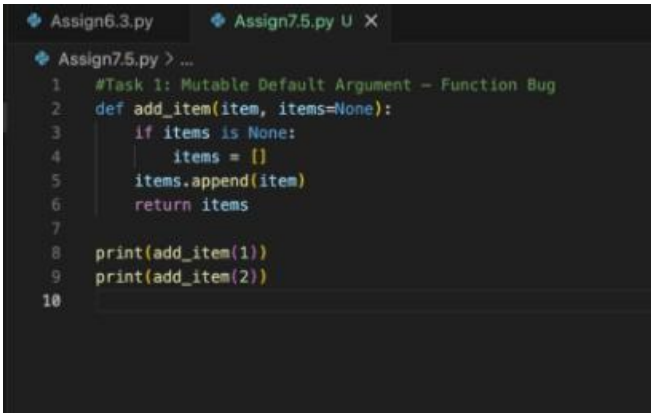
return items

print(add_item(1))

print(add_item(2))

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

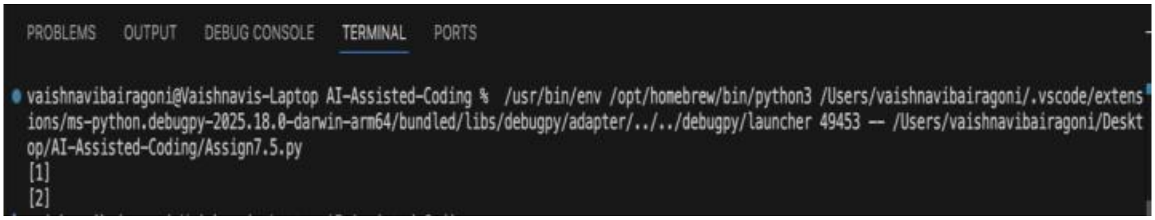
Code:



```
#Task 1: Mutable Default Argument – Function Bug
def add_item(item, items=None):
    if items is None:
        items = []
    items.append(item)
    return items

print(add_item(1))
print(add_item(2))
```

Result:



```
vaishnavibairagoni@Vaishnavis-Laptop AI-Assisted-Coding %  /usr/bin/env /opt/homebrew/bin/python3 /Users/vaishnavibairagoni/.vscode/extensions/ms-python.debugpy-2025.18.0-darwin-arm64/bundled/libs/debugpy/adapter/../../debugpy/launcher 49453 -- /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding/Assign7.5.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.

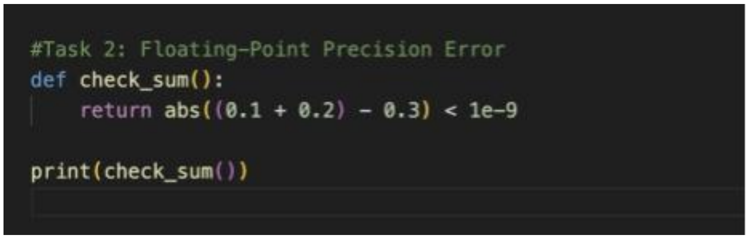
Task 2: Task 2: Floating-Point Precision Error

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

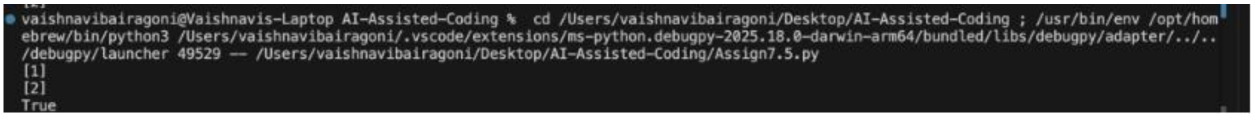
Code:



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

print(check_sum())
```

Result:



```
vaishnavibairagoni@Vaishnavis-Laptop AI-Assisted-Coding %  cd /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding ; /usr/bin/env /opt/hom
ebrew/bin/python3 /Users/vaishnavibairagoni/.vscode/extensions/ms-python.debugpy-2025.18.0-darwin-arm64/bundled/libs/debugpy/adapter/../..
/debugpy/launcher 49529 -- /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding/Assign7.5.py
[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

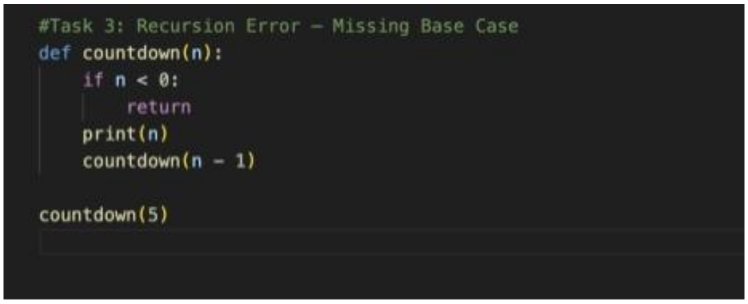
def countdown(n):

print(n)

return countdown(n-1)

countdown(5)

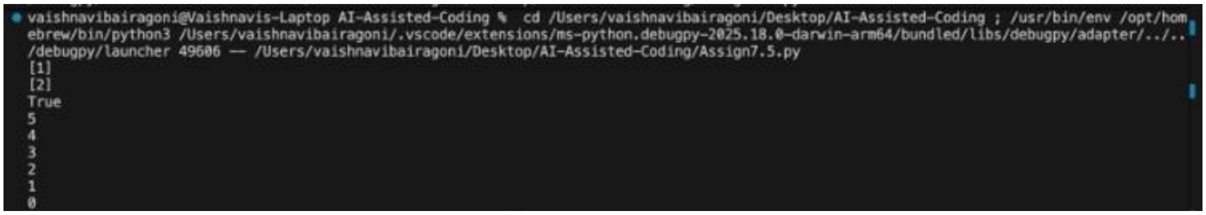
Code:



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

countdown(5)
```

Result:



```
vaishnavibairagoni@Vaishnavis-Laptop AI-Assisted-Coding %  cd /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding ; /usr/bin/env /opt/hom
ebrew/bin/python3 /Users/vaishnavibairagoni/.vscode/extensions/ms-python.debugpy-2025.18.0-darwin-arm64/bundled/libs/debugpy/adapter/../..
/debugpy/launcher 49606 -- /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding/Assign7.5.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():

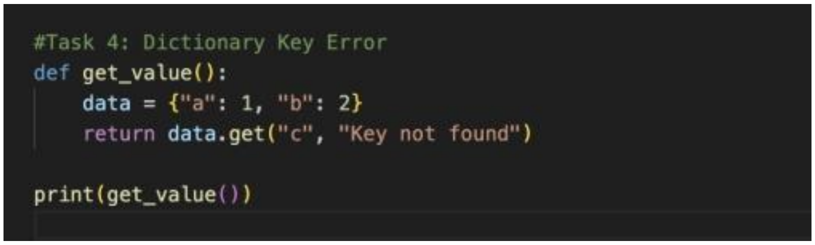
data = {"a": 1, "b": 2}

return data["c"]

print(get_value())

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

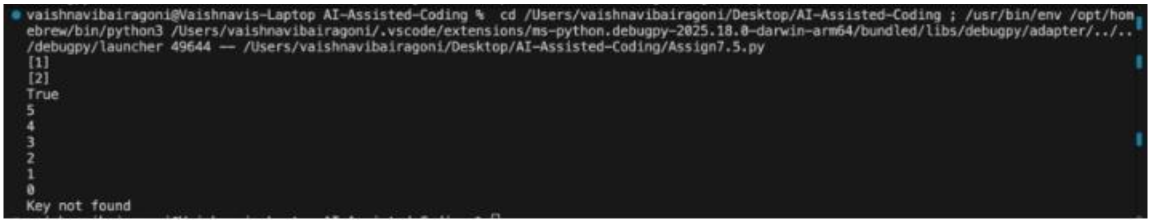
Code:



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

print(get_value())
```

Result:



```
vaishnavibairagoni@Vaishnavis-Laptop AI-Assisted-Coding %  cd /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding ; /usr/bin/env /opt/hom
ebrew/bin/python3 /Users/vaishnavibairagoni/.vscode/extensions/ms-python.debugpy-2025.18.0-darwin-arm64/bundled/libs/debugpy/adapter/../..
/debugpy/launcher 49644 -- /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding/Assign7.5.py
[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():

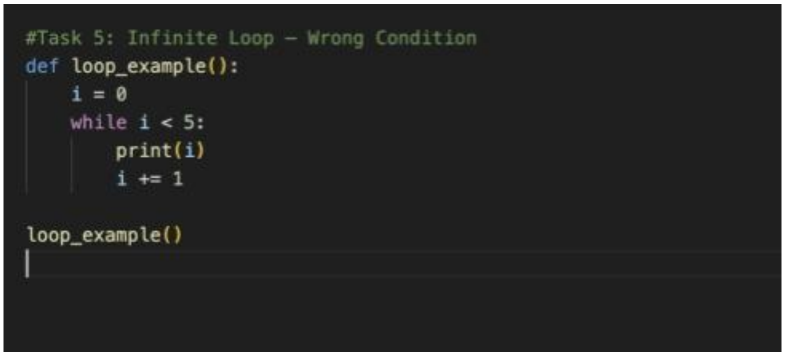
i = 0

while i < 5:

print(i)

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

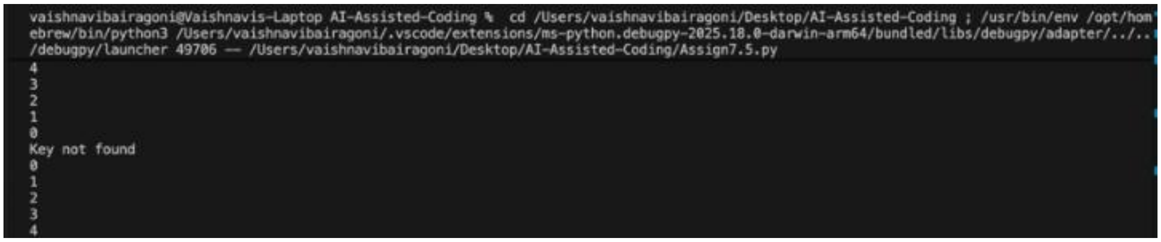
Code:



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

loop_example()
```

Result:



```
vaishnavibairagoni@Vaishnavis-Laptop AI-Assisted-Coding %  cd /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding ; /usr/bin/env /opt/hom
ebrew/bin/python3 /Users/vaishnavibairagoni/.vscode/extensions/ms-python.debugpy-2025.18.0-darwin-arm64/bundled/libs/debugpy/adapter/../..
/debugpy/launcher 49706 -- /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding/Assign7.5.py
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

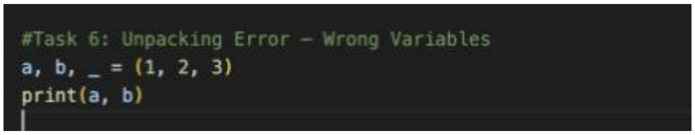
Tuple unpacking fails because the number of variables does not match the tuple size

# Bug: Wrong unpacking

a, b = (1, 2, 3)

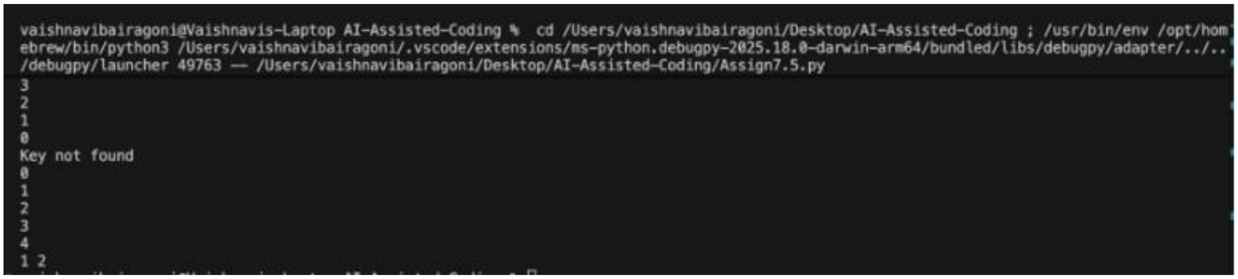
Prompt: # Fix the tuple unpacking error caused by mismatched variables.

Code:



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

Result:



```
vaishnavibairagoni@Vaishnavis-Laptop AI-Assisted-Coding %  cd /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding ; /usr/bin/env /opt/hom
ebrew/bin/python3 /Users/vaishnavibairagoni/.vscode/extensions/ms-python.debugpy-2025.18.0-darwin-arm64/bundled/libs/debugpy/adapter/../..
/debugpy/launcher 49763 -- /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding/Assign7.5.py
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():

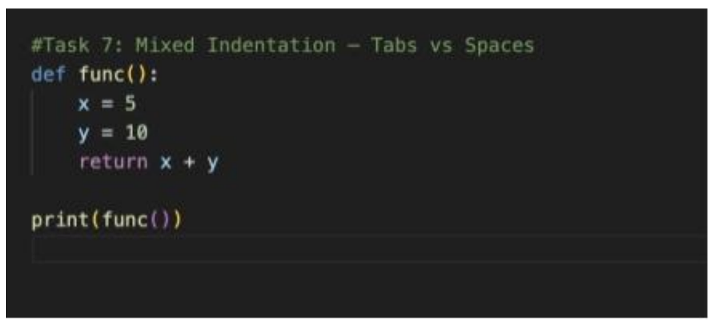
x = 5

y = 10

return x+y

Prompt: # Fix the Python code with mixed indentation.

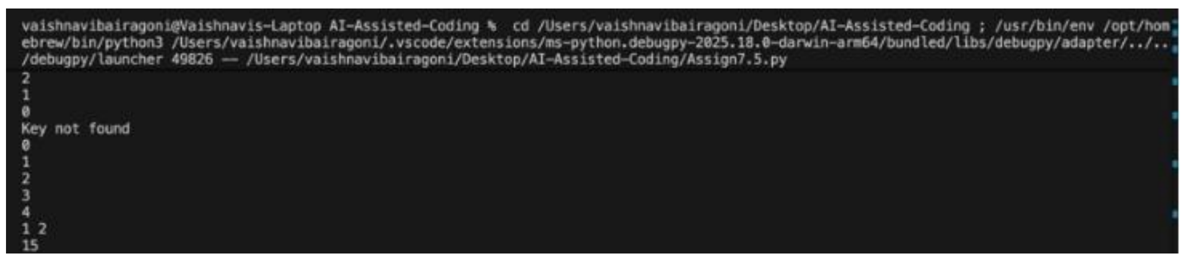
Code:



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

print(func())
```

Result:



```
vaishnavibairagoni@Vaishnavis-Laptop AI-Assisted-Coding %  cd /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding ; /usr/bin/env /opt/hom
ebrew/bin/python3 /Users/vaishnavibairagoni/.vscode/extensions/ms-python.debugpy-2025.18.0-darwin-arm64/bundled/libs/debugpy/adapter/../..
/debugpy/launcher 49826 -- /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding/Assign7.5.py
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 non-existent module, causing an import error.

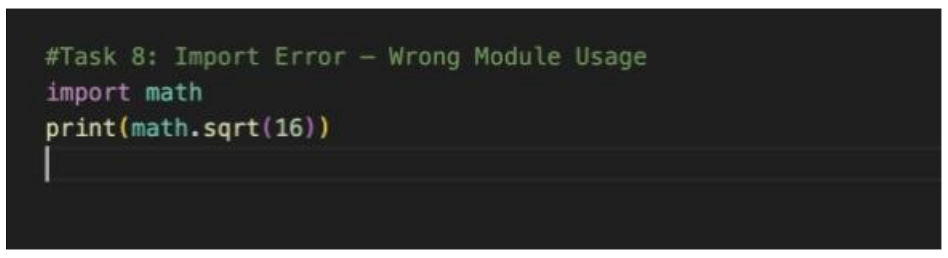
Prompt: # Fix the incorrect module import in the Python code.

# Bug: Wrong import

import maths

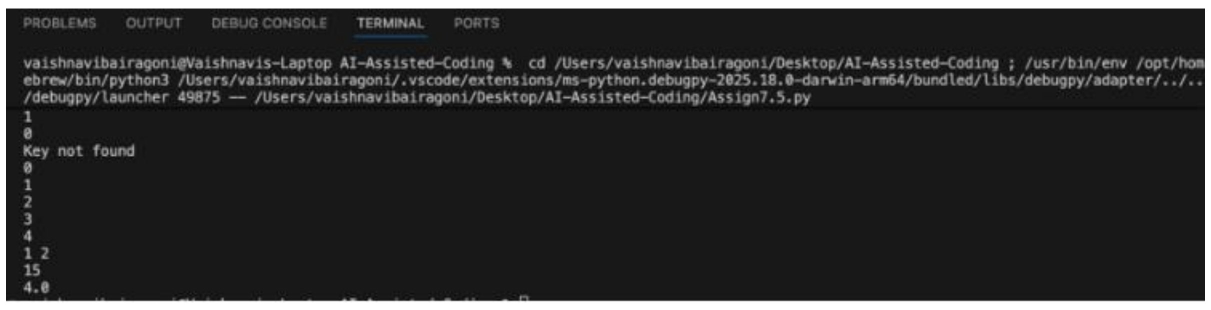
print(maths.sqrt(16))

Code:



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

Result:



```
vaishnavibairagoni@Vaishnavis-Laptop AI-Assisted-Coding %  cd /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding ; /usr/bin/env /opt/hom
ebrew/bin/python3 /Users/vaishnavibairagoni/.vscode/extensions/ms-python.debugpy-2025.18.0-darwin-arm64/bundled/libs/debugpy/adapter/../..
/debugpy/launcher 49875 -- /Users/vaishnavibairagoni/Desktop/AI-Assisted-Coding/Assign7.5.py
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.