ASSIGNMENT-7.5

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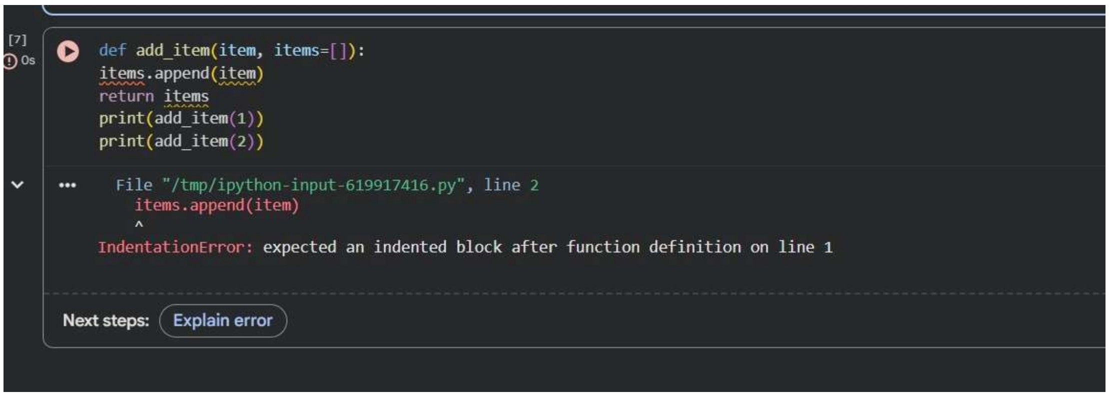
BATCH NO: 03

TASK 1: Mutable Default Argument – Function Bug

ACTUAL CODE:

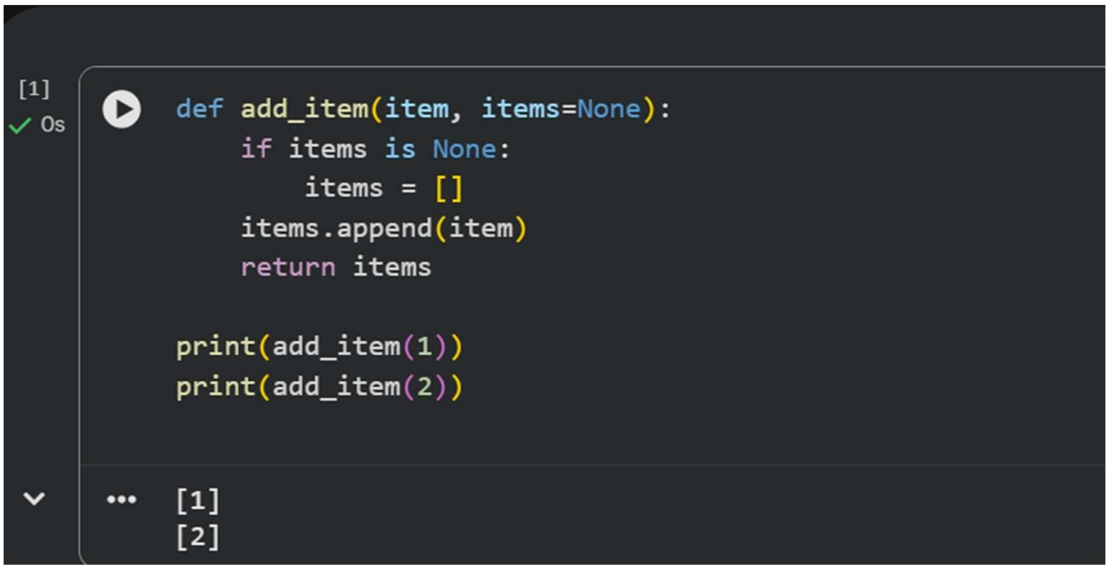


```
[7]
def add_item(item, items=[]):
items.append(item)
return items
print(add_item(1))
print(add_item(2))
```

```
  File "/tmp/ipython-input-619917416.py", line 2
    items.append(item)
    ^
IndentationError: expected an indented block after function definition on line 1
```

Prompt: Analyze the Python function where a mutable default argument causes shared state between function calls. Fix the bug so each call uses a new list.

CORRECTED CODE:



```
[1]
0s
def add_item(item, items=None):
    if items is None:
        items = []
    items.append(item)
    return items

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

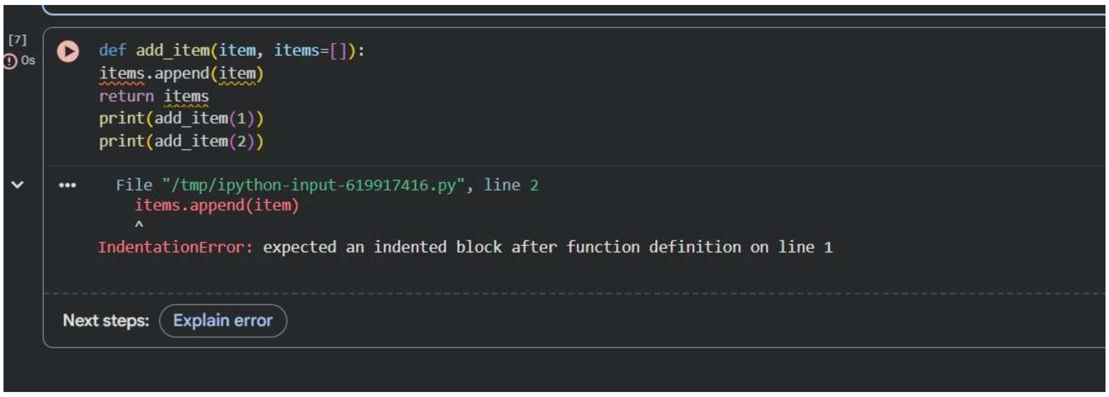
```
[1]
[2]
```

Explanation:

The issue occurs because a mutable object (list) is used as a default argument. In Python, default arguments are created once and reused across function calls, which leads to unexpected shared data. Each function call modifies the same list, causing incorrect results.

TASK 2: Floating-Point Precision Error

ACTUAL CODE:

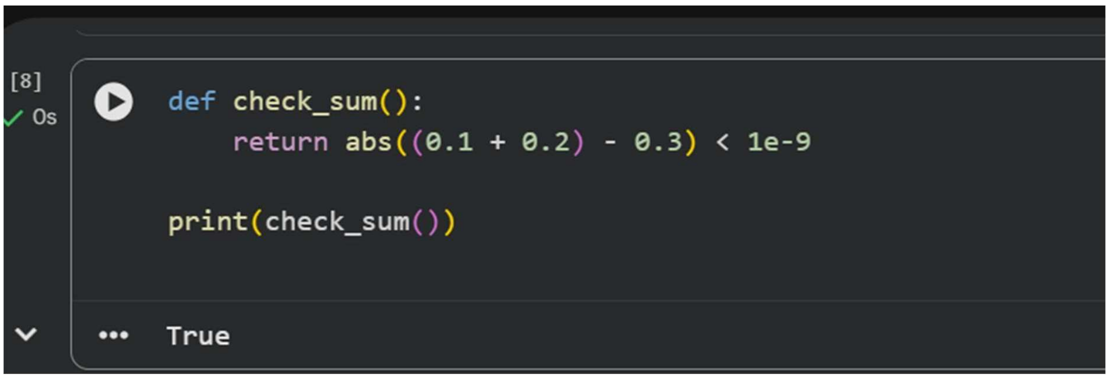


```
[7]
0s
def add_item(item, items=[]):
items.append(item)
return items
print(add_item(1))
print(add_item(2))
```

```
  File "/tmp/ipython-input-619917416.py", line 2
    items.append(item)
    ^
IndentationError: expected an indented block after function definition on line 1
```

Prompt: Identify why direct floating-point comparison fails in Python and correct the function using an appropriate tolerance-based comparison.

CORRECTED CODE:



```
[8]
✓ 0s
def check_sum():
    return abs((0.1 + 0.2) - 0.3) < 1e-9

print(check_sum())
```

```
True
```

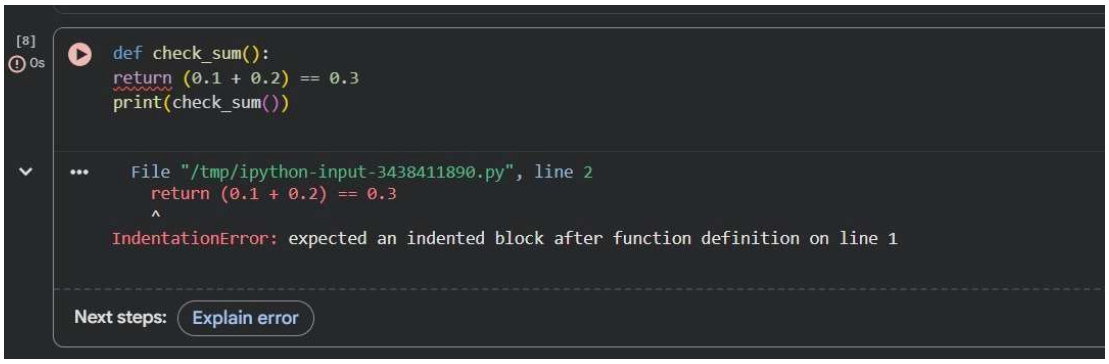
Explanation:

Floating-point numbers are stored in binary form, which can cause small precision errors. Direct equality

comparison fails because the computed result is not exactly equal to the expected value. Using a tolerancebased comparison avoids this issue.

TASK 3: Recursion Error – Missing Base Case

ACTUAL CODE:

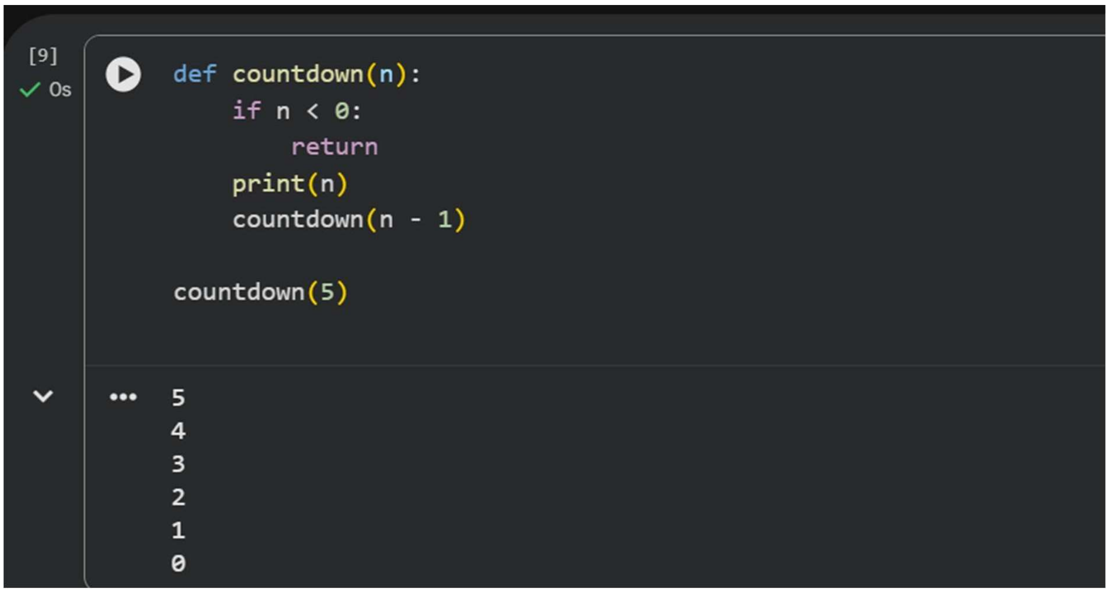


```
[8]
0s
def check_sum():
return (0.1 + 0.2) == 0.3
print(check_sum())
```

```
  File "/tmp/ipython-input-3438411890.py", line 2
    return (0.1 + 0.2) == 0.3
    ^
IndentationError: expected an indented block after function definition on line 1
```

Prompt: Debug the recursive function that runs infinitely due to a missing base case. Add a proper stopping condition

CORRECTED CODE:



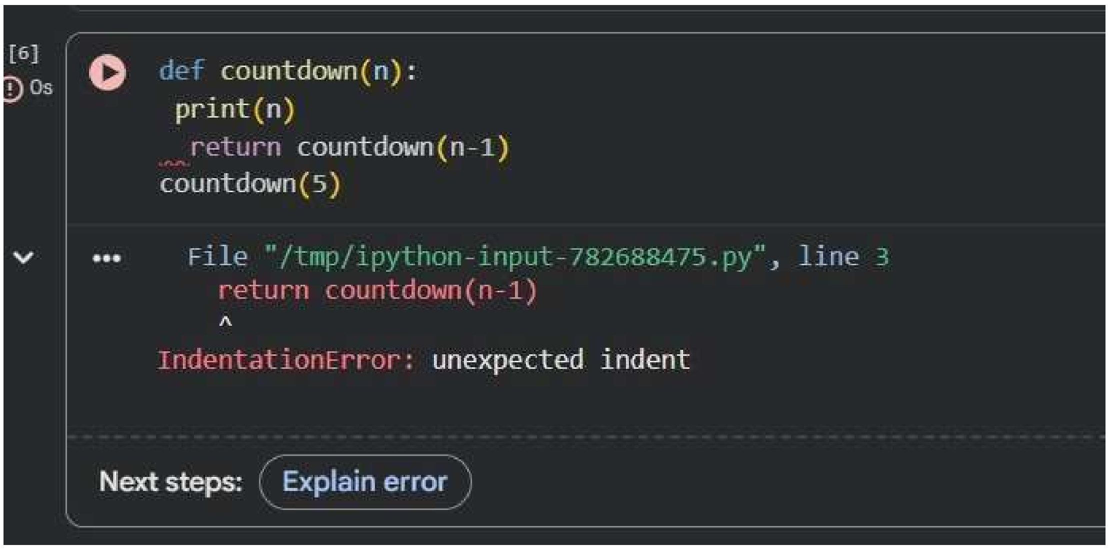
```
[9]
0s
def countdown(n):
    if n < 0:
        return
    print(n)
    countdown(n - 1)

countdown(5)
```

```
5
4
3
2
1
0
```

Explanation: The recursive function lacks a base case, so it keeps calling itself indefinitely. This leads to infinite recursion and eventually a runtime error. Adding a proper stopping condition ensures safe termination.

TASK 4: Dictionary Key Error

ACTUAL CODE:

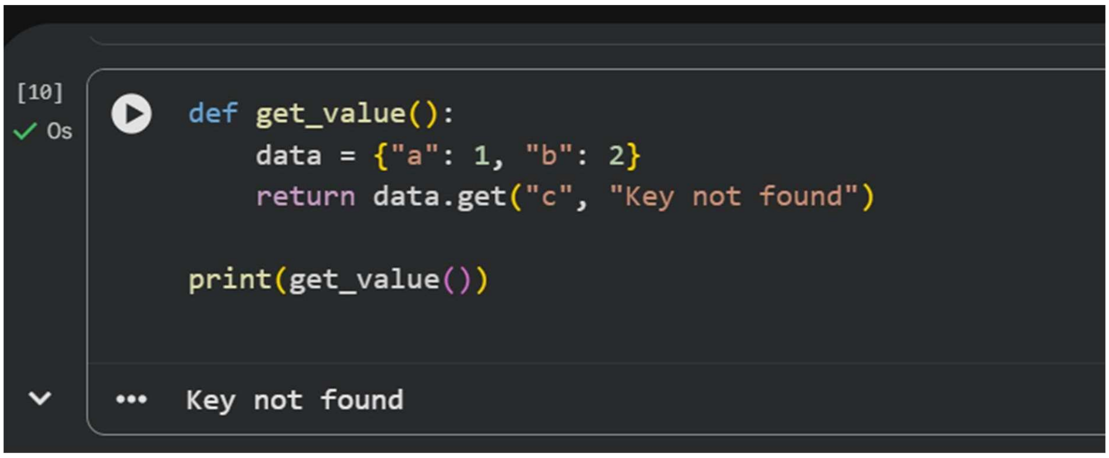


```
[6]
0s
def countdown(n):
 print(n)
  return countdown(n-1)
countdown(5)

  File "/tmp/ipython-input-782688475.py", line 3
    return countdown(n-1)
    ^
IndentationError: unexpected indent
```

Next steps: Explain error

Prompt: Fix the function that raises a KeyError when accessing a non-existing dictionary key by using safe access or error handling.

CORRECTED CODE:

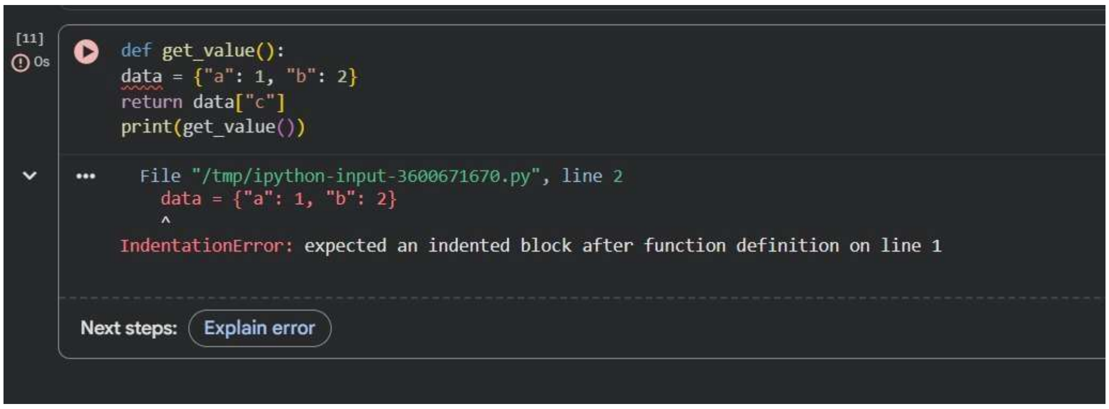


```
[10]
0s
def get_value():
    data = {"a": 1, "b": 2}
    return data.get("c", "Key not found")

print(get_value())

Key not found
```

Explanation: Accessing a key that does not exist in a dictionary raises a KeyError. Using safe access methods or handling missing keys prevents the program from crashing.

TASK 5: Infinite Loop – Wrong Condition

ACTUAL CODE:



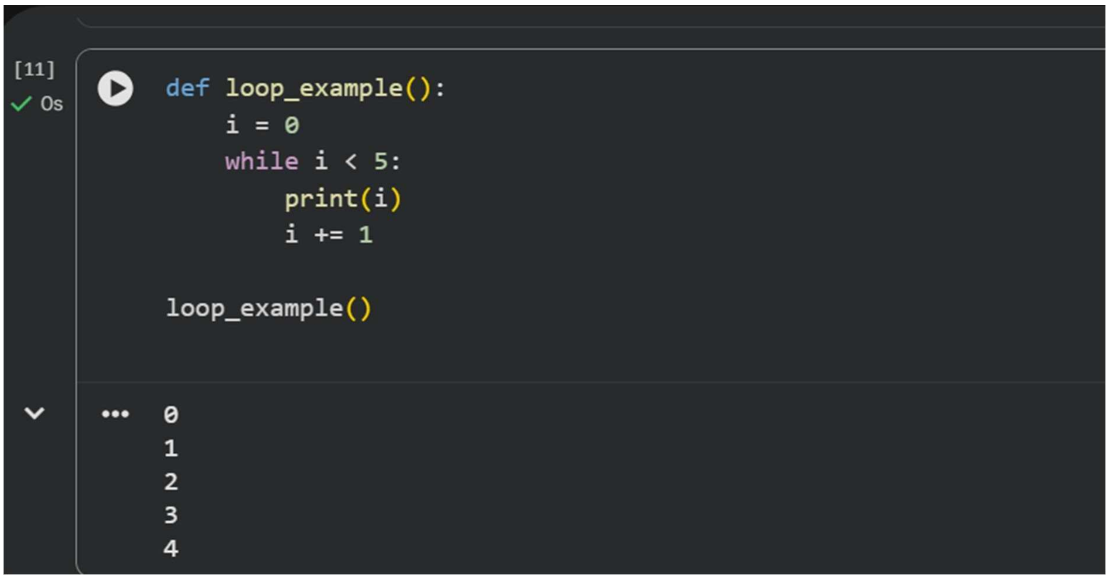
```
[11]
0s
def get_value():
data = {"a": 1, "b": 2}
return data["c"]
print(get_value())
```

```
  File "/tmp/ipython-input-3600671670.py", line 2
    data = {"a": 1, "b": 2}
    ^
IndentationError: expected an indented block after function definition on line 1
```

Next steps: Explain error

Prompt: Detect and correct the infinite loop caused by an incorrect loop condition so the loop terminates properly.

CORRECTED CODE:



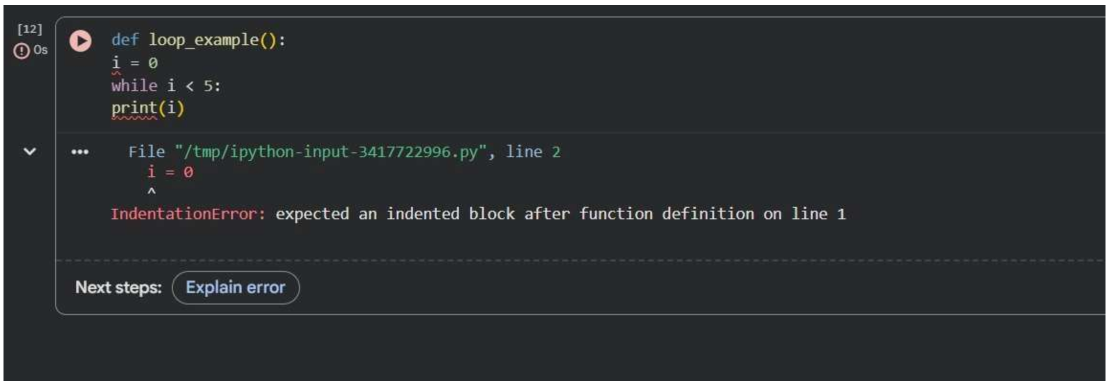
```
[11]
0s
def loop_example():
    i = 0
    while i < 5:
        print(i)
        i += 1

loop_example()
```

```
0
1
2
3
4
```

Explanation: The loop condition is correct, but the loop variable is never updated. This causes the loop to run endlessly. Incrementing the loop variable allows proper termination.

TASK 6: Unpacking Error – Wrong Variables

ACTUAL CODE:

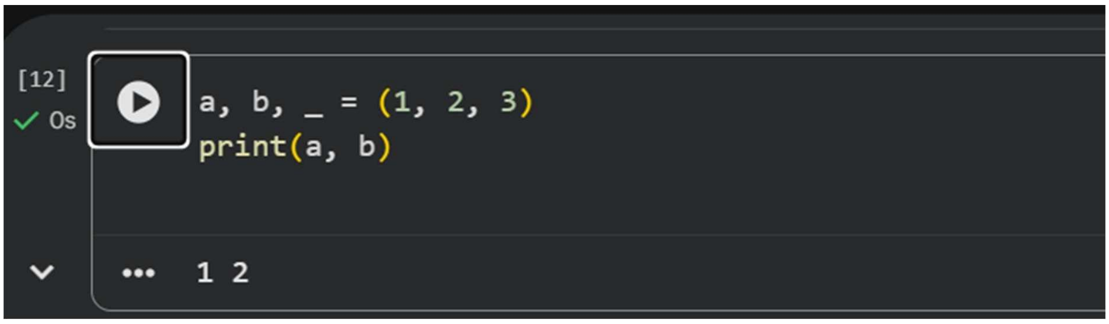


```
[12]
0s
def loop_example():
i = 0
while i < 5:
print(i)
```

```
  File "/tmp/ipython-input-3417722996.py", line 2
    i = 0
    ^
IndentationError: expected an indented block after function definition on line 1
```

Prompt: Analyze the tuple unpacking error caused by mismatched variables and fix it using proper unpacking.

CORRECTED CODE:

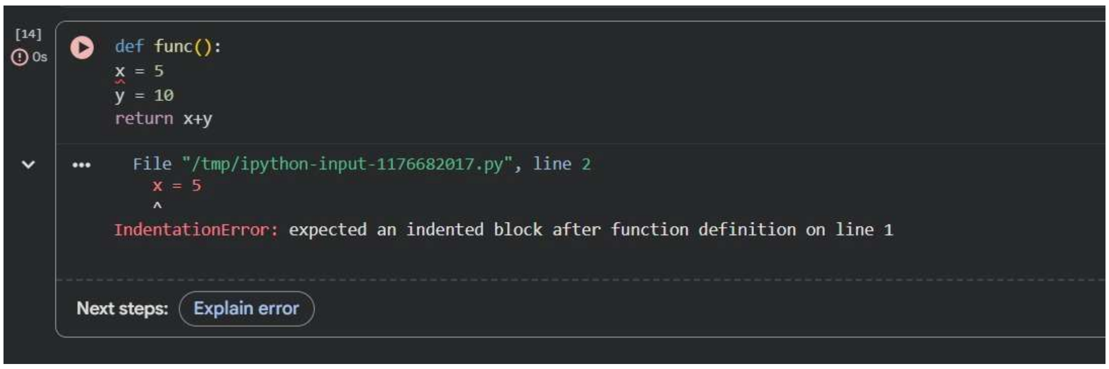


```
[12]
0s
a, b, _ = (1, 2, 3)
print(a, b)

1 2
```

Explanation: Tuple unpacking fails when the number of variables does not match the number of values. Correct unpacking or ignoring extra values resolves the error.

TASK 7: Mixed Indentation – Tabs vs Spaces

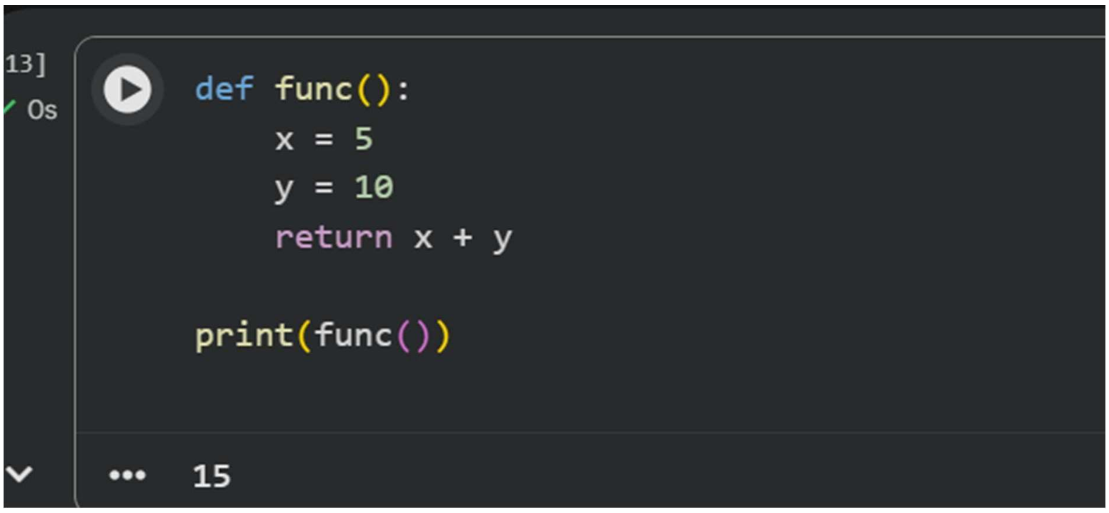
ACTUAL CODE:



```
[14]
0s
def func():
x = 5
y = 10
return x+y

  File "/tmp/ipython-input-1176682017.py", line 2
    x = 5
    ^
IndentationError: expected an indented block after function definition on line 1
```

Prompt: Correct the Python function that fails due to mixed or incorrect indentation by applying consistent indentation.

CORRECTED CODE:

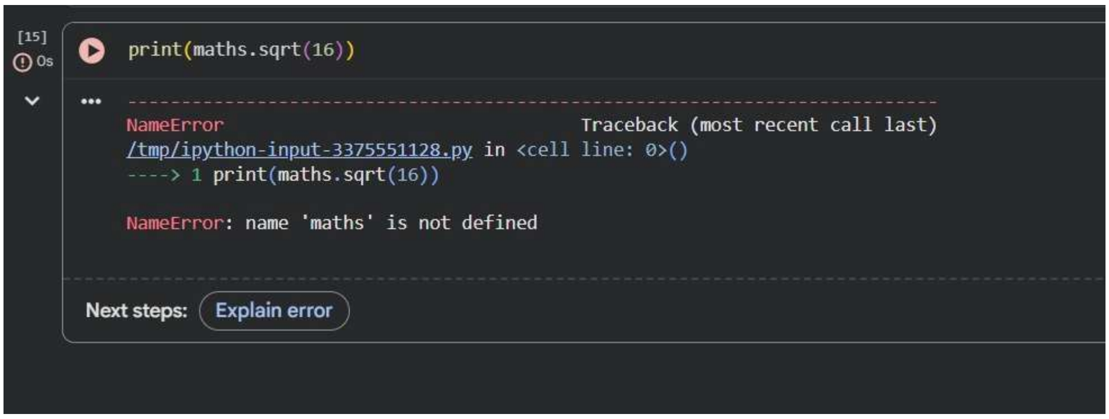


```
13]
 0s

def func():
    x = 5
    y = 10
    return x + y

print(func())

...  15
```

Explanation: Python relies on indentation to define code blocks. Mixed or incorrect indentation causes syntax errors. Using consistent spacing fixes the issue

TASK 8: Import Error – Wrong Module Usage

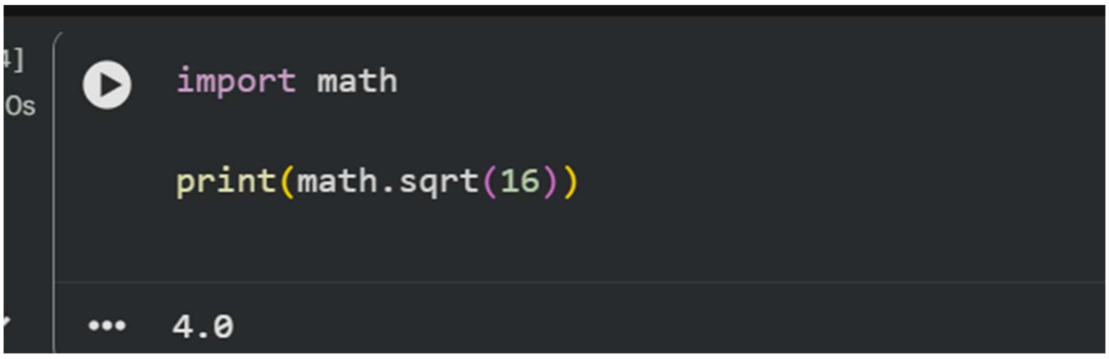
ACTUAL CODE:



```
[15]
 0s
print(maths.sqrt(16))

...
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
/tmp/ipython-input-3375551128.py in <cell line: 0>()
----> 1 print(maths.sqrt(16))

NameError: name 'maths' is not defined
```

Prompt: Correct the Python function that fails due to mixed or incorrect indentation by applying consistent indentation.

CORRECTED CODE:



```
import math

print(math.sqrt(16))
```

```
4.0
```

Explanation: The error occurs due to importing a nonexistent module. Using the correct standard library module name resolves the import issue.