Assignment-7.1

AI Assistant Coding

Name : B. sai prasanna

Btach: 08

Rollno : 2303A51551

Task Description #1

Task: Provide a Python snippet with a missing parenthesis in a print

statement (e.g., print "Hello"). Use AI to detect and fix the syntax error.

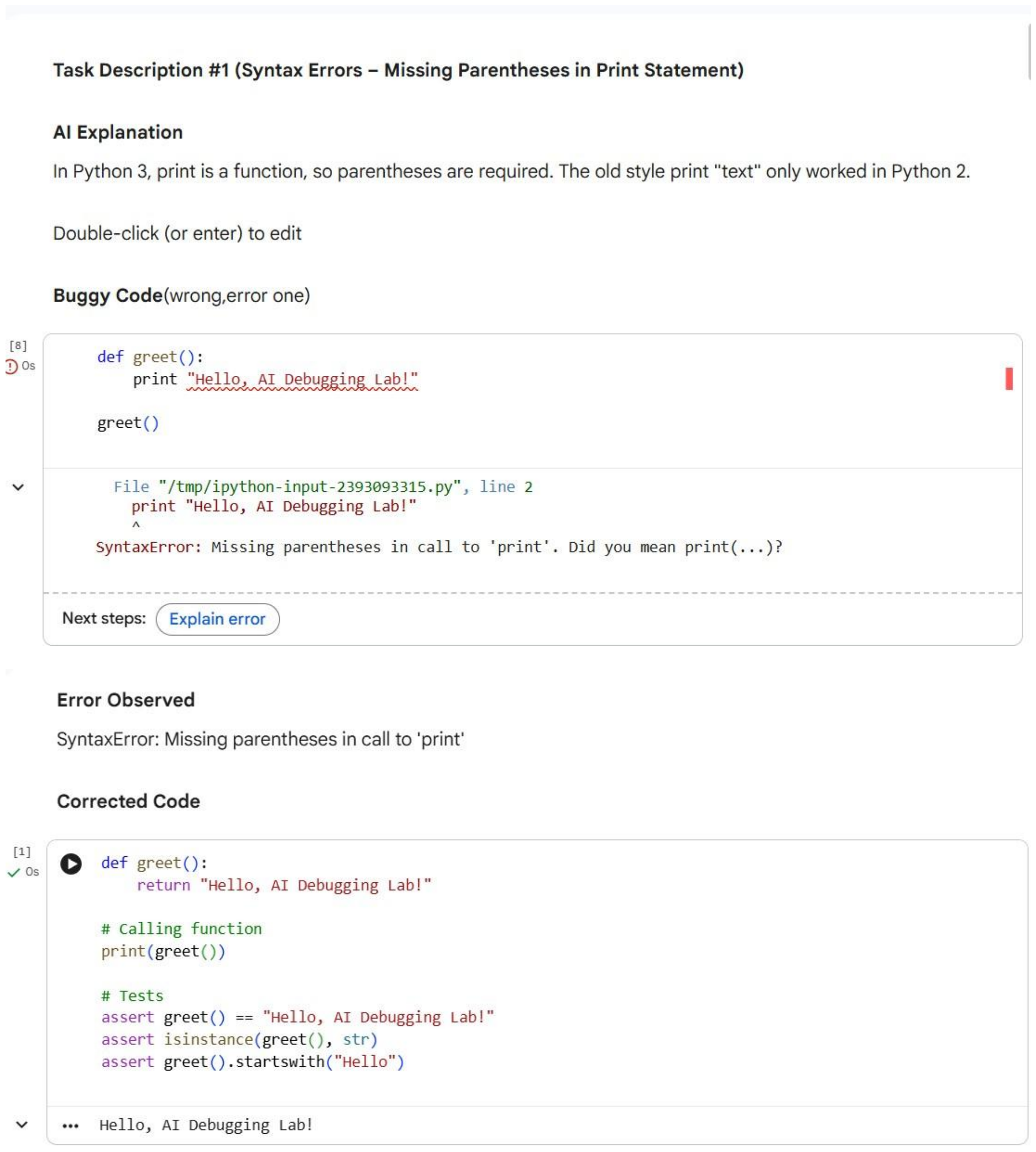
```
# Bug: Missing parentheses in print statement
def greet(): print "Hello, AI Debugging Lab!"
greet()
```

Requirements:

- Run the given code to observe the error.
- Apply AI suggestions to correct the syntax.
- Use at least 3 assert test cases to confirm the corrected code works.

Expected Output #1:

- Corrected code with proper syntax and AI explanation.



Task Description #1 (Syntax Errors – Missing Parentheses in Print Statement)

AI Explanation

In Python 3, print is a function, so parentheses are required. The old style print "text" only worked in Python 2.

Double-click (or enter) to edit

Buggy Code(wrong,error one)

```
[8]
0s
def greet():
    print "Hello, AI Debugging Lab!"

greet()
```

```
  File "/tmp/ipython-input-2393093315.py", line 2
    print "Hello, AI Debugging Lab!"
    ^
SyntaxError: Missing parentheses in call to 'print'. Did you mean print(...)?
```

Next steps: Explain error

Error Observed

SyntaxError: Missing parentheses in call to 'print'

Corrected Code

```
[1]
0s
def greet():
    return "Hello, AI Debugging Lab!"

# Calling function
print(greet())

# Tests
assert greet() == "Hello, AI Debugging Lab!"
assert isinstance(greet(), str)
assert greet().startswith("Hello")
```

```
Hello, AI Debugging Lab!
```

Observation:

- The original program failed to run due to a **SyntaxError**.
- Python 3 requires parentheses for function calls, including print().
- AI identified that the code followed **Python 2 syntax**.
- After correction, the program executed successfully.
- All assert test cases passed, confirming the function returned the expected string.

Task Description #2 (Incorrect condition in an If Statement) Task:

Supply a function where an if-condition mistakenly uses = instead of

==. Let AI identify and fix the issue.

# Bug: Using assignment (=) instead of comparison (==)

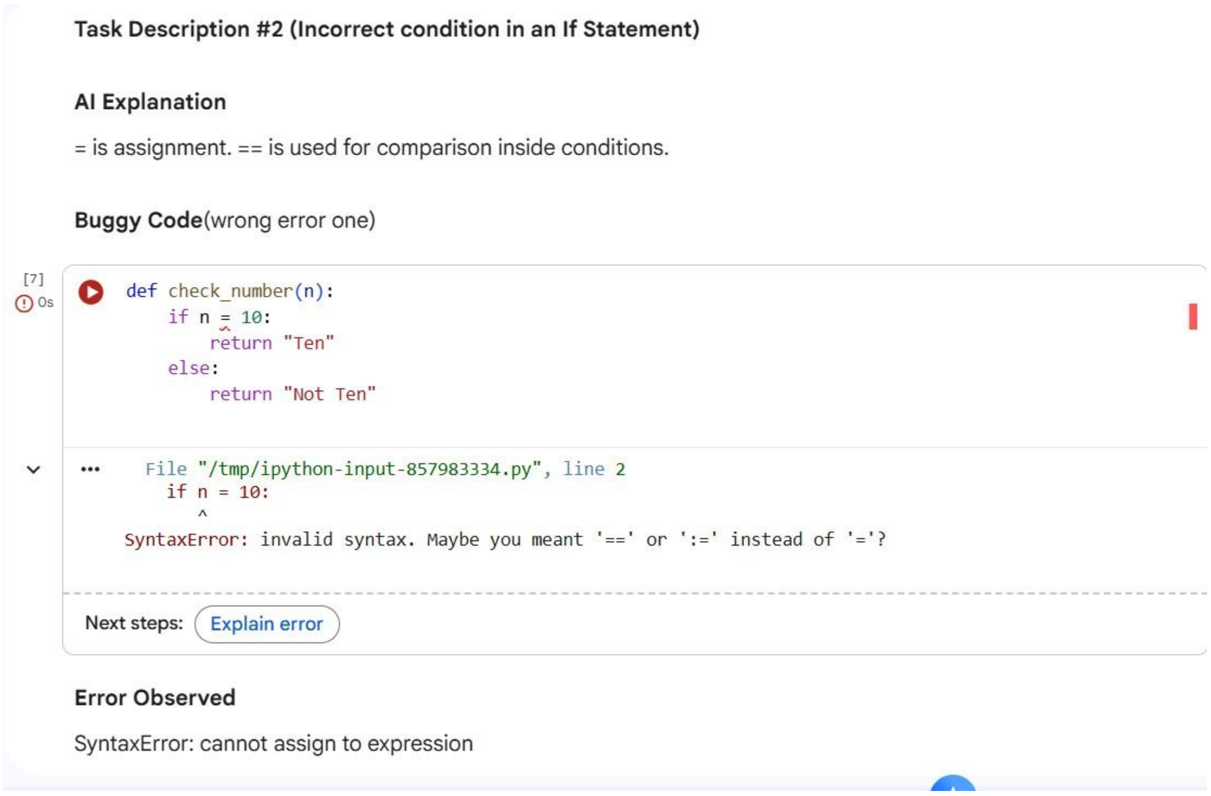
def check_number(n): if n = 10: return "Ten" else:

return "Not Ten" Requirements:

- Ask AI to explain why this causes a bug.
- Correct the code and verify with 3 assert test cases.

Expected Output #2:

- Corrected code using == with explanation and successful test execution.



Task Description #2 (Incorrect condition in an If Statement)

AI Explanation

= is assignment. == is used for comparison inside conditions.

Buggy Code(wrong error one)

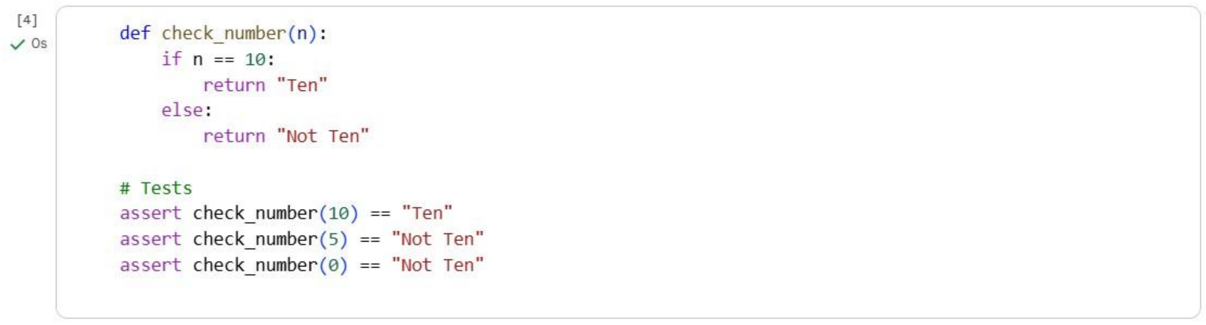
```
[7]
0s
def check_number(n):
    if n = 10:
        return "Ten"
    else:
        return "Not Ten"
```

```
  File "/tmp/ipython-input-857983334.py", line 2
    if n = 10:
       ^
SyntaxError: invalid syntax. Maybe you meant '==' or ':=' instead of '='?
```

Error Observed

SyntaxError: cannot assign to expression

Corrected Code


```
[4]
✓ 0s
def check_number(n):
    if n == 10:
        return "Ten"
    else:
        return "Not Ten"

# Tests
assert check_number(10) == "Ten"
assert check_number(5) == "Not Ten"
assert check_number(0) == "Not Ten"
```

Observation:

- The program produced a **syntax error** because = was used instead of ==.
- AI explained that = performs assignment, not comparison.
- Replacing = with == fixed the logical condition.
- The corrected function behaved correctly for different inputs.
- All assert test cases passed without errors.

Task Description #3 (Runtime Error – File Not Found) Task: Provide

code that attempts to open a non-existent file and crashes. Use AI

to apply safe error handling. # Bug: Program crashes if file is

missing def read_file(filename): with open(filename, 'r') as f:

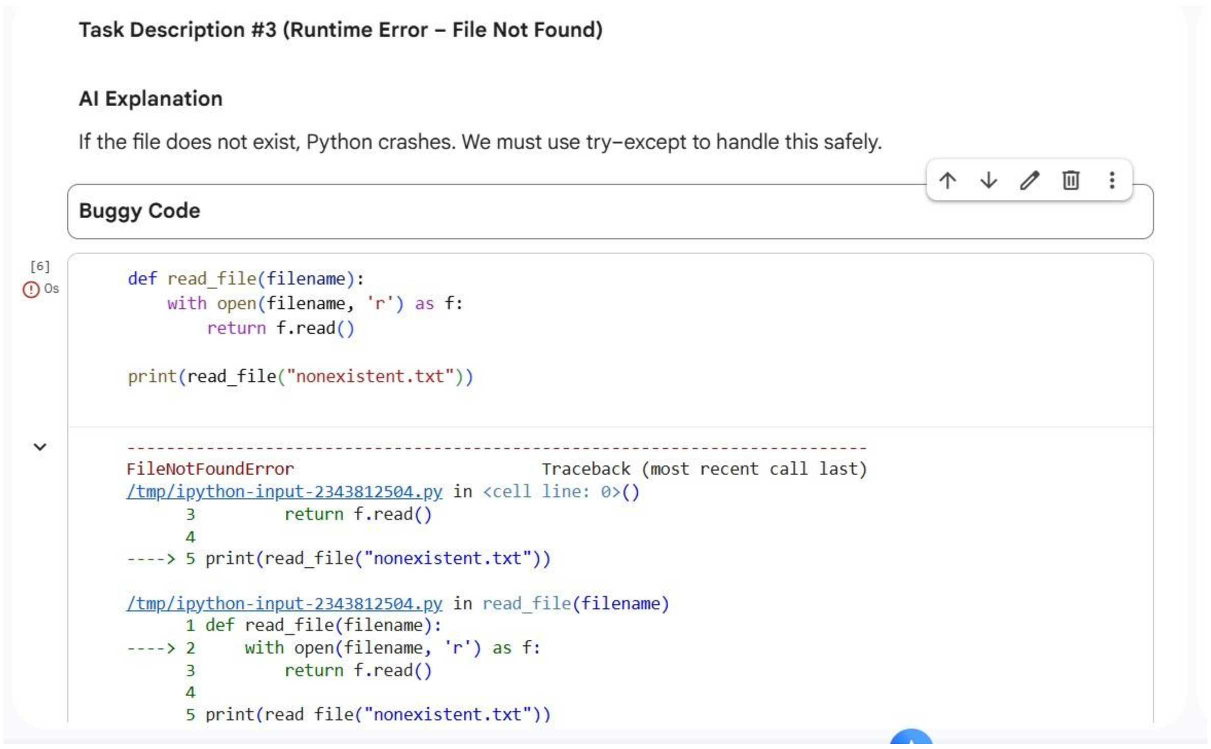
return f.read()

print(read_file("nonexistent.txt")) Requirements:

- Implement a try-except block suggested by AI.
- Add a user-friendly error message.
- Test with at least 3 scenarios: file exists, file missing, invalid path.

Expected Output #3:

- Safe file handling with exception management.



Task Description #3 (Runtime Error – File Not Found)

AI Explanation

If the file does not exist, Python crashes. We must use try–except to handle this safely.

Buggy Code

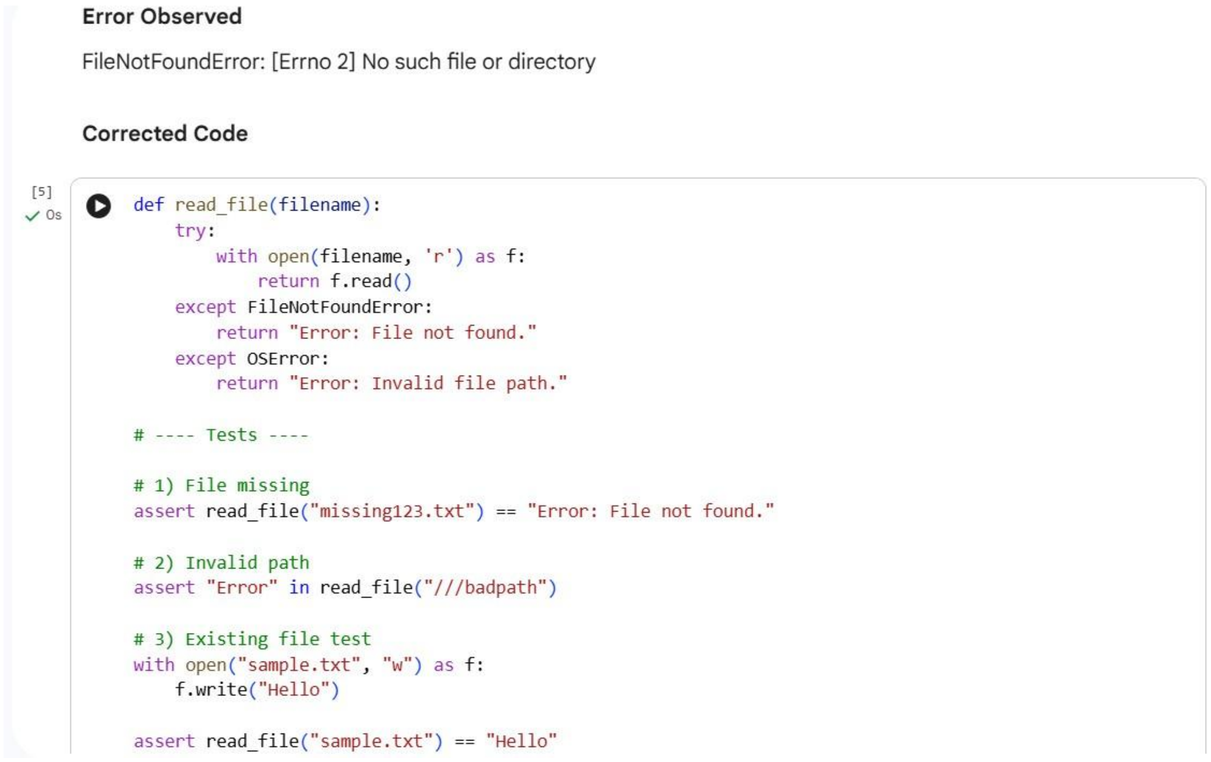
[6]
0s

```
def read_file(filename):
    with open(filename, 'r') as f:
        return f.read()

print(read_file("nonexistent.txt"))
```

```
---------------------------------------------------------------------------
FileNotFoundError                         Traceback (most recent call last)
/tmp/ipython-input-2343812504.py in <cell line: 0>()
      3         return f.read()
      4 
----> 5 print(read_file("nonexistent.txt"))

/tmp/ipython-input-2343812504.py in read_file(filename)
      1 def read_file(filename):
----> 2     with open(filename, 'r') as f:
      3         return f.read()
      4 
      5 print(read_file("nonexistent.txt"))
```



Error Observed

FileNotFoundError: [Errno 2] No such file or directory

Corrected Code

[5]
0s

```
def read_file(filename):
    try:
        with open(filename, 'r') as f:
            return f.read()
    except FileNotFoundError:
        return "Error: File not found."
    except OSError:
        return "Error: Invalid file path."

# ---- Tests ----

# 1) File missing
assert read_file("missing123.txt") == "Error: File not found."

# 2) Invalid path
assert "Error" in read_file("///badpath")

# 3) Existing file test
with open("sample.txt", "w") as f:
    f.write("Hello")

assert read_file("sample.txt") == "Hello"
```

Observation:

- The original code crashed when attempting to open a missing file.
- AI detected the unhandled FileNotFoundError.
- A try–except block was introduced to prevent program termination.
- User-friendly error messages were displayed instead of crashing.

Task Description #4 (Calling a Non-Existent Method) Task: Give a

class where a non-existent method is called (e.g.,

obj.undefined_method()). Use AI to debug and fix.

# Bug: Calling an undefined method

class Car: def start(self): return "Car

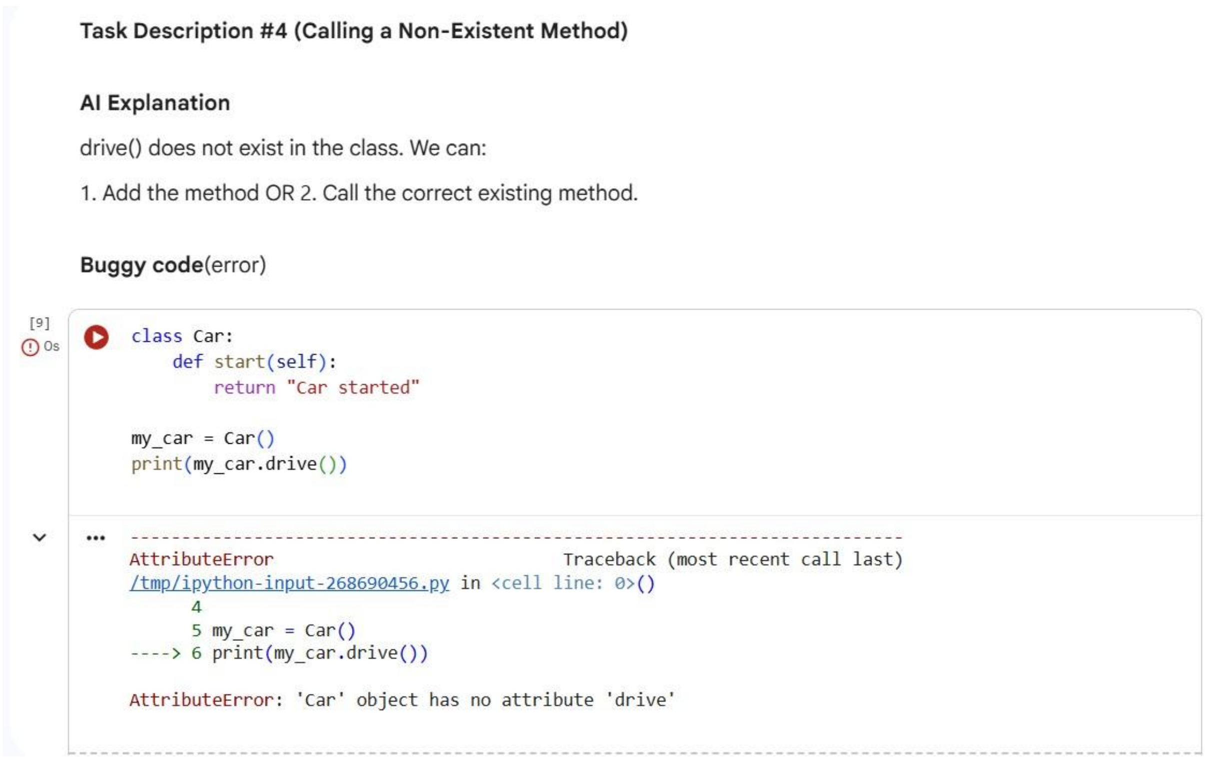
started" my_car = Car()

print(my_car.drive()) # drive() is not defined Requirements:

- Students must analyze whether to define the missing method or correct the method call.
- Use 3 assert tests to confirm the corrected class works.

Expected Output #4:

- Corrected class with clear AI explanation.



Task Description #4 (Calling a Non-Existent Method)

AI Explanation

drive() does not exist in the class. We can:

1. Add the method OR 2. Call the correct existing method.

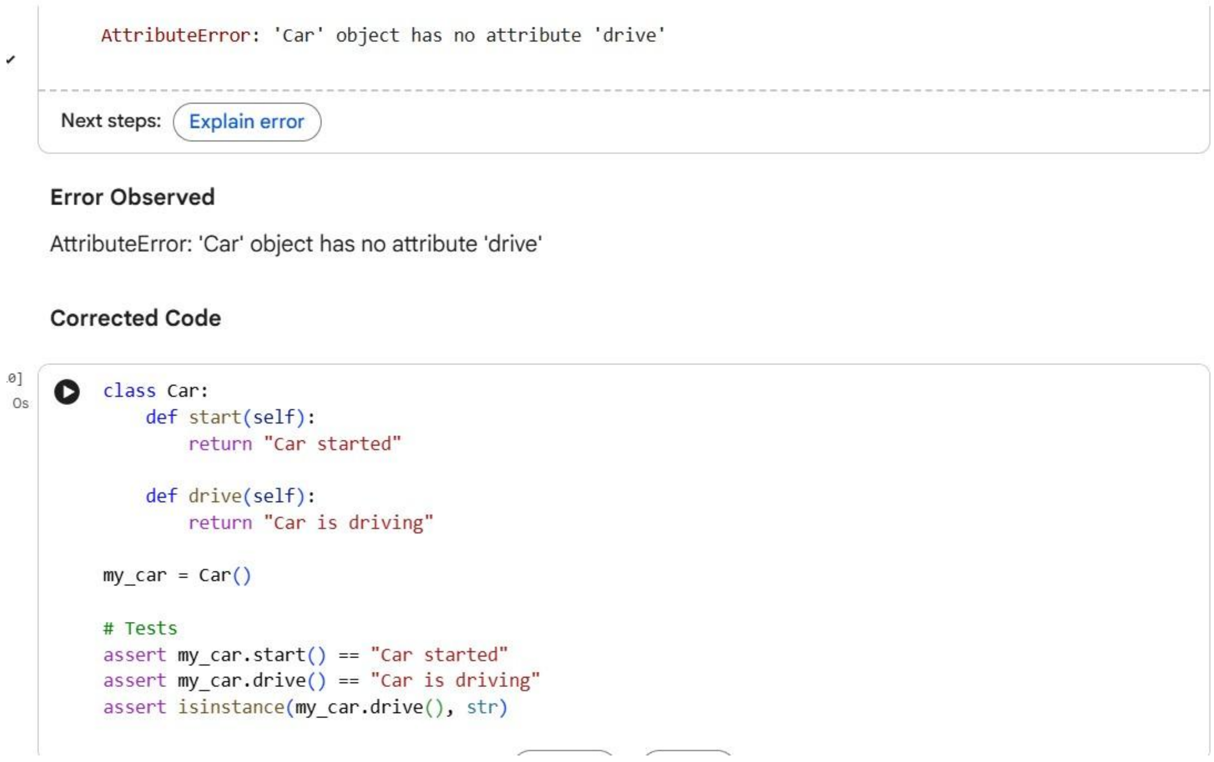
Buggy code(error)

```
class Car:
    def start(self):
        return "Car started"

my_car = Car()
print(my_car.drive())
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
/tmp/ipython-input-268690456.py in <cell line: 0>()
      4
      5 my_car = Car()
----> 6 print(my_car.drive())

AttributeError: 'Car' object has no attribute 'drive'
```



```
AttributeError: 'Car' object has no attribute 'drive'
```

Error Observed

AttributeError: 'Car' object has no attribute 'drive'

Corrected Code

```
class Car:
    def start(self):
        return "Car started"

    def drive(self):
        return "Car is driving"

my_car = Car()

# Tests
assert my_car.start() == "Car started"
assert my_car.drive() == "Car is driving"
assert isinstance(my_car.drive(), str)
```

Observation:

- The program raised an **AttributeError** because the drive() method was not defined.
- AI identified two possible fixes: define the method or change the call.
- Adding the drive() method solved the issue.
- The corrected class worked as expected.

- All assert tests passed, verifying class functionality.

Task Description #5 (TypeError – Mixing Strings and Integers in Addition)

Task: Provide code that adds an integer and string ("5" + 2) causing a TypeError. Use AI to resolve the bug.

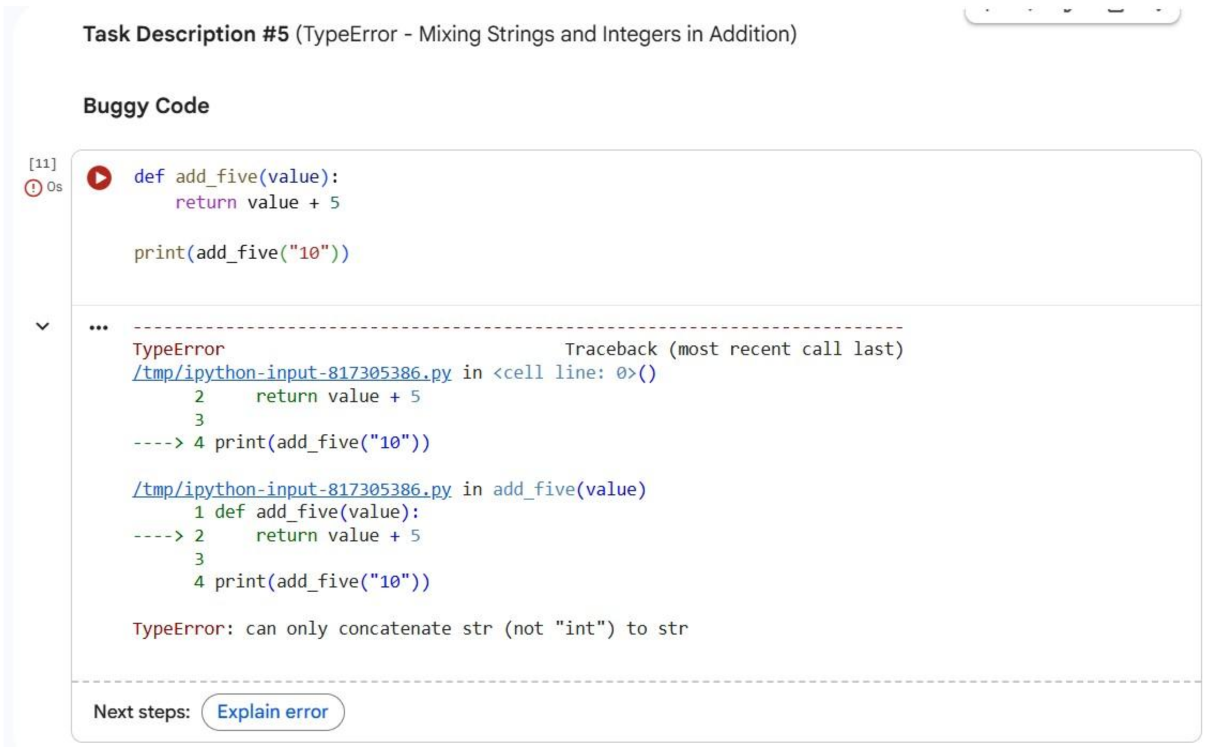
# Bug: TypeError due to mixing string and integer

def add_five(value): return value + 5

print(add_five("10")) Requirements:

- Ask AI for two solutions: type casting and string concatenation.
- Validate with 3 assert test cases.

Expected Output #5:



Task Description #5 (TypeError - Mixing Strings and Integers in Addition)

Buggy Code

[11] 0s

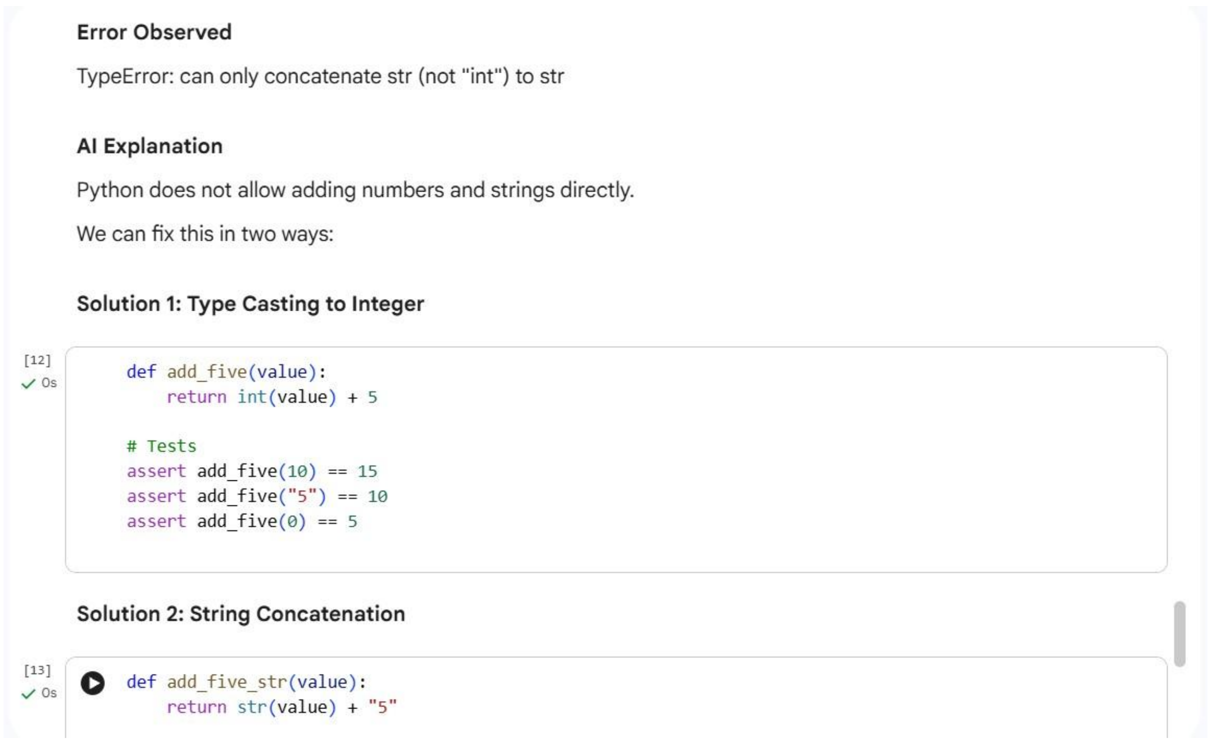
```
def add_five(value):
    return value + 5

print(add_five("10"))
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
/tmp/ipython-input-817305386.py in <cell line: 0>()
      2     return value + 5
      3
----> 4 print(add_five("10"))

/tmp/ipython-input-817305386.py in add_five(value)
      1 def add_five(value):
----> 2     return value + 5
      3
      4 print(add_five("10"))

TypeError: can only concatenate str (not "int") to str
```



Error Observed

TypeError: can only concatenate str (not "int") to str

AI Explanation

Python does not allow adding numbers and strings directly.

We can fix this in two ways:

Solution 1: Type Casting to Integer

[12] ✓ 0s

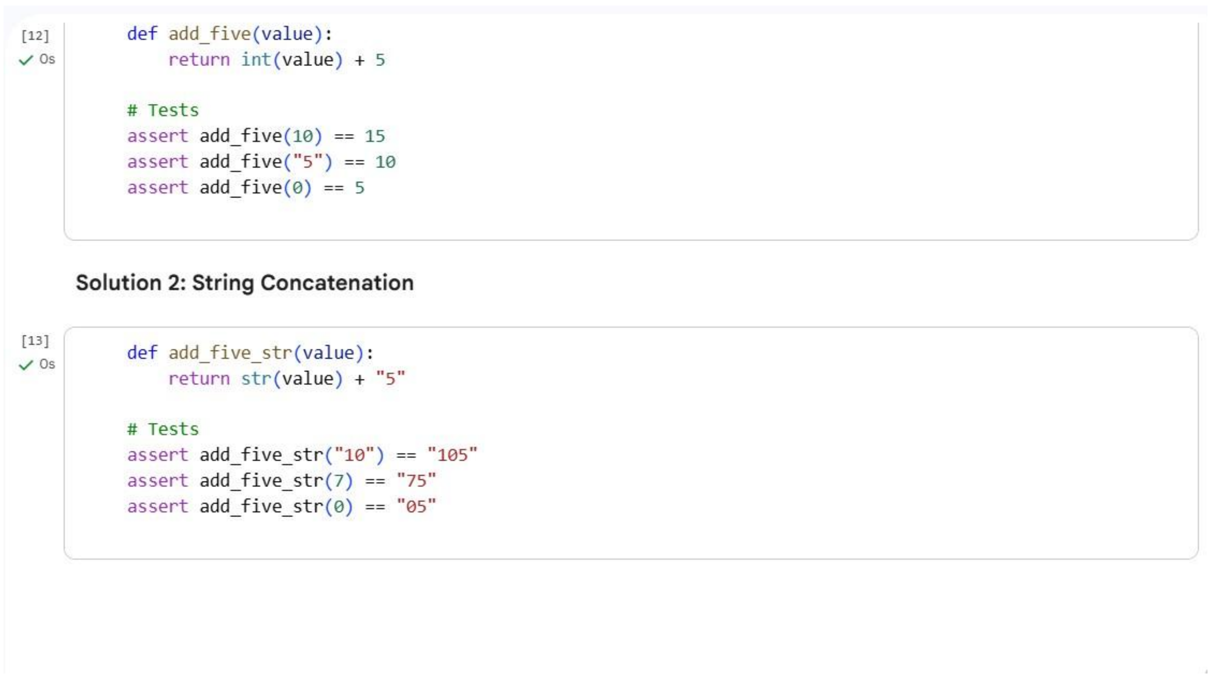
```python
def add_five(value):
    return int(value) + 5

# Tests
assert add_five(10) == 15
assert add_five("5") == 10
assert add_five(0) == 5
```

Solution 2: String Concatenation

[13] ✓ 0s

```python
def add_five_str(value):
    return str(value) + "5"
```



[12] ✓ 0s

```python
def add_five(value):
    return int(value) + 5

# Tests
assert add_five(10) == 15
assert add_five("5") == 10
assert add_five(0) == 5
```

Solution 2: String Concatenation

[13] ✓ 0s

```python
def add_five_str(value):
    return str(value) + "5"

# Tests
assert add_five_str("10") == "105"
assert add_five_str(7) == "75"
assert add_five_str(0) == "05"
```

Observation:

The program crashed with a TypeError when adding a string and integer.

AI explained Python's strict type rules for addition.

Two valid solutions were proposed:

Convert input to an integer.

Convert everything to strings for concatenation.