AI ASSISTED CODING

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Batch: 37 **Assignment-** 7.3

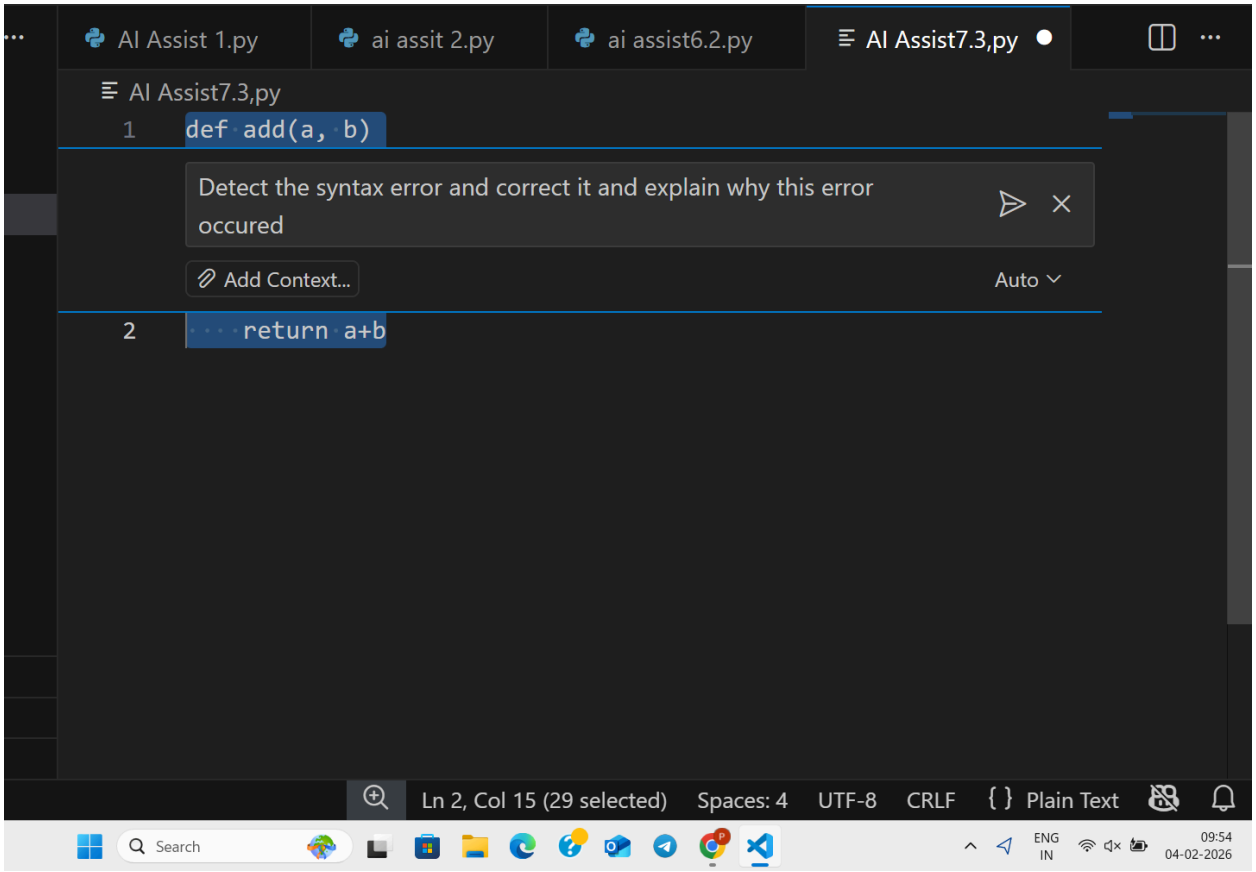
Task 1: Fixing Syntax Errors

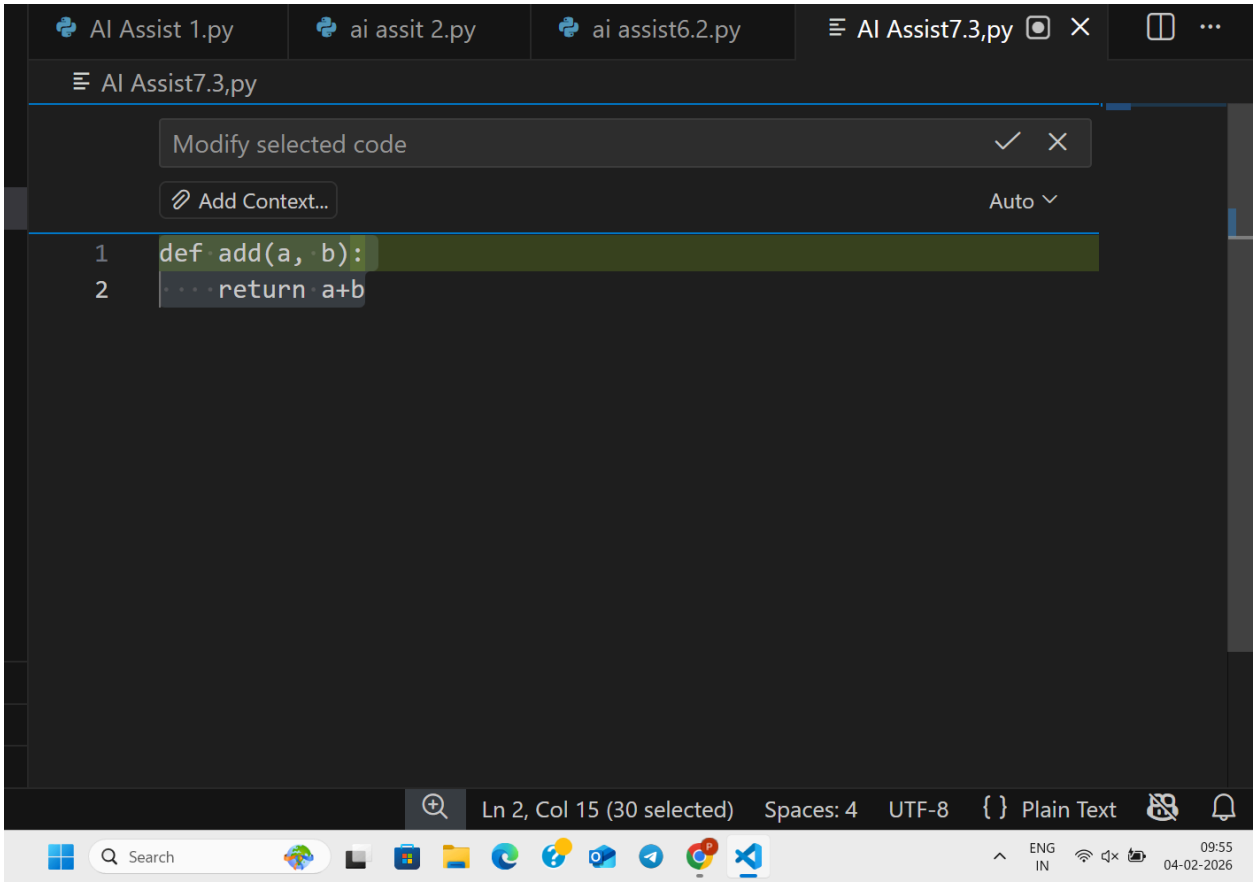
Scenario:

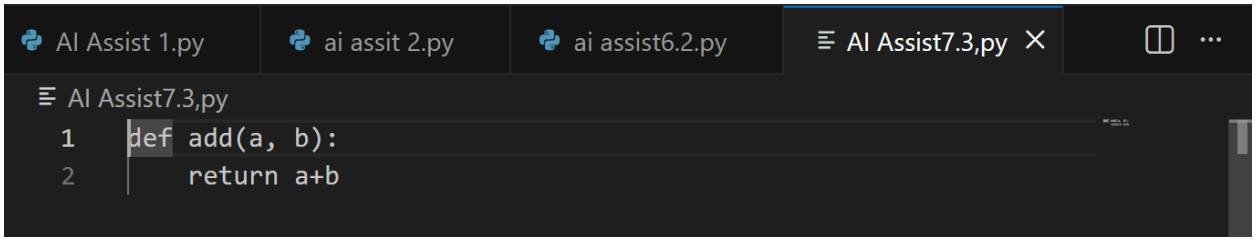
You are reviewing a Python program where a basic function definition contains a syntax error.

Prompt Given for modification:

"#Detect the syntax error and correct it and explain"







Error Explanation:

The code has a syntax error. In Python, function definitions must end with a colon (:) after the parameter list.

Output:

The corrected version should be:

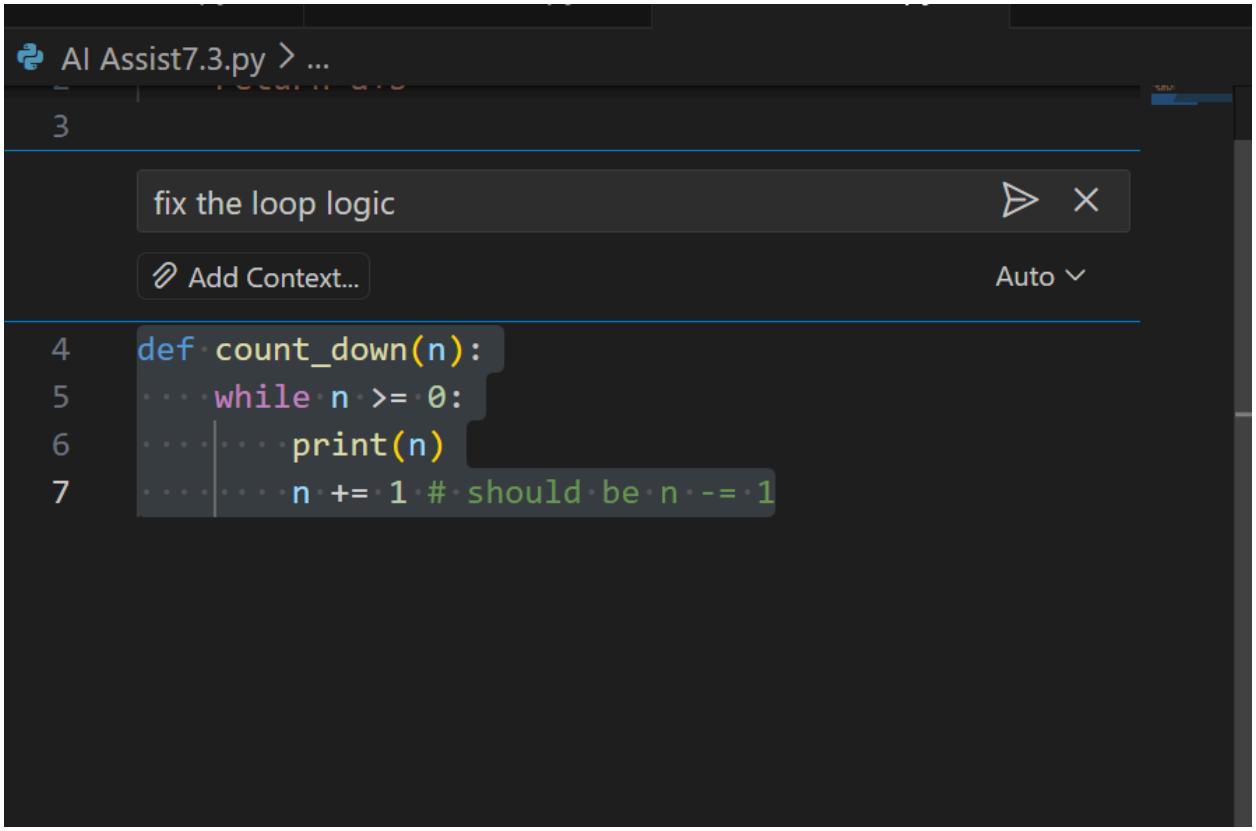
```
def add(a, b):
    return a + b
```

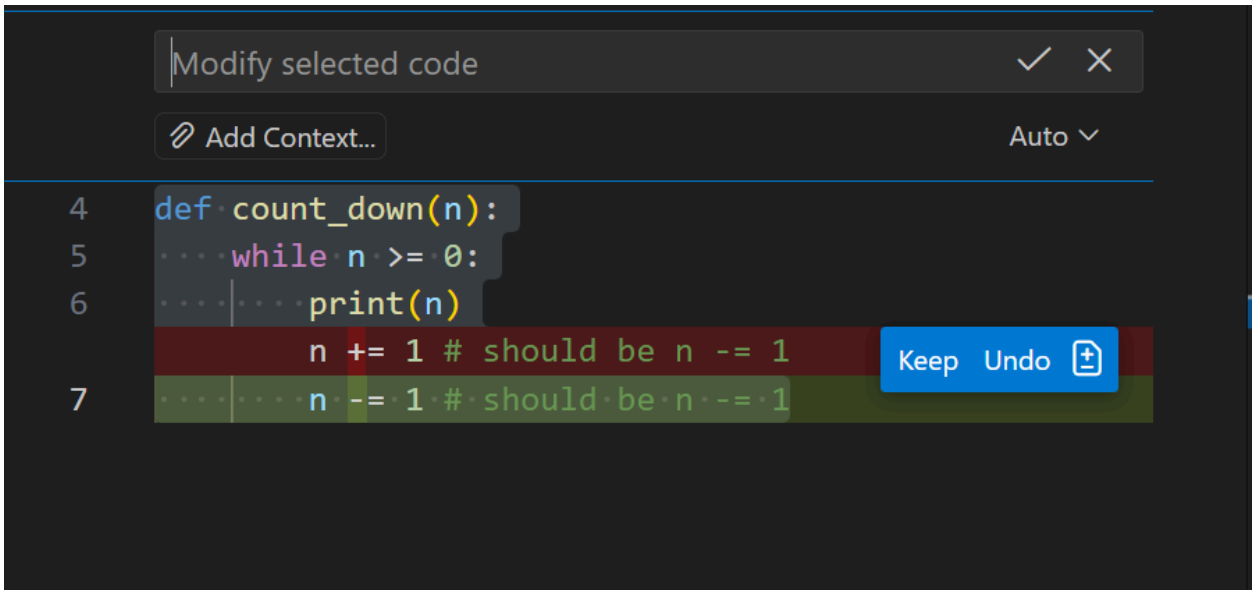
Comments:

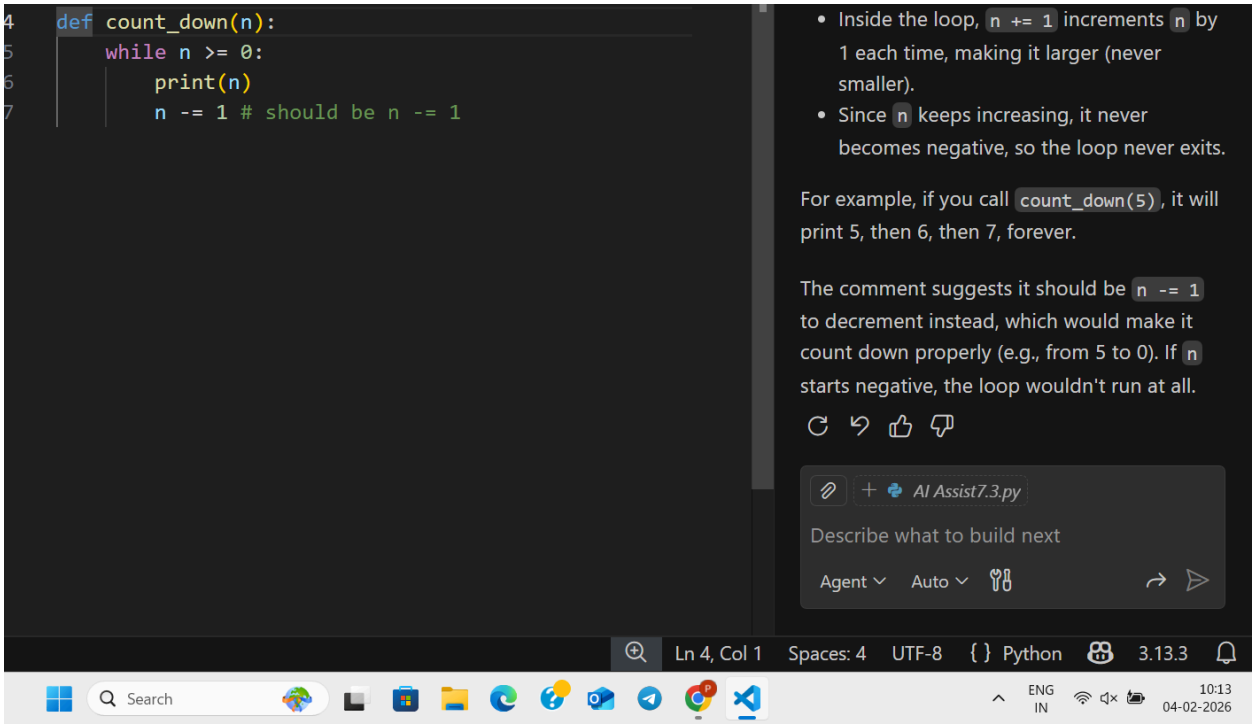
Ai fixed and explained the syntax error.

Task 2: Debugging Logic Errors in Loops

Scenario:
You are debugging a loop that runs infinitely due to a logical mistake.
Prompt Given for modification:
“#Fix the loop logic.”







Error Explanation:

this code will go into an infinite loop if `n` starts as a non-negative integer (0 or greater).

- The while loop condition is n >= 0, so it runs as long as n is 0 or positive.
- Inside the loop, n += 1 increments n by 1 each time, making it larger (never smaller).
- Since n keeps increasing, it never becomes negative, so the loop never exits.

Output:

it should be n -= 1 to decrement instead, which would make it count down properly (e.g., from 5 to 0). If n starts negative, the loop wouldn't run at all

```
def count_down(n):
    while n >= 0:
        print(n)
        n -= 1
```

Comments:

AI fixed the loop logic ,instead of incrementing it went for decrementing that made count down properly and if negative number starts the loop will end.

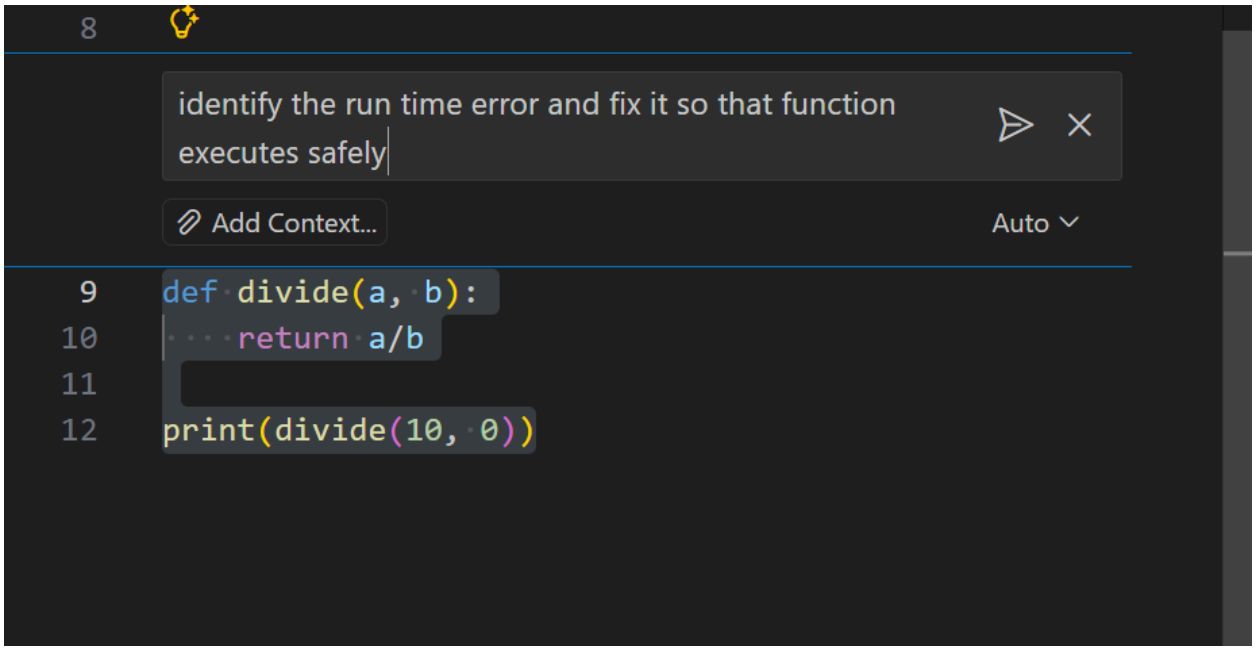
Task 3: Handling Runtime Errors (Division by Zero)

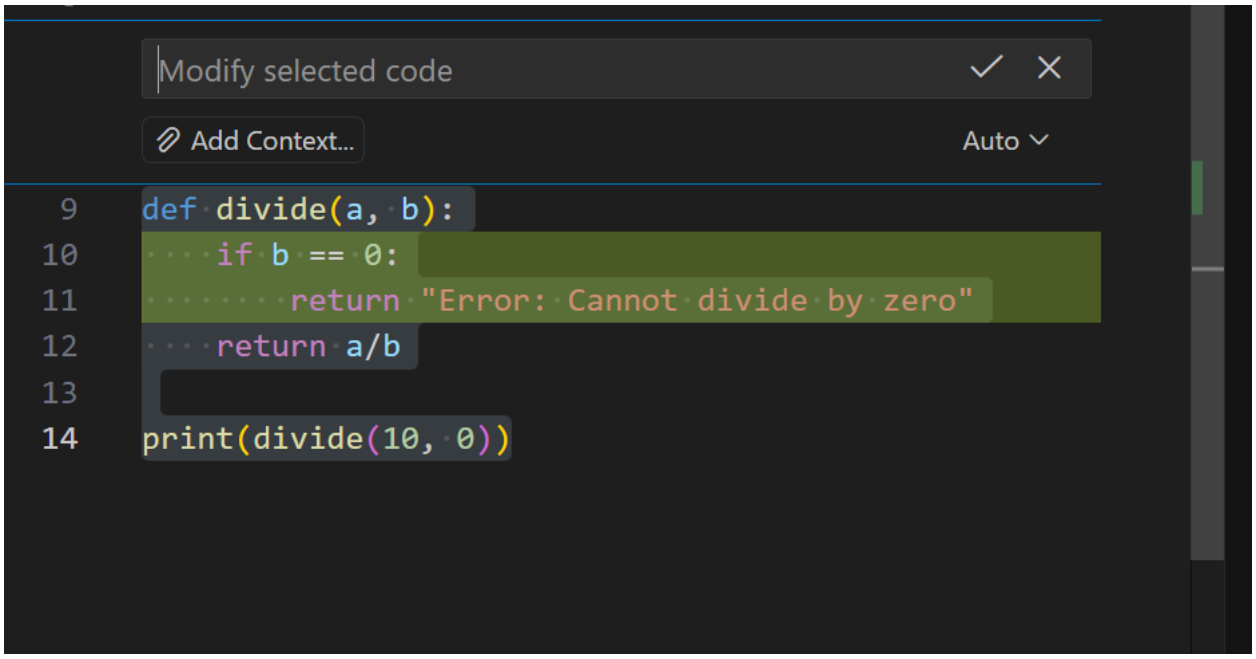
Scenario:

A Python function crashes during execution due to a division by zero error.

Prompt Given for modification:

"#identify the run time error and fix it so that function executes safely."






```
Error: Cannot divide by zero
None
```

```
9   def divide(a, b):
10      if b == 0:
11          print("Error: Cannot divide by zero")
12          return None
13      return a/b
14
15  print(divide(10, 2))
```

```
5.0
```

Error Explanation:

The code will raise a ZeroDivisionError at runtime when you try to divide by zero. In Python, division by zero is mathematically undefined and not allowed, so the interpreter throws an exception instead of returning a result.

Output:

When you run print(divide(10, 0)), you'll see output like:

ZeroDivisionError: division by zero

To handle this safely, you could add error checking in the function:

```
def divide(a, b):
    if b == 0:
        return "Cannot divide by zero"
    return a / b
```

o/p: Error: Cannot divide by zero

None

```
def divide(a, b):
    if b == 0:
        print("Error: Cannot divide by zero")
        return None
    return a/b

print(divide(10, 2))
```

o/p:5.0

Comments:

AI fixed the error and explained it , provided why it can't divide by zero and when we add 2 instead of 0 it gave the output 5.0 it handled the runtime error and executed safely

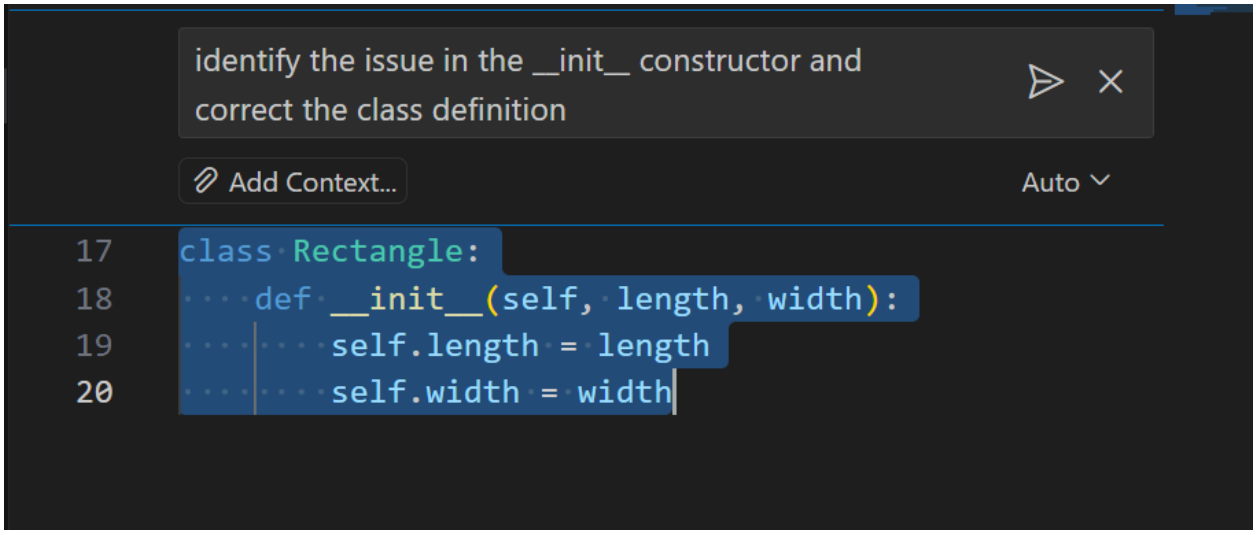
Task 4: Debugging Class Definition Errors

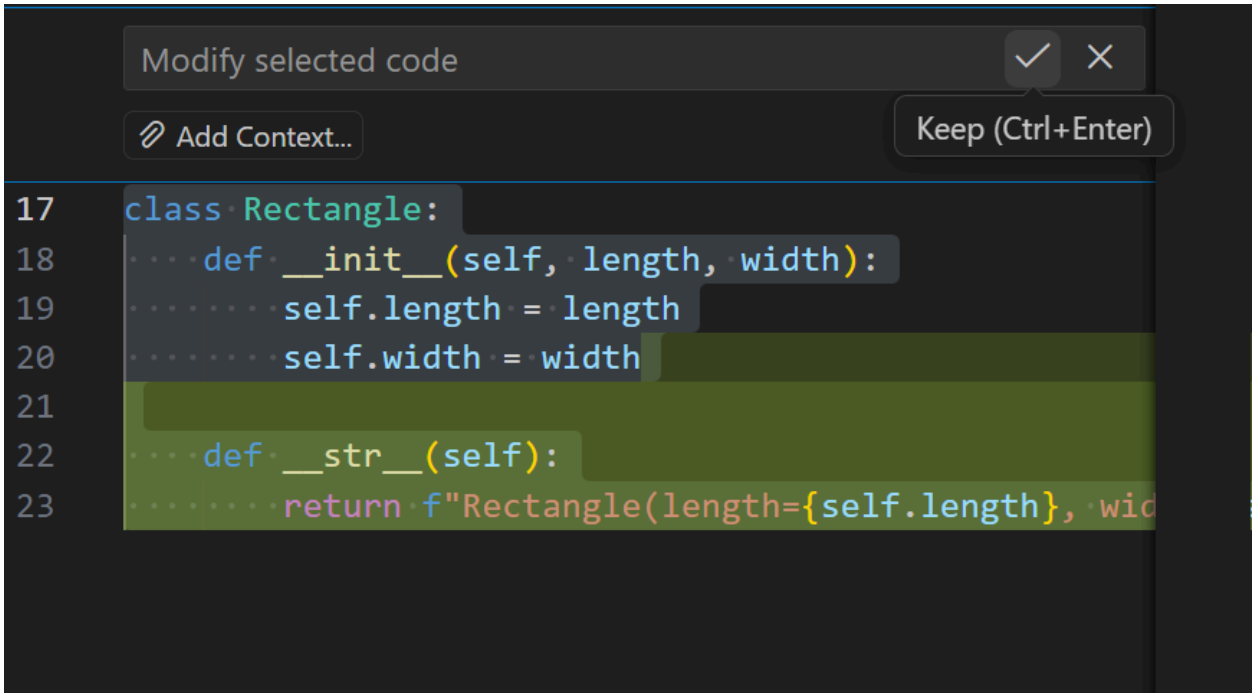
Scenario:

You are given a faulty Python class where the constructor is incorrectly defined

Prompt Given for modification:

"#identify the issue in the __init__ constructor and correct the class definition."






```
17  class Rectangle:
18      def __init__(self, length, width):
19          self.length = length
20          self.width = width
21
22      def __str__(self):
23          return f"Rectangle(length={self.length}, width={self.width})"
```

Error Explanation:

The provided code defines a Rectangle class with an __init__ method that correctly initializes length and width attributes. The AI detected that **self**

was missing in the constructor.It corrected the class definition by adding **self** to properly reference object attributes.

Output:

However, the class is incomplete for practical use. A typical Rectangle class would include methods to calculate properties like area or perimeter. For example, you could add:

```
class Rectangle:
    def __init__(self, length, width):
        self.length = length
        self.width = width

    def __str__(self):
        return f"Rectangle(length={self.length}, width={self.width})"
```

Comments:

AI fixed the runtime error , __init__ constructor and class definition and it explained the error.

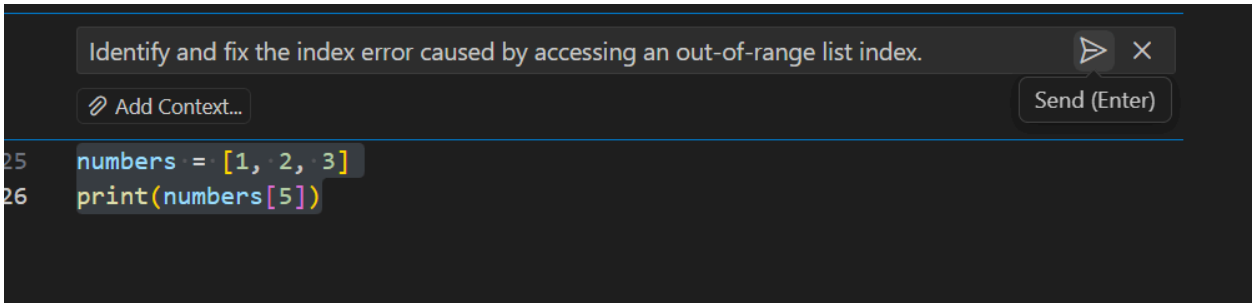
Task 5: Resolving Index Errors in Lists

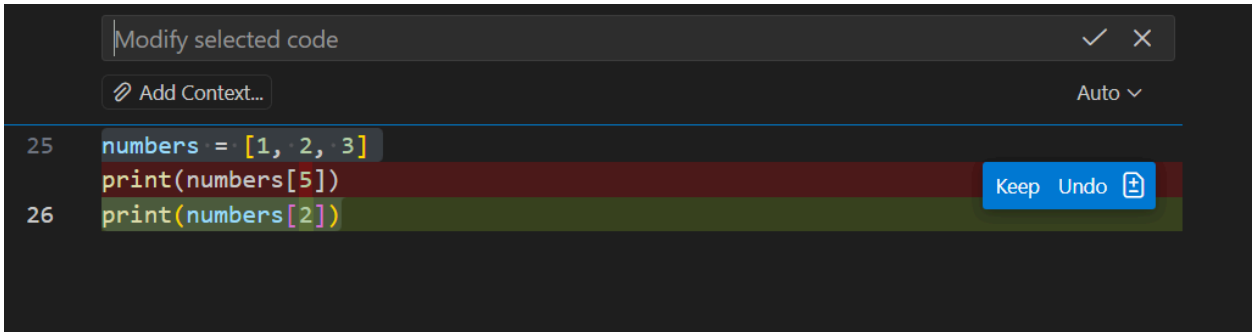
Scenario:

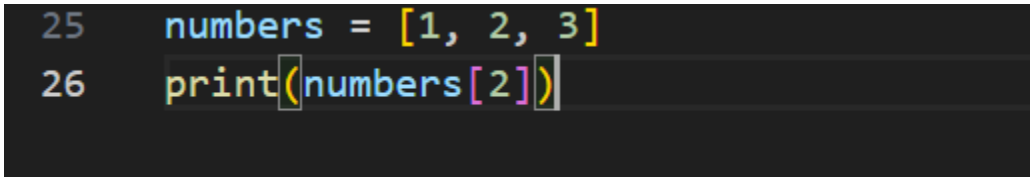
A program crashes when accessing an invalid index in a list.

Prompt Given for modification:

“#Identify and fix the index error caused by accessing an out-of-range list index."







Error Explanation:

Lists in Python are zero-indexed (start at 0), so a list with 3 items goes from index 0 to 2. Asking for index 5 is like asking for a 6th item that isn't there.
The AI identified the index error and suggested bounds checking.
Safe access was implemented using length checks or exception handling.

Output:

The program accesses list elements safely without crashing.

```
numbers = [1, 2, 3]
print(numbers[2])
```

o/p:3

Comments:

AI provides effective solutions for common runtime errors.
Validating list indices improves code reliability.

Conclusion:

This lab demonstrates how AI tools assist in systematically identifying and fixing syntax, logic, and runtime errors in Python programs.