AI Assisted Coding-7.3

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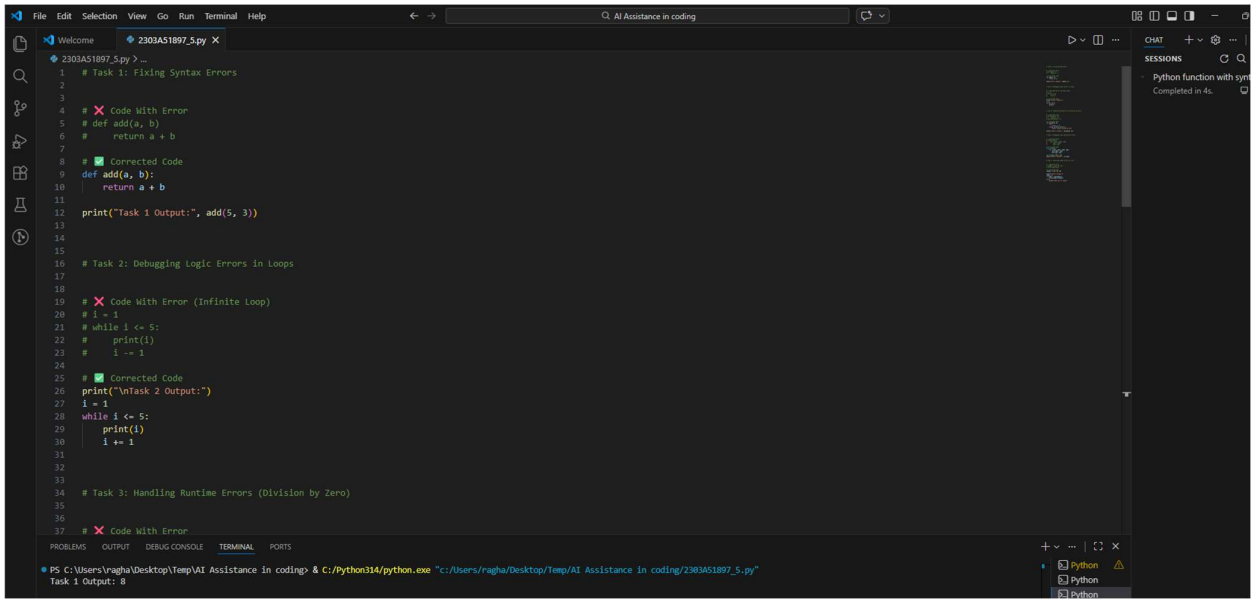
Task 1: Fixing Syntax Errors

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

Code:

```
#Task-01:
def add(a,b)
return a+b
# Function to add two numbers
# Error: Missing colon (:) at the end of function definition
# Syntax Error - def add(a, b) is missing a colon

# CORRECTED CODE:
def add(a, b):
        """Function that takes two parameters and returns their sum"""
        return a + b

# Test the function
result = add(5, 3)
print(f"The sum of 5 and 3 is: {result}")
```

Output:



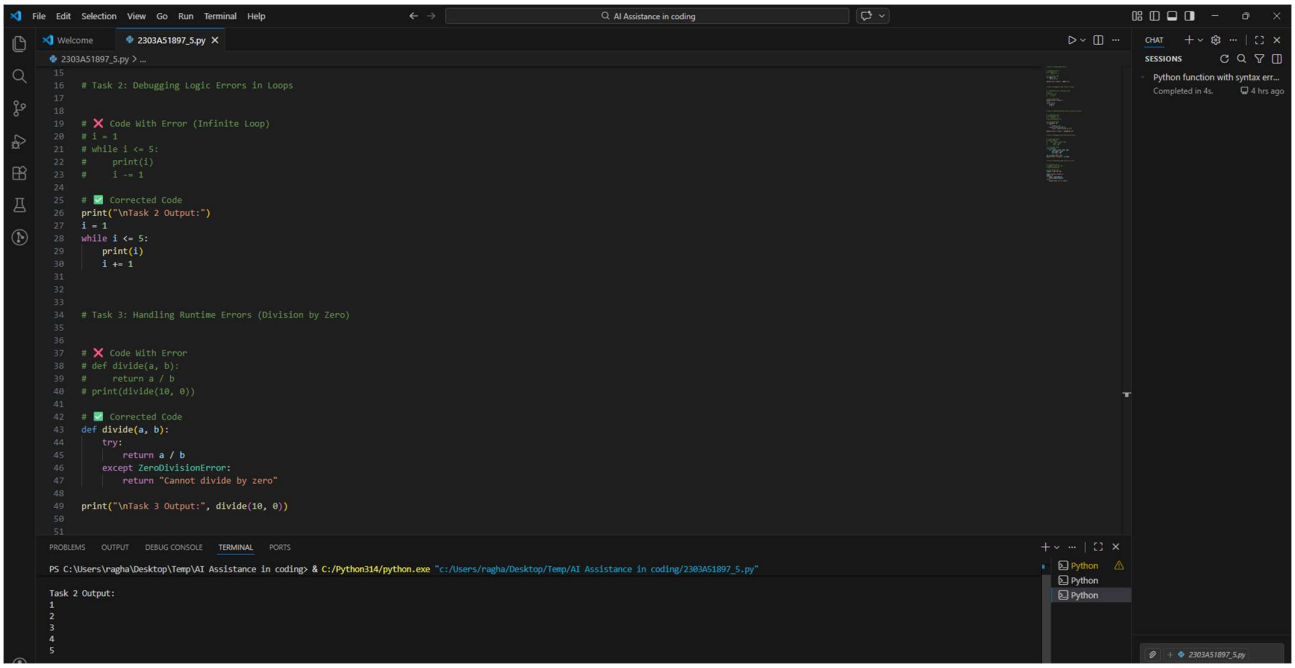
Task 2: Debugging Logic Errors in Loops

Scenario: You are debugging a loop that runs infinitely due to a logical mistake.

Code:

```
#Task-02:
# Infinite Loop - ERROR VERSION
print("ERROR VERSION - Infinite Loop:")
i = 0
while i < 5:
    print(f"Iteration {i}")
    # Problem: i is never incremented, so the loop never exits
    # The condition i < 5 is always True

# CORRECTED CODE:
print("\nCORRECTED VERSION:")
i = 0 while i < 5:
    print(f"Iteration {i}")
    i += 1  # Increment i by 1 each iteration to eventually reach the exit condition
```

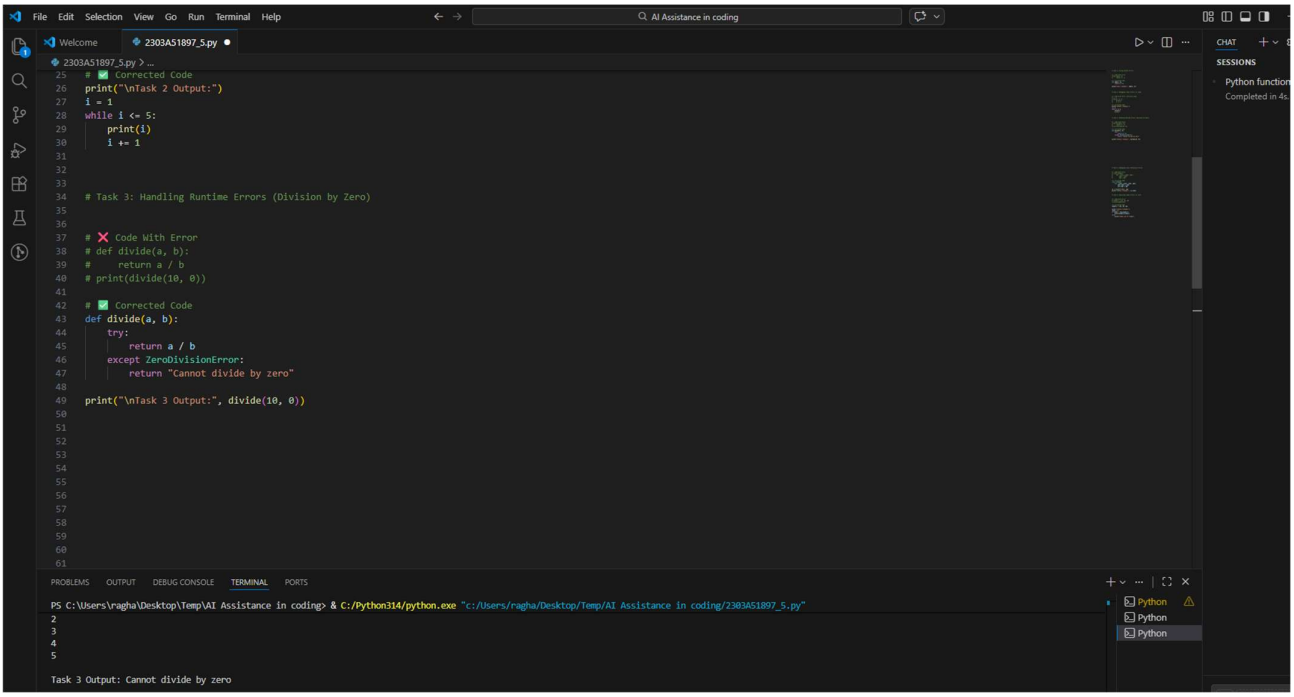
Output:



Task 3: Handling Runtime Errors (Division by Zero) Code:

```
#Task 3: Handling Runtime Errors (Division by Zero) #
Function WITHOUT validation (causes runtime error)
def divide_without_validation(a, b):
    """Division function with no error handling - will crash if b is 0"""
return a / b

# Test - this will crash
print("WITHOUT VALIDATION:")
try:
    result = divide_without_validation(10, 0)
print(f"Result: {result}") except
ZeroDivisionError:     print("ERROR:
Cannot divide by zero!")

# Function WITH try-except blocks (safe execution)
def divide_with_validation(a, b):
    """Division function with error handling using try-except"""
try:
        # Attempt the division operation         result = a / b         return result
except ZeroDivisionError:         # Catch division by zero error
print("Error: Cannot divide by zero. Denominator must be non-zero.")
return None     except TypeError:
        # Catch type errors (non-numeric values)
print("Error: Both arguments must be numbers.")
return None

# Test - safe execution
print("\nWITH VALIDATION:") result
= divide_with_validation(10, 2) if
result is not None:     print(f"Result:
{result}") result =
divide_with_validation(10, 0)
```

Output:

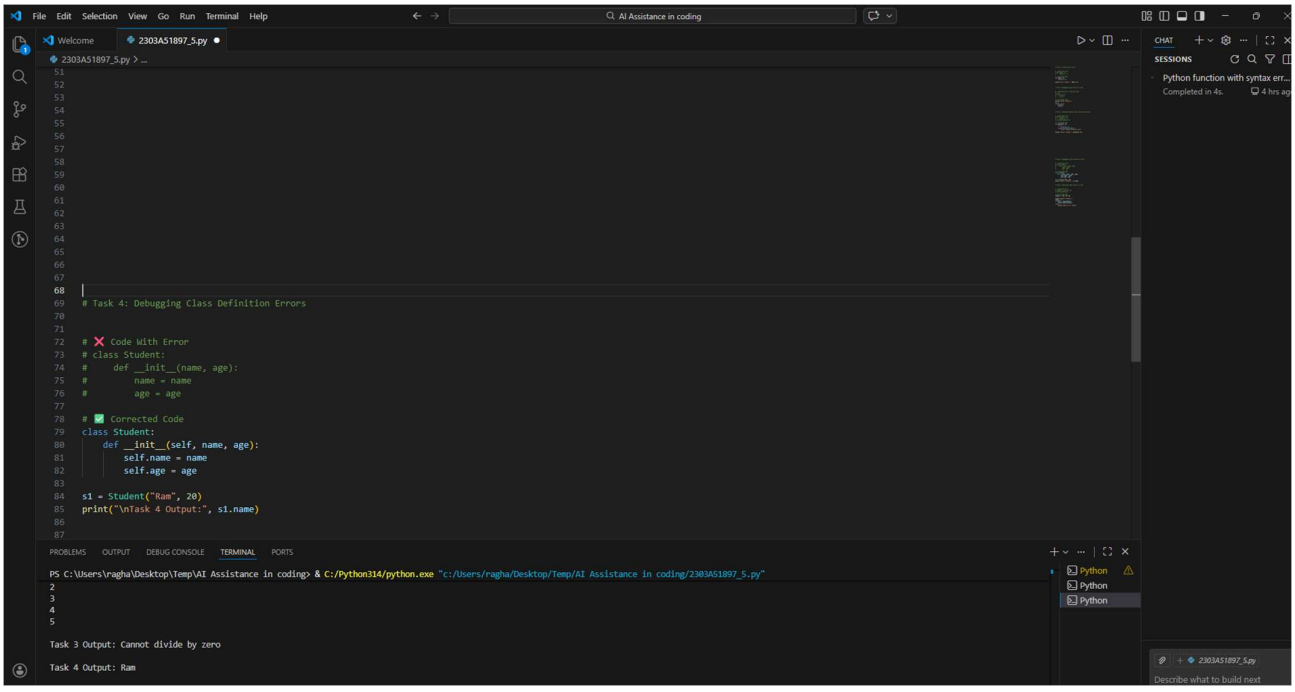


Task 4: Debugging Class Definition Errors Code:

```
#Task 4: Debugging Class Definition Errors
# FAULTY CODE - Missing 'self' parameter in __init__()
print("\nFAULTY CLASS DEFINITION:")
class Person:
    """Class definition with ERROR in constructor"""     def
__init__(name, age):  # ERROR: Missing 'self' as first parameter
"""Constructor without self parameter - causes TypeError"""         name
= name         age = age

# This will cause an error when trying to create an instance
# TypeError: __init__() takes 2 positional arguments but 3 were given
# try:
#     person1 = Person("Alice", 30)
# except TypeError as e:
#     print(f"ERROR: {e}")

# CORRECTED CODE - Proper class definition with 'self' parameter
print("\nCORRECTED CLASS DEFINITION:")
class Person:
    """Class definition with proper constructor including 'self' parameter"""
def __init__(self, name, age):
```

```
        """Constructor with 'self' parameter - allows proper object creation
self: represents the instance of the class        name: parameter for
person's name        age: parameter for person's age"""        self.name
= name  # Store name as instance variable        self.age = age    #
Store age as instance variable

    def display_info(self):
        """Method to display person's information"""
print(f"Name: {self.name}, Age: {self.age}")

# Test - safe execution with corrected class
try:
    person1 = Person("Alice", 30)
    person1.display_info()

    person2 = Person("Bob", 25)
person2.display_info() except
TypeError as e:
print(f"ERROR: {e}")
```

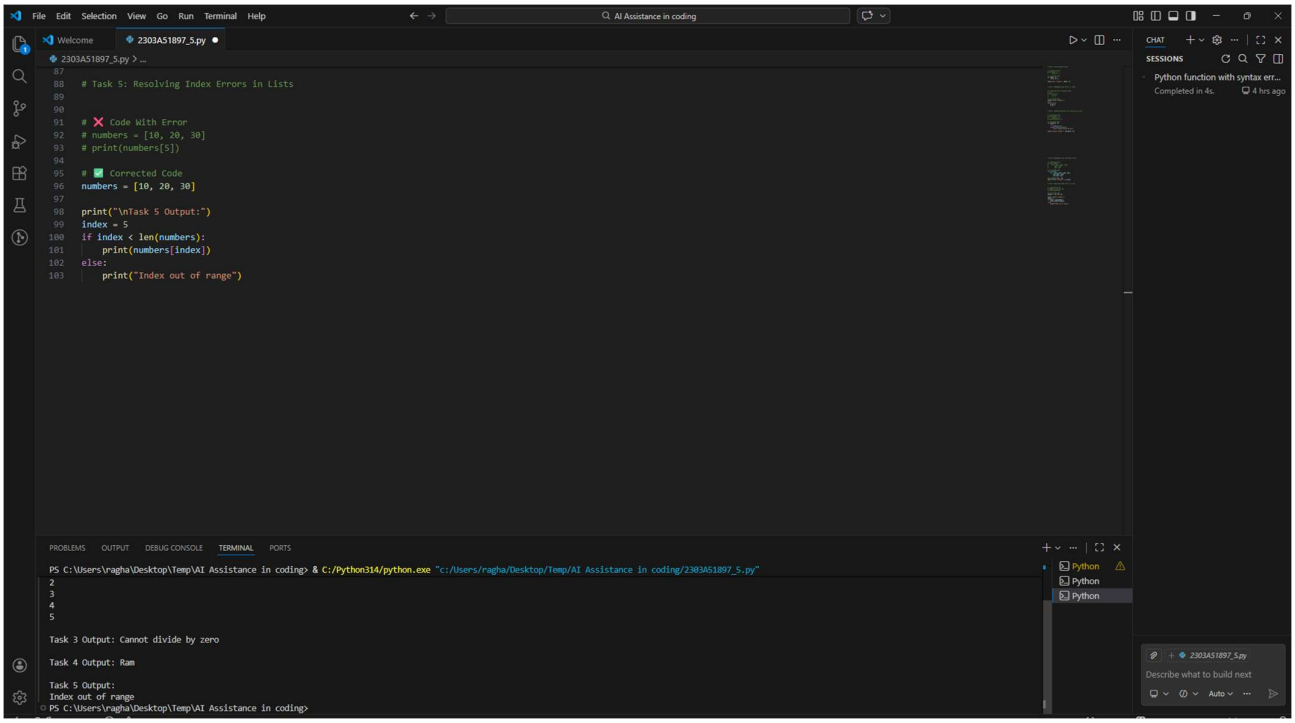
Output:



Task 5: Resolving Index Errors in Lists Code:

```
#Task-05: Handling Index Errors (Out-of-Range List Access)


# Function WITHOUT validation (causes runtime error)
def access_list_without_validation(lst, index):
    """Function that accesses list without bounds checking - will crash if index is out
of range"""     return lst[index]

# Test - this will crash
print("WITHOUT VALIDATION:")
try:
    my_list = [10, 20, 30, 40, 50]     result = access_list_without_validation(my_list,
10)  # Index 10 doesn't exist (list has only 5 elements)     print(f"Value at index 10:
{result}") except IndexError:     print("ERROR: List index out of range!")

# Function WITH try-except blocks (safe execution)
def access_list_with_validation(lst, index):
    """Function that accesses list with error handling using try-except"""
try:
        # Attempt to access the list at given index
result = lst[index]         return result     except
IndexError:
        # Catch index out of range error         print(f"Error: Index {index} is out of
range. List has only {len(lst)} elements.")         return None     except TypeError:
        # Catch type errors (non-numeric index)
print("Error: Index must be an integer.")
return None

# Test - safe execution
print("\nWITH VALIDATION:")
my_list = [10, 20, 30, 40, 50] result
=
access_list_with_validation(my_list,
2) if result is not None:
print(f"Value at index 2: {result}")

result = access_list_with_validation(my_list, 10)
```

Output:


File Edit Selection View Go Run Terminal Help
AI Assistance in coding
Welcome
2303A51897_5.py
2303A51897_5.py > ...
# Task 5: Resolving Index Errors in Lists
# ❌ Code With Error
# numbers = [10, 20, 30]
# print(numbers[5])
# ✅ Corrected Code
numbers = [10, 20, 30]
print("\nTask 5 Output:")
index = 5
if index < len(numbers):
print(numbers[index])
else:
print("Index out of range")
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\ragha\Desktop\Temp\AI Assistance in coding> & C:/Python314/python.exe "c:/Users/ragha/Desktop/Temp/AI Assistance in coding/2303A51897_5.py"
2
3
4
5
Task 3 Output: Cannot divide by zero
Task 4 Output: Ram
Task 5 Output:
Index out of range
PS C:\Users\ragha\Desktop\Temp\AI Assistance in coding>
Python
Python
Python
CHAT
SESSIONS
Python function with syntax err...
Completed in 4s.
4 hrs ago
2303A51897_5.py
Describe what to build next
Auto