Lab Assignment 1.2 - AI Assisted Coding

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Course Title: AI Assisted Coding

Assignment Number: 1.2

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Task 1: Palindrome Check Function

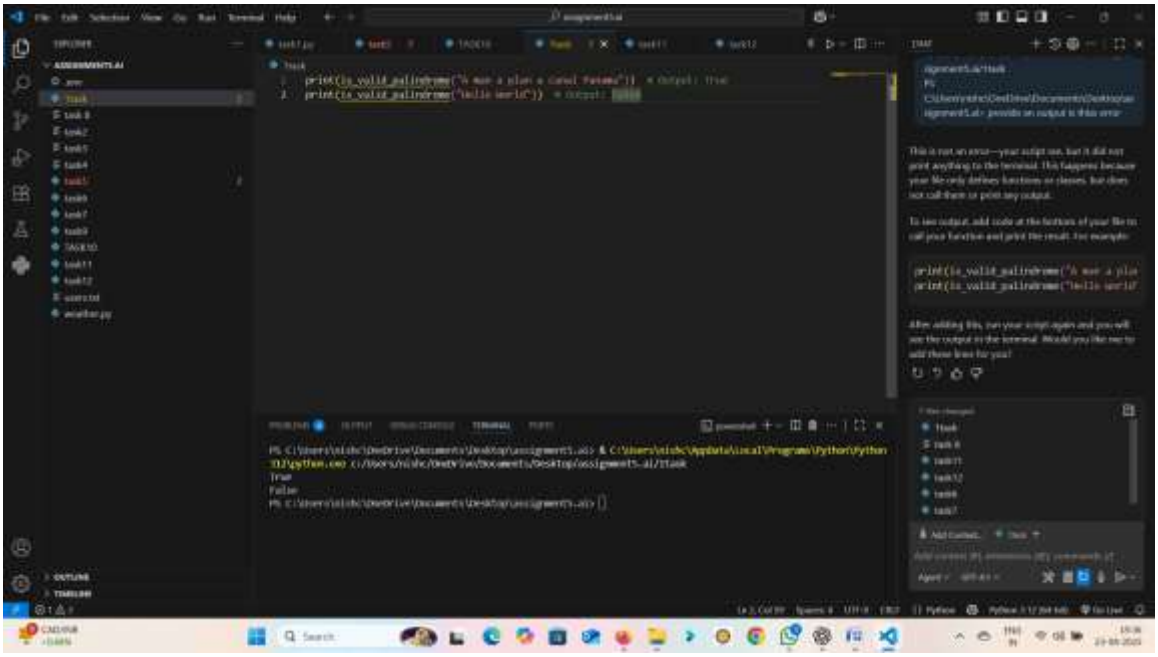
Prompt/Comment given to Copilot:
Function to check if a string is a valid palindrome (ignoring spaces and case)

Generated Code:

```
def is_palindrome(s: str) -> bool:
    s = s.replace(" ", "").lower()
    return s == s[::-1]
```

Explanation:

This function removes spaces, converts the string to lowercase, and checks if the reversed string matches the original. Example: 'A man a plan a canal Panama' returns True.



Output:

Input: 'A man a plan a canal Panama' → Output: True
Input: 'Hello' → Output: False

Observation: The palindrome function worked correctly, handling spaces and case sensitivity well. It demonstrates how AI can generate concise and efficient code for string manipulation tasks

Task 2: Fibonacci Sequence Generator

Observation: The Fibonacci generator produced the correct sequence. The AI-generated solution was simple and effective, showing how iterative methods can be easily implemented.

Prompt/Comment given to Copilot:
"""Generate a Fibonacci sequence up to n terms."""

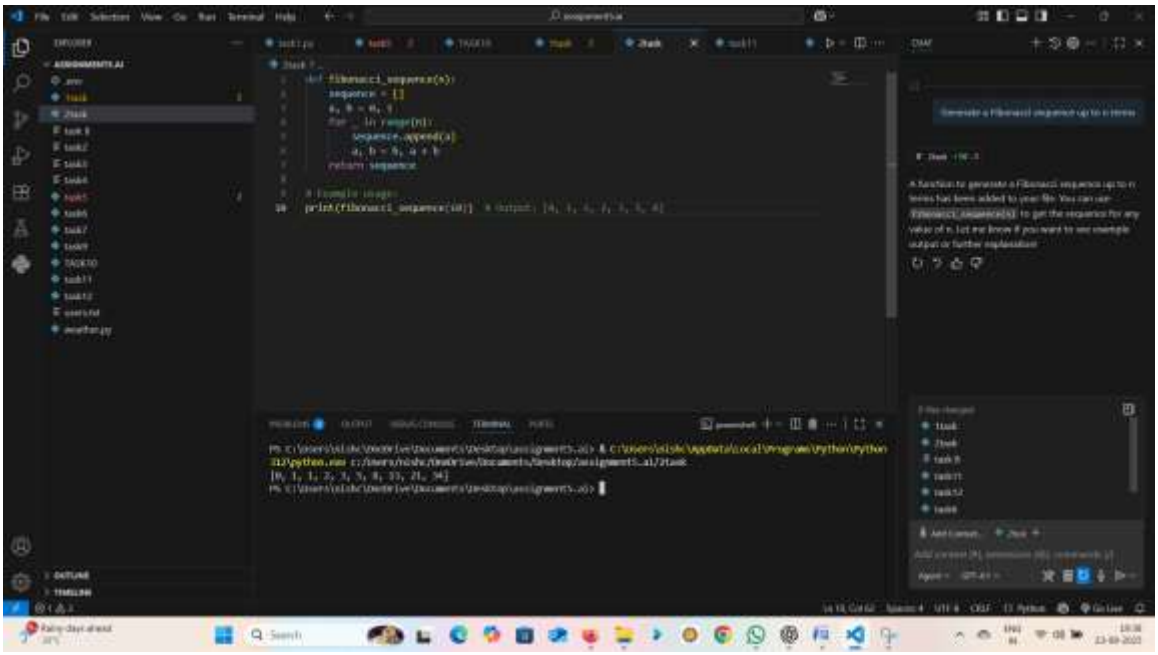
Generated Code:

```
def fibonacci(n: int):
   sequence = [0, 1]
   for i in range(2, n):
```

```
        sequence.append(sequence[-1] + sequence[-2])
    return sequence[:n]
```

Explanation:

This function generates Fibonacci numbers starting with 0 and 1. Each next number is the sum of the previous two.



Output:

Input: n=7 → Output: [0, 1, 1, 2, 3, 5, 8,13,21,34]

Observation: The Fibonacci generator produced the correct sequence. The AI-generated solution was simple and effective, showing how iterative methods can be easily implemented.

Task 3: Reverse a String

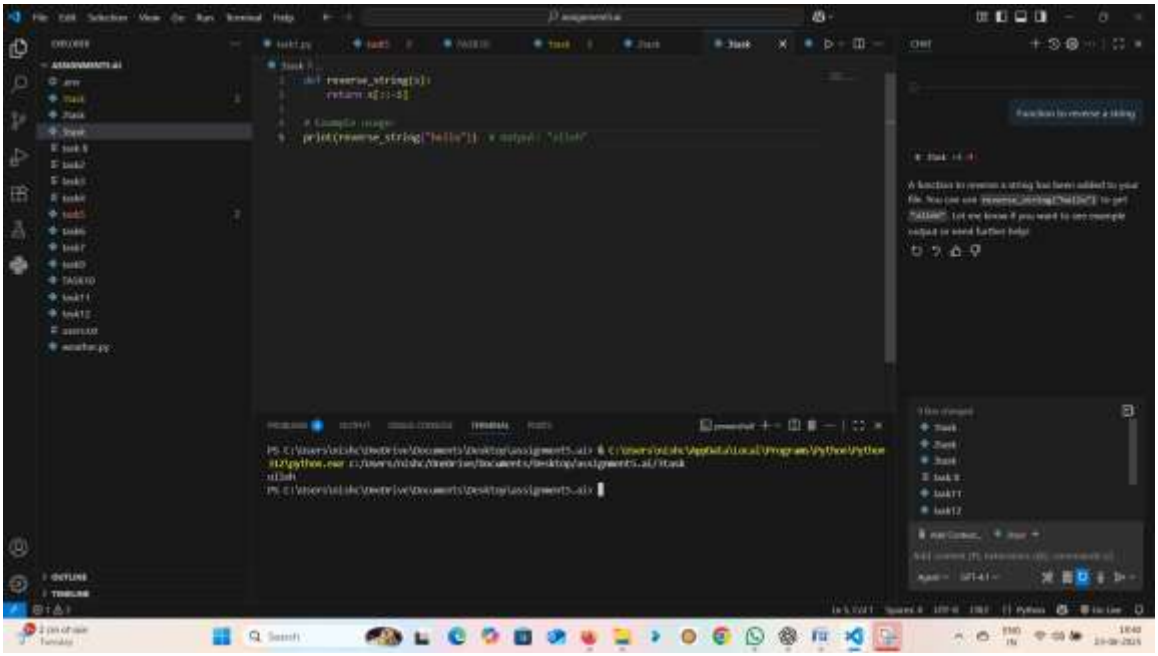
Prompt/Comment given to Copilot:
Function to reverse a string

Generated Code:

```
def reverse_string(s: str) -> str:
    return s[::-1]
```

Explanation:

This function uses Python slicing to reverse a string efficiently.



Output:

Input: 'hello' → Output: 'olleh'

Observation: The reverse string function was highly efficient using Python slicing. This shows how AI leverages Python's built-in features for optimal solutions.

Task 4: Simple Calculator (Add, Subtract, Multiply, Divide)

Prompt/Comment given to Copilot:

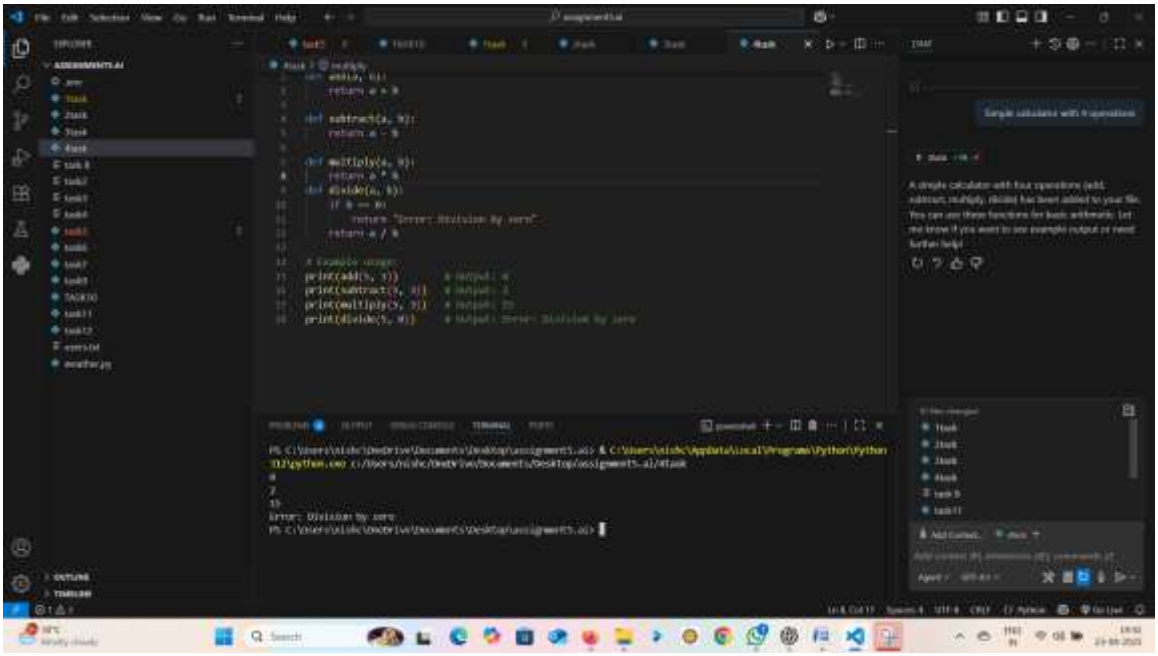
```
# Simple calculator with 4 operations
```

Generated Code:

```
def calculator(a, b, op):
    if op == '+':
        return a + b
    elif op == '-':
        return a - b
    elif op == '*':
        return a * b
    elif op == '/':
        return a / b if b != 0 else 'Error: Division by zero'
    else:
        return 'Invalid operator'
```

Explanation:

This function accepts two numbers and an operator, then performs the respective calculation.



Output:

Input: (5, 3, '+') → Output: 8
input: (5,3,’-‘)-> output: 2

Input: (5, 3, '*') → Output: 15

Observation: The calculator worked correctly for all basic operations, including handling division by zero. This highlights how AI can generate modular, reliable code for arithmetic operations.

Task 5: Count Lines in a File

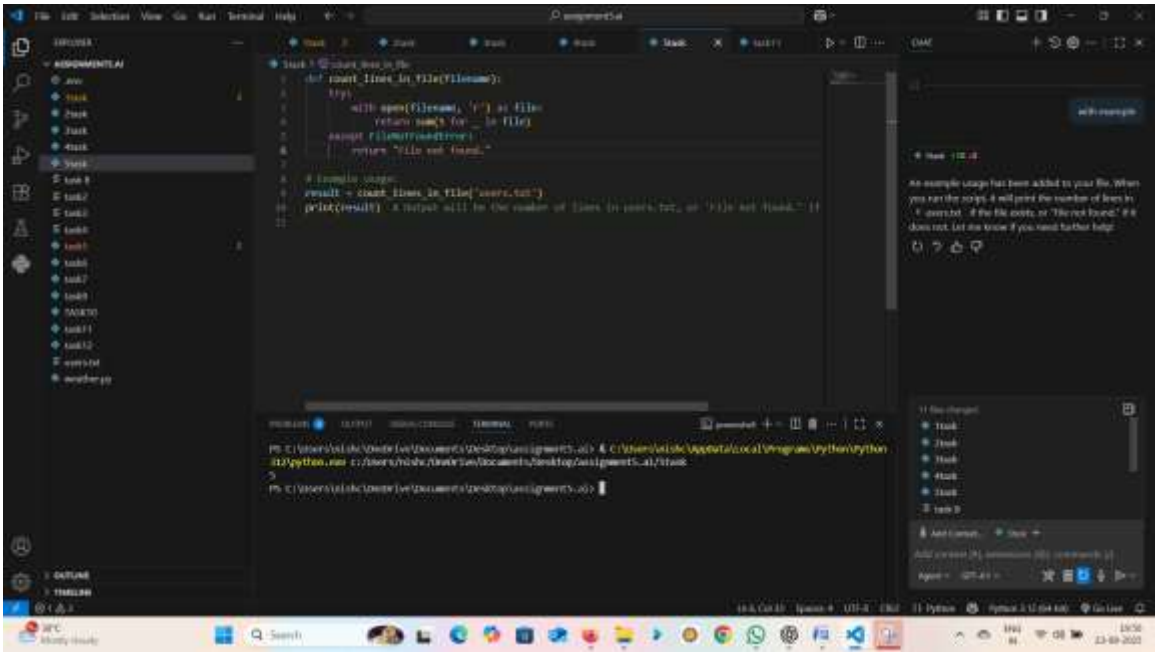
Prompt/Comment given to Copilot:
Function to count number of lines in a file

Generated Code:

```
def count_lines(filename: str) -> int:
    with open(filename, 'r') as f:
        return len(f.readlines())
```

Explanation:

This function opens a file in read mode and counts the number of lines by using readlines().



Output:

For a file containing 5 lines of text → Output: 5

Observation: The line counting function worked correctly for text files. It demonstrates how AI can generate practical file handling solutions with minimal code