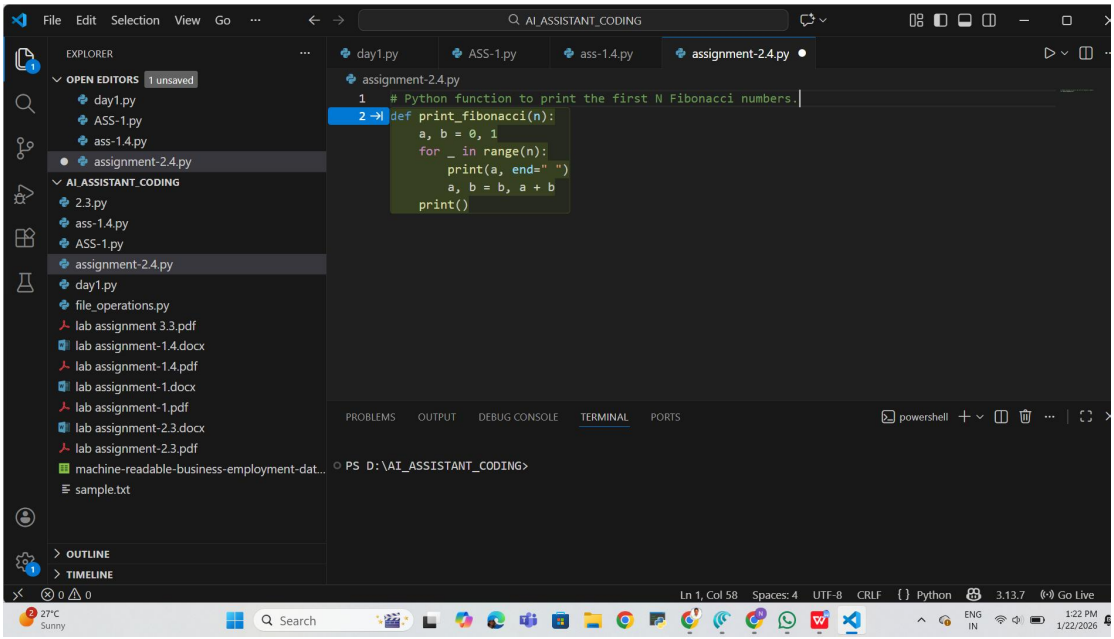
Assignment-3.4

Task 1: Zero-shot Prompt – Fibonacci Series Generator
Task Description #1
• Without giving an example, write a single comment prompt asking GitHub Copilot to generate a Python function to print the first N Fibonacci numbers.
Expected Output #1
• A complete Python function generated by Copilot without any example provided.
• Correct output for sample input N = 7 → 0 1 1 2 3 5 8
• Observation on how Copilot understood the instruction with zero Context

PROMPT:

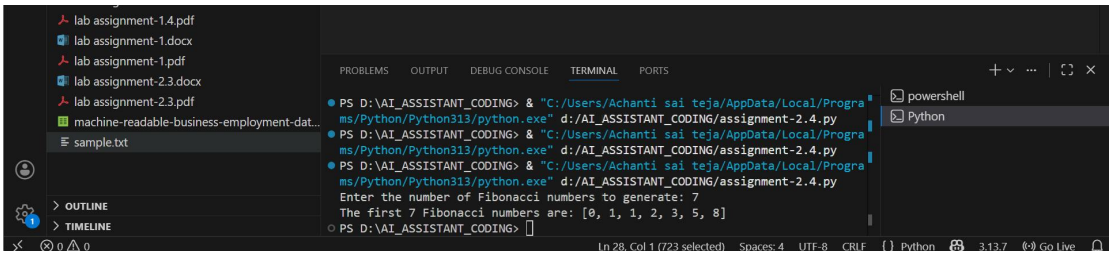



CODE

```
def fibonacci_sequence(n):

    Generates the first N Fibonacci numbers.

    Args:
        n: Integer, number of Fibonacci numbers to generate

    Returns:
        List of first N Fibonacci numbers

    fib_sequence = []
    a, b = 0, 1
    for _ in range(n):
        fib_sequence.append(a)
        a, b = b, a + b
```

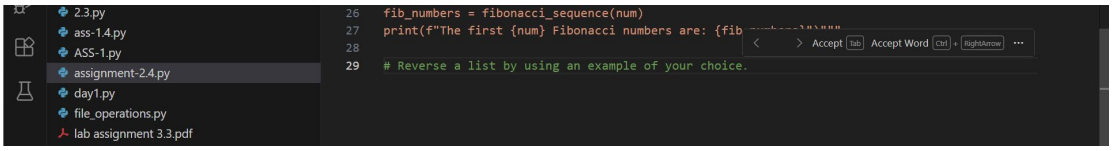
```
    a, b = 0, 1
    for _ in range(n):
        fib_sequence.append(a)
        a, b = b, a + b
    return fib_sequence
    for i in range(2, int(n ** 0.5) + 1):
        if n % i == 0:
            return False

    return True
    return True
# Test the function
num = int(input("Enter the number of Fibonacci numbers to generate: "))
fib_numbers = fibonacci_sequence(num)
print(f"The first {num} Fibonacci numbers are: {fib_numbers}")"""

```

OUTPUT :




**Task 2**: One-shot Prompt – List Reversal Function
Task Description #2
• Write a comment prompt to reverse a list and provide one example below the comment to guide Copilot.
Expected Output #2
• Copilot-generated function to reverse a list using slicing or loop.
• Output: [3, 2, 1] for input [1, 2, 3]
• Observation on how adding a single example improved Copilot's accuracy.

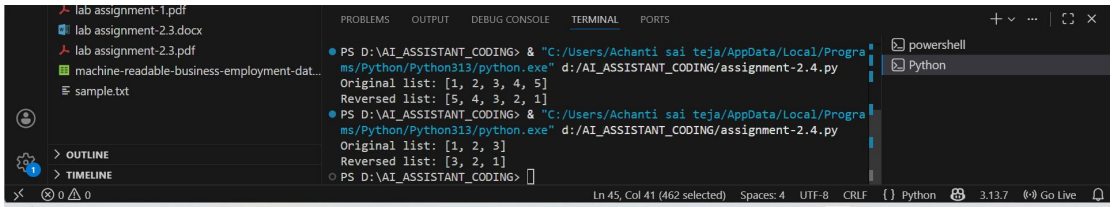
PROMPT:




CODE:

```python
#Reverse a list by using an example of your choice
"""def reverse_list(input_list):

    Reverses the given list.

    Args:
        input_list: List of elements to be reversed

    Returns:
        List: Reversed list
    return input_list[::-1]
# Test the reverse_list function
sample_list = [1, 2, 3]
reversed_list = reverse_list(sample_list)
print(f"Original list: {sample_list}")
print(f"Reversed list: {reversed_list}")
"""
```

OUTPUT:




Adding **just one clear example** helps Copilot quickly infer:

what the function should do

the expected input and output format

This improves **accuracy and reduces ambiguity**, even with a minimal prompt.

**Task 3**: Few-shot Prompt – String Pattern Matching

Task Description #3

• Write a comment with 2–3 examples to help Copilot understand how to check if a string starts with a capital letter and ends with a period.

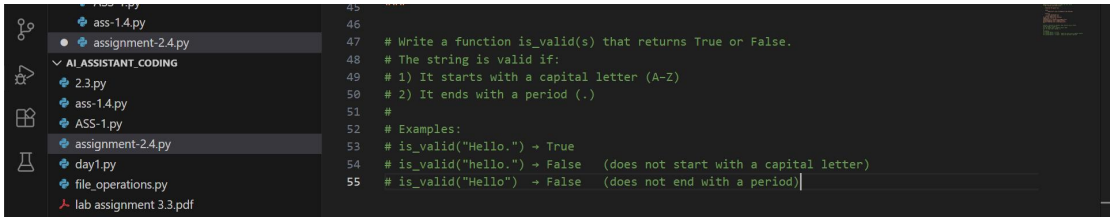
Expected Output #3

• A function is_valid() that checks the pattern.

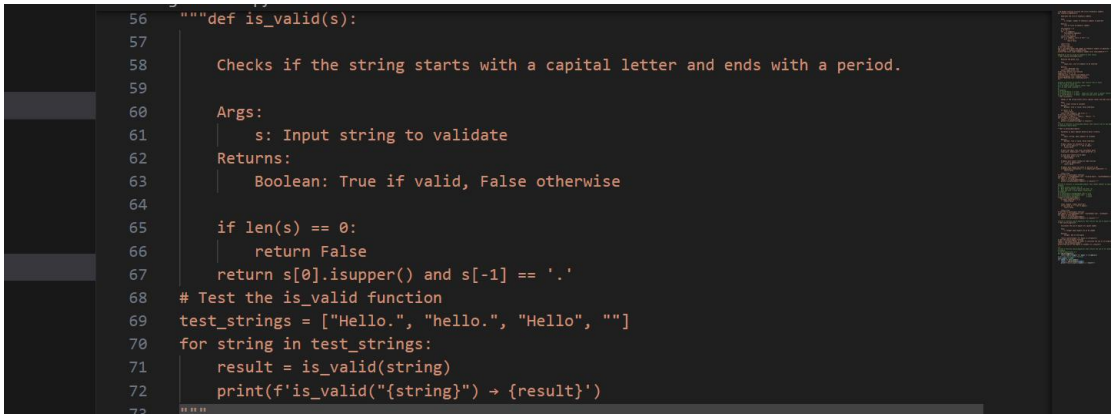
• Output: True or False based on input.

• Students reflect on how multiple examples guide Copilot to generate more accurate code.

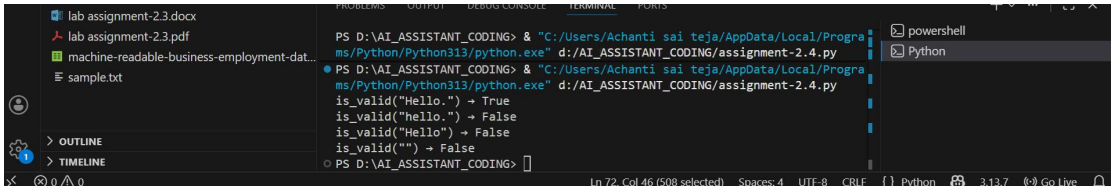
PROMPT:




CODE:




OUTPUT:




Providing **multiple examples in comments** helps Copilot clearly understand:

what counts as valid

what should be rejected
This leads to **more accurate and relevant code generation**.

**Task 4:** Zero-shot vs Few-shot – Email Validator

Task Description #4

• First, prompt Copilot to write an email validation function using

zero-shot (just the task in comment).

• Then, rewrite the prompt using few-shot examples.

Expected Output #4

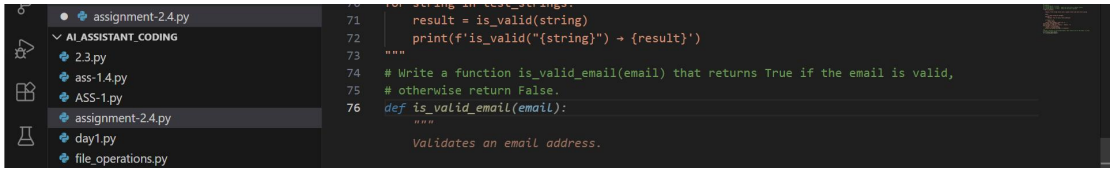
• Compare both outputs:

Zero-shot may result in basic or generic validation.

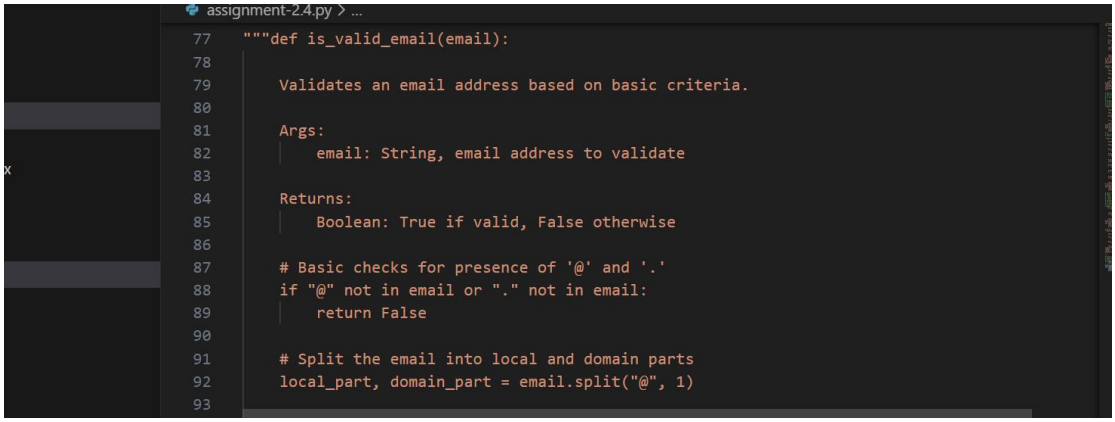
Few-shot gives detailed and specific logic (e.g., @ and domain checking).

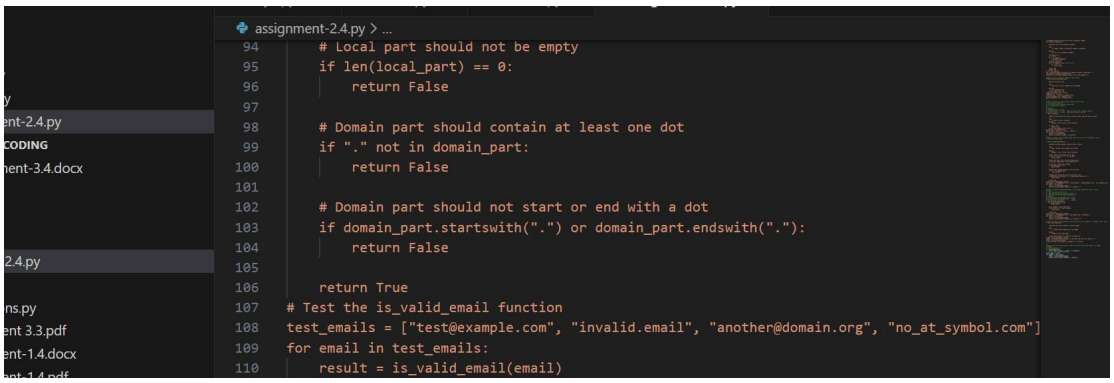
• Submit both code versions and note how few-shot improves reliability.

PROMPT:

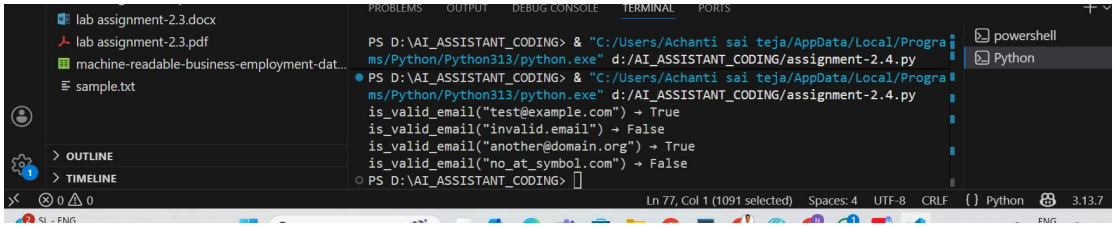



CODE:

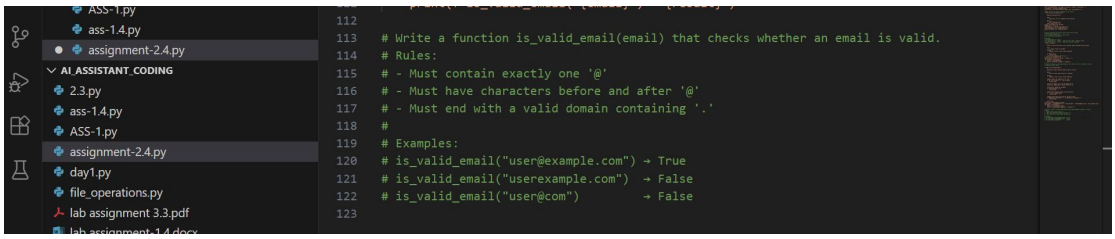



OUTPUT:



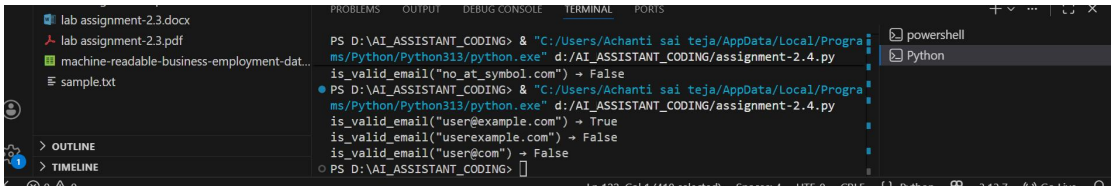

PROMPT:




CODE:

```
"""def is_valid_email(email):
    if email.count("@") != 1:
        return False

    local, domain = email.split("@")
    if not local or "." not in domain:
        return False

    return True
# Test the is_valid_email function
test_emails = ["user@example.com", "userexample.com", "user@com"]
for email in test_emails:
    result = is_valid_email(email)
    print(f'is_valid_email("{email}") → {result}')"""
```

OUTPUT:

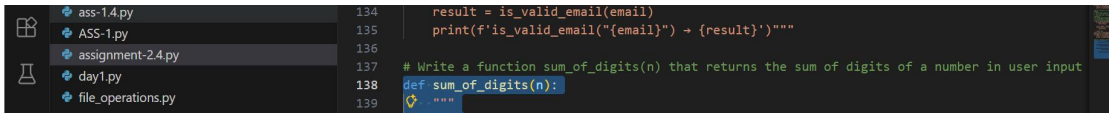



Few-shot prompting **guides Copilot's reasoning** by showing:

valid vs invalid patterns

edge cases
This results in **more reliable, accurate, and meaningful code** compared to zero-shot prompts.

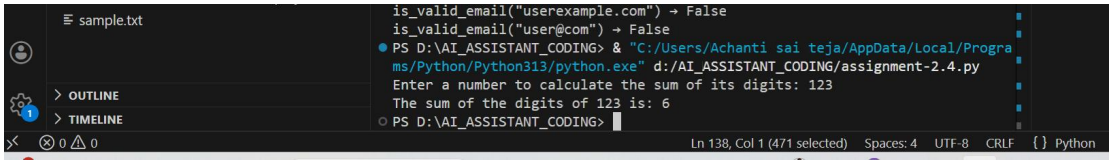
PROMPT:



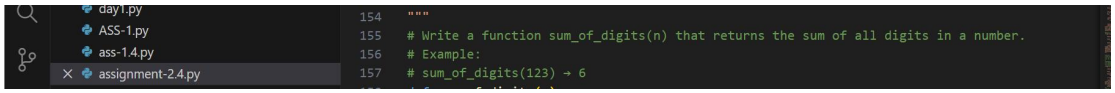
CODE:

```
"""def sum_of_digits(n):

    Calculates the sum of digits of a given number.

    Args:
        n: Integer whose digits are to be summed

    Returns:
        Integer: Sum of the digits

    return sum(int(digit) for digit in str(abs(n)))
# Test the sum_of_digits function
number = int(input("Enter a number to calculate the sum of its digits: "))
result = sum_of_digits(number)
print(f"The sum of the digits of {number} is: {result}")
```

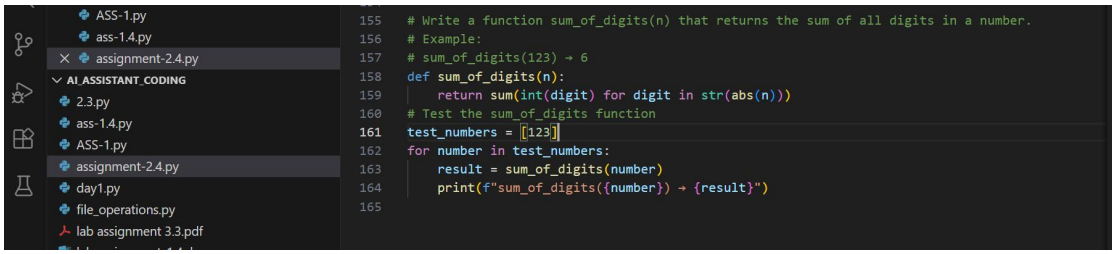
OUTPUT:




PROMPT:




CODE:




OUTPUT: