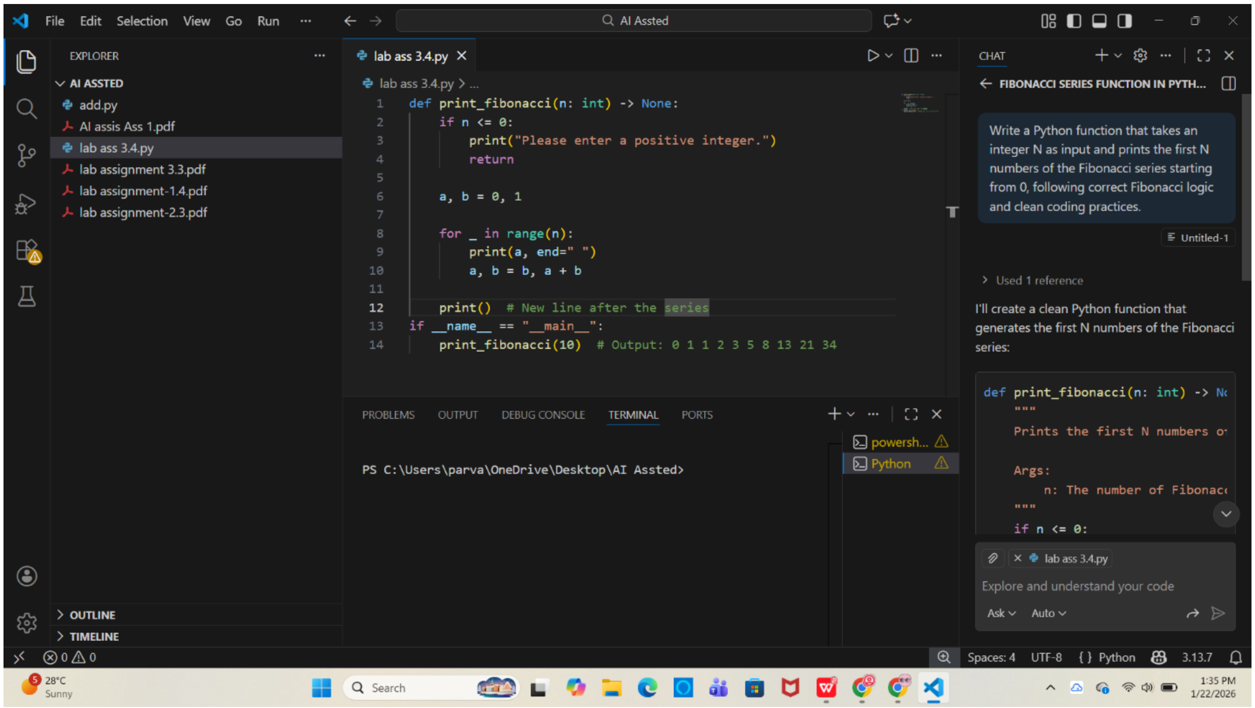
Task 1: Zero-shot Prompt – Fibonacci Series Generator

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.



```python
def print_fibonacci(n: int) -> None:
    if n <= 0:
        print("Please enter a positive integer.")
        return

    a, b = 0, 1

    for _ in range(n):
        print(a, end=" ")
        a, b = b, a + b

    print()  # New line after the series
if __name__ == "__main__":
    print_fibonacci(10)  # Output: 0 1 1 2 3 5 8 13 21 34
```

```
PS C:\Users\parva\OneDrive\Desktop\AI Assted>
```

Write a Python function that takes an integer N as input and prints the first N numbers of the Fibonacci series starting from 0, following correct Fibonacci logic and clean coding practices.

I'll create a clean Python function that generates the first N numbers of the Fibonacci series:

```python
def print_fibonacci(n: int) -> No
    """
    Prints the first N numbers o

    Args:
        n: The number of Fibonacc
    """
    if n <= 0:
```

Task 2: One-shot Prompt – List Reversal Function

Task Description #2

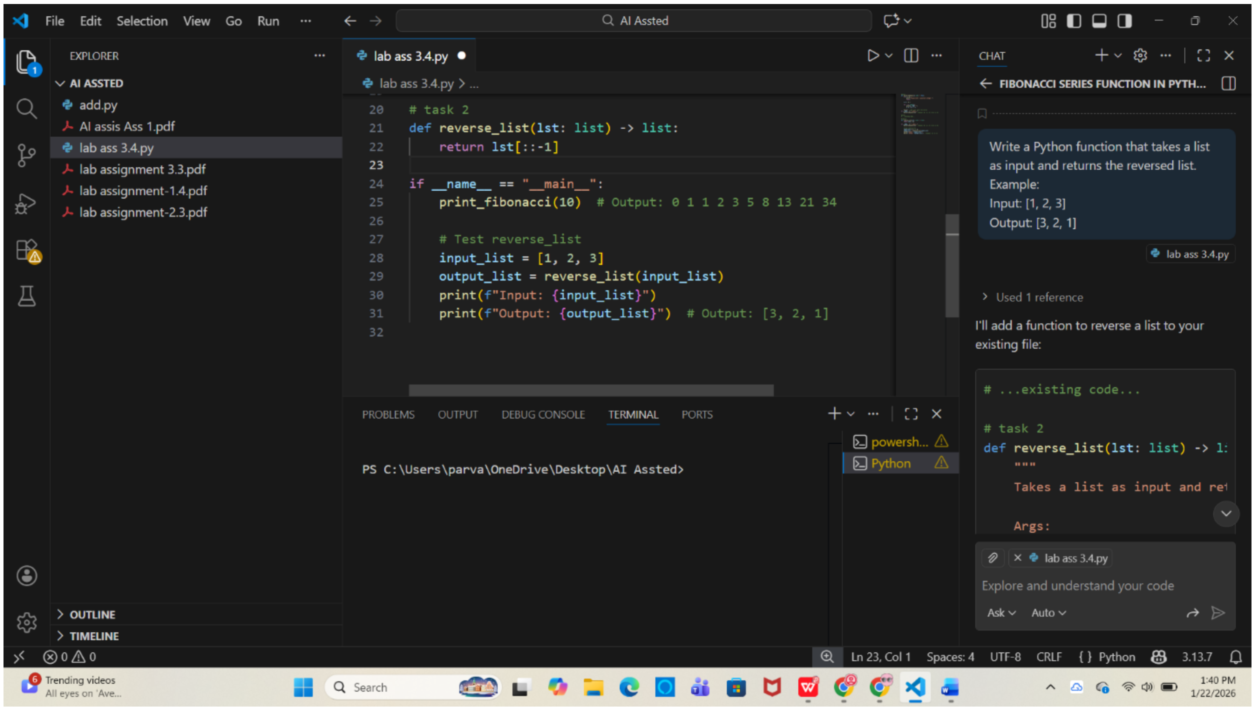
- Write a comment prompt to reverse a list and provide one

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



```python
# task 2
def reverse_list(lst: list) -> list:
    return lst[::-1]

if __name__ == "__main__":
    print_fibonacci(10)  # Output: 0 1 1 2 3 5 8 13 21 34

    # Test reverse_list
    input_list = [1, 2, 3]
    output_list = reverse_list(input_list)
    print(f"Input: {input_list}")
    print(f"Output: {output_list}")  # Output: [3, 2, 1]

```

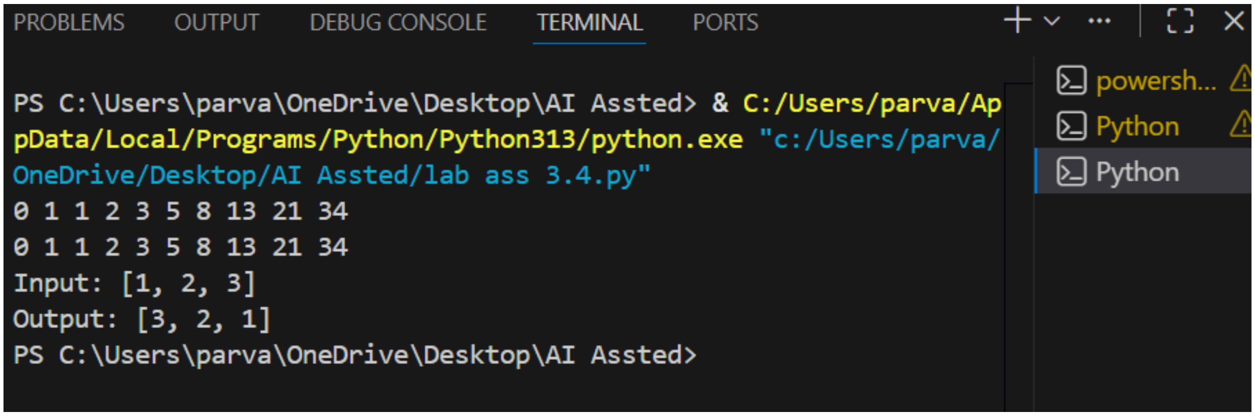
```
PS C:\Users\parva\OneDrive\Desktop\AI Assted>
```

Write a Python function that takes a list as input and returns the reversed list.
Example:
Input: [1, 2, 3]
Output: [3, 2, 1]

I'll add a function to reverse a list to your existing file:

```python
# ...existing code...

# task 2
def reverse_list(lst: list) -> l:
    """
    Takes a list as input and re

    Args:
```

1 and 2 tasks output



```
PS C:\Users\parva\OneDrive\Desktop\AI Assted> & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/OneDrive/Desktop/AI Assted/lab ass 3.4.py"
0 1 1 2 3 5 8 13 21 34
0 1 1 2 3 5 8 13 21 34
Input: [1, 2, 3]
Output: [3, 2, 1]
PS C:\Users\parva\OneDrive\Desktop\AI Assted>
```

Task 3: Few-shot Prompt – String Pattern Matching

Task Description #3

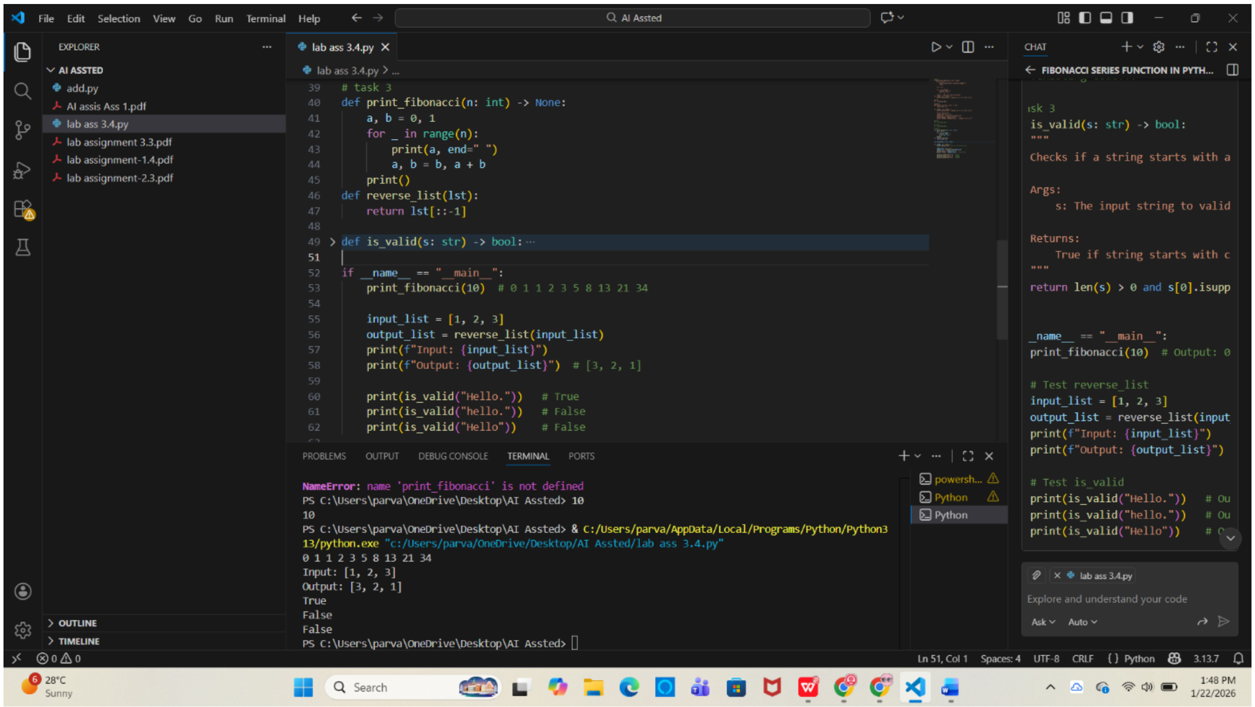
• Write a comment with 2–3 examples to help Copilot understand how to check if a string starts with a capital letter and ends with a period.

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.



```python
# task 3
def print_fibonacci(n: int) -> None:
    a, b = 0, 1
    for _ in range(n):
        print(a, end=" ")
        a, b = b, a + b
    print()
def reverse_list(lst):
    return lst[::-1]

def is_valid(s: str) -> bool: ···

if __name__ == "__main__":
    print_fibonacci(10)  # 0 1 1 2 3 5 8 13 21 34

    input_list = [1, 2, 3]
    output_list = reverse_list(input_list)
    print(f"Input: {input_list}")
    print(f"Output: {output_list}")  # [3, 2, 1]

    print(is_valid("Hello."))   # True
    print(is_valid("hello."))   # False
    print(is_valid("Hello"))    # False
```

```
NameError: name 'print_fibonacci' is not defined
PS C:\Users\parva\OneDrive\Desktop\AI Assted> 10
10
PS C:\Users\parva\OneDrive\Desktop\AI Assted> & C:/Users/parva/AppData/Local/Programs/Python/Python3
13/python.exe "c:/Users/parva/OneDrive/Desktop/AI Assted/lab ass 3.4.py"
0 1 1 2 3 5 8 13 21 34
Input: [1, 2, 3]
Output: [3, 2, 1]
True
False
False
PS C:\Users\parva\OneDrive\Desktop\AI Assted>
```

```python
ısk 3
is_valid(s: str) -> bool:
"""
Checks if a string starts with a

Args:
    s: The input string to valid

Returns:
    True if string starts with c
"""
return len(s) > 0 and s[0].isupp


_name__ == "__main__":
print_fibonacci(10)  # Output: 0

# Test reverse_list
input_list = [1, 2, 3]
output_list = reverse_list(input
print(f"Input: {input_list}")
print(f"Output: {output_list}")

# Test is_valid
print(is_valid("Hello."))   # Ou
print(is_valid("hello."))   # Ou
print(is_valid("Hello"))    # O
```

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.

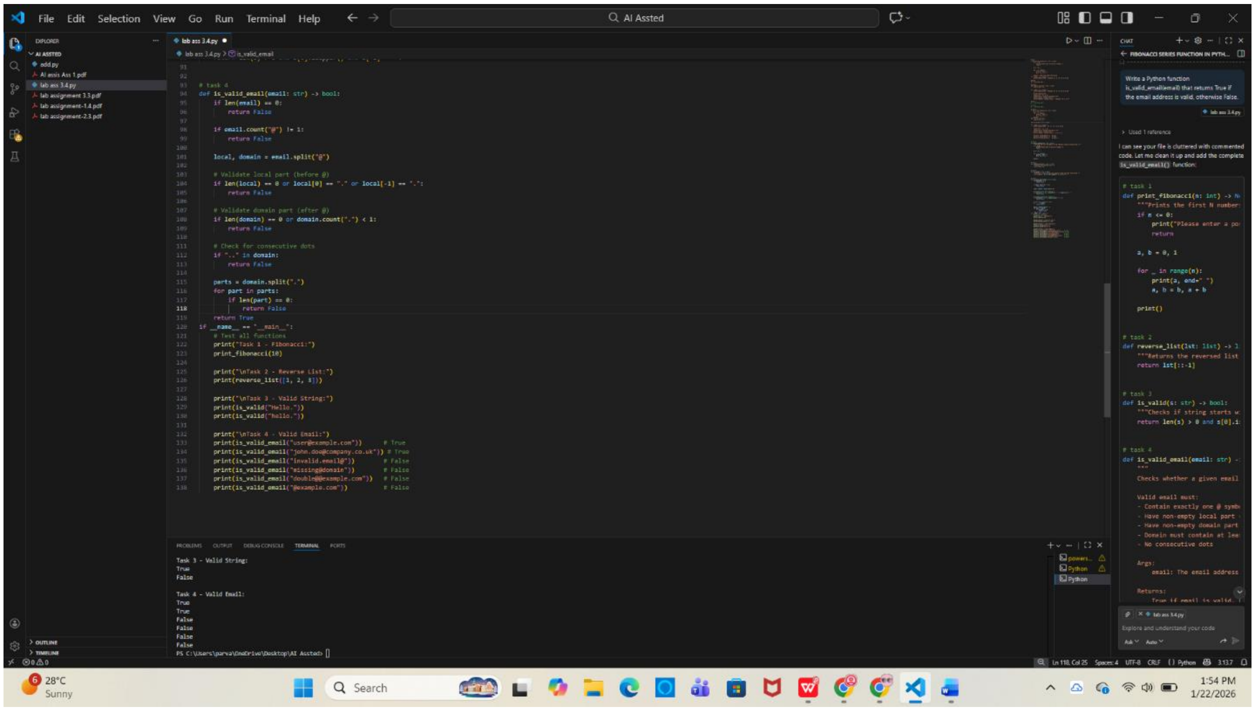
Expected Output #4

- 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.



```python
# task 4
def is_valid_email(email: str) -> bool:
    if len(email) == 0:
        return False

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

    local, domain = email.split("@")

    # Validate local part (before @)
    if len(local) == 0 or local[0] == "." or local[-1] == ".":
        return False

    # Validate domain part (after @)
    if len(domain) == 0 or domain.count(".") < 1:
        return False

    # Check for consecutive dots
    if ".." in domain:
        return False

    parts = domain.split(".")
    for part in parts:
        if len(part) == 0:
            return False
    return True
if __name__ == "__main__":
    # Test all functions
    print("Task 1 - Fibonacci:")
    print_fibonacci(10)

    print("\nTask 2 - Reverse List:")
    print(reverse_list([1, 2, 3]))

    print("\nTask 3 - Valid String:")
    print(is_valid("Hello."))
    print(is_valid("hello."))

    print("\nTask 4 - Valid Email:")
    print(is_valid_email("user@example.com"))      # True
    print(is_valid_email("john.doe@company.co.uk")) # True
    print(is_valid_email("invalid.email@"))        # False
    print(is_valid_email("missing@domain"))        # False
    print(is_valid_email("double@@example.com"))   # False
    print(is_valid_email("@example.com"))          # False
```

```
Task 3 - Valid String:
True
False

Task 4 - Valid Email:
True
True
False
False
False
False
PS C:\Users\parva\OneDrive\Desktop\AI Assted> 
```

Write a Python function is_valid_email(email) that returns True if the email address is valid, otherwise False.

lab ass 3.4.py

> Used 1 reference

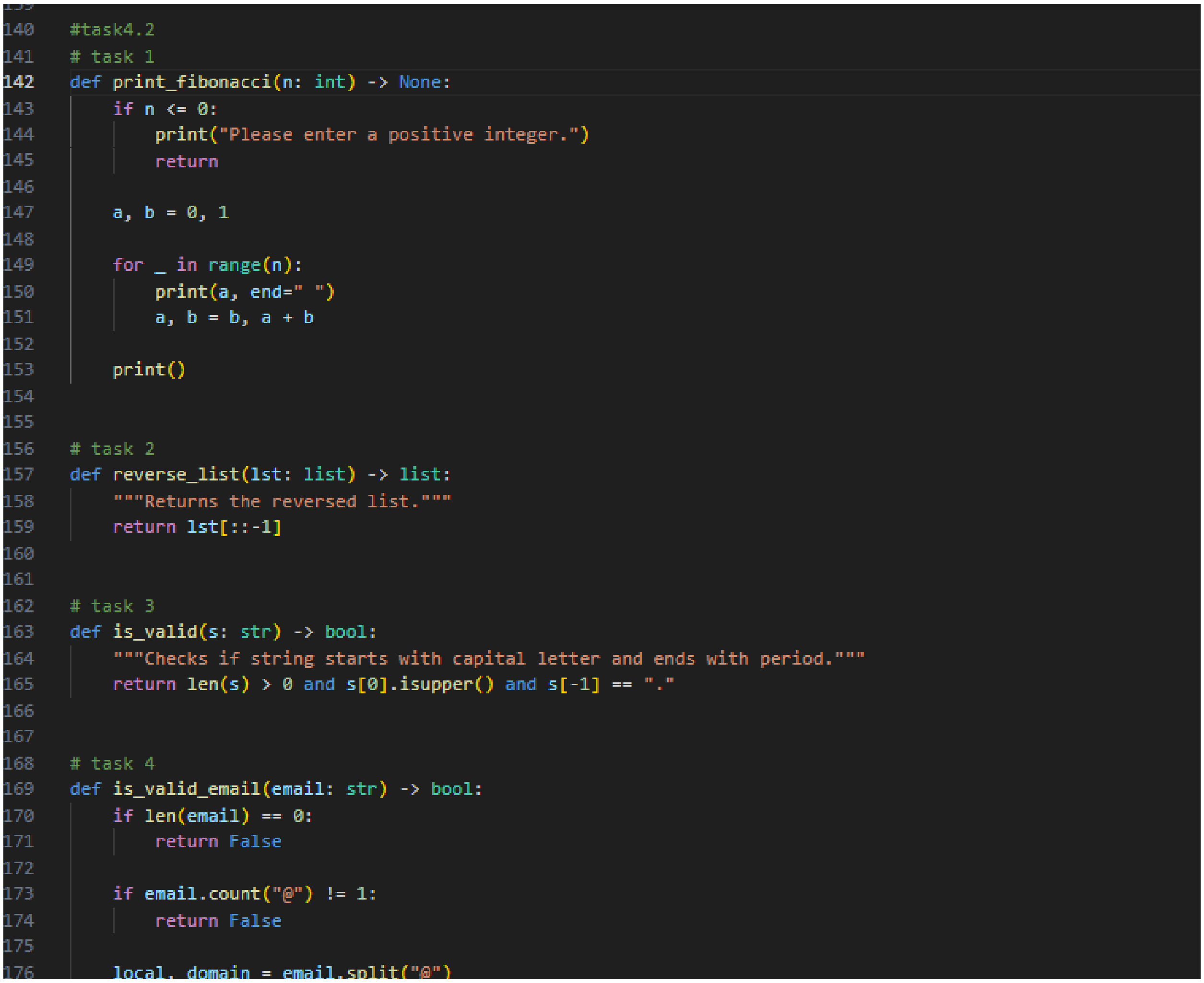
I can see your file is cluttered with commented code. Let me clean it up and add the complete `is_valid_email()` function:

```python
# task 1
def print_fibonacci(n: int) -> N
    """Prints the first N number
    if n <= 0:
        print("Please enter a po
        return

    a, b = 0, 1

    for _ in range(n):
        print(a, end=" ")
        a, b = b, a + b

    print()


# task 2
def reverse_list(lst: list) -> l
    """Returns the reversed list
    return lst[::-1]


# task 3
def is_valid(s: str) -> bool:
    """Checks if string starts w
    return len(s) > 0 and s[0].i


# task 4
def is_valid_email(email: str) -
    """
    Checks whether a given email

    Valid email must:
    - Contain exactly one @ symb
    - Have non-empty local part
    - Have non-empty domain part
    - Domain must contain at lea
    - No consecutive dots

    Args:
        email: The email address

    Returns:
        True if email is valid, 
```

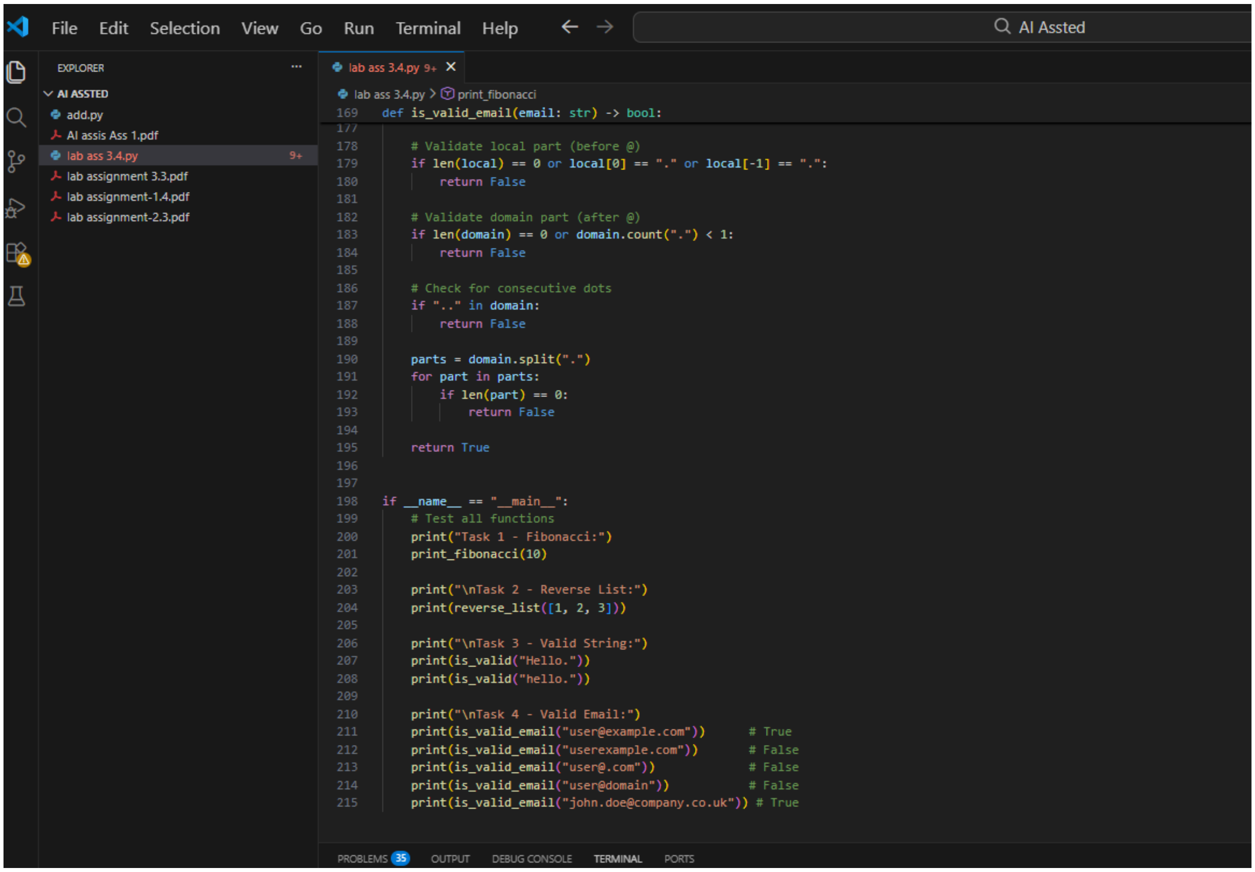
lab ass 3.4.py

Explore and understand your code

Ask
Auto



```python
#task4.2
# task 1
def print_fibonacci(n: int) -> None:
    if n <= 0:
        print("Please enter a positive integer.")
        return

    a, b = 0, 1

    for _ in range(n):
        print(a, end=" ")
        a, b = b, a + b

    print()


# task 2
def reverse_list(lst: list) -> list:
    """Returns the reversed list."""
    return lst[::-1]


# task 3
def is_valid(s: str) -> bool:
    """Checks if string starts with capital letter and ends with period."""
    return len(s) > 0 and s[0].isupper() and s[-1] == "."


# task 4
def is_valid_email(email: str) -> bool:
    if len(email) == 0:
        return False

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

    local, domain = email.split("@")
```



```python
def is_valid_email(email: str) -> bool:

    # Validate local part (before @)
    if len(local) == 0 or local[0] == "." or local[-1] == ".":
        return False

    # Validate domain part (after @)
    if len(domain) == 0 or domain.count(".") < 1:
        return False

    # Check for consecutive dots
    if ".." in domain:
        return False

    parts = domain.split(".")
    for part in parts:
        if len(part) == 0:
            return False

    return True


if __name__ == "__main__":
    # Test all functions
    print("Task 1 - Fibonacci:")
    print_fibonacci(10)

    print("\nTask 2 - Reverse List:")
    print(reverse_list([1, 2, 3]))

    print("\nTask 3 - Valid String:")
    print(is_valid("Hello."))
    print(is_valid("hello."))

    print("\nTask 4 - Valid Email:")
    print(is_valid_email("user@example.com"))      # True
    print(is_valid_email("userexample.com"))       # False
    print(is_valid_email("user@.com"))             # False
    print(is_valid_email("user@domain"))           # False
    print(is_valid_email("john.doe@company.co.uk")) # True
```

Task 5: Prompt Tuning – Summing Digits of a Number

Task Description #5

• Experiment with 2 different prompt styles to generate a function

that returns the sum of digits of a number.

Style 1: Generic task prompt

Style 2: Task + Input/Output example

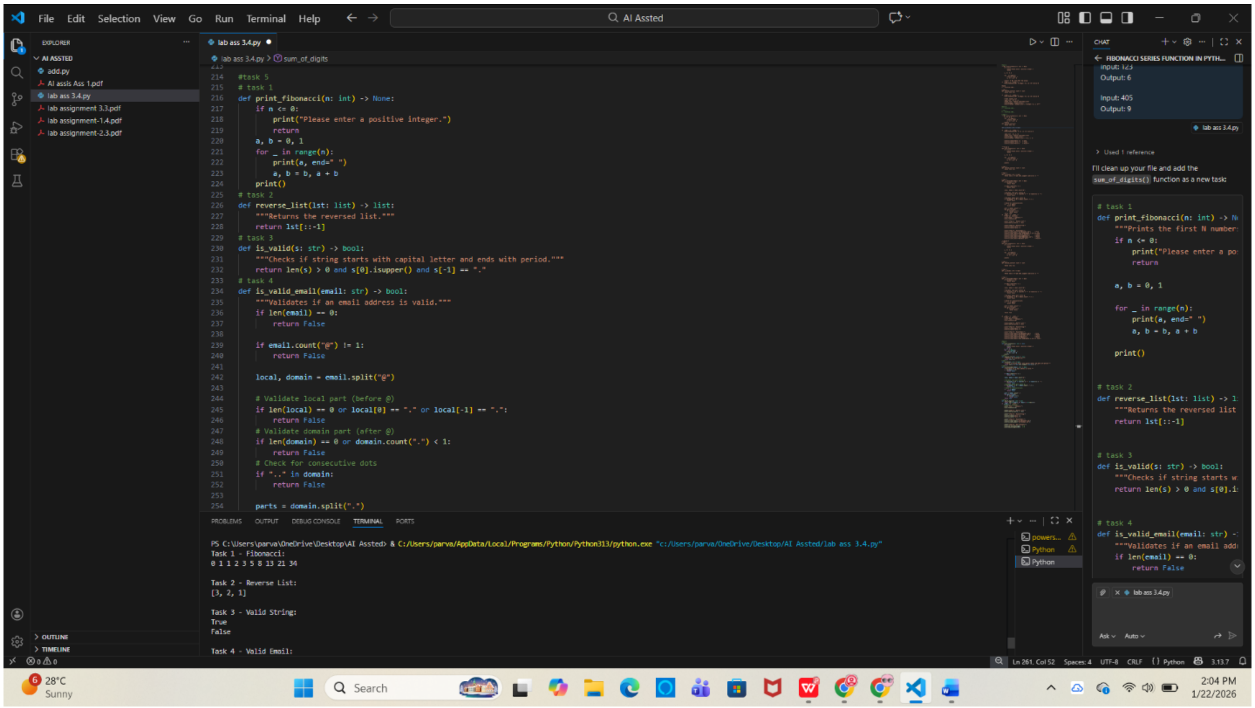
Expected Output #5

• Two versions of the sum_of_digits() function.

• Example Output: sum_of_digits(123) → 6

• Short analysis: which prompt produced cleaner or more

optimized code and why?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lab ass 3.4.py
lab assignment 3.3.pdf
lab assignment-1.4.pdf
lab assignment-2.3.pdf
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CHAT
FIBONACCI SERIES FUNCTION IN PYTH...
Ln 261, Col 52 Spaces: 4 UTF-8 CRLF {} Python 3.13.7
28°C
Sunny
Search
2:04 PM
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```python
#task 5
# task 1
def print_fibonacci(n: int) -> None:
    if n <= 0:
        print("Please enter a positive integer.")
        return
    a, b = 0, 1
    for _ in range(n):
        print(a, end=" ")
        a, b = b, a + b
    print()
# task 2
def reverse_list(lst: list) -> list:
    """Returns the reversed list."""
    return lst[::-1]
# task 3
def is_valid(s: str) -> bool:
    """Checks if string starts with capital letter and ends with period."""
    return len(s) > 0 and s[0].isupper() and s[-1] == "."
# task 4
def is_valid_email(email: str) -> bool:
    """Validates if an email address is valid."""
    if len(email) == 0:
        return False

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

    local, domain = email.split("@")

    # Validate local part (before @)
    if len(local) == 0 or local[0] == "." or local[-1] == ".":
        return False
    # Validate domain part (after @)
    if len(domain) == 0 or domain.count(".") < 1:
        return False
    # Check for consecutive dots
    if ".." in domain:
        return False

    parts = domain.split(".")
```

```
PS C:\Users\parva\OneDrive\Desktop\AI Assted> & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/OneDrive/Desktop/AI Assted/lab ass 3.4.py"
Task 1 - Fibonacci:
0 1 1 2 3 5 8 13 21 34

Task 2 - Reverse List:
[3, 2, 1]

Task 3 - Valid String:
True
False

Task 4 - Valid Email:
```

Input: 123
Output: 6

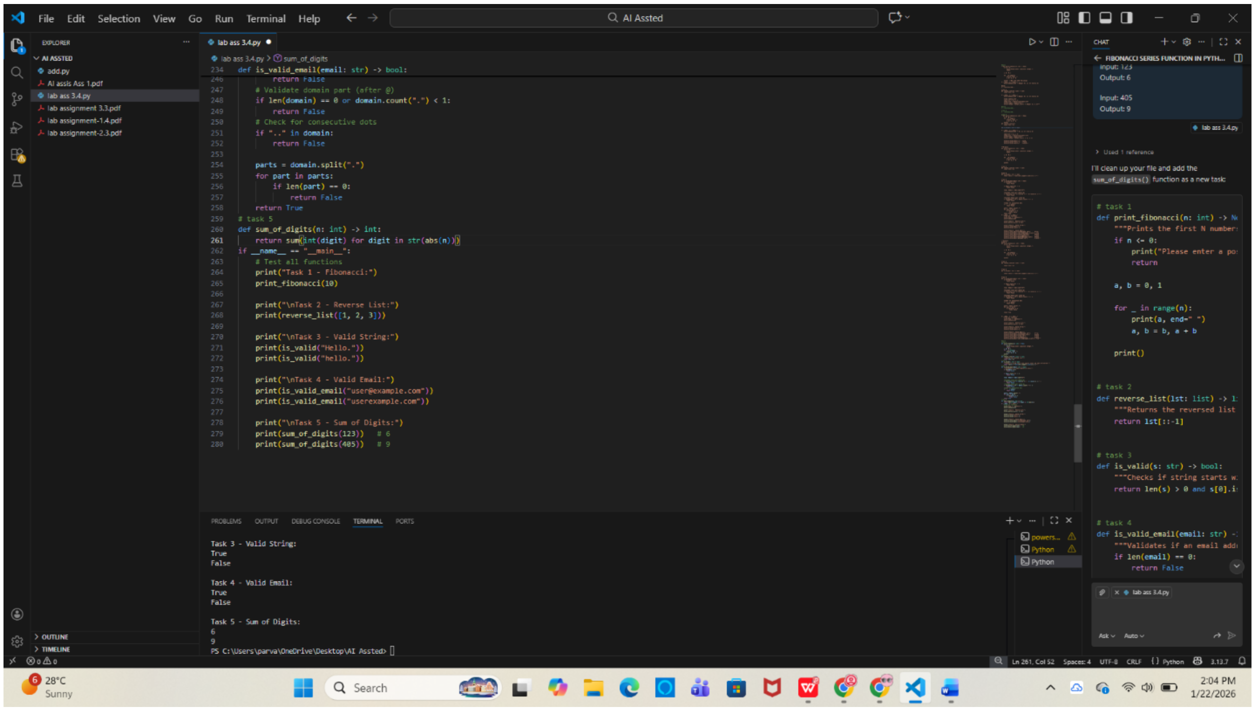
Input: 405
Output: 9

lab ass 3.4.py

Used 1 reference

I'll clean up your file and add the `sum_of_digits()` function as a new task:

```python
# task 1
def print_fibonacci(n: int) -> N
    """Prints the first N number
    if n <= 0:
        print("Please enter a po
        return

    a, b = 0, 1

    for _ in range(n):
        print(a, end=" ")
        a, b = b, a + b

    print()


# task 2
def reverse_list(lst: list) -> l
    """Returns the reversed list
    return lst[::-1]


# task 3
def is_valid(s: str) -> bool:
    """Checks if string starts w
    return len(s) > 0 and s[0].i


# task 4
def is_valid_email(email: str) -
    """Validates if an email addr
    if len(email) == 0:
        return False
```


File Edit Selection View Go Run Terminal Help
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lab ass 3.4.py
lab assignment 3.3.pdf
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lab assignment-2.3.pdf
OUTLINE
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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
powers...
Python
Python
CHAT
FIBONACCI SERIES FUNCTION IN PYTH...
Ln 261, Col 52 Spaces: 4 UTF-8 CRLF {} Python 3.13.7
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1/22/2026

```python
def is_valid_email(email: str) -> bool:
            return False
    # Validate domain part (after @)
    if len(domain) == 0 or domain.count(".") < 1:
        return False
    # Check for consecutive dots
    if ".." in domain:
        return False

    parts = domain.split(".")
    for part in parts:
        if len(part) == 0:
            return False
    return True
# task 5
def sum_of_digits(n: int) -> int:
    return sum(int(digit) for digit in str(abs(n)))
if __name__ == "__main__":
    # Test all functions
    print("Task 1 - Fibonacci:")
    print_fibonacci(10)

    print("\nTask 2 - Reverse List:")
    print(reverse_list([1, 2, 3]))

    print("\nTask 3 - Valid String:")
    print(is_valid("Hello."))
    print(is_valid("hello."))

    print("\nTask 4 - Valid Email:")
    print(is_valid_email("user@example.com"))
    print(is_valid_email("userexample.com"))

    print("\nTask 5 - Sum of Digits:")
    print(sum_of_digits(123))   # 6
    print(sum_of_digits(405))   # 9
```

```
Task 3 - Valid String:
True
False

Task 4 - Valid Email:
True
False

Task 5 - Sum of Digits:
6
9
PS C:\Users\parva\OneDrive\Desktop\AI Assted> 
```

Input: 123
Output: 6

Input: 405
Output: 9

lab ass 3.4.py

Used 1 reference

I'll clean up your file and add the `sum_of_digits()` function as a new task:

```python
# task 1
def print_fibonacci(n: int) -> N
    """Prints the first N number
    if n <= 0:
        print("Please enter a po
        return

    a, b = 0, 1

    for _ in range(n):
        print(a, end=" ")
        a, b = b, a + b

    print()


# task 2
def reverse_list(lst: list) -> l
    """Returns the reversed list
    return lst[::-1]


# task 3
def is_valid(s: str) -> bool:
    """Checks if string starts w
    return len(s) > 0 and s[0].i


# task 4
def is_valid_email(email: str) -
    """Validates if an email addr
    if len(email) == 0:
        return False
```