LAB ASSIGNMENT: 4.3

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BATCH:05

BRANCH :CSE

<table>
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<tr><td colspan="2">ProgramName:B. Tech</td><td colspan="1">Assignment Type: Lab</td><td>AcademicYear:2025-2026</td></tr>
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<tr><td>CourseCode</td><td>24CS002PC215</td><td>CourseTitle</td><td>AI Assisted Coding</td></tr>
<tr><td>Year/Sem</td><td>II/I</td><td>Regulation</td><td>R24</td></tr>
<tr><td>Date and Day of Assignment</td><td>Week2 - Wednesday</td><td>Time(s)</td><td></td></tr>
<tr><td>Duration</td><td>2 Hours</td><td>Applicableto Batches</td><td></td></tr>
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Q.No.	Question	*ExpectedTime to complete*
1	Lab 4: Advanced Prompt Engineering – Zero-shot, One-shot, and Few-shot Techniques **Lab Objectives:** ● To explore and apply different levels of prompt examples in AI-assisted code generation. ● To understand how zero-shot, one-shot, and few-shot prompting affect AI output quality. ● To evaluate the impact of context richness and example quantity on AI performance. ● To build awareness of prompt strategy effectiveness for different problem types. **Lab Outcomes (LOs):** After completing this lab, students will be able to: ● Use zero-shot prompting to instruct AI with minimal context. ● Use one-shot prompting with a single example to guide AI code generation. ● Apply few-shot prompting using multiple examples to improve AI responses. ● Compare AI outputs across the three prompting strategies. **Task Description#1** ● Zero-shot: Prompt AI to write a function that checks whether a given year is a leap year. **Expected Output#1** ● AI-generated function with no examples provided **Task Description#2** ● One-shot: Give one input-output example to guide AI in writing a function that converts centimeters to inches. **Expected Output#2** ● Function with correct conversion logic **Task Description#3** ● Few-shot: Provide 2–3 examples to generate a function that formats full names as "Last, First". **Expected Output#3** ● Well-structured function respecting the examples **Task Description#4** ● Compare zero-shot and few-shot prompts for writing a function that counts the number of vowels in a string. **Expected Output#4** ● Functional output and comparative reflection **Task Description#5** ● Use few-shot prompting to generate a function that reads a .txt file and returns the number of lines. **Expected Output#5** ● Working file-processing function with AI-guided logic	Week2 - Wednesday

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Note: Report should be submitted a word document for all tasks in a single document with prompts, comments & code explanation, and output and if required, screenshots

Evaluation Criteria:

Criteria	Max Marks
Zero Shot (Task #1)	0.5
One Shot (Task#2)	0.5
Few Shot (Task#3 & Task #5)	1.0
Comparison (Task#4)	0.5
Total	**2.5 Marks**

VS code with github copilot

Task Description#1

- Zero-shot: Prompt AI to write a function that checks whether a given year is a leap year.

Expected Output#1

- AI-generated function with no examples provided

Prompt:

write code to check whether given year is leap or not.

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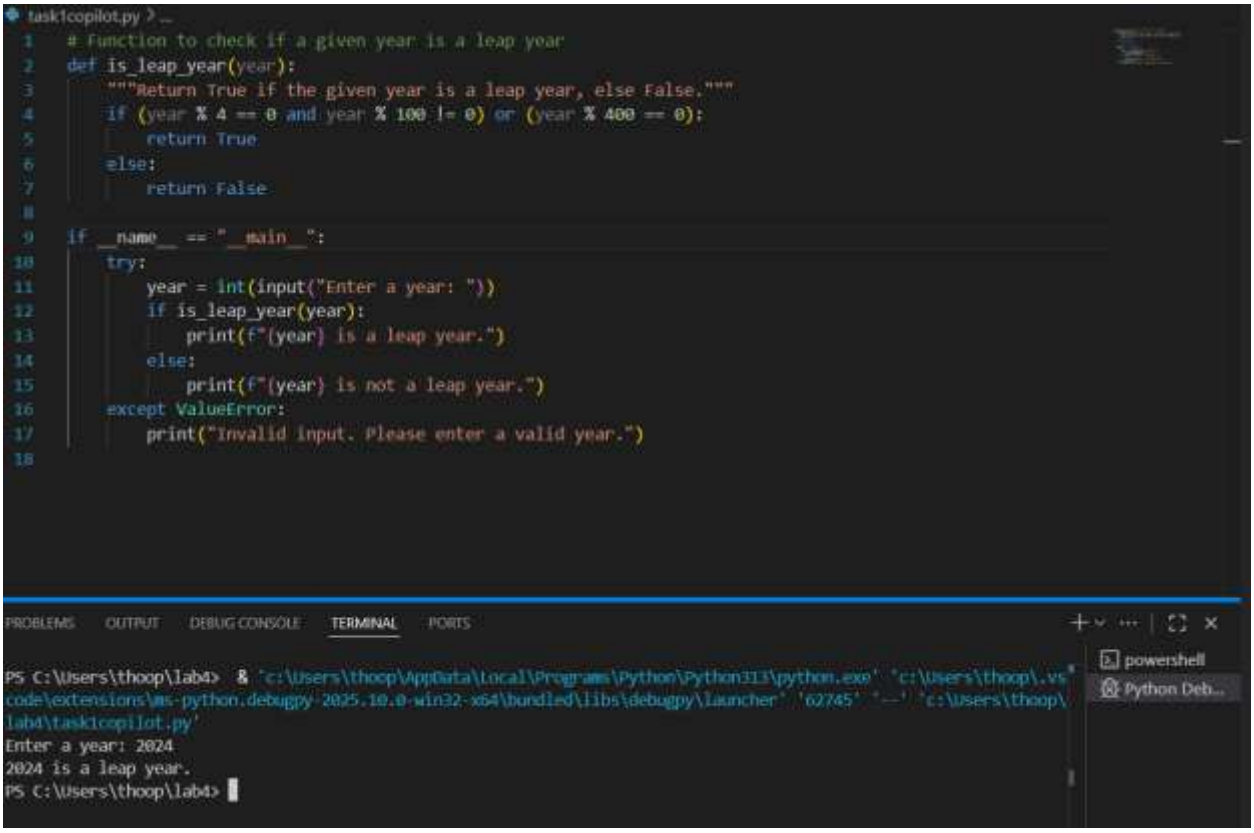

```
task1copilot.py > ...
# Function to check if a given year is a leap year
def is_leap_year(year):
    """Return True if the given year is a leap year, else False."""
    if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
        return True
    else:
        return False

if __name__ == "__main__":
    try:
        year = int(input("Enter a year: "))
        if is_leap_year(year):
            print(f"{year} is a leap year.")
        else:
            print(f"{year} is not a leap year.")
    except ValueError:
        print("Invalid input. Please enter a valid year.")
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\thoop\lab4> & 'c:\Users\thoop\AppData\Local\Programs\Python\Python313\python.exe' 'c:\Users\thoop\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '62745' '--' 'c:\Users\thoop\lab4\task1copilot.py'
Enter a year: 2024
2024 is a leap year.
PS C:\Users\thoop\lab4>
```

Task Description#2

- One-shot: Give one input-output example to guide AI in writing a function that converts centimeters to inches.

Expected Output#2

- Function with correct conversion logic

Prompt:

Write a function to convert centimeters to inches.

Example:10.0 centimeters is equal to 3.912345 inches.

read input from the user.

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Task Description#3

- Few-shot: Provide 2–3 examples to generate a function that formats full names as “Last, First”.

Expected Output#3

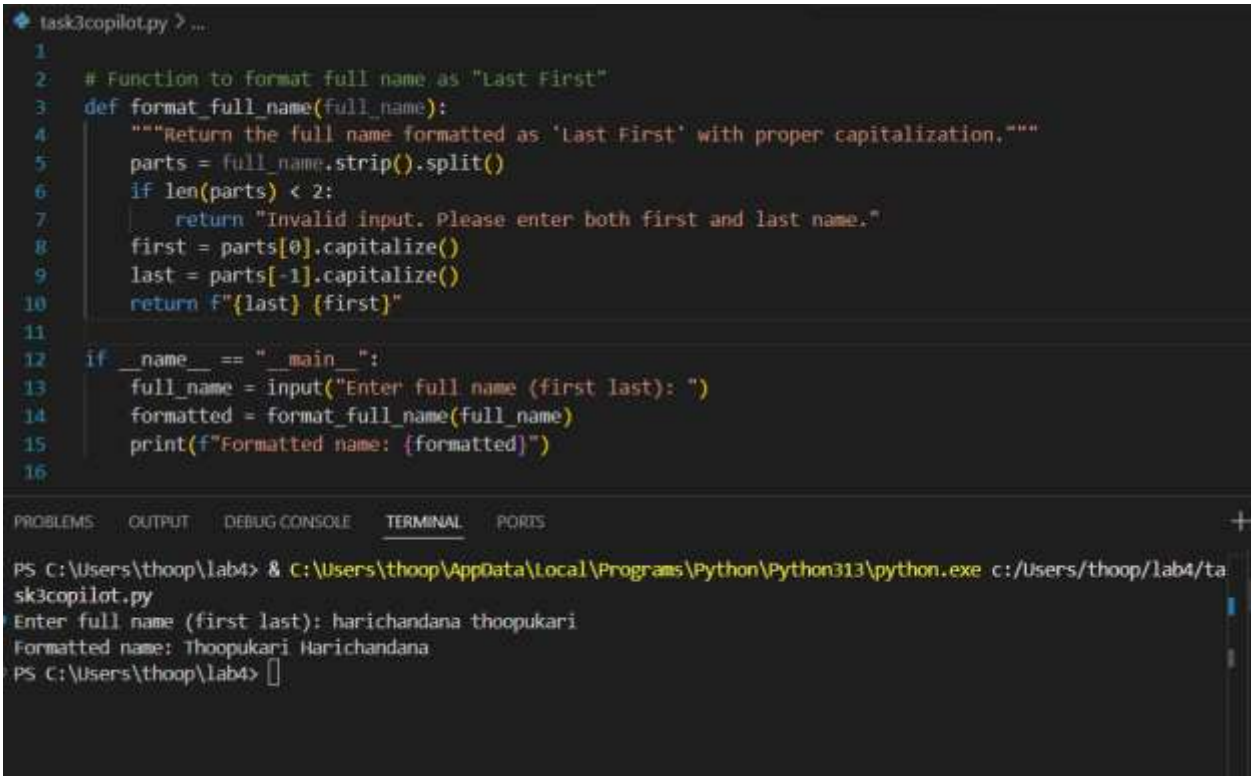
- Well-structured function respecting the examples

Prompt:

Write a python function that generates formats full names as “last,first”.
Example: peter parker =parker peter.
Harry potter=Potter Harry
Read full name from the user.

Code:

LAB ASSIGNMENT: 4.3



```
task3copilot.py > ...
1
2   # Function to format full name as "Last First"
3   def format_full_name(full_name):
4       """Return the full name formatted as 'Last First' with proper capitalization."""
5       parts = full_name.strip().split()
6       if len(parts) < 2:
7           return "Invalid input. Please enter both first and last name."
8       first = parts[0].capitalize()
9       last = parts[-1].capitalize()
10      return f"{last} {first}"
11
12  if __name__ == "__main__":
13      full_name = input("Enter full name (first last): ")
14      formatted = format_full_name(full_name)
15      print(f"Formatted name: {formatted}")
16

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\thoop\lab4> & C:\Users\thoop\AppData\Local\Programs\Python\Python313\python.exe c:/Users/thoop/lab4/ta
sk3copilot.py
Enter full name (first last): harichandana thoopukari
Formatted name: Thoopukari Harichandana
PS C:\Users\thoop\lab4>
```

Task Description#4

- Compare zero-shot and few-shot prompts for writing a function that counts the number of vowels in a string.

Expected Output#4

- Functional output and comparative reflection

Prompt:

1.Zero shot:

Write a python program to count number of vowels in a string. read input from the user.

2.few-shot:

Write a python program to count number of vowels in a given string.
Example: sruniversity
Vowel count=4.
Read input from the user.

LAB ASSIGNMENT: 4.3

Zero shot

few-shot

Task Description#5

- Use few-shot prompting to generate a function that reads a .txt file and returns the number of lines.

Expected Output#5

- Working file-processing function with AI-guided logic

Prompt:

Generate a function that reads the given a.txt file and returns the number of lines

Example:hello sr university.hanmakonda warangal.

Top engineering college.

Offers wide variety of courses.

No.of lines in a.txt=3.

LAB ASSIGNMENT: 4.3

Cursor AI

Task Description#1

- Zero-shot: Prompt AI to write a function that checks whether a given year is a leap year.

Expected Output#1

- AI-generated function with no examples provided

Prompt:

write code to check whether given year is leap or not.

LAB ASSIGNMENT: 4.3

```python
def main():
    """Main function to demonstrate the leap year checker."""
    print("Leap Year Checker")
    print("=" * 20)

    # Test cases
    test_years = [2000, 2020, 2024, 1900, 2100, 2023, 2025]

    for year in test_years:
        if is_leap_year(year):
            print(f"{year} is a leap year")
        else:
            print(f"{year} is NOT a leap year")

    print("\n" + "=" * 20)

    # Interactive input
    try:
        user_year = int(input("Enter a year to check: "))
        if is_leap_year(user_year):
            print(f"{user_year} is a leap year!")
        else:
            print(f"{user_year} is NOT a leap year.")
    except ValueError:
        print("Please enter a valid integer year.")
```

```
Problems  Output  Debug Console  Terminal  Ports
PS C:\Users\thoop\lab4> & C:/Users/thoop/AppData/Local/Programs/Python/Python313/python.exe c:/Users/
Enter a year: & c:/Users/thoop/AppData/Local/Programs/Python/Python313/python.exe c:/Users/thoop/lab4
Invalid input. Please enter a valid year.
PS C:\Users\thoop\lab4> & C:/Users/thoop/AppData/Local/Programs/Python/Python313/python.exe c:/Users/
Enter a year: 2024
2024 is a leap year.
PS C:\Users\thoop\lab4>
```

Task Description#2

- One-shot: Give one input-output example to guide AI in writing a function that converts centimeters to inches.

Expected Output#2

- Function with correct conversion logic

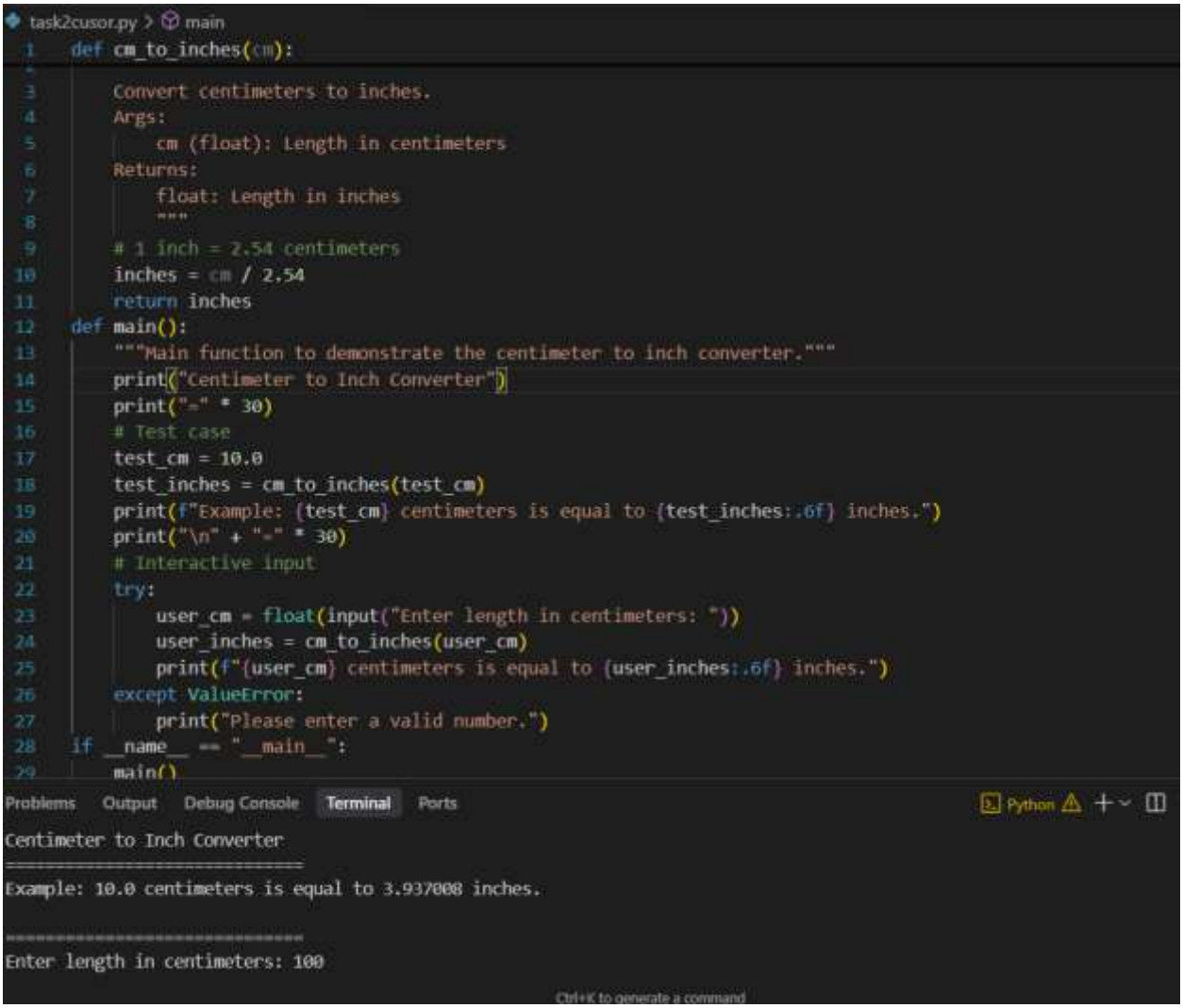
Prompt:

Write a function to convert centimeters to inches.

Example:10.0 centimeters is equal to 3.912345 inches.

read input from the user.

LAB ASSIGNMENT: 4.3



```
task2cusor.py > main
def cm_to_inches(cm):

    Convert centimeters to inches.
    Args:
        cm (float): Length in centimeters
    Returns:
        float: Length in inches
        """
    # 1 inch = 2.54 centimeters
    inches = cm / 2.54
    return inches
def main():
    """Main function to demonstrate the centimeter to inch converter."""
    print("Centimeter to Inch Converter")
    print("=" * 30)
    # Test case
    test_cm = 10.0
    test_inches = cm_to_inches(test_cm)
    print(f"Example: {test_cm} centimeters is equal to {test_inches:.6f} inches.")
    print("\n" + "-" * 30)
    # Interactive input
    try:
        user_cm = float(input("Enter length in centimeters: "))
        user_inches = cm_to_inches(user_cm)
        print(f"{user_cm} centimeters is equal to {user_inches:.6f} inches.")
    except ValueError:
        print("Please enter a valid number.")
if __name__ == "__main__":
    main()
```

```
Problems  Output  Debug Console  Terminal  Ports                Python

Centimeter to Inch Converter
==============================
Example: 10.0 centimeters is equal to 3.937008 inches.

------------------------------
Enter length in centimeters: 100

Ctrl+K to generate a command
```

Task Description#3

- Few-shot: Provide 2–3 examples to generate a function that formats full names as “Last, First”.

Expected Output#3

- Well-structured function respecting the examples

Prompt:

Write a python function that generates formats full names as “last,first”.
Example: peter parker =parker peter.
Harry potter=Potter Harry

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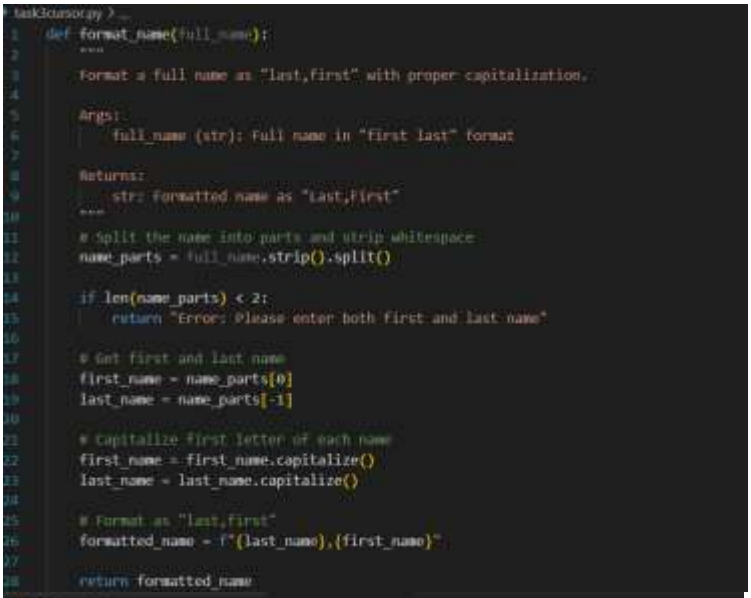
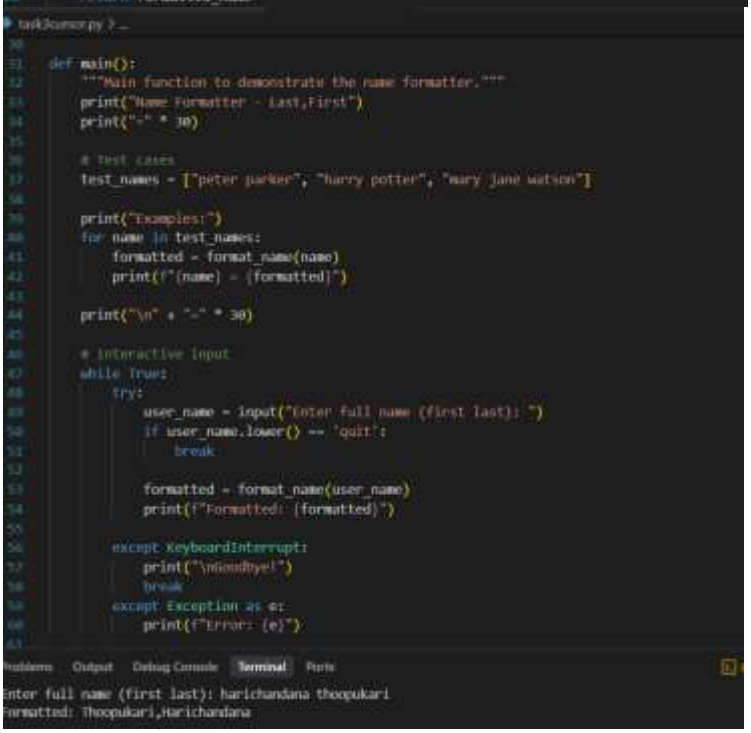
Read full name from the user.



```python
def format_name(full_name):
    """
    Format a full name as "last,first" with proper capitalization.

    Args:
        full_name (str): Full name in "first last" format

    Returns:
        str: Formatted name as "Last,First"
    """
    # Split the name into parts and strip whitespace
    name_parts = full_name.strip().split()

    if len(name_parts) < 2:
        return "Error: Please enter both first and last name"

    # Get first and last name
    first_name = name_parts[0]
    last_name = name_parts[-1]

    # Capitalize first letter of each name
    first_name = first_name.capitalize()
    last_name = last_name.capitalize()

    # Format as "last,first"
    formatted_name = f"{last_name},{first_name}"

    return formatted_name
```



```python
def main():
    """Main function to demonstrate the name formatter."""
    print("Name Formatter - Last,First")
    print("-" * 30)

    # Test cases
    test_names = ["peter parker", "harry potter", "mary jane watson"]

    print("Examples:")
    for name in test_names:
        formatted = format_name(name)
        print(f"{name} - {formatted}")

    print("\n" + "-" * 30)

    # Interactive input
    while True:
        try:
            user_name = input("Enter full name (first last): ")
            if user_name.lower() == 'quit':
                break

            formatted = format_name(user_name)
            print(f"Formatted: {formatted}")

        except KeyboardInterrupt:
            print("\nGoodbye!")
            break
        except Exception as e:
            print(f"Error: {e}")
```

```
Problems  Output  Debug Console  Terminal  Ports
Enter full name (first last): harichandana thoopukari
Formatted: Thoopukari,Harichandana
```

Task Description#4

- Compare zero-shot and few-shot prompts for writing a function that counts the number of vowels in a string.

Expected Output#4

- Functional output and comparative reflection

Prompt:

1.Zero shot:

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Write a python program to count number of vowels in a string. read input from the user.
2.few-shot:
Write a python program to count number of vowels in a given string.
Example: sruniversity
Vowel count=4.
Read input from the user.

Zero-shot

```
def format_name(full_name):
    """
    Format a full name as "last,first" with proper capitalization.

    Args:
        full_name (str): Full name in "first last" format

    Returns:
        str: Formatted name as "Last,First"
    """
    # Split the name into parts and strip whitespace
    name_parts = full_name.strip().split()

    if len(name_parts) < 2:
        return "Error: Please enter both first and last name"

    # Get first and last name
    first_name = name_parts[0]
    last_name = name_parts[-1]

    # Capitalize first letter of each name
    first_name = first_name.capitalize()
    last_name = last_name.capitalize()

    # Format as "Last,First"
    formatted_name = f"{last_name},{first_name}"

    return formatted_name
```

```
def main():
    """Main function to get user input and count vowels."""
    print("Vowel Counter")
    print("-" * 20)

    # Get input from user
    user_input = input("Enter a string: ")

    # Count vowels
    vowel_count = count_vowels(user_input)

    # Display result
    print(f"Number of vowels in '{user_input}': {vowel_count}")

    # Show which vowels were found
    vowels_found = [char for char in user_input if char.lower() in 'aeiou']
    if vowels_found:
        print(f"Vowels found: {vowels_found}")
    else:
        print("No vowels found in the string.")


if __name__ == "__main__":
    main()
```

```
Vowel Counter
--------------------
Enter a string: harichandana
Number of vowels in 'harichandana': 5
Vowels found: ['a', 'i', 'a', 'a', 'a']
PS C:\Users\thoop\Lab4>
```

few-shot

```
def count_vowels(text):
    """
    Count the number of vowels in a given string.

    Args:
        text (str): Input string to count vowels in

    Returns:
        int: Number of vowels in the string
    """
    vowels = 'aeiouAEIOU'
    count = 0

    for char in text:
        if char in vowels:
            count += 1

    return count


def main():
    """Main function to demonstrate vowel counting with example and user input."""
    print("Vowel Counter")
    print("-" * 30)

    # Show the example
    example = "sruniversity"
    example_count = count_vowels(example)
    print(f"Example: {example}")
    print(f"Vowel count = {example_count}")
    # Show the vowels found in the example
    vowels_found = [char for char in example if char.lower() in 'aeiou']
    print(f"Vowels found: {vowels_found}")
    print("\n" + "-" * 30)
    # Get input from user
    user_input = input("Enter a string: ")
    # Count vowels in user input
    user_count = count_vowels(user_input)
    # Display result
    print(f"Vowel count = {user_count}")
    # Show which vowels were found
    user_vowels = [char for char in user_input if char.lower() in 'aeiou']
    if user_vowels:
        print(f"Vowels found: {user_vowels}")
    else:
        print("No vowels found in the string.")
if __name__ == "__main__":
    main()
```

```
Vowel Counter
------------------------------
Example: sruniversity
Vowel count = 4
Vowels found: ['u', 'i', 'e', 'i']

------------------------------
Enter a string: harichandana
Enter a string: harichandana
Vowel count = 5
```

Task Description#5

- Use few-shot prompting to generate a function that reads a .txt file and returns the number of lines.

Expected Output#5

- Working file-processing function with AI-guided logic

Prompt:
Generate a function that reads the given a.txt file and returns the number of lines

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Example:hello sr university.hanmakonda warangal.
Top engineering college.
Offers wide variety of courses.
No.of lines in a.txt=3.

LAB ASSIGNMENT: 4.3