LAB ASSIGNMENT: 4.3

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BATCH:05

BRANCH :CSE

SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
ProgramName: B. Tech		**Assignment Type: Lab**	**AcademicYear:** 2025-2026
CourseCoordinatorName	Venkataramana Veeramsetty		
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CourseCode	24CS002PC215	**CourseTitle**	AI Assisted Coding
Year/Sem	II/I	**Regulation**	R24
Date and Day of Assignment	Week2 - Wednesday	**Time(s)**	
Duration	2 Hours	**Applicableto Batches**	
AssignmentNumber: **4.3**(Present assignment number)/**24**(Total number of assignments)			

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

	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.

task1copilot.py > ...

```python
# 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

powershell
Python Deb...

```
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.

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:

task3copilot.py > ...

```python

# Function to format full name as "Last First"
def format_full_name(full_name):
    """Return the full name formatted as 'Last First' with proper capitalization."""
    parts = full_name.strip().split()
    if len(parts) < 2:
        return "Invalid input. Please enter both first and last name."
    first = parts[0].capitalize()
    last = parts[-1].capitalize()
    return f"{last} {first}"

if __name__ == "__main__":
    full_name = input("Enter full name (first last): ")
    formatted = format_full_name(full_name)
    print(f"Formatted name: {formatted}")

```

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/task3copilot.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:

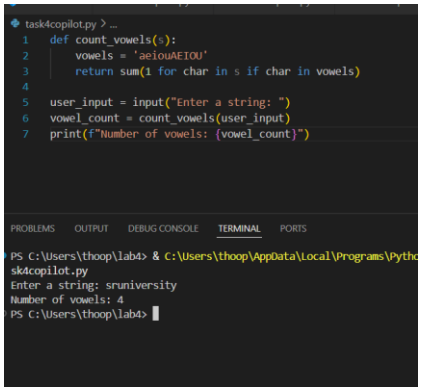
1.Zero shot:

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

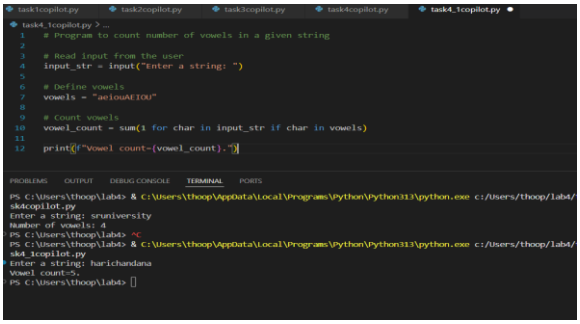
2.few-shot:

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

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:

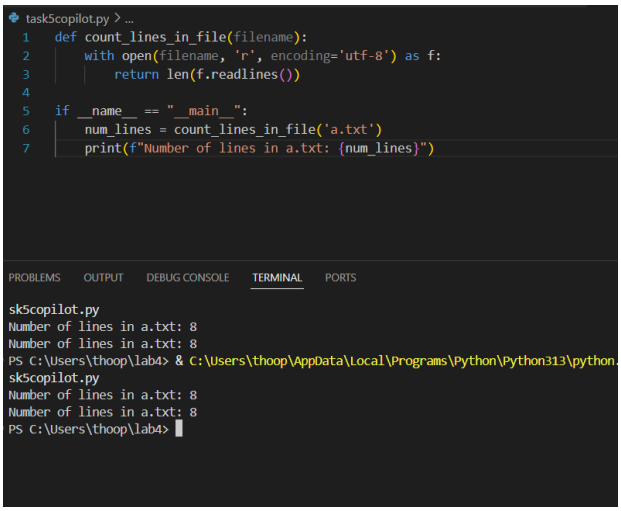
Generate a function that reads the given a.txt file and returns the number of lines

Example:hello sr university.hanmakonda warangal.

Top engineering college.

Offers wide variety of courses.

No.of lines in a.txt=3.



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.

```python
def is_leap_year(year):
    """
    Check if a given year is a leap year.

    Leap year rules:
    1. If a year is divisible by 4, it's a leap year
    2. However, if it's also divisible by 100, it's NOT a leap year
    3. Unless it's also divisible by 400, then it IS a leap year

    Args:
        year (int): The year to check

    Returns:
        bool: True if it's a leap year, False otherwise
    """
    if year % 4 == 0:
        if year % 100 == 0:
            if year % 400 == 0:
                return True
            else:
                return False
        else:
            return True
    else:
        return False

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

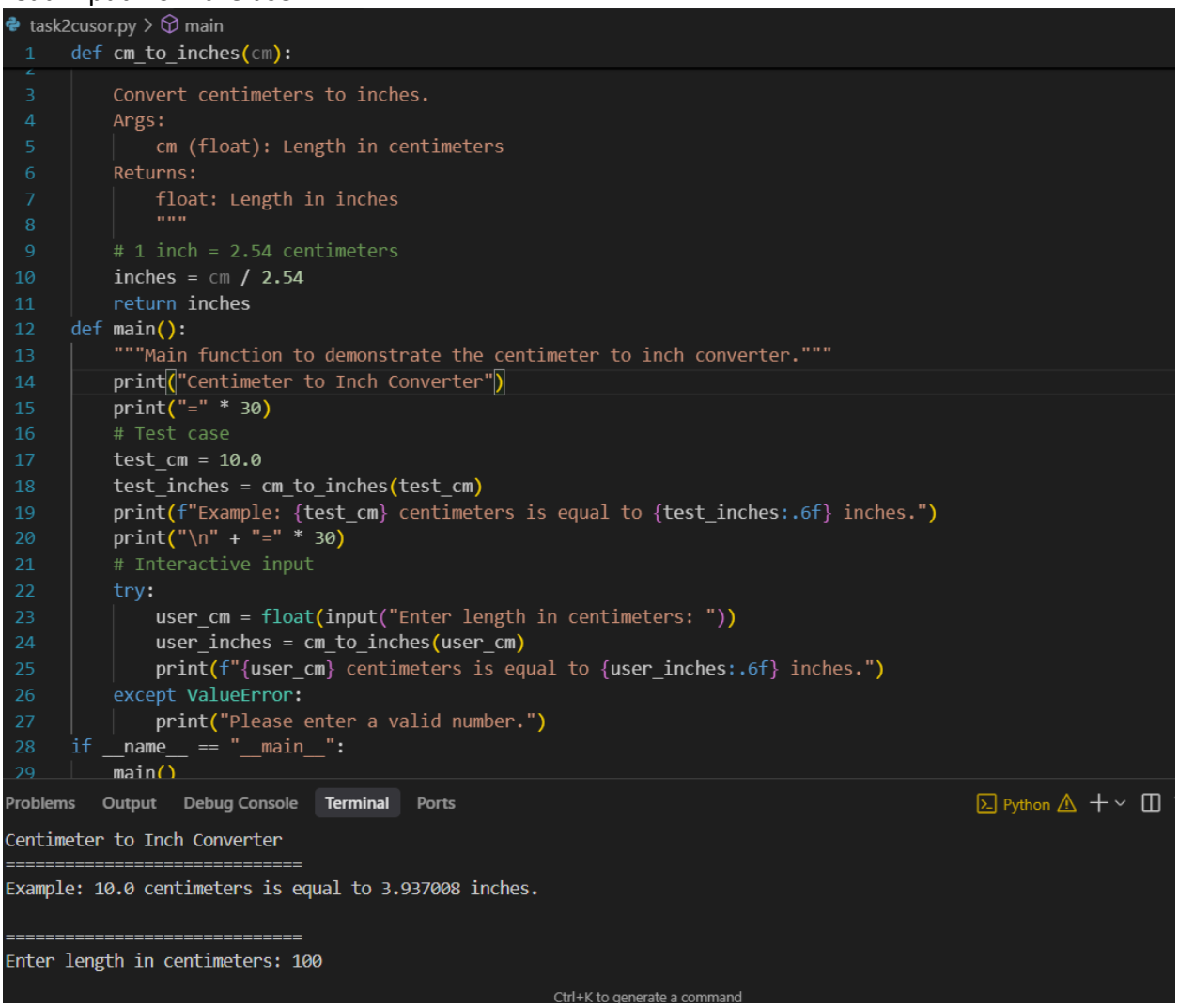
- Function with correct conversion logic

Prompt:

Write a function to convert centimeters to inches.

Example:10.0 centimeters is equal to 3.912345 inches.

read input from the user.



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.

task3cursor.py > ...

```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
```

task3cursor.py > ...

```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:

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 few-shot

task3cursor.py > ...

```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
```

task4cursor.py > ...

```python
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()
```

Problems Output Debug Console Terminal Ports

```
rsor\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher' '50563' '--' 'c
lab4\task4cursor.py'
Vowel Counter
====================
Enter a string: harichandana
Number of vowels in 'harichandana': 5
Vowels found: ['a', 'i', 'a', 'a', 'a']
PS C:\Users\thoop\lab4>
```

task4_1cursor.py > ...

```python
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)
```

task4_1cursor.py > main

```python
def main():
    # 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()
```

Problems Output Debug Console Terminal Ports

```
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:

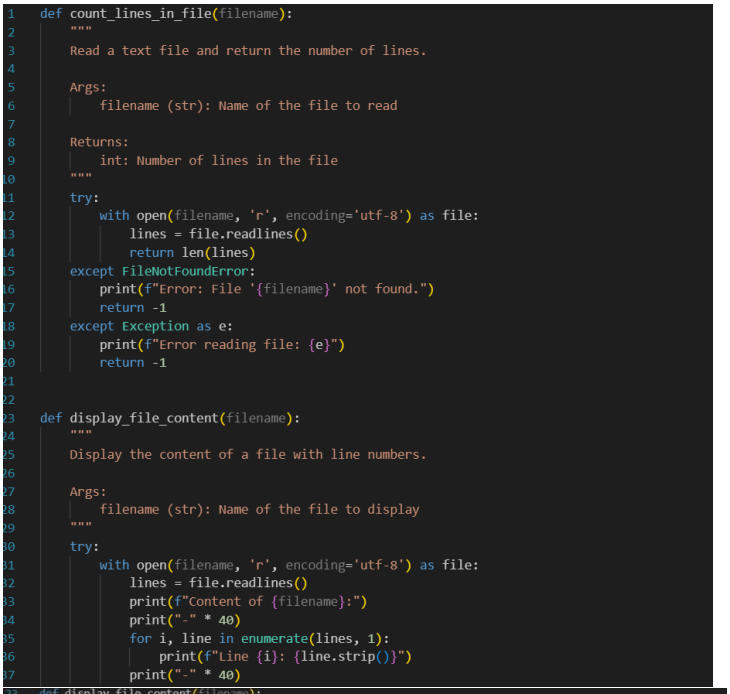
Generate a function that reads the given a.txt file and returns the number of lines

Example:hello sr university.hanmakonda warangal.

Top engineering college.

Offers wide variety of courses.

No.of lines in a.txt=3.



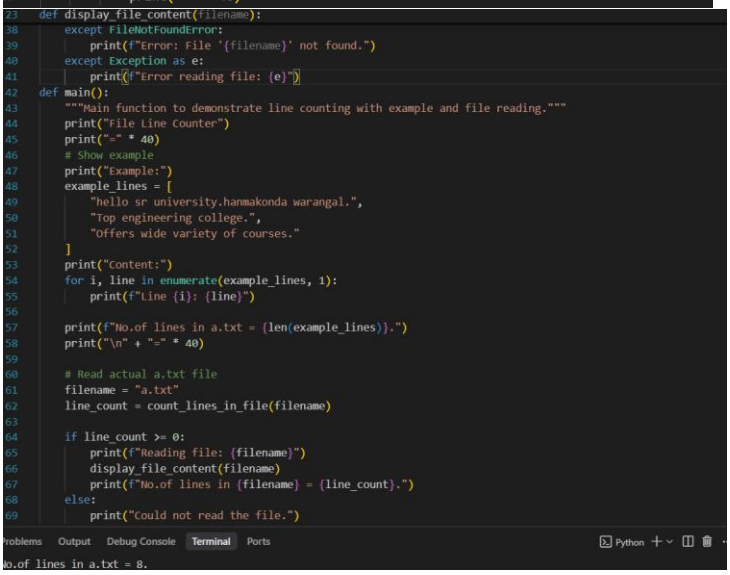
```python
def count_lines_in_file(filename):
    """
    Read a text file and return the number of lines.

    Args:
        filename (str): Name of the file to read

    Returns:
        int: Number of lines in the file
    """
    try:
        with open(filename, 'r', encoding='utf-8') as file:
            lines = file.readlines()
            return len(lines)
    except FileNotFoundError:
        print(f"Error: File '{filename}' not found.")
        return -1
    except Exception as e:
        print(f"Error reading file: {e}")
        return -1


def display_file_content(filename):
    """
    Display the content of a file with line numbers.

    Args:
        filename (str): Name of the file to display
    """
    try:
        with open(filename, 'r', encoding='utf-8') as file:
            lines = file.readlines()
            print(f"Content of {filename}:")
            print("-" * 40)
            for i, line in enumerate(lines, 1):
                print(f"Line {i}: {line.strip()}")
            print("-" * 40)
```



```python
def display_file_content(filename):
    except FileNotFoundError:
        print(f"Error: File '{filename}' not found.")
    except Exception as e:
        print(f"Error reading file: {e}")
def main():
    """Main function to demonstrate line counting with example and file reading."""
    print("File Line Counter")
    print("=" * 40)
    # Show example
    print("Example:")
    example_lines = [
        "hello sr university.hanmakonda warangal.",
        "Top engineering college.",
        "Offers wide variety of courses."
    ]
    print("Content:")
    for i, line in enumerate(example_lines, 1):
        print(f"Line {i}: {line}")

    print(f"No.of lines in a.txt = {len(example_lines)}.")
    print("\n" + "=" * 40)

    # Read actual a.txt file
    filename = "a.txt"
    line_count = count_lines_in_file(filename)

    if line_count >= 0:
        print(f"Reading file: {filename}")
        display_file_content(filename)
        print(f"No.of lines in {filename} = {line_count}.")
    else:
        print("Could not read the file.")
```

```
Problems  Output  Debug Console  Terminal  Ports                Python
No.of lines in a.txt = 8.
```