LAB ASSIGNMENT-4.3

NAME : m.krishnam raju

H.T.No: 2403A52203

Task Description#1

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

prompt:-1 write a program to write a function that checks whether a given year is a leap year

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

  Args:
    year: The year to check.

  Returns:
    True if the year is a leap year, False otherwise.
  """
  return (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0)

# Example usage:
print(f"2024 is a leap year: {is_leap_year(2024)}")
print(f"1900 is a leap year: {is_leap_year(1900)}")
print(f"2000 is a leap year: {is_leap_year(2000)}")
print(f"2023 is a leap year: {is_leap_year(2023)}")
```

Output :-

```
2024 is a leap year: True
1900 is a leap year: False
2000 is a leap year: True
2023 is a leap year: False
```

Task Description#2

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

prompt:-2 write a program to generate One-shot: Give one input-output example to guide AI in writing a function that converts centimeters to inches

```python
def cm_to_inches(cm):
  """
  Converts centimeters to inches.

  Args:
    cm: The value in centimeters to convert.

  Returns:
    The converted value in inches.
  """
  return cm * 0.393701

# Example usage:
cm_value = 100
inches_value = cm_to_inches(cm_value)
print(f"{cm_value} cm is equal to {inches_value} inches.")
```

Output:-

```
100 cm is equal to 39.3701 inches.
```

Input: 100 cm Output: 39.37 inches

Task Description#3

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

prompt:-3 write a program Few-shot: Provide 2–3 examples to generate a function that formats full names as "Last, First"

```python
def format_name(full_name):
  """
  Formats a full name as "Last, First".

  Args:
    full_name: The full name (e.g., "John Doe").

  Returns:
    The formatted name (e.g., "Doe, John").
  """
  parts = full_name.split()
  if len(parts) > 1:
    return f"{parts[-1]}, {' '.join(parts[:-1])}"
  else:
    return full_name

# Example usage:
print(f"'John Doe' formatted: {format_name('John Doe')}")
print(f"'Alice Wonderland' formatted: {format_name('Alice Wonderland')}")
print(f"'Peter Pan' formatted: {format_name('Peter Pan')}")
print(f"'SingleName' formatted: {format_name('SingleName')}")
```

Output:-

```
'John Doe' formatted: Doe, John
'Alice Wonderland' formatted: Wonderland, Alice
'Peter Pan' formatted: Pan, Peter
'SingleName' formatted: SingleName
```

Examples:

Input: "John Doe" Output: "Doe, John"

Input: "Alice Wonderland" Output: "Wonderland, Alice"

Input: "Peter Pan" Output: "Pan, Peter"

Task Description#4

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

prompt:-4 write a program to generate Compare zero-shot and few-shot prompts for writing a function that counts the number of vowels in a string

```python
def count_vowels_few_shot(text):
  """
  Counts the number of vowels in a string (few-shot).
  """
  vowels = "aeiouAEIOU"
  count = 0
  for char in text:
    if char in vowels:
      count += 1
  return count

# Example usage:
print(f"Number of vowels in 'hello': {count_vowels_few_shot('hello')}")
print(f"Number of vowels in 'programming': {count_vowels_few_shot('programming')}")
```

Output:-

```
Number of vowels in 'hello': 2
Number of vowels in 'programming': 3
```

Few-shot prompt example:

Write a Python function that counts the number of vowels in a given string.

Example 1: Input: "hello" Output: 2

Example 2: Input: "programming" Output: 3

```python
def count_vowels_zero_shot(text):
  """
  Counts the number of vowels in a string (zero-shot).
  """
  vowels = "aeiouAEIOU"
  count = 0
  for char in text:
    if char in vowels:
      count += 1
  return count

# Example usage:
print(f"Number of vowels in 'Hello World': {count_vowels_zero_shot('Hello World')}")
```

Output:-

```
Number of vowels in 'Hello World': 3
```

Task Description#5

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

prompt:-5 write a program to generate Use few-shot prompting to generate a function that reads a .txt file and returns the number of lines

```
[ ] Start coding or generate with AI.
```

```python
import os

# Create dummy files for the example
with open("example.txt", "w") as f:
  f.write("Line 1\nLine 2\nLine 3")

with open("empty.txt", "w") as f:
  pass

def count_lines_in_file(filename):
  """
  Reads a text file and returns the number of lines.

  Args:
    filename: The name of the text file.

  Returns:
    The number of lines in the file.
  """
  try:
    with open(filename, 'r') as f:
      return len(f.readlines())
  except FileNotFoundError:
    return f"Error: File '{filename}' not found."

# Example usage:
print(f"Number of lines in 'example.txt': {count_lines_in_file('example.txt')}")
print(f"Number of lines in 'empty.txt': {count_lines_in_file('empty.txt')}")
print(f"Number of lines in 'nonexistent.txt': {count_lines_in_file('nonexistent.txt')}")

# Clean up dummy files
os.remove("example.txt")
os.remove("empty.txt")
```

Output:-

```
Number of lines in 'example.txt': 3
Number of lines in 'empty.txt': 0
Number of lines in 'nonexistent.txt': Error: File 'nonexistent.txt' not found.
```

Examples:

Input: A file named 'example.txt' with the following content: Line 1 Line 2 Line 3 Output: 3

Input: A file named 'empty.txt' with no content. Output: 0