AI ASSISTANT CODING

ASSIGNMENT-(4.3)

2303A52T02

BT-50

TASK-1

:

PROMPT

Use zero-shot prompting to instruct an AI tool to generate a Python function that:
• Accepts a year as input
• Checks whether the given year is a leap year
• Returns an appropriate result give a python code.

CODE

```
def is_leap_year(year):
    """
    Check if a given year is a leap year.
    A year is a leap year if:
    - It is divisible by 4
    -       Except for years that are divisible by 100, unless they are also divisible
    by 400 Parameters:
    year (int): The year to check
    Returns:
    bool: True if the year is a leap year, False otherwise
    """
    if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
        return True
    else:
        return False
```

```
# Sample input and output

year = 2020

if is_leap_year(year):

    print(f"{year} is a leap year.")

else:

    print(f"{year} is not a leap year.")
```

OUTPUT

EXPLANATION

Check whether a given year is leap yea or not.For that we apply conditions like the year is divisible by 4 and Except for years that are divisible by 100, unless they are also divisible by 400.

TASK-2:

PROMPT

Use one-shot prompting by providing one input-output example to generate a Python function that:

- Converts centimeters to inches
- Uses the correct mathematical

formula Example provided in prompt:
Input: 10 cm → Output: 3.94 inches give a python code.

CODE

```
def cm_to_inches(cm):

    """

    Convert centimeters to inches.
```

```
    Parameters:
    cm (float): Length in centimeters
    Returns:
    float: Length in inches
    """
    inches = cm / 2.54
    return inches
# Sample test cases
test_values = [10, 25.4, 50, 100]
for cm in test_values:
    inches = cm_to_inches(cm)
    print(f"{cm} cm is equal to {inches:.2f} inches.")
```

OUTPUT

EXPLANATION

Here we convert cm to inches by using formula inch=cm/2.54 and give some test values to convert it into inches and print the inches output.

TASK-3

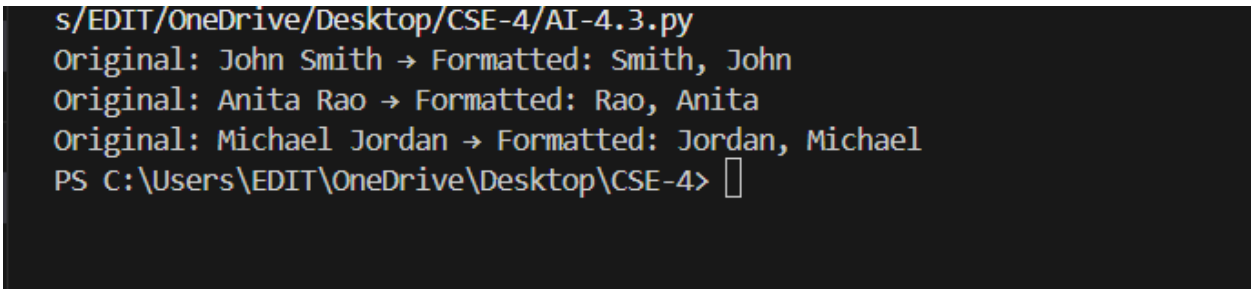
PROMPT

se few-shot prompting with 2–3 examples to generate a Python function that:
• Accepts a full name as input
• Formats it as “Last, First”.Using few shot prompt write a python code.

CODE

```
def format_name(full_name):
    """    Format a full name as "Last, First".
    Parameters:
    full_name (str): The full name in "First Last" format
    Returns:
    str: The formatted name in "Last, First" format
    """
    parts = full_name.split()
    if len(parts) != 2:
        raise ValueError("Input must be in 'First Last' format")
    first, last = parts
    return f"{last}, {first}"
# Sample inputs and outputs
test_names = ["John Smith", "Anita Rao", "Michael Jordan"]
for name in test_names:
    formatted_name = format_name(name)
    print(f"Original: {name} → Formatted: {formatted_name}")
```

OUTPUT



Format a full name as "Last, First". Parameters full_name (str) The full name in "First Last" format .Returns str: The formatted name in "Last, First" format.

TASK-4

PROMPT

Use zero-shot prompting to generate a function that counts vowels in a string
• Use few-shot prompting for the same problem
• Compare both outputs based on:
o Accuracy
o Readability
o Logical clarity

CODE

```
def count_vowels_zero_shot(s):
    """
    Count the number of vowels in a string.

    Parameters:
    s (str): Input string

    Returns:
    int: Number of vowels in the
    string """
    vowels = "aeiouAEIOU"
    count = 0
    for char in s:
        if char in vowels:
            count += 1
    return count
# Few-Shot Prompting Function
def count_vowels_few_shot(s):
```

```
    """
    Count the number of vowels in a string.

    Examples:
    Input: "hello" → Output: 2
    Input: "world" → Output: 1

    Parameters:
    s (str): Input string

    Returns:
    int: Number of vowels in the
    string """
    vowels = "aeiouAEIOU"
    count = sum(1 for char in s if char in vowels)
    return count
# Sample Input and Output Testing
test_strings = ["hello", "world", "AI is fun", "Python programming"]
print("Zero-Shot Prompting Results:")
for s in test_strings:
    print(f"Input: '{s}' → Vowel Count:
{count_vowels_zero_shot(s)}") print("\nFew-Shot Prompting
Results:")
for s in test_strings:
    print(f"Input: '{s}' → Vowel Count: {count_vowels_few_shot(s)}")
```

OUTPUT

```
PS C:\Users\EDIT\OneDrive\Desktop\CSE-4> & C:\Users\EDIT\AppData\Local\Programs\Python\Python313\python.exe c:/User
s/EDIT/OneDrive/Desktop/CSE-4/AI-4.3.py
Zero-Shot Prompting Results:
Input: 'hello' → Vowel Count: 2
Input: 'world' → Vowel Count: 1
Input: 'AI is fun' → Vowel Count: 4
Input: 'Python programming' → Vowel Count: 4

Few-Shot Prompting Results:
Input: 'hello' → Vowel Count: 2
Input: 'world' → Vowel Count: 1
Input: 'AI is fun' → Vowel Count: 4
Input: 'Python programming' → Vowel Count: 4
PS C:\Users\EDIT\OneDrive\Desktop\CSE-4>
```

Using zero shot prompting and few shot prompting find number of vowels in a string.

TASK-5

PROMPT

Use few-shot prompting to generate a Python function that:

- Reads a .txt file
- Counts the number of lines in the file
- Returns the line count GIVE A PYTHON CODE

CODE

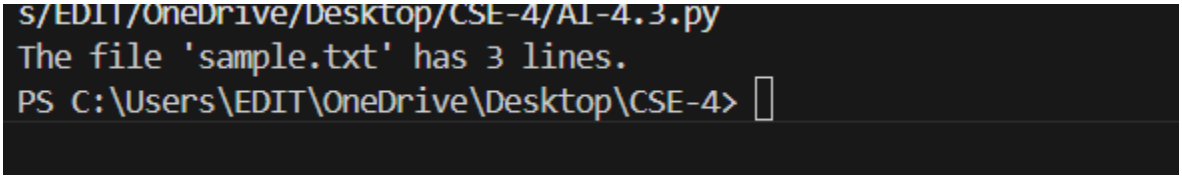
```
def count_lines_in_file(file_path):
    """
    Count the number of lines in a text file.

    Parameters:
    file_path (str): Path to the text file

    Returns:
    int: Number of lines in the file
    """
```

```
    with open(file_path, 'r') as file:
        lines = file.readlines()
        return len(lines)
# Sample Input and Output Testing
if __name__ == "__main__":
    sample_file = 'sample.txt'
    # Create a sample text file for demonstration
    with open(sample_file, 'w') as f:
        f.write("Hello, World!\n")
        f.write("This is a sample file.\n")
        f.write("It has multiple lines.\n")
    line_count = count_lines_in_file(sample_file)
    print(f"The file '{sample_file}' has {line_count} lines.")
```

OUTPUT



EXPLANATION

Count the number of lines in a text file.