

# Assignment:-[4.3]

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## Task Description#1

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

ANS:-

PROMPT:-Write a Python function that checks if a given year is a leap year.

Function:-

```
def is_leap_year(year: int) -> bool:
    if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
        return True
    return False
```

## Task Description#2

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

ANS:-

PROMPT:- Example: 10 cm → 3.937 inches.

Write a Python function that converts centimeters to inches.

Function:-

```
def cm_to_inches(cm: float) -> float:
    return cm / 2.54

# Example
print(cm_to_inches(10)) # 3.937007874015748
```

## Task Description#3

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

ANS:-

PROMPT:-

Example 1: "John Doe" → "Doe, John"

Example 2: "Alice Wonderland" → "Wonderland, Alice"

Example 3: "Michael Jordan" → "Jordan, Michael"

Write a Python function that formats names as "Last, First".

```
python

def format_name(full_name: str) -> str:
    parts = full_name.split()
    if len(parts) == 2:
        first, last = parts
        return f"{last}, {first}"
    return full_name # fallback for unexpected input

# Examples
print(format_name("John Doe"))      # Doe, John
print(format_name("Alice Wonderland")) # Wonderland, Alice
print(format_name("Michael Jordan")) # Jordan, Michael
```

#### Task Description#4

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

ANS:-

ZERO SHOT PROMPT:-

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

```
python

def count_vowels(s: str) -> int:
    vowels = "aeiouAEIOU"
    return sum(1 for char in s if char in vowels)
```

FEW SHOT PROMPT:-

Example 1: "hello" → 2

Example 2: "AI" → 2

Example 3: "Python" → 1

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

```
python

def count_vowels(s: str) -> int:
    vowels = set("aeiouAEIOU")
    count = 0
    for ch in s:
        if ch in vowels:
            count += 1
    return count
```

#### Comparison/Reflection:

- **Zero-shot:** AI gave a short, direct solution using list comprehension.
- **Few-shot:** AI produced a more explicit step-by-step version (loop + set).  
Few-shot usually makes the code more aligned with given examples and sometimes clearer, while zero-shot is concise but less guided.

#### Task Description#5

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

ANS:-

PROMPT:-

Example 1: file.txt content:

Hello

World

→ Output: 2

Example 2: data.txt content:

Line1

Line2

Line3

→ Output: 3

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

python

```
def count_lines_in_file(filename: str) -> int:  
    with open(filename, "r") as file:  
        return sum(1 for _ in file)
```

```
# Example (assuming file exists)
```

```
# print(count_lines_in_file("file.txt"))
```