

ASSIGNMENT-4

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Batch-37

Task Description-1

- Zero-shot: Prompt AI with only the instruction. Write a Python function to determine whether a given number is prime

Expected Output

A simple Python function that checks whether a given number is prime.

Prompt

Write a Python function to determine whether a given number is prime.

Code

```
#Write a Python function to determine whether a given number is prime.
def is_prime(n):
    if n <= 1:
        return False
    for i in range(2, int(n**0.5) + 1):
        if n % i == 0:
            return False
    return True
# Example usage:
number = 29
if is_prime(number):
    print(f"{number} is a prime number.")
else:
    print(f"{number} is not a prime number.")
```

Output

```
29 is a prime number.
```

Explanation

In a zero-shot scenario, we are simply instructing the AI without having to provide any examples. The AI understands the instruction and writes the logic of whether a number is a prime number or not.

Task Description-2

- One-shot: Provide one example: Input: [1, 2, 3, 4], Output: 10 to help AI generate a function that calculates the sum of elements in a list.

Expected Output

A Python function that calculates the sum of all elements in a given list. The function follows the pattern shown in the provided example.

Prompt

Write a Python function that calculates the sum of elements in a list.

Code

```
#write a Python function that calculates the sum of elements in a list.
def sum_of_elements(lst):
    total = 0
    for element in lst:
        total += element
    return total
# Example usage:
numbers = [1, 2, 3, 4]
result = sum_of_elements(numbers)
print(f"The sum of elements in the list is: {result}")
```

Output

```
The sum of elements in the list is: 10
```

Explanation

The function begins with initializing the total sum to zero. It then proceeds to evaluate each number in the list and adds the number to the running sum. After all numbers have been added, this function will return a result.

Task Description-3

- Few-shot: Give 2–3 examples to create a function that extracts digits from an alphanumeric string.

Expected Output

A Python function that extracts only numeric digits from an alphanumeric string. The function follows the pattern shown in the given examples.

Prompt

Write a Python function that extracts only the digits from an alphanumeric string.

Code

```
# Write a Python function that extracts digits from an alphanumeric string
#user defined function
def extract_digits(s):
    digits = ''.join([char for char in s if char.isdigit()])
    return digits
# Example usage:
input_string = "a1b2c3d4"
result = extract_digits(input_string)
print(f"The extracted digits from the string are: {result}")
```

Output

```
The extracted digits from the string are: 1234
```

Explanation

We provided the program with several examples so that it could develop an understanding of our request. It has determined from these samples that it is only required to return numbers from the input string. Subsequently, Its output has generated a method that cycles through the text to collect only the number characters.

Task Description-4

- Compare zero-shot vs few-shot prompting for generating a function that counts the number of vowels in a string.

Expected Output

Zero-shot prompting: The AI generates a vowel-counting function using only the instruction, without any examples.
Few-shot prompting: The AI generates a similar function but with better clarity and structure after seeing multiple examples.
Comparison result: Few-shot prompting produces more accurate and consistent output than zero-shot prompting due to added guidance

Prompt

Zero Shot :Write a Python function that counts the number of vowels in a string.

Few Shot: Example

Input: "education"

Output: 5

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

Code

```
def count_vowels(s):
    vowels = 'aeiouAEIOU'
    count = sum(1 for char in s if char in vowels)
    return count
# Example usage:
input_string = "Hello World"
result = count_vowels(input_string)
print(f"The number of vowels in the string is: {result}")

#Example 1:Input: "hello"Output: 2 Example 2:Input: "chatgpt" Output: 2
#Write a Python function that counts the number of vowels in a string.
def count_vowels(s):
    vowels = 'aeiouAEIOU'
    count = sum(1 for char in s if char in vowels)
    return count
# Example usage:
input_string = "hello"
result = count_vowels(input_string)
print(f"The number of vowels in the string is: {result}")
```

Output

```
The number of vowels in the string is: 3
The number of vowels in the string is: 2
```

Explanation

In zero-shot prompting, only the task is provided to the AI, hence all logic is performed. In few-shot prompting, examples are offered, which demonstrate in a clear manner how to count vowels. As a result, the few-shot prompt is more accurate and reliable than the zero-shot prompt.

Task Description-5

- Use few-shot prompting with 3 sample inputs to generate a function that determines the minimum of three numbers without using the built-in min() function.

Expected Output

A Python function that finds the minimum of three numbers. The function compares the values using conditional statements

Prompt

Write a Python function that determines the minimum of three numbers without using the built-in min() function.

Code

```
#Write a Python function that determines the minimum of three numbers without using the built-in min() function user defined function
def min_of_three(a, b, c):
    if a <= b and a <= c:
        return a
    elif b <= a and b <= c:
        return b
    else:
        return c
# Example usage:
num1 = 10
num2 = 5
num3 = 8
minimum = min_of_three(num1, num2, num3)
print(f"The minimum of the three numbers is: {minimum}")
```

Output

```
The minimum of the three numbers is: 5
```

Explanation:

We provided examples for demonstrating how to calculate the smallest number.

In the code, the values of the three numbers are compared one by one.

The final value returned is the smallest value