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ASSIGNMENT 1

Task 1 : Use Google Gemini in Colab to write a Python function that reads a list of numbers and calculates the mean, minimum, and maximum values.

Program:

```python
def calculate_stats(numbers):
    mean = sum(numbers) / len(numbers)
    minimum = min(numbers)
    maximum = max(numbers)
    return mean, minimum, maximum


# Example usage:
numbers = [10, 20, 30, 40, 50]
mean, minimum, maximum = calculate_stats(numbers)
print(f"Mean: {mean}, Min: {minimum}, Max: {maximum}")
```

OUTPUT:

```
List: [10, 20, 30, 40, 50]
Mean: 30.0
Minimum: 10
Maximum: 50
The list is empty.
```

Task 2 :

write a Python program to calculate the sum of odd numbers and even numbers in a given tuple.

Program:

```python
def sum_odd_even(numbers):
    odd_sum = 0
    even_sum = 0
    for num in numbers:
        if num % 2 == 0:
            even_sum += num
        else:
            odd_sum += num
    return odd_sum, even_sum

# Example usage:
numbers = (1, 1, 3)
odd_sum, even_sum = sum_odd_even(numbers)
print(f"Sum of odd numbers: {odd_sum}")
print(f"Sum of even numbers: {even_sum}")
```

OUTPUT:

Output:

```
Sum of odd numbers: 5
Sum of even numbers: 0
```

Task 3 :

Use it to generate a Python function (e.g., sum of the first N natural numbers) and test its output.

Program:

```python
def sum_of_natural_numbers(n):
  if n < 0:
    return "Input must be a non-negative integer."
  else:
    return n * (n + 1) |
N = 10
sum_n = sum_of_natural_numbers(N)
print(f"The sum of the first {N} natural numbers is: {sum_n}")
N = 0
sum_n = sum_of_natural_numbers(N)
print(f"The sum of the first {N} natural numbers is: {sum_n}")
N = 5
sum_n = sum_of_natural_numbers(N)
print(f"The sum of the first {N} natural numbers is: {sum_n}")
N = -5
sum_n = sum_of_natural_numbers(N)
print(f"The sum of the first {N} natural numbers is: {sum_n}")
```

OUTPUT :

```
The sum of the first 10 natural numbers is: 55
The sum of the first 0 natural numbers is: 0
The sum of the first 5 natural numbers is: 15
The sum of the first -5 natural numbers is: Input must be a non-negative integer.
```

Task 4:

Ask Gemini to explain a Python function (e.g., is_prime(n) or is_palindrome(s)) line by line. Choose either a prime-checking or palindrome-checking function and document the explanation provided by Gemini.

Program:

```python
def is_palindrome(s):
    s = s.lower()  # Convert the string to lowercase for case-insensitive com
    s = ''.join(c for c in s if c.isalnum())  # Remove non-alphanumeric chara
    return s == s[::-1]  # Check if the string is equal to its reverse


# Example usage:
print(is_palindrome("Madam"))          # Output: True
print(is_palindrome("Hello"))          # Output: False
print(is_palindrome("A man, a plan, a canal: Panama"))  # Output: True
```

OUTPUT:

```
True
False
True
```