

# Assignment - 4

## Python-Functions

1. What does the len() function do in Python? Write a code example using len() to find the length of a list.

```
1 # Exercise 1
2 Students = ['Ashish', 'Rahul', 'Anjali', 'Meera']
3 print(f"The length of the list: {len(Students)}")
4 '''
5 The len() function is used to return the number of items (length)
6 in an object, such as a string, list, tuple,
7 dictionary, or other iterable objects.
8 '''
9
```

## Output

```
C:\Users\ashis\PycharmProjects\PythonProject6
The length of the list: 4

Process finished with exit code 0
```

2. Write a Python function greet(name) that takes a person's name as input and prints "Hello, [name]!".

```
10 # Exercise 2
11 Name1 = input("Enter your name: ")
12 print(f"Hello, {Name1}!")
13 
14 |
```

## Output

```
Enter your name: Mariya
Hello, Mariya!

Process finished with exit code 0
```

3. Write a Python function `find_maximum(numbers)` that takes a list of integers and returns the maximum value without using the built-in `max()` function. Use a loop to iterate through the list and compare values.

```
15 # Exercise 3
16 def find_maximum(numbers):
17     if not numbers: # Check for an empty list
18         return None
19     max_value = numbers[0] # Assume the first number is the maximum
20     for num in numbers:
21         if num > max_value: # Compare each number with the current maximum
22             max_value = num
23     return max_value
24
25 numbers = [12, 23, 34, 45, 56, 67, 78, 89]
26 max_num = find_maximum(numbers)
27 print(f"The max number is: {max_num}")
28
```

## Output

```
The max number is: 89
Local x inside the function: 8
Global x outside the function: 15

Process finished with exit code 0
```

4. Explain the difference between local and global variables in a Python function. Write a program where a global variable and a local variable have the same name and show how Python differentiates between them.

```
30 # Exercise 4
31 x = 15 # Global variable
32
33 def my_function():
34     x = 8 # Local variable
35     print("Local x inside the function:", x)
36
37 my_function()
38 print("Global x outside the function:", x)
39 '''
40 Here when we call the function (my_function), it reads the x (x=8) inside
41 not the global variable x.
42 '''
```

### Output

```
Local x inside the function: 8
Global x outside the function: 15

Process finished with exit code 0
```

5. Create a function `calculate_area(length, width=5)` that calculates the area of a rectangle. If only the length is provided, the function should assume the width is 5. Show how the function behaves when called with and without the width argument.

```
44 # Exercise 5
45 def calculate_area(length, width=6):
46     area = length * width
47     return area
48
49 area1 = calculate_area(length=8, width=4)
50 print(f"Area with length: 8 and width: 4: {area1}")
51
52 area2 = calculate_area(7)
53 print(f"Area with length: 7: {area2}")
```

### Output

```
Area with length: 8 and width: 4: 32
Area with length: 7: 42

Process finished with exit code 0
|
```

6.