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

The len() function in Python is used to determine the length of an object. It returns the number of items in a container or the number of characters in a string.

Syntax: len(object)

- The object must be a type that supports the len() function, such as strings, lists, tuples, dictionaries, sets, or custom objects with a __len__() method.
- If the object does not support len(), Python will raise a TypeError.

```python
# 1.What does the len() function do in Python? Write a code example using len() to find the length of a list
# The len() function in Python is used to determine the length of an object.
# It returns the number of items in a container or the number of characters in a string.
l=[1,2,3,3,4,5]
print(l)
print("length of the list:",len(l))
```

```
Run  Assignment_4
C:\Users\AS\PycharmProjects\entri_dsml\venv\Scripts\python.exe C:\Users\AS\PycharmProjects\entri_dsml\Assignment_4.py
[1, 2, 3, 3, 4, 5]
length of the list: 6
```

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

```python
#2.Write a Python function greet(name) that takes a person's name as input and prints "Hello, [name]!".
name=input("Enter your name")
def greet():
    print("Hello",name)
greet()
```

```
Run  Assignment_4
C:\Users\AS\PycharmProjects\entri_dsml\venv\Scripts\python.exe C:\Users\AS\PycharmProjects\entri_dsml\Assignment_4.py
Enter your namelubna
Hello lubna
```

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.

```python
#3.Write a Python function find_maximum(numbers) that takes a list of integers and returns the maximum valu
numbers = [3, 7, 2, 8, 5, 10]
def find_maximum(numbers):
    max_value = numbers[0]  # Assume the first number is the maximum
    for i in numbers:  # Iterate through the list
        if i > max_value:  # Compare each number with the current max_value
            max_value = i  # Update max_value if a larger number is found
    return max_value  # Return the largest number
print("The maximum value is:", find_maximum(numbers))  # Output: The maximum value is: 10
```

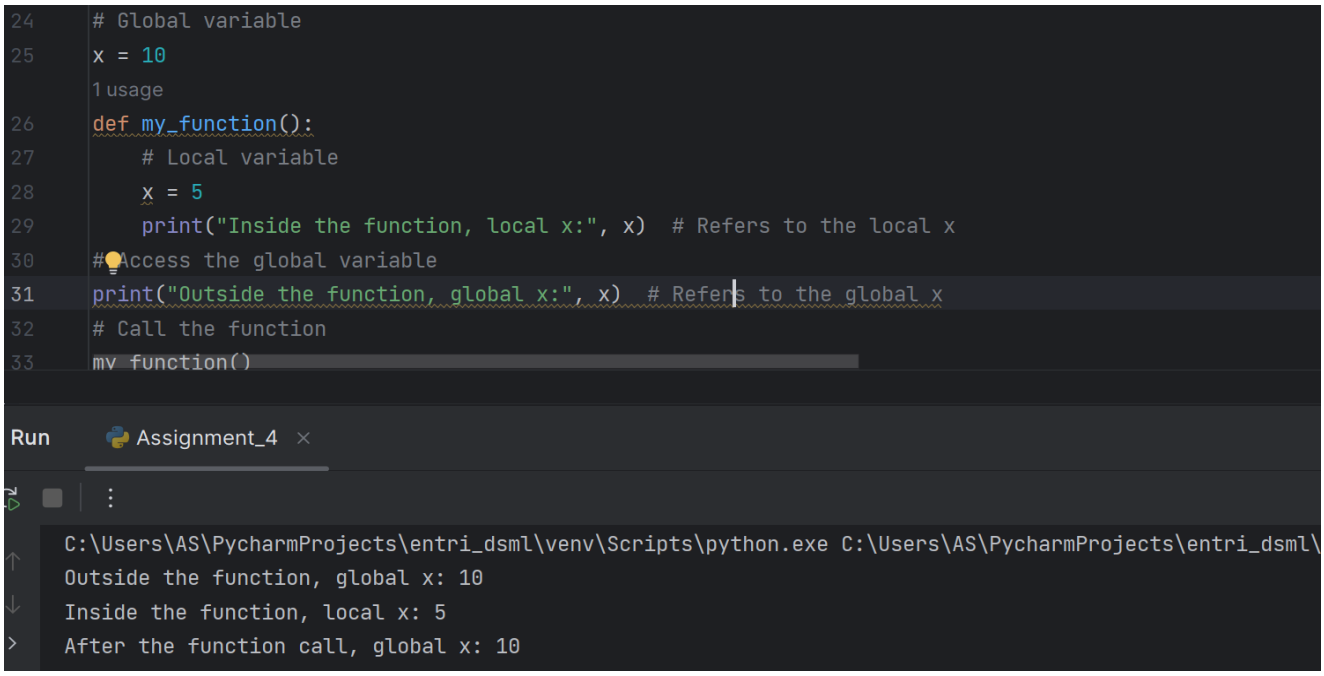
```
Run  Assignment_4
C:\Users\AS\PycharmProjects\entri_dsml\venv\Scripts\python.exe C:\Users\AS\PycharmProjects\entri_dsml\Assignment_4.py
The maximum value is: 10

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.

Difference between Local Variable and Global variables:

Aspect	Local Variables	Global Variables
Scope	Limited to the block of code	Accessible throughout the program
Declaration	Typically within functions or specific blocks	Outside of any function or block
Access	Accessible only within the block where they are declared	Accessible from any part of the program
Lifetime	Created when the block is entered and destroyed when it exits	Retain their value throughout the lifetime of the program
Name conflicts	Can have the same name as variables in other blocks	Should be used carefully to avoid unintended side effects
Usage	Temporary storage, specific to a block of code	Values that need to be accessed and modified by multiple parts of the program



Explanation:

1. The global variable `x` is defined outside the function with a value of `10`.
2. Inside `my_function()`, a local variable `x` is declared with a value of `5`.
3. When `x` is printed inside the function, Python uses the local variable `x`.
4. Outside the function, Python uses the global variable `x`.

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.