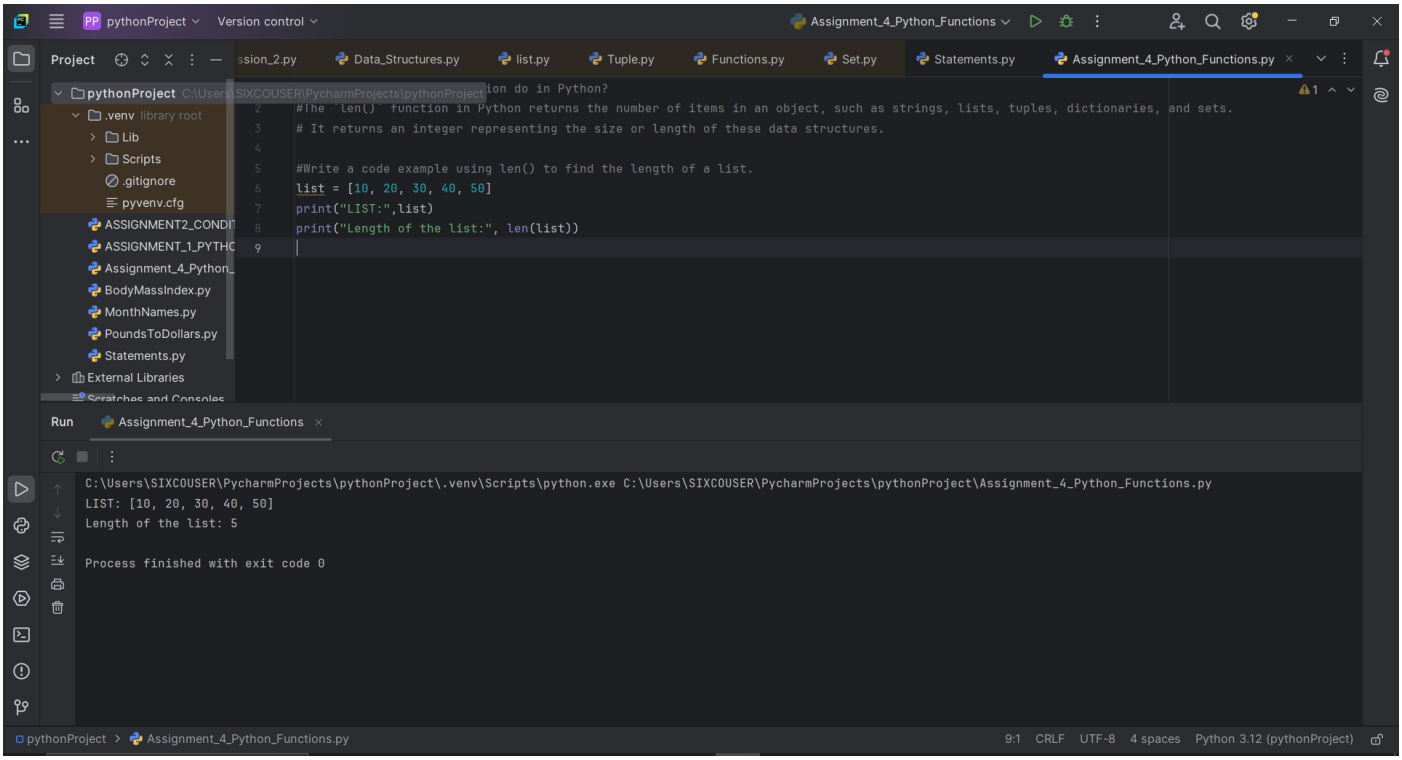
ASSIGNMENT 4 – PYTHON FUNCTIONS

1. What does the len() function do in Python?

The `len()` function in Python returns the number of items in an object, such as strings, lists, tuples, dictionaries, and sets. It returns an integer representing the size or length of these data structures.

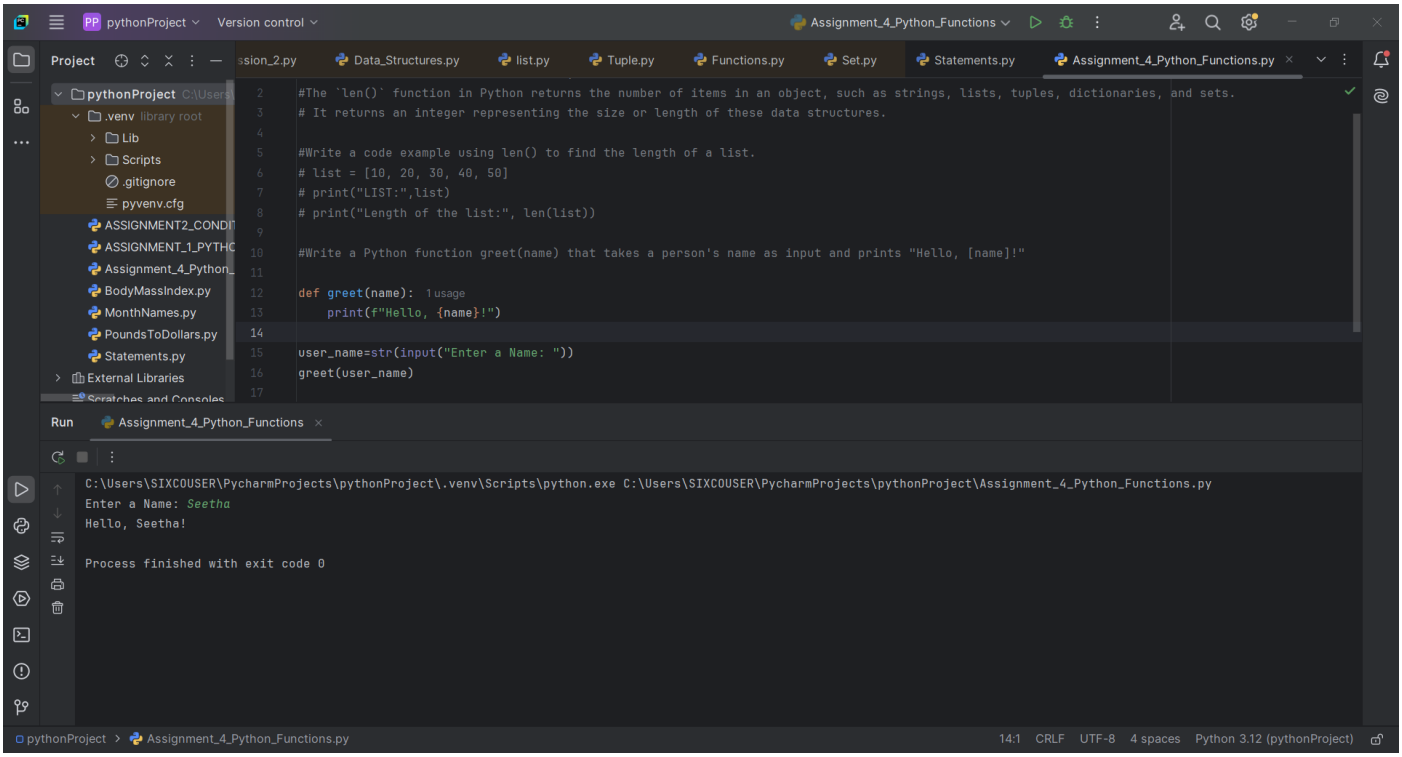
2. Write a code example using len() to find the length of a list.

```
list = [10, 20, 30, 40, 50]

print("LIST:",list)

print("Length of the list:", len(list))
```



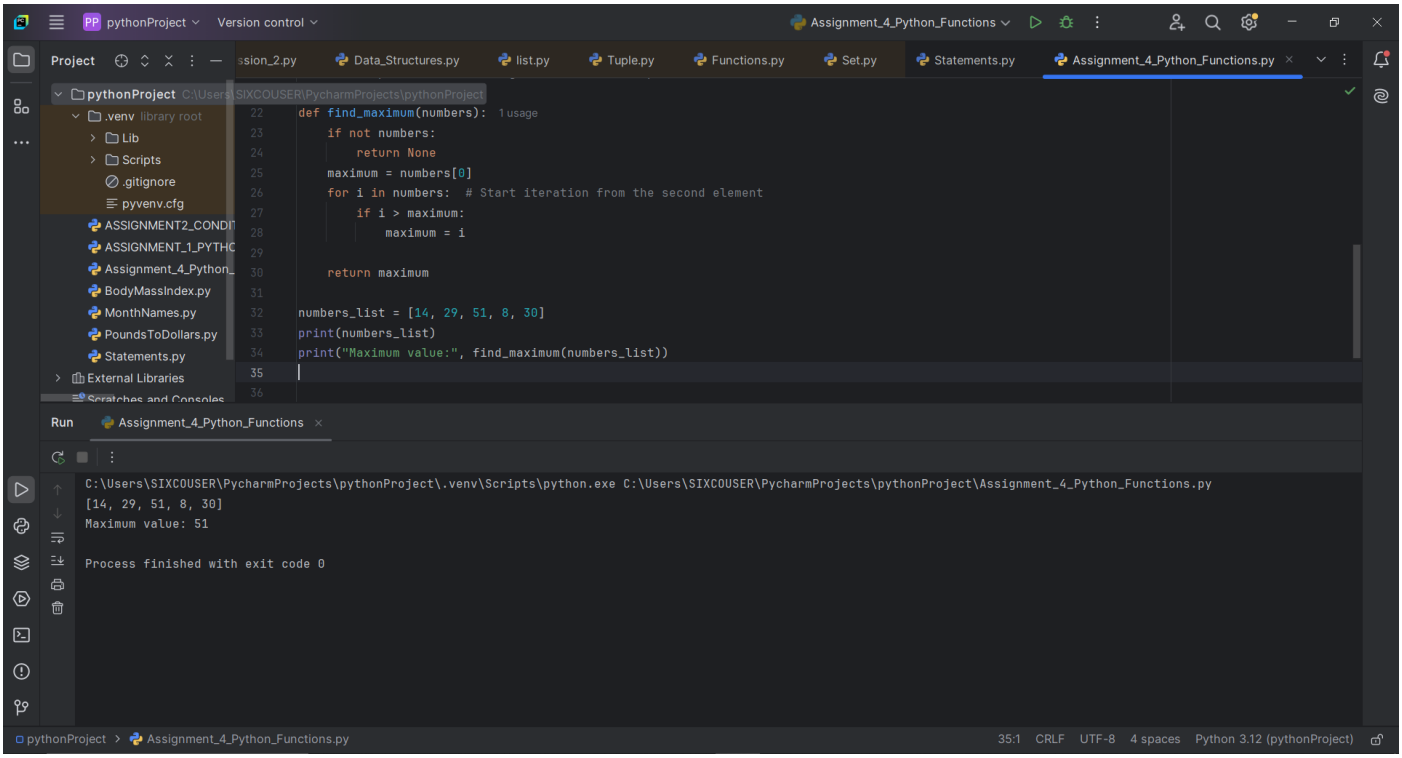
3. Write a Python function greet(name) that takes a person's name as input and prints "Hello, [name]!"

```
def greet(name):
    print(f"Hello, {name}!")

user_name=str(input("Enter a Name: "))
greet(user_name)
```



4. 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.

```
def find_maximum(numbers):
    if not numbers:
        return None
    maximum = numbers[0]
    for i in numbers:
        if i > maximum:
            maximum = i

    return maximum


numbers_list = [14, 29, 51, 8, 30]
print(numbers_list)
print("Maximum value:", find_maximum(numbers_list))
```

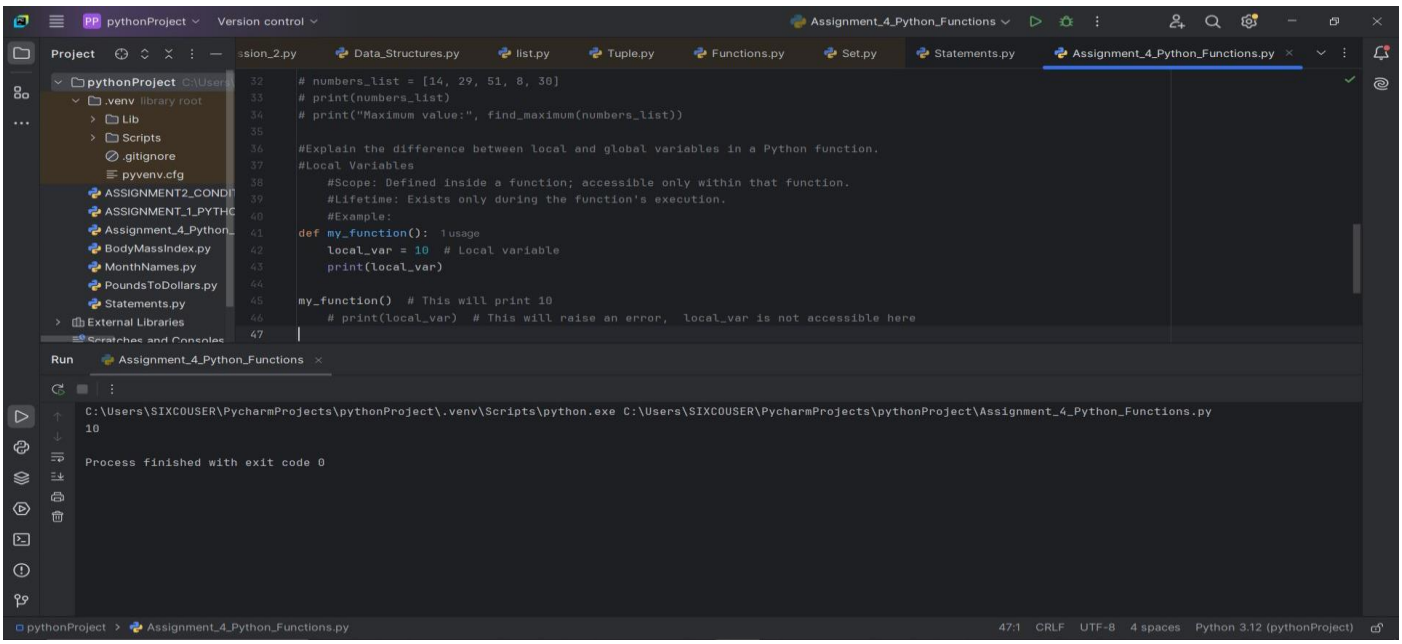


5. Explain the difference between local and global variables in a Python function.

Local Variables

#Scope: Defined inside a function; accessible only within that function.
#Lifetime: Exists only during the function's execution.
#Example:

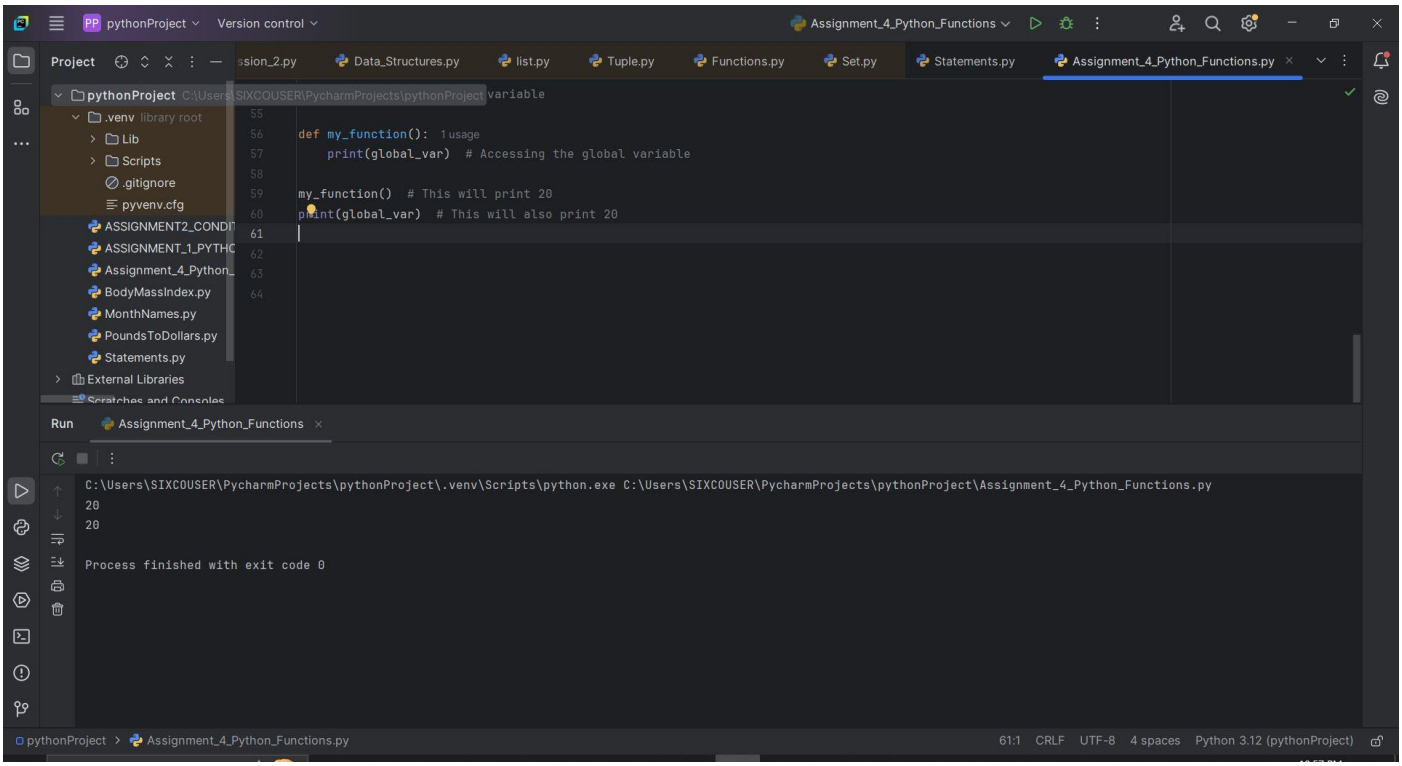
```
def my_function():
    local_var = 10          # Local variable
    print(local_var)

my_function()               # This will print 10
print(local_var)            # This will raise an error,  local_var is not accessible here
```



Global Variables

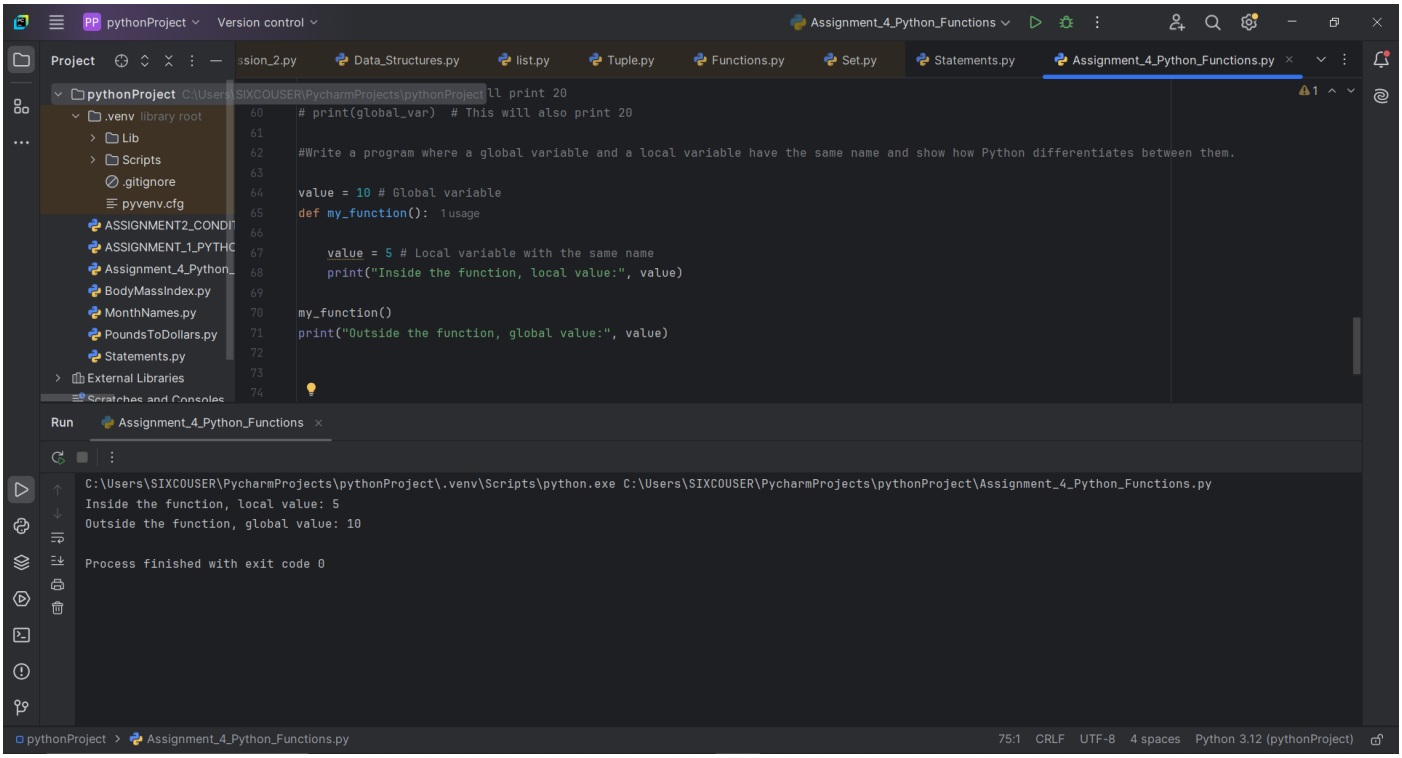
#Scope: Defined outside any function; accessible throughout the entire program.
#Lifetime: Exists for the duration of the program.
#Example:

```
global_var = 20          # Global variable

def my_function():
        print(global_var)     # Accessing the global variable

my_function()         # This will print 20
print(global_var)     # This will also print 20
```



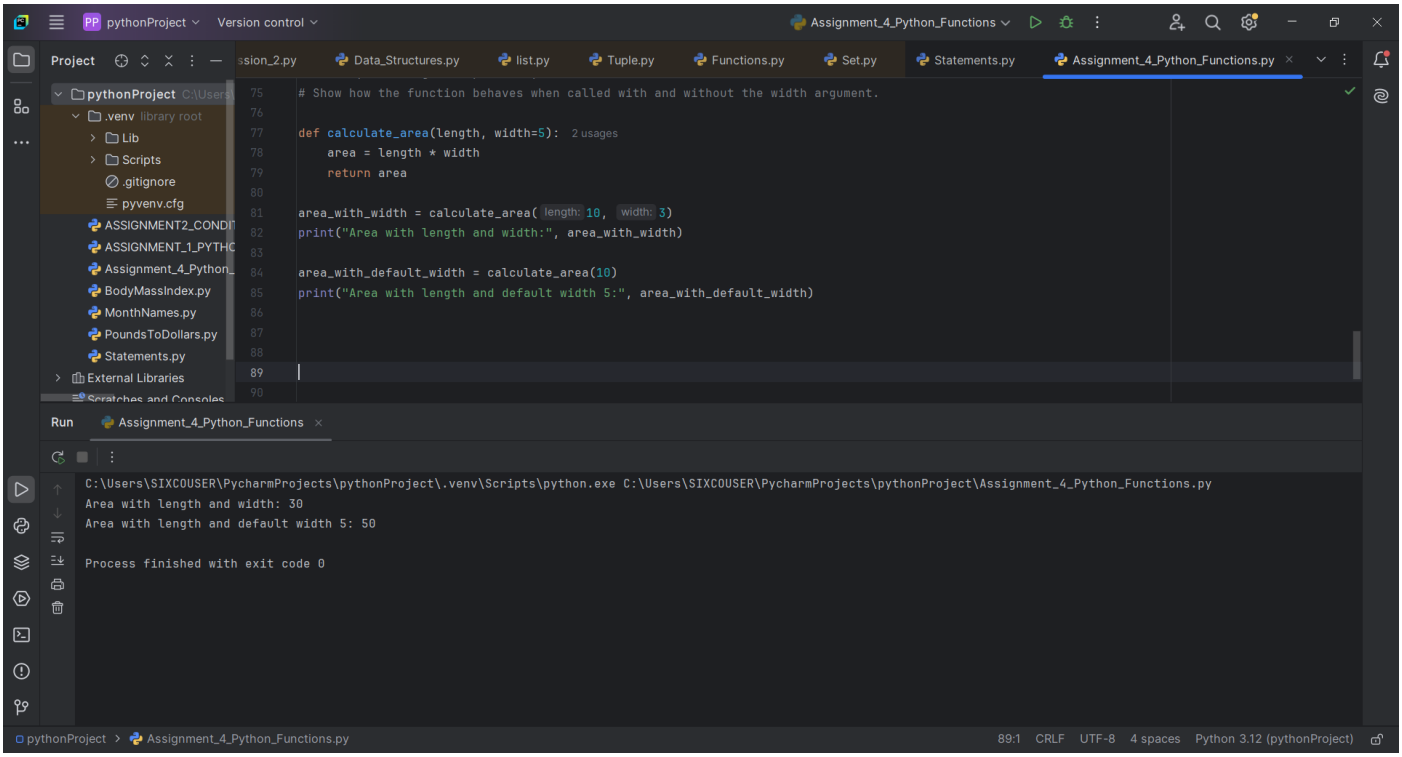
6. Write a program where a global variable and a local variable have the same name and show how Python differentiates between them.

```
value = 10     # Global variable

def my_function():

    value = 5      # Local variable with the same name

    print("Inside the function, local value:", value)


my_function()

print("Outside the function, global value:", value)
```



7. 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.

```
def calculate_area(length, width=5):
    area = length * width
    return area

area_with_width = calculate_area(10, 3)
print("Area with length and width:", area_with_width)

area_with_default_width = calculate_area(10)
print("Area with length and default width 5:", area_with_default_width)
```


pythonProject
Version control
Assignment_4_Python_Functions
Project
pythonProject
.venv library root
Lib
Scripts
.gitignore
pyvenv.cfg
ASSIGNMENT2_CONDIT
ASSIGNMENT_1_PYTHC
Assignment_4_Python_
BodyMassIndex.py
MonthNames.py
PoundsToDollars.py
Statements.py
External Libraries
Scratches and Consoles
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Data_Structures.py
list.py
Tuple.py
Functions.py
Set.py
Statements.py
Assignment_4_Python_Functions.py
Show how the function behaves when called with and without the width argument.
def calculate_area(length, width=5): 2 usages
area = length * width
return area
area_with_width = calculate_area(length: 10, width: 3)
print("Area with length and width:", area_with_width)
area_with_default_width = calculate_area(10)
print("Area with length and default width 5:", area_with_default_width)
Run
Assignment_4_Python_Functions
C:\Users\SIXCOUSER\PycharmProjects\pythonProject\.venv\Scripts\python.exe C:\Users\SIXCOUSER\PycharmProjects\pythonProject\Assignment_4_Python_Functions.py
Area with length and width: 30
Area with length and default width 5: 50
Process finished with exit code 0
pythonProject
Assignment_4_Python_Functions.py
89:1
CRLF
UTF-8
4 spaces
Python 3.12 (pythonProject)