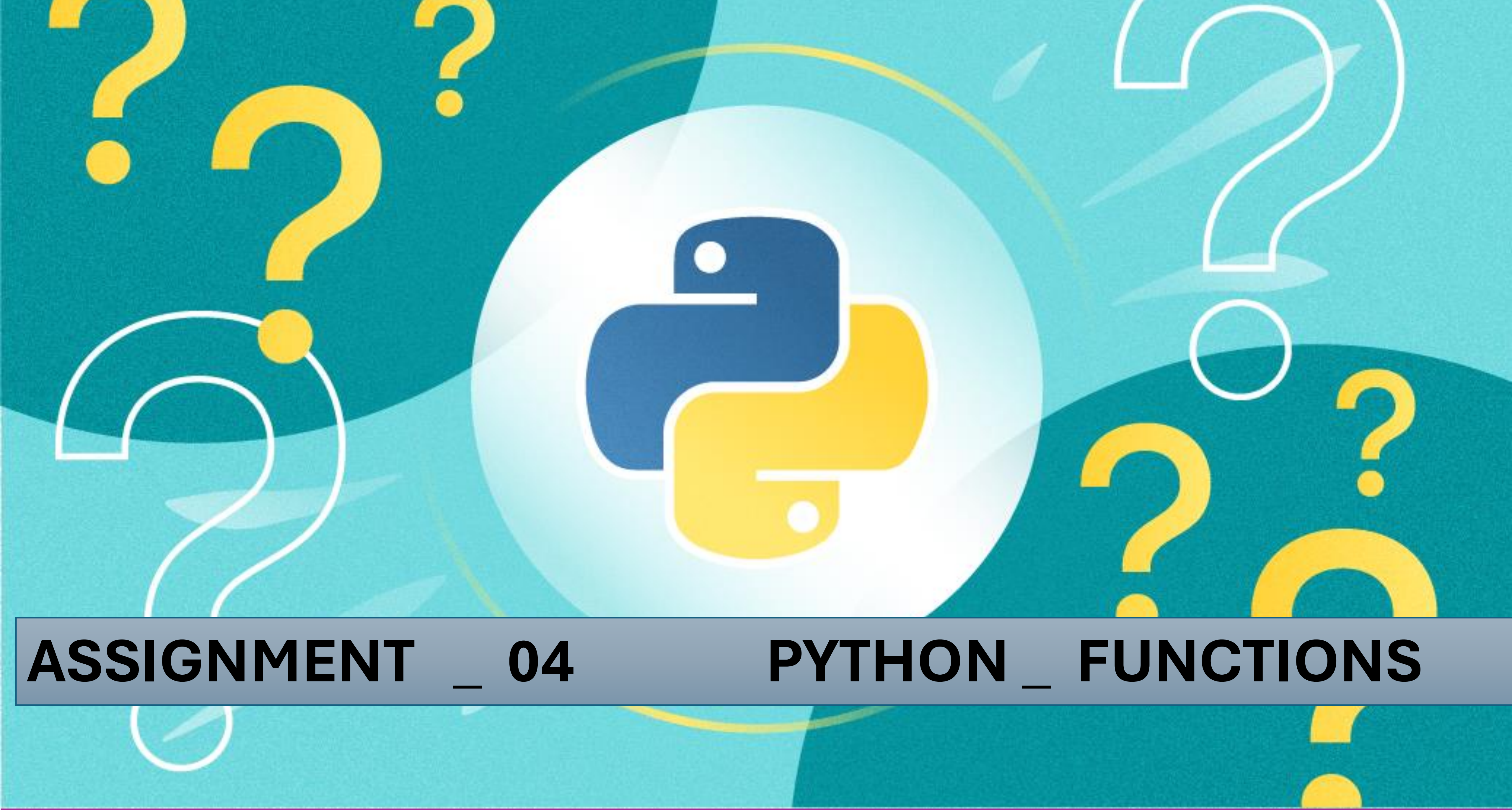
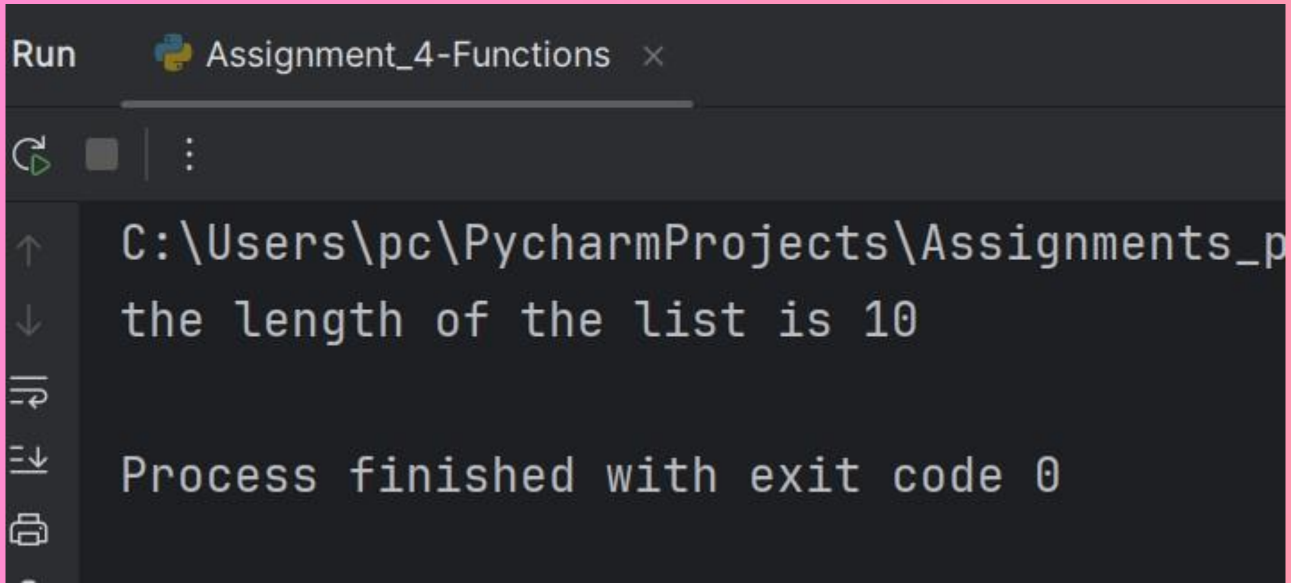


ASSIGNMENT _ 04 PYTHON _ FUNCTIONS

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

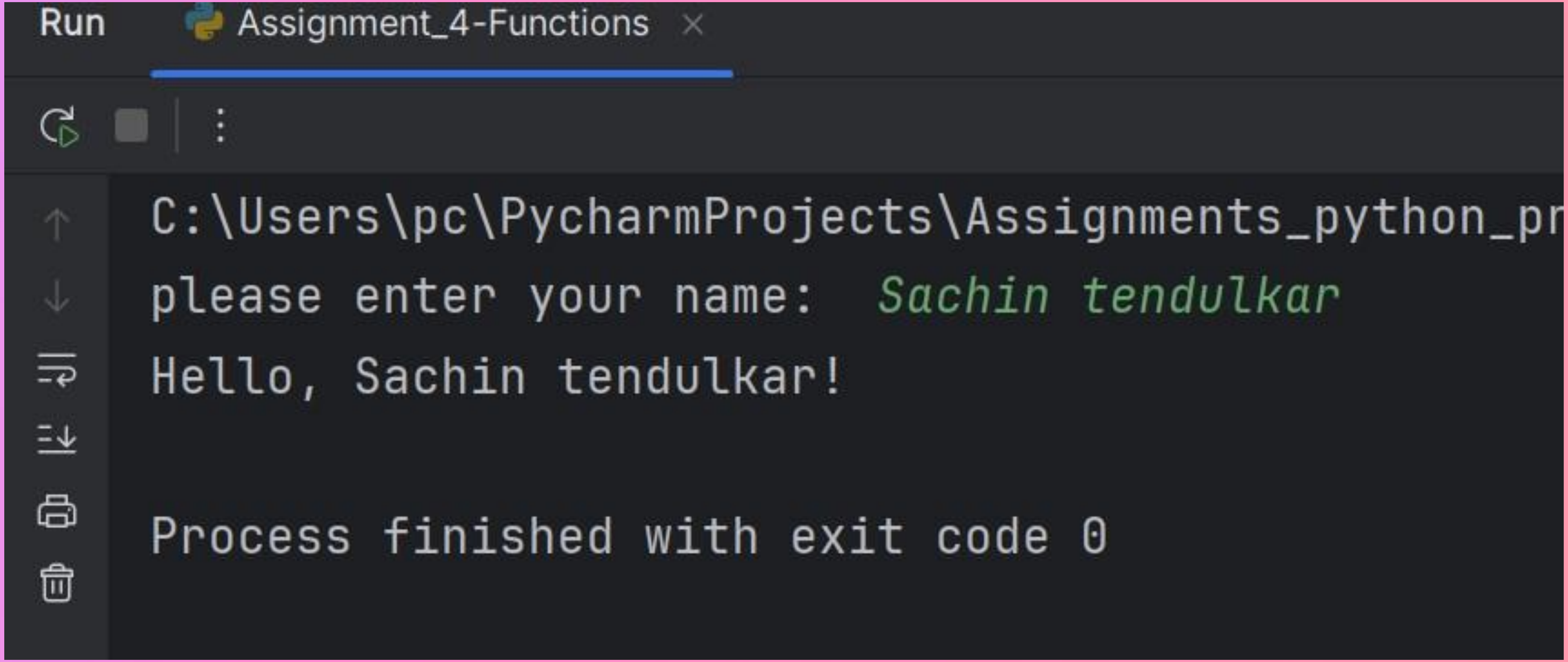
The `len()` function in Python returns the number of items (length) in an object. This can be applied to various data types, such as strings, lists, tuples, dictionaries, etc.



```
C:\Users\pc\PycharmProjects\Assignments_p
the length of the list is 10

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]!".



```
C:\Users\pc\PycharmProjects\Assignments_python_pr
please enter your name:  Sachin tendulkar
Hello, Sachin tendulkar!

Process finished with exit code 0
```

- 03) 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.

Let’s walk through the example list `[7, 1, 5, 8, 9, 3, 4, 2, 6]`:

- **Initial State**: `max_value = 7`
- **First Iteration**: Compare 1 with 7 (max_value remains 7)
- **Second Iteration:** Compare 5 with 7 (max_value remains 7)
- **Third Iteration**: Compare 8 with 7 (max_value is updated to 8)
- **Fourth Iteration**: Compare 9 with 8 (max_value is updated to 9)
- **Subsequent Iterations**: Compare 3, 4, 2, 6 with 9 (max_value remains 9)

At the end of the loop, the function returns 9, which is the maximum value in the list.

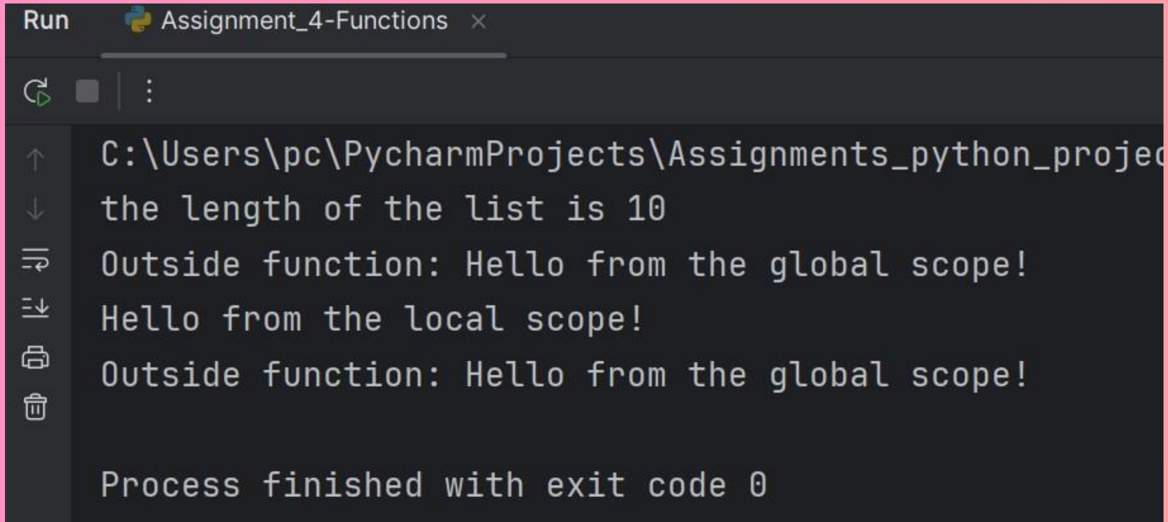
- 4) Explain the difference between local and global variables in a Python function. Write a program where a global variable and a local variable have the same name and show how Python differentiates between them.

Global Variables:

- Defined outside any function.
- Accessible throughout the code, including inside functions (unless shadowed by local variables).
- Their values can be changed globally (or even locally with the `global` keyword).

Local Variables:

- Defined inside a function.
- Accessible only within the function where they are defined.
- Their scope is limited to the function, and they do not affect the global scop

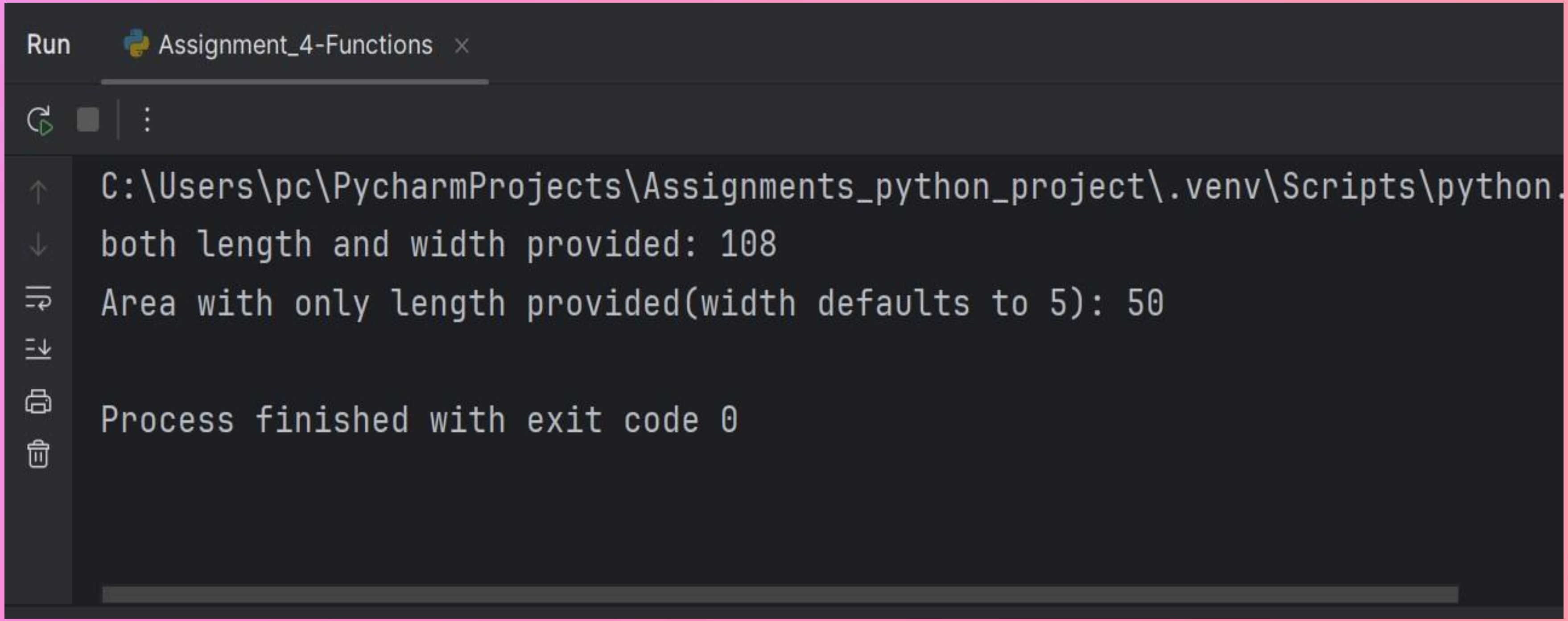


```
C:\Users\pc\PycharmProjects\Assignments_python_projec
the length of the list is 10
Outside function: Hello from the global scope!
Hello from the local scope!
Outside function: Hello from the global scope!

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.

The function takes two parameters: `length` and `width`, with `width` defaulting to 5 if not provided. I'll also show how the function behaves when called with and without the `width` argument.



```
C:\Users\pc\PycharmProjects\Assignments_python_project\.venv\Scripts\python.
both length and width provided: 108
Area with only length provided(width defaults to 5): 50

Process finished with exit code 0
```