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Foundation of Programming: Python

Assignment 06

GitHubURL:https://github.com/LU99IS99/IntroToProg-Python-Mod06.git

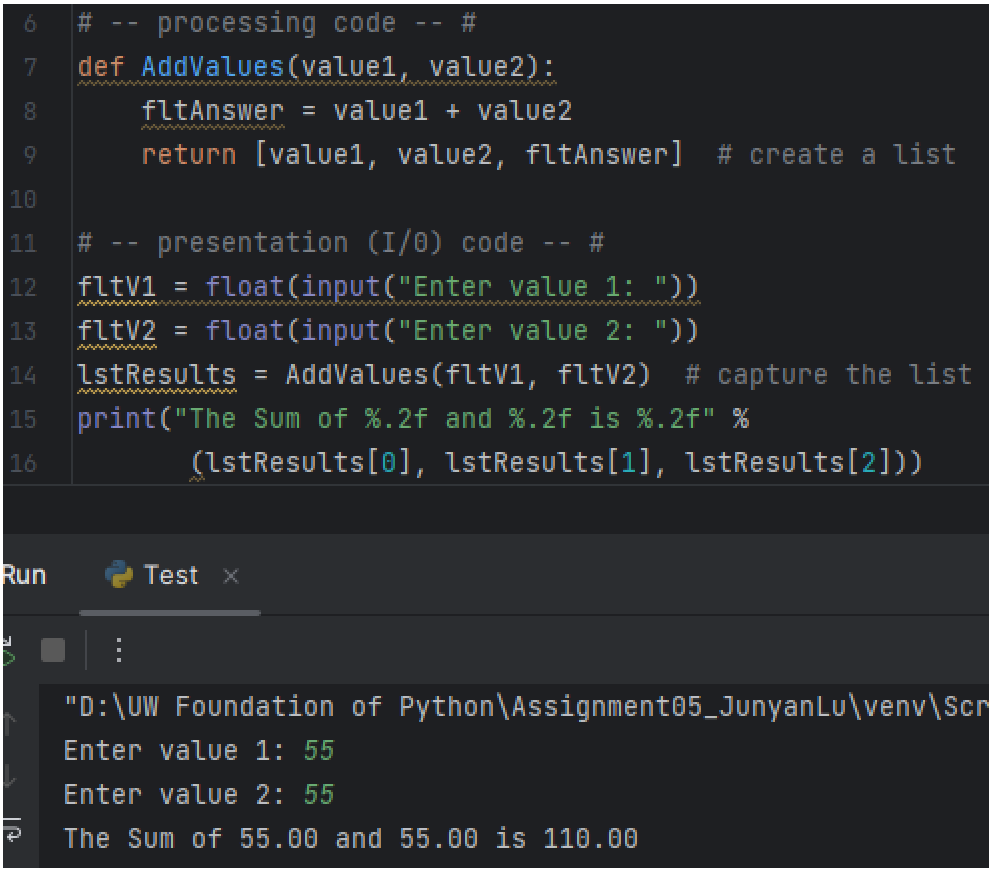
Creating scripts using Functions

Introduction

Writing code can be challenging, but fortunately, there are powerful tools and concepts that make it easier to tackle complex problems. Functions, loops, and classes are fundamental elements of programming that help to organize and structure code, making it more manageable and efficient.

Function

Function is a way to organize code, and reuse it whenever needed to perform a specific task. It takes some input values, does some processing, and gives a result. Here is an example: (Figure 1)



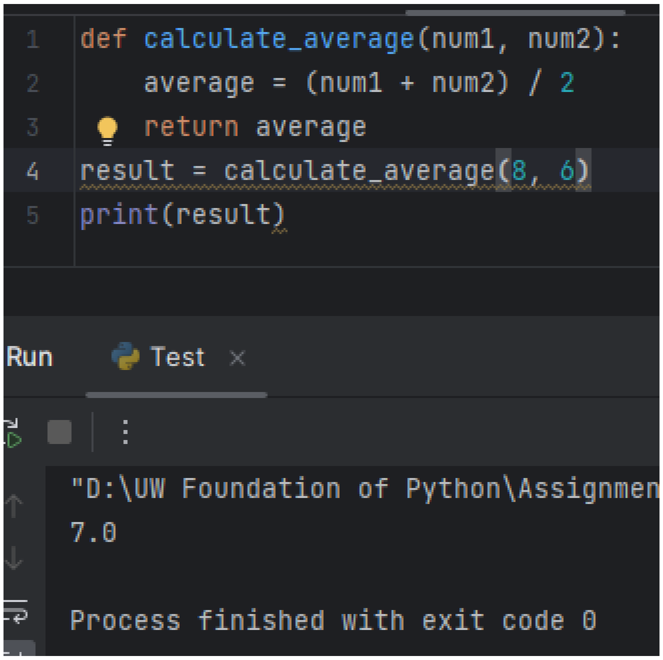
```python
# -- processing code -- #
def AddValues(value1, value2):
    fltAnswer = value1 + value2
    return [value1, value2, fltAnswer]  # create a list

# -- presentation (I/O) code -- #
fltV1 = float(input("Enter value 1: "))
fltV2 = float(input("Enter value 2: "))
lstResults = AddValues(fltV1, fltV2)  # capture the list
print("The Sum of %.2f and %.2f is %.2f" %
      (lstResults[0], lstResults[1], lstResults[2]))
```

```
"D:\UW Foundation of Python\Assignment05_JunyanLu\venv\Scr
Enter value 1: 55
Enter value 2: 55
The Sum of 55.00 and 55.00 is 110.00
```

Figure 1. Function

Parameters

Parameters are variables used in functions to receive and work with specific values. They define the input that a function expects to perform its task effectively. Here's an example of parameters: (Figure 2)



```python
def calculate_average(num1, num2):
    average = (num1 + num2) / 2
    return average
result = calculate_average(8, 6)
print(result)
```

```
"D:\UW Foundation of Python\Assignmen
7.0

Process finished with exit code 0
```

Figure 2. Parameters, Arguments, Return Values

"num1" and "num2" are parameters.

"8" and "6" are arguments.

Arguments

Arguments allow customizing the behavior of a function based on the specific values. Can pass different arguments each time invoke the function, enabling it to work with different data. They provide the actual values for the function to process and produce the desired output. Here's an example: (Figure 2)

Difference between Parameters and Arguments

Parameters are defined in the function declaration, while arguments are the values passed to a function when it is called. Parameters act as placeholders, and arguments provide the actual data for a function to work with.

Return values

Return values make functions more flexible and reusable. They allow functions to provide meaningful results and share information with the rest of the program, enhancing the functionality and modularity of the code. Here is an example: (Figure 2)
In this example, the returned value from the calculate_average function, which is 7, is assigned to the variable result. This value can be used in further calculations, printed, or passed as an argument to other functions.

Difference between Global and local variables

Global variables have a global scope and can be accessed from anywhere in the program, while local variables have a local scope and are limited to the specific function or block where they are defined. Global variables provide a way to share data across different parts of the code, while local variables keep data confined within a specific function or block.

Difference between a function and a class

Functions:

- They are created using the ‘def’ keyword, followed by a name, parentheses, and a colon.

- Functions take input values called arguments, perform computations, and optionally return a result.

Classes:

- They are defined using the ‘class’ keyword, followed by the class name and a colon.
- Objects are instances of a class, and they can have unique values for their attributes while sharing the same methods.

GitHub webpage

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Summary

For this class, I learned that function is a block of code that performs a specific task. It can take parameters, which act as placeholders for values passed into the function as arguments. Arguments are the actual values provided when calling the function. Functions can return values using the return statement, providing the result of their computations. Also GitHub webpage, or GitHub Pages site, is a feature that allows me to create and host a website directly from my GitHub repository, making it easy to share my projects and content with others.