

# Python-Functions and Modules

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Here's a summary of functions and modules in Python, along with examples:

## Functions

A function is a block of code that can be executed multiple times from different parts of your program. It takes input(s), performs some operations, and returns output.

Example:

```
def greet(name):  
    """Prints a personalized greeting"""  
    print(f"Hello, {name}!")  
  
# Call the function with an argument  
greet("John") # Output: Hello, John!
```

In this example:

- We define a function `greet` that takes one input parameter `name`.
- Inside the function, we use an f-string to create a greeting message.
- The `print()` statement is used to output the greeting.
- To call the function, we simply invoke it with the desired argument (`"John"`).

## Modules

A module is a file containing Python code that can be imported into your program. Modules provide reusable code, functions, and variables that you can use in your own programs.

Example:

```
# mymodule.py (a simple module)  
def add(a, b):  
    """Returns the sum of two numbers"""  
    return a + b  
  
x = 5  
y = 3  
  
result = add(x, y)  
  
print(result) # Output: 8
```

In this example:

- We create a file `mymodule.py` containing a function `add`.
- The `add` function takes two input parameters and returns their sum.
- In our main program (not shown), we import the `mymodule` module using `import mymodule`.
- We can then call the `add` function from the imported module, passing arguments as needed.

To use a module in your own code:

1. Save the module file (`mymodule.py`, for example) in the same directory as your main program.
2. In your main program, import the module using `import mymodule`.
3. Call functions or access variables from the imported module as needed.

### Example with both Functions and Modules

Suppose we have a simple calculator that performs arithmetic operations:

```
# mycalculator.py (a module)
def add(a, b):
    """Returns the sum of two numbers"""
    return a + b

def subtract(a, b):
    """Returns the difference between two numbers"""
    return a - b

def multiply(a, b):
    """Returns the product of two numbers"""
    return a * b
```

Now, in our main program:

```
import mycalculator as mc

# Define some values
a = 5
b = 3

# Perform calculations using functions from the imported module
result1 = mc.add(a, b)
result2 = mc.subtract(a, b)

print(f"Result 1: {result1}")
print(f"Result 2: {result2}")

# Use another function from the same module
product = mc.multiply(a, b)
print(f"Product of {a} and {b}: {product}")
```

In this example:

- We import the `mymodule` (renamed to `mc`) using `import mycalculator as mc`.
- We define some values (`a` and `b`).
- We use functions from the imported module to perform calculations.
- We can also access variables or other functions from the same module as needed.

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