Python Programming

Practical Questions - Database Management

Session 3

FUNCTIONS

Types of Functions

Python support two types of functions

1. Built-in function
2. User-defined function

Built-in function

The functions which are come along with Python itself are called a built-in function or **predefined function**. Some of them are listed below.
`range()`, `id()`, `type()`, `input()`, `eval()` etc.

User-defined function

Functions which are created by programmer explicitly according to the requirement are called a user-defined function.

Creating a Function

Use the following steps to to define a function in Python.

- Use the `def` keyword with the function name to define a function.
- Next, pass the number of parameters as per your requirement. (Optional).
- Next, define the function body with a **block of code**. This block of code is nothing but the action you wanted to perform.

In Python, no need to specify curly braces for the function body. The only **indentation** is essential to separate code blocks. Otherwise, you will get an error.

Syntax of creating a function

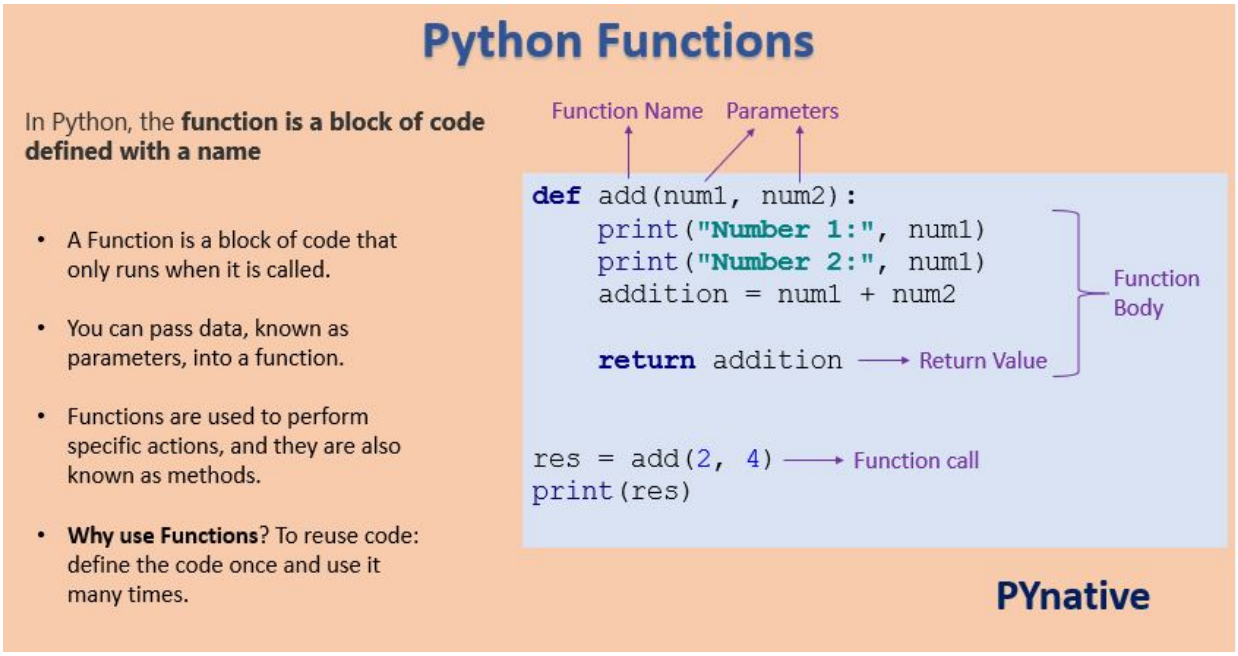
```
def function_name(parameter1, parameter2):
       # function body
       # write some action
return value
```

Here,

- `function_name`: Function name is the name of the function. We can give any name to function.
- `parameter`: Parameter is the value passed to the function. We can pass any number of parameters. Function body uses the parameter's value to perform an action

- `function_body` : The function body is a block of code that performs some task. This block of code is nothing but the action you wanted to accomplish.
- **return value**: Return value is the output of the function.

> **Note:** While defining a function, we use two keywords, `def` (mandatory) and `return` (optional).



Python Functions

Creating a function without any parameters

Now, Let's the example of creating a simple function that prints a welcome message.

```
# function
def message():
    print("Welcome to PYnative")

# call function using its name
message()
```

Output

```
Welcome to PYnative
```

Creating a function with parameters

Let's create a function that takes two parameters and displays their values.

In this example, we are creating function with two parameters ' name' and 'age'.

```
# function
def course_func(name, course_name):
    print("Hello", name, "Welcome to PYnative")
    print("Your course name is", course_name)

# call function
course_func('John', 'Python')
```

Output

```
Hello John Welcome to PYnative
Your course name is Python
```

Calling a function

Once we defined a function or finalized structure, we can call that function by using its name. We can also call that function from another function or program by importing it.

To call a function, use the name of the function with the parenthesis, and if the function accepts parameters, then pass those parameters in the parenthesis.

Example

```
# function
def even_odd(n):
    # check numne ris even or odd
    if n % 2 == 0:
        print('Even number')
    else:
        print('Odd Number')

# calling function by its name
even_odd(19)
# Output Odd Number
```

The pass Statement

In Python, the `pass` is the keyword, which won't do anything. Sometimes there is a situation where we need to define a syntactically empty block. We can define that block using the `pass` keyword.

When the interpreter finds a `pass` statement in the program, it returns **no operation**.

Example

```
def addition(num1, num2):
    # Implementation of addition function in comming release
    # Pass statement
    pass

addition(10, 2)
```

Scope and Lifetime of Variables

When we define a function with variables, then those variables' scope is limited to that function. In Python, the scope of a variable is an area where a variable is declared. It is called the variable's local scope.

We cannot access the local variables from outside of the function. Because the scope is local, those variables are not visible from the outside of the function.

Local Variable in function

A local variable is a variable declared inside the function that is not accessible from outside of the function. The scope of the local variable is limited to that function only where it is declared.

If we try to access the local variable from the outside of the function, we will get the error as NameError.

Example

```
def function1():
    # local variable
    loc_var = 888
    print("Value is :", loc_var)

def function2():

    print("Value is :", loc_var)

function1()
function2()
```

Output

```
Value is : 888
print("Value is :", loc_var) # gives error,
NameError: name 'loc_var' is not defined
```

Global Variable in function

A Global variable is a variable that declares outside of the function. The scope of a global variable is broad. It is accessible in all functions of the same module.

Example

```
global_var = 999

def function1():
    print("Value in 1nd function :", global_var)

def function2():
    print("Value in 2nd function :", global_var)

function1()
function2()
```

Output

```
Value in 1nd function : 999
Value in 2nd function : 999
```

Python Anonymous/Lambda Function

Sometimes we need to declare a function without any name. The nameless property function is called an **anonymous function** or **lambda function.**

The reason behind the using anonymous function is for instant use, that is, one-time usage. Normal function is declared using the `def` function. Whereas the anonymous function is declared using the `lambda` keyword.

In opposite to a normal function, a Python lambda function is a single expression. But, in a lambda body, we can expand with expressions over multiple lines using parentheses or a multiline string.
ex : `lambda n:n+n`

Syntax of `lambda` function:

```
lambda: argument_list:expression
```

When we define a function using the `lambda` keyword, the code is very concise so that there is more readability in the code. A lambda function can have any number of arguments but return only one value after expression evaluation.

Let's see an example to print even numbers without a `lambda` function and with a `lambda` function. See the difference in line of code as well as readability of code.

Example 1: Program for even numbers without lambda function

```
def even_numbers(nums):
    even_list = []
    for n in nums:
        if n % 2 == 0:
            even_list.append(n)
    return even_list

num_list = [10, 5, 12, 78, 6, 1, 7, 9]
ans = even_numbers(num_list)
print("Even numbers are:", ans)
```

Output

```
Even numbers are: [10, 12, 78, 6]
```

`filter()` function in Python

In Python, the `filter()` function is used to return the filtered value. We use this function to filter values based on some conditions.

Syntax of `filter()` function:

```
filter(funtion, sequence)
```

where,

- function – Function argument is responsible for performing condition checking.
- sequence – Sequence argument can be anything like list, tuple, string

Example: `lambda` function with `filter()`

```
l = [-10, 5, 12, -78, 6, -1, -7, 9]
positive_nos = list(filter(lambda x: x > 0, l))
print("Positive numbers are: ", positive_nos)
```

Output

```
Positive numbers are: [5, 12, 6, 9]
```

`map()` function in Python

In Python, the `map()` function is used to apply some functionality for every element present in the given sequence and generate a new series with a required modification.

Ex: for every element present in the sequence, perform cube operation and generate a new cube list.

Syntax of `map()` function:

```
map(function,sequence)
```

where,

- `function` – function argument responsible for applied on each element of the sequence
- `sequence` – Sequence argument can be anything like list, tuple, string

Example: `lambda` function with `map()` function

```
list1 = [2, 3, 4, 8, 9]
list2 = list(map(lambda x: x*x*x, list1))
print("Cube values are:", list2)
```

Output

```
Cube values are: [8, 27, 64, 512, 729]
```

`reduce()` function in Python

In Python, the `reduce()` function is used to **minimize sequence elements** into a **single value** by applying the specified condition.

Python Functions

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In Python, the **function is a block of code defined with a name**. We use functions whenever we need to perform the same task multiple times without writing the same code again. It can take arguments and returns the value.

Python has a DRY principle like other programming languages. DRY stands for Don't Repeat Yourself. Consider a scenario where we need to do some action/task many times. We can define that action only once using a function and call that function whenever required to do the same activity.

Function improves efficiency and reduces errors because of the reusability of a code. Once we create a function, we can call it anywhere and anytime. The benefit of using a function is reusability and modularity.

Also, See

- Python Functions Exercise
- Python Functions Quiz

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Types of Functions

Python support two types of functions

1. Built-in function
2. User-defined function

Built-in function

The functions which are come along with Python itself are called a built-in function or **predefined function**. Some of them are listed below.
`range()`, `id()`, `type()`, `input()`, `eval()` etc.

Example: Python range() function generates the immutable sequence of numbers starting from the given start integer to the stop integer.

```
for i in range(1, 10):
    print(i, end=' ')
# Output 1 2 3 4 5 6 7 8 9
```

Run

User-defined function

Functions which are created by programmer explicitly according to the requirement are called a user-defined function.

Creating a Function

Use the following steps to to define a function in Python.

- Use the `def` keyword with the function name to define a function.
- Next, pass the number of parameters as per your requirement. (Optional).
- Next, define the function body with a **block of code**. This block of code is nothing but the action you wanted to perform.

In Python, no need to specify curly braces for the function body. The only **indentation** is essential to separate code blocks. Otherwise, you will get an error.

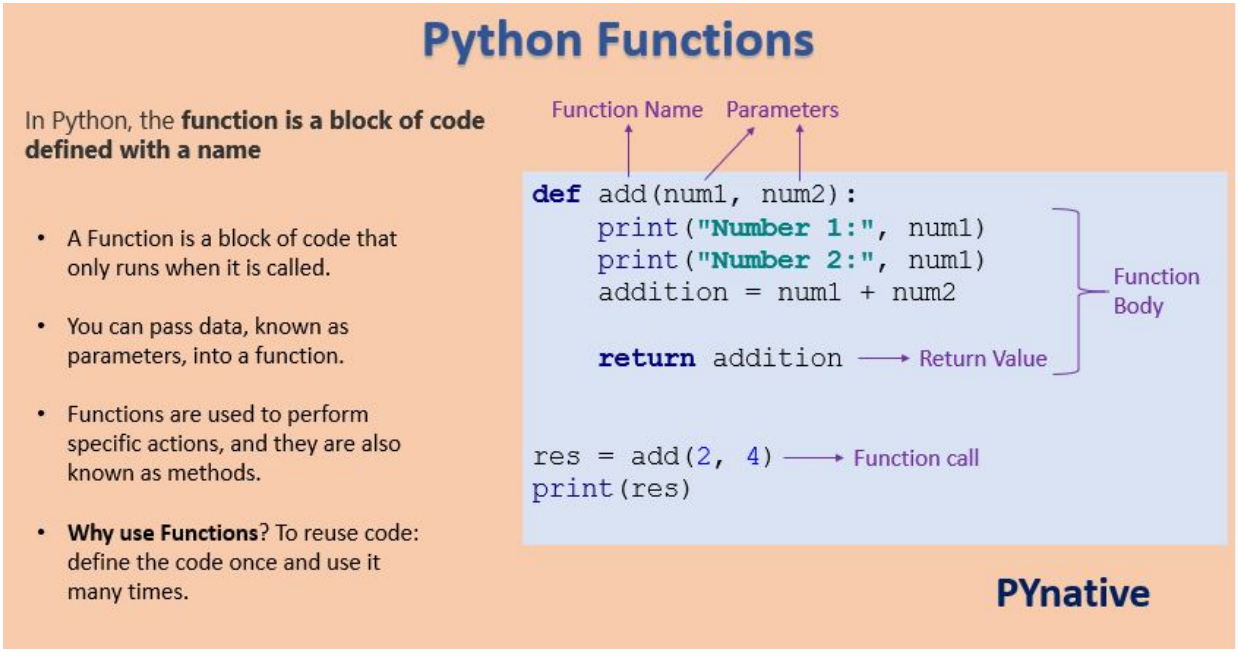
Syntax of creating a function

```
def function_name(parameter1, parameter2):
       # function body
       # write some action
return value
```

Here,

- `function_name`: Function name is the name of the function. We can give any name to function.
- `parameter`: Parameter is the value passed to the function. We can pass any number of parameters. Function body uses the parameter's value to perform an action
- `function_body`: The function body is a block of code that performs some task. This block of code is nothing but the action you wanted to accomplish.
- **return value**: Return value is the output of the function.

Note: While defining a function, we use two keywords, `def` (mandatory) and `return` (optional).



Python Functions

Creating a function without any parameters

Now, Let's the example of creating a simple function that prints a welcome message.

```
# function
def message():
    print("Welcome to PYnative")

# call function using its name
message()
```

Run

Output

```
Welcome to PYnative
```

Creating a function with parameters

Let's create a function that takes two parameters and displays their values.

In this example, we are creating function with two parameters ' name' and 'age'.

```
# function
def course_func(name, course_name):
    print("Hello", name, "Welcome to PYnative")
    print("Your course name is", course_name)

# call function
course_func('John', 'Python')
```

Run

Output

```
Hello John Welcome to PYnative
Your course name is Python
```

Creating a function with parameters and return value

Functions can return a value. The return value is the output of the function. Use the return keyword to return value from a function.

```
# function
def calculator(a, b):
    add = a + b
    # return the addition
    return add

# call function
# take return value in variable
res = calculator(20, 5)

print("Addition :", res)
# Output Addition : 25
```

Run

Calling a function

Once we defined a function or finalized structure, we can call that function by using its name. We can also call that function from another function or program by importing it.

To call a function, use the name of the function with the parenthesis, and if the function accepts parameters, then pass those parameters in the parenthesis.

Example

```
# function
def even_odd(n):
    # check numne ris even or odd
    if n % 2 == 0:
        print('Even number')
    else:
        print('Odd Number')

# calling function by its name
even_odd(19)
# Output Odd Number
```

Run

Calling a function of a module

You can take advantage of the built-in module and use the functions defined in it. For example, Python has a random module that is used for generating random numbers and data. It has various functions to create different types of random data.

Let's see how to use functions defined in any module.

- First, we need to use the import statement to import a specific function from a module.
- Next, we can call that function by its name.

```
# import randint function
from random import randint

# call randint function to get random number
print(randint(10, 20))
# Output 14
```

Run

Docstrings

In Python, the documentation string is also called a **docstring**. It is a descriptive text (like a comment) written by a programmer to let others know what block of code does.

We write docstring in source code and define it immediately after module, class, function, or method definition.

It is being declared using triple single quotes `(''' ''')` or triple-double quote `(""" """)`.

We can access docstring using doc attribute `(__doc__)` for any object like `list`, `tuple`, `dict`, and user-defined function, etc.

Single-Line Docstring

The single-line docstring is a docstring that fits in one line. We can use the triple single or triple-double quotes to define it. The Opening and closing quotes need to be the same. By convention, we should use to use the triple-double quotes to define docstring.

```
def factorial(x):
    """This function returns the factorial of a given number."""
    return x

# access doc string
print(factorial.__doc__)
```

Run

Output

```
This function is going to return the factorial of a given number
```

When you use the help function to get the information of any function, it returns the docstring.

```
# pass function name to help() function
print(help(factorial))
```

Run

Output

```
Help on function factorial in module main:
factorial(x)
     This function returns the factorial of a given number.
None
```

Multi-Line Docstring

A multi-line Docstrings is the same single-line Docstrings, but it is followed by a single blank line with the descriptive text.

The general format of writing a multi-line Docstring is as follows:

Example

```
def any_fun(parameter1):
"""
   Description of function

   Arguments:
   parameter1(int):Description of parameter1

   Returns:
   int value
"""
print(any_fun.__doc__)
```

Run

Output

```
Description of function

Arguments
parameter1(int):Description of parameter1

Returns:
int value
```

Return Value From a Function

In Python, to return value from the function, a `return` statement is used. It returns the value of the expression following the returns keyword.

Syntax of `return` statement

```
def fun():
    statement-1
    statement-2
    statement-3
    .
    .
    return [expression]
```

The return value is nothing but a outcome of function.

- The `return` statement ends the function execution.
- For a function, it is not mandatory to return a value.
- If a `return` statement is used without any expression, then the `None` is returned.
- The `return` statement should be inside of the function block.

Example

```
def is_even(list1):
    even_num = []
    for n in list1:
        if n % 2 == 0:
            even_num.append(n)
    # return a list
    return even_num

# Pass list to the function
even_num = is_even([2, 3, 42, 51, 62, 70, 5, 9])
print("Even numbers are:", even_num)
```

Run

Output

```
Even numbers are: [2, 42, 62, 70]
```

Return Multiple Values

You can also return multiple values from a function. Use the return statement by separating each expression by a comma.

Example: –

In this example, we are returning three values from a function. We will also see how to process or read multiple return values in our code.

```
def arithmetic(num1, num2):
    add = num1 + num2
    sub = num1 - num2
    multiply = num1 * num2
    division = num1 / num2
    # return four values
    return add, sub, multiply, division

# read four return values in four variables
a, b, c, d = arithmetic(10, 2)

print("Addition: ", a)
print("Subtraction: ", b)
print("Multiplication: ", c)
print("Division: ", d)
```

Run

The pass Statement

In Python, the `pass` is the keyword, which won't do anything. Sometimes there is a situation where we need to define a syntactically empty block. We can define that block using the `pass` keyword.

When the interpreter finds a `pass` statement in the program, it returns **no operation**.

Example

```
def addition(num1, num2):
    # Implementation of addition function in comming release
    # Pass statement
    pass

addition(10, 2)
```

Run

How does Function work in Python?

In Python, functions allow the programmer to create short and clean code to be reused in an entire program.

The function helps us to organize code. The function accepts parameters as input, processes them, and in the end, returns values as output.

Let's assume we defined a function that computes some task. When we call that function from another function, the program controller goes to that function, does some computation, and returns some value as output to the caller function.

The following diagram shows how the function works.

Scope and Lifetime of Variables

When we define a function with variables, then those variables' scope is limited to that function. In Python, the scope of a variable is an area where a variable is declared. It is called the variable's local scope.

We cannot access the local variables from outside of the function. Because the scope is local, those variables are not visible from the outside of the function.

Note: The inner function does have access to the outer function's local scope.

When we are executing a function, the life of the variables is up to running time. Once we return from the function, those variables get destroyed. So function does no need to remember the value of a variable from its previous call.

The following code shows the scope of a variable inside a function.

Example

```
global_lang = 'DataScience'

def var_scope_test():
    local_lang = 'Python'
    print(local_lang)

var_scope_test()
# Output 'Python'

# outside of function
print(global_lang)
# Output 'DataScience'

# NameError: name 'local_lang' is not defined
print(local_lang)
```

Run

In the above example, we print the local and global variable values from outside of the function. The global variable is accessible with its name `global_lang`.

But when we try to access the local variable with its name `local_lang`, we got a NameError, because the local variable is not accessible from outside of the function.

Local Variable in function

A local variable is a variable declared inside the function that is not accessible from outside of the function. The scope of the local variable is limited to that function only where it is declared.

If we try to access the local variable from the outside of the function, we will get the error as NameError.

Example

```
def function1():
    # local variable
    loc_var = 888
    print("Value is :", loc_var)

def function2():

    print("Value is :", loc_var)

function1()
function2()
```

Run

Output

```
Value is : 888
print("Value is :", loc_var) # gives error,
NameError: name 'loc_var' is not defined
```

Global Variable in function

A Global variable is a variable that declares outside of the function. The scope of a global variable is broad. It is accessible in all functions of the same module.

Example

```
global_var = 999

def function1():
    print("Value in 1nd function :", global_var)

def function2():
    print("Value in 2nd function :", global_var)

function1()
function2()
```

Run

Output

```
Value in 1nd function : 999
Value in 2nd function : 999
```

Global Keyword in Function

In Python, `global` is the keyword used to access the actual global variable from outside the function. we use the global keyword for two purposes:

1. To declare a global variable inside the function.
2. Declaring a variable as global, which makes it available to function to perform the modification.

Let's see what happens when we don't use global keyword to access the global variable in the function

```
# Global variable
global_var = 5

def function1():
    print("Value in 1st function :", global_var)

def function2():
    # Modify global variable
    # function will treat it as a local variable
    global_var = 555
    print("Value in 2nd function :", global_var)

def function3():
    print("Value in 3rd function :", global_var)

function1(
function2()
function3()
```

Run

Output

```
Value in 1st function : 5
Value in 2nd function : 555
Value in 3rd function : 5
```

As you can see, `function2()` treated `global_var` as a new variable (local variable). To solve such issues or access/modify global variables inside a function, we use the `global` keyword.

Example:

```
# Global variable
x = 5

# defining 1st function
def function1():
    print("Value in 1st function :", x)

# defining 2nd function
def function2():
```

```
    # Modify global variable using global keyword
    global x
    x = 555
    print("Value in 2nd function :", x)

# defining 3rd function
def function3():
    print("Value in 3rd function :", x)

function1()
function2()
function3()
```

Run

Output

```
Value in 1st function : 5
Value in 2nd function : 555
Value in 3rd function : 555
```

Nonlocal Variable in Function

In Python, `nonlocal` is the keyword used to declare a variable that acts as a global variable for a nested function (i.e., function within another function).

We can use a `nonlocal` keyword when we want to declare a variable in the local scope but act as a global scope.

Example

```
def outer_func():
    x = 777

    def inner_func():
        # local variable now acts as global variable
        nonlocal x
        x = 700
        print("value of x inside inner function is :", x)

    inner_func()
    print("value of x inside outer function is :", x)

outer_func()
```

Run

Output

```
value of x inside inner function is : 700
value of x inside outer function is : 700
```

Python Function Arguments

The argument is a value, a variable, or an object that we pass to a function or method call. In Python, there are four types of arguments allowed.

1. Positional arguments
2. keyword arguments
3. Default arguments
4. Variable-length arguments

Read the complete guide on **Python function arguments**.

Positional Arguments

Positional arguments are arguments that are pass to function in **proper positional order**. That is, the 1st positional argument needs to be 1st when the function is called. The 2nd positional argument needs to be 2nd when the function is called, etc. See the following example for more understanding.

Example

```
def add(a, b):
    print(a - b)

add(50, 10)
# Output 40
add(10, 50)
# Output -40
```

Run

If you try to use pass more parameters you will get an error.

```
def add(a, b):
    print(a - b)

add(105, 561, 4)
```

Run

Output

```
TypeError: add() takes 2 positional arguments but 3 were given
```

In the positional argument number and position of arguments must be matched. If we change the order, then the result may change. Also, If we change the number of arguments, then we will get an error.

Keyword Arguments

A keyword argument is an argument value, passed to function preceded by the variable name and an equals sign.

Example

```
def message(name, surname):
    print("Hello", name, surname)

message(name="John", surname="Wilson")
message(surname="Ault", name="Kelly")
```

Run

Output

```
Hello John Wilson
Hello Kelly Ault
```

In keyword arguments order of argument is not matter, but the number of arguments must match. Otherwise, we will get an error.

While using keyword and positional argument simultaneously, we need to pass 1st arguments as positional arguments and then keyword arguments. Otherwise, we will get `SyntaxError`. See the following example.

Example

```
def message(first_nm, last_nm):
    print("Hello..!", first_nm, last_nm)

# correct use
message("John", "Wilson")
message("John", last_nm="Wilson")

# Error
# SyntaxError: positional argument follows keyword argument
message(first_nm="John", "Wilson")
```

Run

Default Arguments

Default arguments take the default value during the function call if we do not pass them. We can assign a default value to an argument in function definition using the `=` assignment operator.

For example, A function `show_employee()` that accepts the employee's name and salary and displays both. Let's modify a function definition and assigned a default value 8000 to a salary. Next, if salary value is missing in the function call, the function automatically takes default value 9000 as a salary.

Example

```
# function with default argument
def message(name="Guest"):
    print("Hello", name)

# calling function with argument
message("John")

# calling function without argument
message()
```

Run

Output

```
Hello John
Hello Guest
```

When we call a function with an argument, it will take that value.

Variable-length Arguments

In Python, sometimes, there is a situation where we need to pass multiple numbers of arguments to the function. Such types of arguments are called **variable-length arguments**. We can declare a variable-length argument with the `*` **(asterisk)** symbol.

```
def fun(*var):
    function body
```

We can pass any number of arguments to this function. Internally all these values are represented in the form of a **tuple**.

Example

```
def addition(*numbers):
    total = 0
    for no in numbers:
        total = total + no
    print("Sum is:", total)


# 0 arguments
addition()

# 5 arguments
addition(10, 5, 2, 5, 4)


# 3 arguments
```

```
addition(78, 7, 2.5)
```

Run

Output

```
Sum is: 0
Sum is: 26
Sum is: 87.5
```

Read more: The complete guide on **Python function arguments**.

Recursive Function

A recursive function is a function that calls itself, again and again.

Consider, calculating the factorial of a number is a repetitive activity, in that case, we can call a function again and again, which calculates factorial.

```
factorial(5)

5*factorial(4)
5*4*factorial(3)
5*4*3*factorial(2)
5*4*3*2*factorial(1)
5*4*3*2*1 = 120
```

Example

```
def factorial(no):
    if no == 0:
        return 1
    else:
        return no * factorial(no - 1)

print("factorial of a number is:", factorial(8))
```

Run

Output

```
factorial of a number is: 40320
```

The advantages of the recursive function are:

1. By using recursive, we can reduce the length of the code.
2. The readability of code improves due to code reduction.
3. Useful for solving a complex problem

The disadvantage of the recursive function:

1. The recursive function takes more memory and time for execution.
2. Debugging is not easy for the recursive function.

Python Anonymous/Lambda Function

Sometimes we need to declare a function without any name. The nameless property function is called an **anonymous function** or **lambda function.**

The reason behind the using anonymous function is for instant use, that is, one-time usage. Normal function is declared using the `def` function. Whereas the anonymous function is declared using the `lambda` keyword.

In opposite to a normal function, a Python lambda function is a single expression. But, in a lambda body, we can expand with expressions over multiple lines using parentheses or a multiline string.
ex : `lambda n:n+n`

Syntax of `lambda` function:

```
lambda: argument_list:expression
```

When we define a function using the `lambda` keyword, the code is very concise so that there is more readability in the code. A lambda function can have any number of arguments but return only one value after expression evaluation.

Let's see an example to print even numbers without a `lambda` function and with a `lambda` function. See the difference in line of code as well as readability of code.

Example 1: Program for even numbers without lambda function

```
def even_numbers(nums):
    even_list = []
    for n in nums:
        if n % 2 == 0:
            even_list.append(n)
    return even_list

num_list = [10, 5, 12, 78, 6, 1, 7, 9]
ans = even_numbers(num_list)
print("Even numbers are:", ans)
```

Run

Output

```
Even numbers are: [10, 12, 78, 6]
```

Example 2: Program for even number with a lambda function

```
l = [10, 5, 12, 78, 6, 1, 7, 9]
even_nos = list(filter(lambda x: x % 2 == 0, l))
print("Even numbers are: ", even_nos)
```

Run

Output

```
Even numbers are: [10, 12, 78, 6]
```

We are not required to write **explicitly return statements** in the `lambda` function because the lambda internally returns expression value.

Lambda functions are more useful when we pass a function as an argument to another function. We can also use the lambda function with built-in functions such as `filter`, `map`, `reduce` because this function requires another function as an argument.

`filter()` function in Python

In Python, the `filter()` function is used to return the filtered value. We use this function to filter values based on some conditions.

Syntax of `filter()` function:

```
filter(funtion, sequence)
```

where,

- function – Function argument is responsible for performing condition checking.
- sequence – Sequence argument can be anything like list, tuple, string

Example: `lambda` function with `filter()`

```
l = [-10, 5, 12, -78, 6, -1, -7, 9]
positive_nos = list(filter(lambda x: x > 0, l))
print("Positive numbers are: ", positive_nos)
```

Run

Output

```
Positive numbers are: [5, 12, 6, 9]
```

`map()` function in Python

In Python, the `map()` function is used to apply some functionality for every element present in the given sequence and generate a new series with a required modification.

Ex: for every element present in the sequence, perform cube operation and generate a new cube list.

Syntax of `map()` function:

```
map(function,sequence)
```

where,

- `function` – function argument responsible for applied on each element of the sequence
- `sequence` – Sequence argument can be anything like list, tuple, string

Example: `lambda` function with `map()` function

```
list1 = [2, 3, 4, 8, 9]
list2 = list(map(lambda x: x*x*x, list1))
print("Cube values are:", list2)
```

Run

Output

```
Cube values are: [8, 27, 64, 512, 729]
```

`reduce()` function in Python

In Python, the `reduce()` function is used to **minimize sequence elements** into a **single value** by applying the specified condition.

The reduce() function is present in the `functools` module; hence, we need to import it using the import statement before using it.

Syntax of `reduce()` function:

```
reduce(function, sequence)
```

Example: `lambda` function with `reduce()`

```
from functools import reduce
list1 = [20, 13, 4, 8, 9]
add = reduce(lambda x, y: x+y, list1)
print("Addition of all list elements is : ", add)>/code>
```

Output

```
Addition of all list elements is : 54
```