Functions in Python

Difference between *function* and *method*

Functions:

```
def hello_world (n: int):
    for i in range(n):
        print("Hello World")
hello_world(3)
```

Method:

```
a = [1, 2, 3]
a.insert(1, 4)
print(a)
```

The data type for the parameters CAN be omitted

```
def message(number):
print(type(number))
message(5)
```

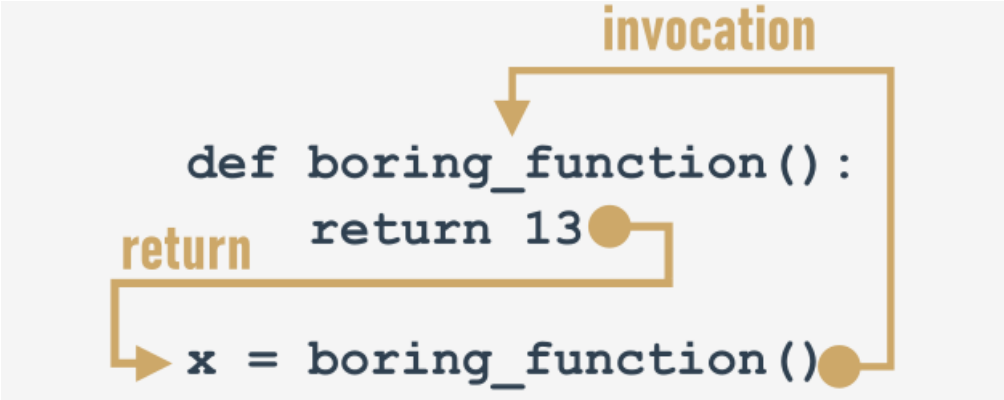
Of course, the traditional way of passing parameters into functions can work, but also passing by the value

```
def introduction(first_name, last_name):
    print("Hello, my name is", first_name, last_name)
introduction(first_name = "James", last_name = "Bond")
introduction(last_name = "Skywalker", first_name = "Luke")
```

We can also make some of the parameters to “default” so that it can be omitted during the calling of the function.

```
def introduction(first_name, last_name="Smith"):
    print("Hello, my name is", first_name, last_name)
introduction("James", "Doe") # output: Hello, my name is James Doe
introduction("Henry") #output: Hello, my name is Henry Smith
```

All the above are *void* functions in C++, but what about functions with return values?




```
def boring_function():
    print("'Boredom Mode' ON.")
    return 123
boring_function() #does nothing with the return value
print(boring_function()) #output 123
```

Null in python, which is equivalent to NULL in C++

```
value = None # NULL in C++
if value is None:
    print("Sorry, you don't carry any value")
```

If a function doesn't have a return value, it is equal to `return None`

```
def strange_function(n):
    if(n % 2 == 0):
        return True
print(strange_function(2)) # output True
print(strange_function(1)) # output None
```

Variables created in the functions are local, just like in C++

```
def my_function():
    var = 2 # new local variable
    print(var) # output: 2
var = 1 # local variable
my_function()
print(var) # output: 1
```

Lists are different, as explained in "Lists in Python"

```
def my_function(my_list_1):
    print("Print #1:", my_list_1) # output: Print #1: [2, 3]
    print("Print #2:", my_list_2) # output: Print #2: [2, 3]
    del my_list_1[0] # Pay attention to this line.
    print("Print #3:", my_list_1) # output: Print #3: [3]
    print("Print #4:", my_list_2) # output: Print #4: [3]
my_list_2 = [2, 3]
my_function(my_list_2)
print("Print #5:", my_list_2) # output: Print #5: [3]
```

'\' character can be used to tell Python to continue the line of the code in the next line

```
def bmi(weight, height):
    if height < 1.0 or height > 2.5 or \ # continues to next line
    weight < 20 or weight > 200:
        return None
    return weight / height ** 2
print(bmi(352.5, 1.65))
```