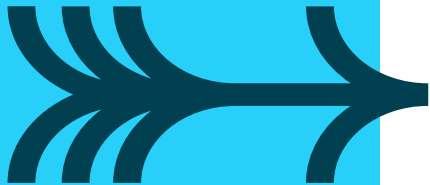User-defined Functions

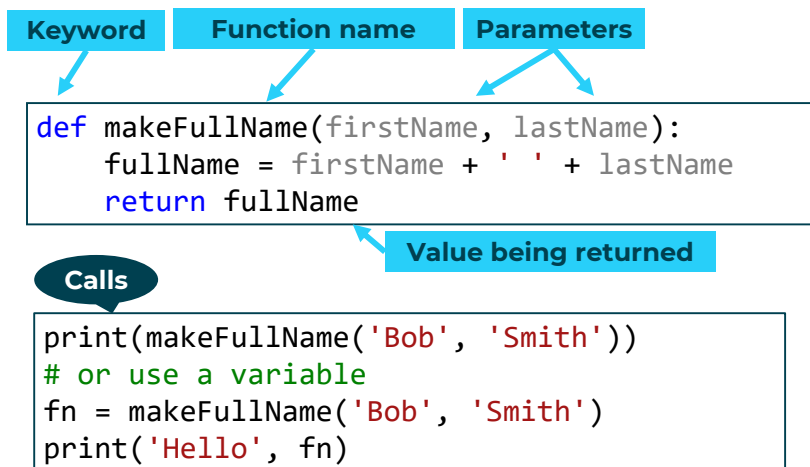# PYTHON FUNCTIONS

In this chapter you'll learn how to:

- Write a user defined function in Python
- Define Parameters for such functions
- Return a value

Python Functions

- **You've seen a few Built-in functions in the previous chapter**
  - print, input, number & string functions

- **Library functions**
  - math.min(), math.max(), statistics.median()

- **User defined functions**
  - Functions we write ourselves

User-defined functions Syntax

Keyword   **Function name**   **Parameters**

```python
def makeFullName(firstName, lastName):
    fullName = firstName + ' ' + lastName
    return fullName
```

Value being returned

Calls

```python
print(makeFullName('Bob', 'Smith'))
# or use a variable
fn = makeFullName('Bob', 'Smith')
print('Hello', fn)
```

User-Defined Functions
There are thousands of built-in library functions but we will always need to write our own

def
Def is the keyword which denotes the start of a function.
This is followed by the **name** of the function. Convention has this in lower case.
Parentheses (round brackets) comes next, even if the function doesn't take parameters.
The **parameters** go inside the brackets. Unlike other languages Python does not need type declarations for the parameters (or the returned value).
Code to do whatever is necessary for the functionality is next followed by the **return** statement which states what is being returned to where it was called from.

In the example, two pieces of text are "passed" to the function as parameters. We can pass the parameters as text literals (as shown) or variables or as expressions. It is only the value that counts.
The code then concatenates these text items together, not forgetting a space in between them. We have used a temporary variable and returned that but this is optional.
We could have written *return first_name + " " + last_name* and it would have worked just the same (with one line less of code!).

The code underneath shows how we can use our function as the parameter to a print command.

Examples – No return value

```python
def add(a,b):
    print (a+b)

def priceIncVAT(price):
    print ( price * 1.2)

#--------- Main program ----------

add(2,3)

priceIncVAT(100)
```

Define the functions first

```
5
120.0
Press any key to continue . . .
```

Examples – Returning a value

```python
def add(a,b):
    return a+b

def getPriceIncVAT(price):
    return price * 1.2

#---------- Main program ----------
print( add(2,3) )

price = getPriceIncVAT(100)
print(price)
```

```
5
120.0
Press any key to continue . . .
```

In this chapter you learned how to:

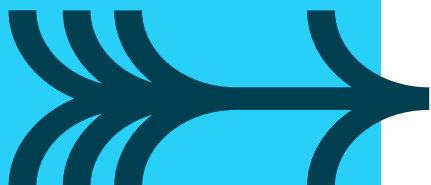- Write a user defined function in Python
- Define Parameters for such functions
- Return a value

Python Functions

EXERCISE

Please see your Exercise Guide

- 06-User-defined Functions.docx

Further Reading

- https://www.python.org/
- https://www.tutorialspoint.com/python/python_strings.htm
- https://docs.python.org/3/tutorial/index.html#tutorial-index