Date: ________ Page: ______

* CHAPTER-8 : FUNCTIONS & RECURSIONS

- A function is a group of statements performing a specific tasks.

- When a program gets bigger in size and its complexity grows, it gets difficult for a programmer to keep track on which piece of code is doing what!

- A function can be reused by the programmer in a given program any number of.

→ Example and syntax of a function
The syntax of a function looks as follows:

```
def func 1():
        print ("Hello")
```

This function can be called ~~any~~ any number of times, anywhere in the program.

→ Function call

Whenever we want to call a function, we put that name of the function followed by parenthesis as follows;

```
        func 1()   ——→  This is called function call.
```

→ function definition
The part containing the exact set of instructions which are executed during the function call.

Scanned with CamScanner

→ Types of functions in Python

1. Built in functions → Already present in Python.
2. User defined functions → Defined by the user.

Examples of built in function includes len(), print(), range() etc.

~~The function we~~ The func1() function we defined is an example of User defined function.

→ Functions with arguments

A function can accept some values it can work with. We can put these values in the parenthesis. A function can also return values as shown below

```
def greet (name):
        gr = "Hello" + name
        return gr
```

→ Shayan is passed to greet in na

```
a = greet ("Shayan")
```

↳ a will now contain "Hello Shayan

→ Default Parameter Value

We can have a value as default argument in a function.
If we specify name = "stranger" in the line ~~Commenting~~ Containing def, this value is used when no argument is passed.

Date: ________ Page: ______

For Example :

```
def greet(name = "Stranger")
        # function body
```

greet() ⟶ Name will be "Stranger" in function body (default
greet ("Harry") → Name will be "Harry" in function body (passed

→ Recursion

Recursion is a function which calls itself. It is used to directly use a mathematical formula as a function. For Example :

factorial(n) = n × (n-1)!

This function can be defined as follows :

```
def factorial (n):
        if i == 0 or i == 1 : → Base Condition which doesnt
                return 1        all the function any further
        Else :
                return n* (n-1)!  → Function calling itself.
```

This works as follows : factorial (3)
⟶ [function called]
[3 × factorial(2)]
3 × [2 × factorial (1)]
3 × 2 × [1] [Function returned]

- Programmer need to be extremely careful while working with recursion to ensure that the function doesn't infinitely keep calling itself. Recursion is sometimes most direct way to code an algorithm.