Functions

A function is a block of organised set of instructions used to perform a single,specific and well defined task.

Need of function:

- Clarity of code
- Code reuse
- Reduce errors

Function Definition:

When the function is defined a space is allocated for it in the memory.It consists of two parts 1.function header and 2.function body.The below is the syntax for function definition

```
def  function_name(parameter1,...):
        Statement block
        return
```

In the above the function_name can be anything we want and the parameters are which required for the function.

Function Arguments and Parameters:

The names given in the function definition are called parameters and the values that we supply in the function are called as arguments.for example

```
def  hello(a,b):
    print('hell')

hello(2,4)
```

From the above we can see that a,b are parameters and 2,4 are arguments.The arguments are of 5 types as positional,keyword,default,variable-length positional,variable-length keyword arguments.

Calling a function:

A function can be called just by using the syntax function_name().For example

like calling function hello() by hello() without arguments or calling by hello(5,6) using arguments .

Function Prototypes:

- Function with no arguments and no return value.

```
def fun():
    print('fun')
```

- Function with arguments and no return value.

```
def fun(a,b):
    c=a+b
    print('fun')
```

- Function with no arguments and return value.

```
def fun():
    a=int(input('enter the value for a')
    return(a)
```

- Function with arguments and return value.

```
def fun(a,b):
    c=a+b
    print('fun')
    return(c)
```

Function Classification:

- ### Library or Builtin functions:

  The functions that are already built into python and can be accessed by the user by just calling them.Examples:- abs(),dict(),list(),set(),float()..etc.

- ### User defined functions:

  The functions that are defined by the user are called as user defined functions.
  Example:
  ```
  def hello():
      print('Hello')
  ```

- Lambda function:

  The functions that are defined without a name.These functions are also called as anonymous functions since they are not defined like other function with def keyword.These functions are used to replace simple one line functions. The syntax for this lambda arguments: expression .Example: lambda a,b:ab ,this is used to find product of two numbers.