Recursive Function

- A function calling itself is called recursive function
- It is same as the recursive function in mathematics
- A factorial is defined in terms of factorial only ,therefore it is called recursive function

Ex : n ! = 1 * 2 * 3 * 4 * 5 ….. * n

5! = 5 * 4 * 3 * 2 * 1

5! = 5 * 4!

n! = n * (n -1)

- In maths recursive function is also define as

$$\text{fact}(n) = \begin{cases} 1 & \text{if } n=0 \\ n * \text{fact}(n-1) & \text{if } n>0 \end{cases}$$

- In python we can write the same thing as

Ex:

```
def fact ( n ) :
    If n == 0 :
    return 1
else :
  Return n * fact ( n-1)
```

```python
def fact(n):  # taking I/P that should be integer
    if n == 0:  # if given n is equal to 0
        return 1
    else:
        return n * fact(n-1)  # return factorial of that number
r = fact(5)  # calling and storing the function in a temporary variable
print(r)   # printing the result
```

Output :

```
120
```