

# Python\_basic\_programming\_6

1. Write a Python Program to Display Fibonacci Sequence using Recursion ?

```
In [1]: def genFibonacci(n,a,b):
        if n == 0:
            return 1
        else:
            result = a+b
            print(result, end=', ')
            genFibonacci(n-1,b,result)
    in_num = int(input('Enter the length of Series: '))
    print('0, 1',end=', ')
    genFibonacci(in_num,1,2)
```

Enter the length of Series: 13

0, 1, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987,

2. Write a Python Program to Find Factorial of a Number using Recursion ?

```
In [2]: def factorial(num):
        if (num < 1):
            return 1
        else:
            return num*factorial(num-1)
    num = int(input('Enter a number: '))
    value = factorial(num)
    print(f'The Factorial of {num} is {value}')
```

Enter a number: 5

The Factorial of 5 is 120

3. Write a Python Program to Calculate your Body Mass Index

```
In [3]: def calculateBMI():
        in_weight = eval(input('Enter your Weight(kgs): '))
        in_height = eval(input('Enter your Height(mts): '))
        calc_bmi = in_weight/pow(in_height,2)
        if (calc_bmi < 18.5):
            status = 'Underweight'
        elif (calc_bmi >= 18.5 and calc_bmi < 24.9):
            status = 'Healthy'
        elif (calc_bmi >= 24.9 and calc_bmi < 30):
            status = 'Overweight'
        elif (calc_bmi >=30):
            status = 'Suffering from Obesity'
        print(f'Your\'re BMI is {calc_bmi} and status is {status} ')
    calculateBMI()
```

Enter your Weight(kgs): 42

Enter your Height(mts): 1.4

Your're BMI is 21.42857142857143 and status is Healthy

4. Write a Python Program to Calculate the Natural Logarithm of any Number ?

```
In [4]: import math
def genNatLog():
    in_num = eval(input("Enter a Number:"))
    print(math.log(in_num))

genNatLog()
```

Enter a Number:19  
2.9444389791664403

5. Write a Python Program for Cube sum of first n Natural Numbers ?

```
In [5]: def cubeOfNaturalNumbers():
    in_num = int(input("Enter the no of Natural Numbers: "))
    result = pow(((in_num * (in_num +1))/2),2)
    print(f'The Cube Sum of First {in_num} Natural Numbers is {result}')

cubeOfNaturalNumbers()
```

Enter the no of Natural Numbers: 10  
The Cube Sum of First 10 Natural Numbers is 3025.0