Basic Programming assignment 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: 25
0, 1, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368,
75025, 121393, 196418, 317811,
```

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: 10
The Factorial of 10 is 3628800
```

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

In [4]:
```
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): 63
Enter your Height(mts): 166
Your're BMI is 0.00228625344752504 and status is Underweight
```

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

In [5]:
```
import math
def genNatLog():
    in_num = eval(input("Enter a Number:"))
    print(math.log(in_num))

genNatLog()
```

```
Enter a Number:35
3.5553480614894135
```

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

In [6]:
```
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: 5
The Cube Sum of First 5 Natural Numbers is 225.0
```