Programming Assignment 6

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

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

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

4. Write a Python Program to calculate the natural logarithm of any number?

5. Write a Python Program for cube sum of first n natural numbers?

In [32]:
```
# 1. Write a Python Program to Display Fibonacci Sequence Using Recursion?
def fibseries(n):

    if n <=1 :
        return n
    else :

        return (fibseries(n-1) + fibseries(n-2))

try:

    n = int(input("Enter number of terms:"))
    if(n<0):

        raise Exception ('Enter positive number')
    print("Fibonacci sequence:")
    for i in range(n):
        print(fibseries(i))
except Exception as e:
    print(e)
```

```
Enter number of terms:7
Fibonacci sequence:
0
1
1
2
3
5
8
```

In [31]:
```
#2. Write a Python Program to Find Factorial of Number Using Recursion

def factrecur(n):

    if n <=1 :
```

```
        return n
    else :

        return n*factrecur(n-1)

try:

    n = int(input("Enter number to find factorial:"))
    if(n<0):
        print ('Enter positive number')
    elif n==0:
        print("factorial of 0 is 1")
    else:
        print('Factorial of ',n,' is ' ,factrecur(n))
except Exception as e:
    print(e)
```

```
Enter number to find factorial:7
Factorial of  7  is  5040
```

In [7]:

```
# 3. Write a Python Program to calculate your Body Mass Index
while(True):
    try:

        height = float(input("Enter your height in cms: "))
        if(height<=0.0):
            raise Exception ('Height has to be greater than "0"')
        weight = float(input("Enter your weight in kgs: "))


        if(weight<=0.0):
            raise Exception ('Weight has to be greater than "0"')
        break
    except Exception as e:
        print(e)
BMI = weight/((height/100)**2)
print(f'Your BMI is {BMI}')
if BMI <= 18.4:
    print("You are underweight.")
elif BMI <= 24.9:
    print("You are healthy.")
elif BMI <= 29.9:
    print("You are over weight.")
elif BMI <= 34.9:
    print("You are severely over weight.")
elif BMI <= 39.9:
    print("You are obese.")
else:
    print("You are severely obese.")
```

```
Enter your height in cms: 167
Enter your weight in kgs: 130
Your BMI is 46.61336010613503
You are severely obese.
```

In [17]:

```
#4. Write a Python Program to calculate the natural logarithm of any number
import math
num=None
lg=None
while(True):
    try:

        num = float(input("Enter number for which the natural log has to be found: "
        if (num < 0):
            raise Exception('Number has to be positive')
```

```
        lg = math.log(num)
        print(f'the natural logarithm of {num} is {lg}')
        break
    except Exception as e:
        print(e)
```

```
Enter number for which the natural log has to be found: 0
math domain error
Enter number for which the natural log has to be found: 10
the natural logarithm of 10.0 is 2.302585092994046
```

In [4]:

```
#5. Write a Python Program for cube sum of first n natural number
cumsum=0
while(True):
    try:

        num = int(input("Enter number for which the cube sum has to be found: "))
        if (num < 0):
            raise Exception('Number has to be positive')
        for i in range(1,num+1):
            cumsum += i*i*i

        print(f'Cube sum of {num} natural number is {cumsum}')
        break
    except Exception as e:
        print(e)
```

```
Enter number for which the cube sum has to be found: 3
Cube sum of 3 natural number is 36
```