BASIC PHYTON ASSIGNMENT 6

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

```
def fib_recursion(num):
    """This function will calculate fibonacci sequence using recursion"""
    try:
        if num==0:
            return 0
        elif num==1:
            return 1
        else:
            return (fib_recursion(num-1) + fib_recursion(num-2))
    except Exception as e:
        print("\nSome Exception has occurred: ",e)


try:
    n_terms = int(input("Enter how many terms you want to print of Fibonacci
Sequence: "))
    if n_terms <= 0:
        print("\nPlease enter a positive integer")
    else:
        print("\nFibonacci Sequence: ")
        for i in range(n_terms):
            print(fib_recursion(i))
except Exception as e:
    print("\nSome Exception has occurred: ",e)
```

```
Enter how many terms you want to print of Fibonacci Sequence: 8

Fibonacci Sequence:
0
1
1
2
3
```

5
8
13

In [2]:

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

```
def factorial_recursion(number):
    """This function will calculate the factorial of a given number using
recursion."""
    try:
        if number==0:
            return 1
        elif number==1:
            return 1
        else:
            return (number*factorial_recursion(number-1))
    except Exception as e:
        print("\nSome exception has occurred: ",e)


try:
    number = int(input("Enter the number to calculate factorial: "))
    if number<0:
        print("\nPlease enter a positive integer.")
    else:
        print(f"\nFactorial of {number} is {factorial_recursion(number)}")
except Exception as e:
    print("\nSome exception has occurred: ",e)
```

```
Enter the number to calculate factorial: 5

Factorial of 5 is 120
```

In [3]:

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

```
import sys

def bmi_calculator(weight,height):
```

```
    """This function will return the body mass index."""
    try:
        if weight==0 or height==0:
            return 0
        else:
            bmi = weight / (height/100)**2
            return bmi
    except Exception as e:
        print("\nSome exception has occurred: ",e)

try:
    weight = float(input("Enter your weight in kg: "))
    height = float(input("Enter your height in cm: "))

    bmi = bmi_calculator(weight,height)

    if bmi==0:
        print(f"\nWeight or Height can't be 0.")
    elif bmi<=18.4:
        print(f"\nThe BMI is {bmi}. You are underweight.")
    elif bmi<=24.9:
        print(f"\nThe BMI is {bmi}. You are healthy.")
    elif bmi<=29.9:
        print(f"\nThe BMI is {bmi}. You are overweight.")
    else:
        print(f"\nThe BMI is {bmi}. You are suffering from obesity.")
except Exception as e:
    print("\nSome exception has occurred: ",e)
```

```
Enter your weight in kg: 85
Enter your height in cm: 158.496

The BMI is 33.83625685726058. You are suffering from obesity.
```

In [4]:

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

```
import math
```

```
def natural_log(number):
    """This function will return the natural logarithm of a number"""
    return math.log(number)

try:
    number = float(input("Enter the number: "))
    if number<=0:
        print("\nPlease enter a positive integer.")
    else:
        print(f"\nlog({number}) : {natural_log(number)}")
except Exception as e:
    print("\nSome exception has occurred: ",e)
```

```
Enter the number: 2.5

log(2.5) : 0.9162907318741551
```

In [5]:

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

```
def sum_of_cubes(number):
    """This function will return sum of cubes of first n natural numbers"""
    try:
        result = (number*(number+1)/2) ** 2
        return int(result)
    except Exception as e:
        print("\nSome exception has occurred: ",e)


try:
    number = int(input("Enter the number to calculate sum of cubes of first natural numbers: "))
    if number<=0:
        print("\nPlease enter a positive integer.")
    else:
        print(f"\nSum of cubes of first {number} natural numbers: {sum_of_cubes(number)}")
```

```
except Exception as e:
    print("\nSome exception has occurred: ",e)
```

```
Enter the number to calculate sum of cubes of first natural numbers: 4

Sum of cubes of first 4 natural numbers: 100
```

In [ ]: