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

# Function to calculate the Fibonacci sequence using recursion

def fibonacci(n):

if n <= 0:

return []

elif n == 1:

return [0]

elif n == 2:

return [0, 1]

else:

fib\_seq = fibonacci(n - 1)

fib\_seq.append(fib\_seq[-1] + fib\_seq[-2])

return fib\_seq

# Input the number of terms

terms = int(input("Enter the number of Fibonacci terms to generate: "))

# Display the Fibonacci sequence

result = fibonacci(terms)

print("Fibonacci Sequence:")

print(result)

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

# Function to calculate the factorial using recursion

def factorial(n):

if n == 0:

return 1

else:

return n \* factorial(n - 1)

# Input a number

num = int(input("Enter a number: "))

# Calculate and print the factorial

result = factorial(num)

print(f"The factorial of {num} is {result}")

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

# Input weight and height

weight\_kg = float(input("Enter your weight in kilograms: "))

height\_m = float(input("Enter your height in meters: "))

# Calculate BMI

bmi = weight\_kg / (height\_m \*\* 2)

# Interpret the BMI

if bmi < 18.5:

category = "Underweight"

elif 18.5 <= bmi < 24.9:

category = "Normal Weight"

elif 25 <= bmi < 29.9:

category = "Overweight"

else:

category = "Obese"

# Print the BMI and category

print(f"Your BMI is {bmi:.2f}")

print(f"Category: {category}")

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

import math

# Input a number

num = float(input("Enter a number: "))

# Calculate the natural logarithm (base e) of the number

if num <= 0:

print("Natural logarithm is undefined for non-positive numbers.")

else:

result = math.log(num)

print(f"The natural logarithm of {num} is {result:.2f}")

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

# Function to calculate the cube sum of the first n natural numbers

def cube\_sum(n):

if n <= 0:

return 0

else:

return n\*\*3 + cube\_sum(n - 1)

# Input the value of n

n = int(input("Enter a positive integer (n): "))

# Calculate and print the cube sum

result = cube\_sum(n)

print(f"The cube sum of the first {n} natural numbers is {result}")