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

Ans 1 : 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

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

Ans : def factorial(n):

if n == 0:

return 1

else:

return n \* factorial(n - 1)

# Input the number for which you want to find the factorial

num = int(input("Enter a non-negative integer: "))

if num < 0:

print("Factorial is not defined for negative numbers.")

else:

result = factorial(num)

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

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

Ans : def calculate\_bmi(weight\_kg, height\_m):

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

return bmi

# Input weight in kilograms and height in meters

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

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

# Calculate BMI

bmi = calculate\_bmi(weight\_kg, height\_m)

# Display the BMI and corresponding category

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

if bmi < 18.5:

print("You are underweight.")

elif 18.5 <= bmi < 24.9:

print("You have a healthy weight.")

elif 25 <= bmi < 29.9:

print("You are overweight.")

else:

print("You are obese.")

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

Ans : import math

# Input a number for which you want to calculate the natural logarithm

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

if num <= 0:

print("Natural logarithm is not defined for non-positive numbers.")

else:

# Calculate the natural logarithm using the math.log() function

natural\_log = math.log(num)

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

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

Ans : def cube\_sum\_of\_natural\_numbers(n):

if n <= 0:

return 0

else:

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

# Input the value of n

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

if n <= 0:

print("Please enter a positive integer.")

else:

result = cube\_sum\_of\_natural\_numbers(n)

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