BASIC_PYTHON_PROGRAMMING_ASSIGNMENT_6

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

```
def fibonacci(n):
    if n <= 1:
        return n
    else:
        return fibonacci(n-1) + fibonacci(n-2)

# take input from the user
 num = int(input("Enter the number of terms: "))

# check if the number of terms is valid
if num <= 0:
    print("Invalid input! Please enter a positive integer.")
else:
    print("Fibonacci sequence:")
    for i in range(num):
        print(fibonacci(i))
```

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

```
def factorial(n):
    if n == 0:
        return 1
    else:
        return n * factorial(n-1)

# take input from the user
num = int(input("Enter a non-negative integer: "))

# check if the input is valid
if num < 0:
    print("Invalid input! Please enter a non-negative integer.")
else:
```

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

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

```
# take input from the user
weight = float(input("Enter your weight in kilograms: "))
height = float(input("Enter your height in meters: "))

# calculate the BMI
bmi = weight / (height ** 2)

# print the BMI to the user
print(f"Your Body Mass Index is {bmi:.2f}.")
```

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

```
import math

# take input from the user
num = float(input("Enter a positive number: "))

# check if the input is valid
if num <= 0:
    print("Invalid input! Please enter a positive number.")
else:
    # calculate the natural logarithm
    result = math.log(num)

    # print the result to the user
    print(f"The natural logarithm of {num} is {result:.2f}.")
```

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

```
# take input from the user
n = int(input("Enter a positive integer: "))


# check if the input is valid
if n <= 0:
   print("Invalid input! Please enter a positive integer.")
else:
   # calculate the cube sum
   cube_sum = sum([i**3 for i in range(1, n+1)])


   # print the result to the user
   print(f"The cube sum of the first {n} natural numbers is {cube_sum}.")
```