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**ASSIGN : 04**

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

# Function to calculate the factorial of a number

def factorial(num):

if num == 0 or num == 1:

return 1

else:

return num \* factorial(num - 1)

# Get user input for the number

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

# Call the factorial function and print the result

if num < 0:

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

elif num == 0:

print("The factorial of 0 is 1.")

else:

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

1. Write a Python Program to Display the multiplication Table?

# Get user input for the number

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

# Display multiplication table

print(f"Multiplication table for {num}:")

for i in range(1, 11):

result = num \* i

print(f"{num} x {i} = {result}")

1. Write a Python Program to Print the Fibonacci sequence?

n = int(input("Enter the number of terms in the Fibonacci sequence: "))

# Initialize variables for the first two terms

a, b = 0, 1

# Print the Fibonacci sequence

print("Fibonacci sequence:")

print(a, end=", ")

print(b, end=", ")

for i in range(2, n):

c = a + b

print(c, end=", ")

a, b = b, c

print("...")

1. Write a Python Program to Check Armstrong Number?

# Get user input for the number

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

# Convert the number to a string to determine the number of digits

num\_str = str(num)

num\_len = len(num\_str)

# Calculate the sum of cubes of digits

sum\_of\_cubes = 0

for digit\_str in num\_str:

digit = int(digit\_str)

sum\_of\_cubes += digit \*\* num\_len

# Check if the number is an Armstrong number

if num == sum\_of\_cubes:

print(f"{num} is an Armstrong number.")

else:

print(f"{num} is not an Armstrong number.")

1. Write a Python Program to Find Armstrong Number in an Interval?

def is\_armstrong\_number(num):

# Function to check if a number is an Armstrong number.

num\_str = str(num)

num\_len = len(num\_str)

armstrong\_sum = 0

for digit\_str in num\_str:

digit = int(digit\_str)

armstrong\_sum += digit \*\* num\_len

return armstrong\_sum == num

# Input interval from the user

lower\_limit = int(input("Enter lower limit of interval: "))

upper\_limit = int(input("Enter upper limit of interval: "))

print("Armstrong numbers in the interval [{}, {}] are:".format(lower\_limit, upper\_limit))

# Iterate through the numbers in the interval and check if each one is an Armstrong number

for num in range(lower\_limit, upper\_limit + 1):

if is\_armstrong\_number(num):

print(num)

1. Write a Python Program to Find the Sum of Natural Numbers?

def sum\_of\_natural\_numbers(n):

# Function to find the sum of first n natural numbers.

return sum(range(1, n + 1))

# Input n from the user

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

# Check if n is a positive integer

if n <= 0:

print("Error: n must be a positive integer.")

else:

# Call the sum\_of\_natural\_numbers() function to find the sum

sum\_of\_naturals = sum\_of\_natural\_numbers(n)

print("The sum of first {} natural numbers is: {}".format(n, sum\_of\_naturals))