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

ANS: def factorial(number):

if number < 0:

return None

elif number == 0:

return 1

else:

result = 1

for i in range(1, number + 1):

result \*= i

return result

if \_\_name\_\_ == "\_\_main\_\_":

try:

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

fact = factorial(num)

if fact is None:

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

else:

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

except ValueError:

print("Invalid input. Please enter a valid integer.")

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

ANS: def display\_multiplication\_table(number):

print(f"Multiplication Table for {number}:")

for i in range(1, 11):

print(f"{number} x {i} = {number \* i}")

if \_\_name\_\_ == "\_\_main\_\_":

try:

user\_input = int(input("Enter a number to display its multiplication table: "))

display\_multiplication\_table(user\_input)

except ValueError:

print("Invalid input. Please enter a valid number.")

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

ANS: def fibonacci\_sequence(num\_terms):

fibonacci = [0, 1]

while len(fibonacci) < num\_terms:

next\_term = fibonacci[-1] + fibonacci[-2]

fibonacci.append(next\_term)

return fibonacci

if \_\_name\_\_ == "\_\_main\_\_":

try:

num\_terms = int(input("Enter the number of terms for the Fibonacci sequence: "))

if num\_terms <= 0:

print("Please enter a positive integer.")

else:

fib\_sequence = fibonacci\_sequence(num\_terms)

print("Fibonacci Sequence:")

print(fib\_sequence)

except ValueError:

print("Invalid input. Please enter a valid integer.")

Fibonacci Sequence:

[0, 1, 1, 2, 3, 5, 8, 13, 21, 34]

1. Write a Python Program to Check Armstrong Number?

ANS: An Armstrong number is a number that is equal to the sum of its own digits each raised to the power of the number of digits.

For example, 153 is an Armstrong number because:

1^3 + 5^3 + 3^3 = 1 + 125 + 27 = 153

Here's a Python program to check if a given number is an Armstrong number or not:

def is\_armstrong\_number(number):

num\_str = str(number)

num\_digits = len(num\_str)

total = sum(int(digit) \*\* num\_digits for digit in num\_str)

return number == total

if \_\_name\_\_ == "\_\_main\_\_":

try:

num = int(input("Enter a number to check if it's an Armstrong number: "))

if is\_armstrong\_number(num):

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

else:

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

except ValueError:

print("Invalid input. Please enter a valid integer.")

For example, if you enter `153`, the program will display:

153 is an Armstrong number.

If you enter `123`, the program will display:

123 is not an Armstrong number.

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

ANS: def is\_armstrong\_number(number):

num\_str = str(number)

num\_digits = len(num\_str)

total = sum(int(digit) \*\* num\_digits for digit in num\_str)

return number == total

def find\_armstrong\_numbers\_in\_interval(start, end):

armstrong\_numbers = []

for num in range(start, end + 1):

if is\_armstrong\_number(num):

armstrong\_numbers.append(num)

return armstrong\_numbers

if \_\_name\_\_ == "\_\_main\_\_":

try:

start = int(input("Enter the starting number of the interval: "))

end = int(input("Enter the ending number of the interval: "))

if start <= end:

armstrong\_numbers = find\_armstrong\_numbers\_in\_interval(start, end)

if len(armstrong\_numbers) > 0:

print("Armstrong numbers in the interval:")

print(armstrong\_numbers)

else:

print("No Armstrong numbers found in the interval.")

else:

print("Invalid interval. The starting number should be less than or equal to the ending number.")

except ValueError:

print("Invalid input. Please enter valid integers.")

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

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

return (n \* (n + 1)) // 2

if \_\_name\_\_ == "\_\_main\_\_":

try:

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

if num < 1:

print("Please enter a positive integer.")

else:

result = sum\_of\_natural\_numbers(num)

print(f"The sum of natural numbers up to {num} is: {result}")

except ValueError:

print("Invalid input. Please enter a valid positive integer.")

For example enter “10”,the program will display:

The sum of natural numbers up to 10 is: 55