**Challenges Unit-1:**

**1. Implement a recursive function to calculate the factorial of a given number.**

**# Factorial of a number using recursion**

**def recur\_factorial(n):**

**if n == 0 or n==1:**

**return 1**

**else:**

**return n\*recur\_factorial(n-1)**

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

**result = recur\_factorial(num)**

**print("The factorial of {} is {}.".format(num,result))**

**(OR)**

# Factorial of a number using recursion

def recur\_factorial(n):

if n == 1:

return n

else:

return n\*recur\_factorial(n-1)

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

# check if the number is negative

if num < 0:

print("Sorry, factorial does not exist for negative numbers")

elif num == 0:

print("The factorial of 0 is 1")

else:

print("The factorial of", num, "is", recur\_factorial(num))

**2. Write a program that determines whether a year entered by the user is a leap year or not using ifelif-else statements.**

# determines whether a year entered by the user is a leap year or not

def IsLeapYear(year):

if (year % 4 == 0 and year % 100 != 0) or year % 400 ==0:

return True

else:

return False

# To get year (integer input) from the user

year = int(input("Enter a year: "))

if IsLeapYear(year):

print('{} is a leap year.'.format(year))

else:

print('{} is not a leap year.'.format(year))

**(OR)**

# Python program to check if year is a leap year or not

# To get year (integer input) from the user

year = int(input("Enter a year: "))

# divided by 100 means century year (ending with 00)

# century year divided by 400 is leap year

if (year % 400 == 0) and (year % 100 == 0):

print("{0} is a leap year".format(year))

# not divided by 100 means not a century year

# year divided by 4 is a leap year

elif (year % 4 ==0) and (year % 100 != 0):

print("{0} is a leap year".format(year))

# if not divided by both 400 (century year) and 4 (not century year)

# year is not leap year

else:

print("{0} is not a leap year".format(year))