**Exercise 4**

#Q1: Write a Program to make a simple calculator that can add, subtract, multiply and divide using functions

def calculator():

    x = float(input("enter the value for n1"))

    y = float(input("enter the value of n2"))

    operator = input("enter the operator : +, -, \*, /")

    if operator == "+":

        result = x+y

    elif operator == "-":

        result = x-y

    elif operator == "\*":

        result = x\*y

    else:

        result = x/y

    print(result)

#Qn.2 write a Program to display the Fibonacci sequence up to n-th term where n is provided by the user

num = int(input("enter the terms"))

a,b = 0,1

for i in range(num+1):

    a,b = b,a+b

    print(a)

#Qn.3 Write a Python Program To Display Powers of 2 Using Anonymous Function

( Lambda function). Take number of terms from user

terms = int(input("ENTER VALUES"))

b = range(1, terms+1)

k = list(map(lambda x : x\*\*2, b))

k

#Qn.4 Write a Python Program to find numbers divisible by thirteen from a list using anonymous function

list1 = list(map(int,input("ENTER VALUES").split()))

list2 = list(filter(lambda x : x%13==0,list1))

list2

#Q5: Write a Python program to display the Fibonacci sequence up to n-th term by using recursive functions

num = int(input("enter the terms"))

def fibo(num):

    if num<=1:

        return num

    else:

        return fibo(num-1) + fibo(num-2)

result = fibo(num)

print(result)

#Q 6: Write a Python program to find the sum of natural numbers up to n using recursive function

num = int(input("enter the terms"))

def sum1(num):

    if num==0:

        return num

    else:

        return num + sum1(num-1)

result = sum1(num)

print(result)

#Q. 7. Write a version of a palindrome recognizer that also accepts phrase palindromes such as &quot;Go hang a salami I&#39;m a lasagna hog.&quot;, &quot;Was it a rat I saw?&quot;, &quot;Step on no pets&quot;, &quot;Sit on a potato pan, Otis&quot;, &quot;Lisa Bonet ate no basil&quot;, &quot;Satan, oscillate my metallic sonatas&quot;, &quot;I roamed under it as a tired nude Maori&quot;, &quot;Rise to vote sir&quot;, or the exclamation &quot;Dammit, I&#39;m mad!&quot;. Note that punctuation, capitalization, and spacing are usually ignored.

s = input("enter the string")

s = s.replace(" ", "")

s = s.lower()

import string

k = string.punctuation

str = []

for i in s:

    if i not in k:

        str.append(i)

if str[::]==str[::-1]:

    print("Given string is palindrome")

else:

    print("given string is not palindrome")

#Q. 8. A pangram is a sentence that contains all the letters of the English alphabet at least once, for example: The quick brown fox jumps over the lazy dog. Your task here is to write a function to check a sentence to see if it is a pangram or not.

import string

s = set(string.ascii\_lowercase)

pangram = "The quick brown fox jumps over the lazy dog"

k = pangram.lower()

k = k.replace(" ","")

k = set(k)

if k.issubset(s):

    print("this is pangram")

else:

    print("this is not pangram")

#Q.9. Define a function overlapping() that takes two lists and returns True if they have at least one member in common, False otherwise.

def overlapping():

    list1 = set(input("enter list values").split(","))

    list2 = set(input("enter list values").split(","))

    k = list1.intersection(list2)

    if k == set():

        print("False")

    else:

        print("True")

#Q. 10. Write a function find\_longest\_word() that takes a list of words and returns the length of the longest one.

def find\_longest\_word():

    word = input("enter your words").split()

    k = 0

    for i in range(len(word)):

        k = max(k, len(word[i]))

        if k == len(word[i]):

            m = word[i]

    print("length of longest word is",k, "and longest word is", m)

#Q. 11. Write a function filter\_long\_words() that takes a list of words and an integer n and returns the list of words that are longer than n.

def filter\_long\_words(n):

    word = input("enter your words").split()

    final = []

    for i in word:

        if len(i)>n:

            final.append(i)

    print(final)