|  |  |
| --- | --- |
| **Ex. No. 6**  **Date:02.06.2021** | **FUNCTIONS – LEVEL 2** |

**AIM:**

To write Python programs using recursion concept.

**PROGRAMMING BASE:**

Function calling itself.

**Syntax:**

deffunctionname( parameters ):

functionname(parameters)

return [expression]

**PROGRAMS:**

**a) Display Fibonacci series using recursion**

**Description:**

Get the value of n from the user.

Sample Input

9

Sample Output

0

1

1

2

3

5

8

13

21

Sample Input

-6

Sample Output

Please give a positive number

Sample Input

0

Sample Output

Give a number greater than zero

**Program:**

"""Name: R.sridevi

Roll.No: 20UIT021

Program name: To display Fibonacci series using recursion."""

def recur\_fibo(n):

if n <= 1:

return n

else:

return(recur\_fibo(n-1) + recur\_fibo(n-2))

nterms =int(input())

if nterms < 0:

print("Please give a positive number")

elif nterms == 0:

print("Give a number greater than zero")

else:

for i in range(nterms):

print(recur\_fibo(i))

**Test Cases:**

|  |  |  |
| --- | --- | --- |
| **Test Case No.** | **Input** | **Expected Output** |
| 1 | -6 | Please give a positive number |
| 2 | 9 | 0  1  1  2  3  5  8  13  21 |
| 3 | 0 | Give a number greater than zero |
| 4 | 1 | 0 |
| **Total Test Cases** | | **4** |
| **Number of Test Cases Passed** | | **4** |

**b) Find the sum of digits of a given number using recursion**

**Description:**

Sample Input

123

Sample Output

6

Sample Input

-98

Sample Output

-17

Sample Input

0

Sample Output

0

**Program:**

"""Name: R.sridevi

Roll.No: 20UIT021

Program Name: To find the sum of digits of a given number using recursion. """

number = int(input())

temp = number

if number<0:

number = number\*-1

def sum\_of\_digit(n):

if n< 10:

return n

else:

return n%10 + sum\_of\_digit(n/10)

digit\_sum = sum\_of\_digit(number)

if temp < 0:

print("%d" %(-1\*digit\_sum))

else:

print("%d" %(digit\_sum))

**Test Cases:**

|  |  |  |
| --- | --- | --- |
| **Test Case No.** | **Input** | **Expected Output** |
| 1 | 123 | 6 |
| 2 | 0 | 0 |
| 3 | -98 | -17 |
| 4 | 7 | 7 |
| **Total Test Cases** | | 4 |
| **Number of Test Cases Passed** | | 4 |

**RESULT:**

Thus, the Python programs are executed successfully.