KUMARAGURU
COLLEGE OF TECHNOLOGY
LABORATORY MANUAL

Exercise/Experiment Number: 5

Lab Code / Lab   **: U18CSI2201 - PROBLEM SOLVING AND PROGRAMMING USING PYTHON**

Course / Branch   **: BE**

Title of the exercise/experiment :Problems based on User defined Functions

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STEP 1: INTRODUCTION

a)   OBJECTIVE OF THE EXERCISE/EXPERIMENT

Solve Problems using user defined functions.

STEP 2: ACQUISITION

b)   Facilities/material required to do the exercise/experiment:

Sl.No.	Facilities/material required	Quantity
1.	Python	1

c)   Procedure for doing the exercise/experiment:

1.Write a program to print the absolute value of a given value.

(i) print(absolute_value(2))

Solution:

```
def absolute_value(a):
    if a<0:
        return -1*a
    else:
        return a
print("The Absolute value of 2 is",absolute_value(2))
```

Output:

```
In [5]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')
The Absolute value of 2 is 2
```

(ii) print(absolute_value(-4))

Solution:

```python
#Vibin_20BMC046

def absolute_value(a):
    if a<0:
        return -1*a
    else:
        return a
print("The Absolute value of -4 is",absolute_value(-4))
```

Output:

```
In [6]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')
The Absolute value of -4 is 4
```

2.Write a program using functions to perform operations of an arithmetic calculator.

Solution:

```python
#Vibin_20BMC046
def add(a,b):
    return a+b
def sub(a,b):
    return a-b
def mul(a,b):
    return a*b
def div(a,b):
    return a/b
def rem(a,b):
    return a%b
def flo(a,b):
    return a//b
c=int(input("Choose an Option to perform the
Operation:\n1.Add\n2.Subtract\n3.Multiply\n4.Division\n5.Remainder\n6.Floor
Divsion\n"))
m=int(input("Enter first Number:"))
```

```python
n=int(input("Enter Second Number:"))
if c==1:
    print("Ans=",add(m,n))
if c==2:
    print("Ans=",sub(m,n))
if c==3:
    print("Ans=",mul(m,n))
if c==4:
    print("Ans=",div(m,n))
if c==5:
    print("Ans=",rem(m,n))
if c==6:
    print("Ans=",flo(m,n))
```

Output:

```
In [9]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Choose an Option to perform the Operation:
1.Add
2.Subtract
3.Multiply
4.Division
5.Remainder
6.Floor Divsion
1

Enter first Number:3

Enter Second Number:6
Ans= 9

In [10]: runfile('C:/Users/Vibin/Python Scripts/Python Codes/Pro 2_1.py',
wdir='C:/Users/Vibin/Python Scripts/Python Codes')

Choose an Option to perform the Operation:
1.Add
2.Subtract
3.Multiply
4.Division
5.Remainder
6.Floor Divsion
4

Enter first Number:10

Enter Second Number:3
Ans= 3.3333333333333335
```

3.For a quadratic equation in the form of ax2+bx+c, the discriminant is b2-4ac. Write a function to compute the discriminant D, that returns the following output depending on the discriminant D.

Solution:

#Vibin.R_20BMC046

```
def disc(l,m,n):
    return m**2-4*l*c
a,b,c=input("Enter values of a,b,c in quadratic eqn. ax2+bx+c:").split()
a,b,c=int(a),int(b),int(c)
print("The Discriminant D is ",disc(a,b,c))
```

Output:

```
In [3]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter values of a,b,c in quadratic eqn. ax2+bx+c:2 3 7
The Discriminant D is  -47

In [4]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter values of a,b,c in quadratic eqn. ax2+bx+c:1 6 8
The Discriminant D is  4
```

4. Write a program using recursive function to find the sum of numbers from 1 to n.

Solution:

#Vibin.R_20BMC046

```
def sum(b):
    s=0
    for i in range(1,b+1):
        s=s+i
    print("The Sum =",s)
n=int(input("Enter a value for n:"))
sum(n)
```

Output:

```
In [9]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a value for n:25
The Sum = 325

In [10]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a value for n:50
The Sum = 1275
```

5.Write a recursive function to find the factorial of a given number.

Solution:

```
#Vibin.R_20BMC046

def fact(n):
    if n==0 or n==1:
        return 1
    else:
        return n*fact(n-1)
a=int(input("Enter a number to find factorial:"))
print("The Factorial =",fact(a))
```

Output:

```
In [1]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a number to find factorial:5
The Factorial = 120

In [2]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a number to find factorial:7
The Factorial = 5040
```

6.Write a recursive function to generate the Fibonacci series for the given limit.

Solution:

#Vibin.R_20BMC046

```python
def fibo(n):
  if n <= 1:
    return n
  else:
    return(fibo(n-1)+fibo(n-2))
n=int(input("Enter the Num. of terms:"))
if n<= 0:
  print("Plese enter a positive integer")
else:
  print("Fibonacci sequence:")
  for i in range(n):
    print(fibo(i))
```

Output:

```
In [5]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter the Num. of terms:15
Fibonacci sequence:
0
1
1
2
3
5
8
13
21
34
55
89
144
233
377
```

7.Write a lambda function to find the product of two numbers.

Solution:

#Vibin.R_20BMC046

```python
pro=lambda a,b:a*b
m=int(input("Enter first number:"))
n=int(input("Enter second number:"))
```

print("The Product=",pro(m,n))

Output:

```
In [8]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter first number:15

Enter second number:4
The Product= 60
```

STEP 3: PRACTICE/TESTING

Questions with answers:

1. What is a function in Python?

A function is a self-contained block of statements which performs a specific operation whenever it is called.

2. How to call a function in python?

A function is called with function name and the values as arguments to be passed.
Syntax:
Function_name(argument1,argument2...)

KUMARAGURU
COLLEGE OF TECHNOLOGY
LABORATORY WORK BOOK

Exercise/Experiment Number: 6

Lab Code / Lab   **:U18CSI2201- PYTHON**
                                      PROGRAMMING LAB
Course / Branch   **:BE /B.Tech**
Title of the exercise/experiment **:**Develop python programs to perform various

string operations like concatenation, slicing and indexing.

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1.Write a program input two strings from the user, concatenate the strings and display it.

Solution:

a=input("Enter a String:")
b=input("Enter another String:")
print("The Concatenated String is",a+b)

Output:

```
In [11]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a String:Python

Enter another String:Programming
The Concatenated String is Python Programming
```

2. Write the output for the following:

```
    Test_String = "Civil Engineering"

a. len(Test_String)
b. Test_String[1]
c. Test_String[-2]
d. Test_String[0:3]
e. Test_String[-2:-4]
f. Test_String[0:len(Test_String):2]
g. Test_String[::-1]
```

```
h. Test_String[3:-2]
i. Test_String[0:]
j. Test_String[:]
k. Test_String[6:14]
```

Output:

```
In [14]: Test_String="Civil Engineering"

In [15]: len(Test_String)
Out[15]: 17

In [16]: Test_String[1]
Out[16]: 'i'

In [17]: Test_String[-2]
Out[17]: 'n'

In [18]: Test_String[0:3]
Out[18]: 'Civ'

In [19]: Test_String[-2:-4]
Out[19]: ''

In [20]: Test_String[0:len(Test_String):2]
Out[20]: 'CvlEgneig'

In [21]: Test_String[::-1]
Out[21]: 'gnireenignE liviC'

In [22]: Test_String[3:-2]
Out[22]: 'il Engineeri'

In [23]: Test_String[0:]
Out[23]: 'Civil Engineering'

In [24]: Test_String[:]
Out[24]: 'Civil Engineering'

In [25]: Test_String[6:14]
Out[25]: 'Engineer'
```

3.Perform the operations for the given string and write the output of the following:

myString = "CodeNinjaDotIn"

a. Check length of the string

b. Slice from index '2' up to but not including index '7'

c. Slice from index '5' onwards

d. Slice up to but not including index '9'

e. Full slice

f. Slice including every alternative item starting from '0'th

g. Slice of every third element beginning from index at '0'

h. String reversal with a step of -1

g. Slice counting backwards starting at index '7'   up to but not including index '2' and printing every alternative character.

Output:

```
In [29]: myString="CodeNinjaDotIn"

In [30]: len(myString)
Out[30]: 14

In [31]: myString[2:7]
Out[31]: 'deNin'

In [32]: myString[5:]
Out[32]: 'injaDotIn'

In [33]: myString[:9]
Out[33]: 'CodeNinja'

In [34]: myString[::]
Out[34]: 'CodeNinjaDotIn'

In [35]: myString[0::2]
Out[35]: 'CdNnaoI'

In [36]: myString[0::3]
Out[36]: 'CenDI'

In [37]: myString[::-1]
Out[37]: 'nItoDajniNedoC'

In [38]: myString[7:2:-2]
Out[38]: 'jie'
```