Name: VIBIN R
Roll No: 20BMC046

KUMARAGURU

COLLEGE OF TECHNOLOGY

LABORATORY WORK BOOK

Exercise/Experiment Number: 7

Lab Code / Lab : **U18CSI2201- PYTHON PROGRAMMING LAB**

Course / Branch : **I BE /B.Tech**

Title of the exercise/experiment : Demonstrate string functions using Python

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1. Write a program that accepts a sentence/word as input and calculates the number of letters, digits and special characters.

Test Case		1	2
Input		abc@123	There is a laptop with #CS123
Output	Letters	3	20
	Digits	3	3
	Special Characters	1	6

Code:

```
#Vibin_20BMC046
s=input("Enter a String:")
let=dig=spe=0
for i in s:
   if i.isalpha():
      let+=1
   elif i.isdigit():
      dig+=1
   else:
```

```
        spe+=1
print("Letters=",let)
print("Digits=",dig)
print("Special Charecters=",spe)
```

Output:

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

Enter a String:abc@123
Letters= 3
Digits= 3
Special Charecters= 1

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

Enter a String:There is a laptop with #CS123
Letters= 20
Digits= 3
Special Charecters= 6
```

2.Write a program that prints all the vowels in a given string.

Code:

```
#Vibin_20BMC046
s=input("Enter a String:")
for i in s:
    if i in 'aeiou' or i in 'AEIOU':
        print (i)
```

Output:

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

Enter a String:I am Eighteen years old
I
a
E
i
e
e
e
a
o
```

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3.Write a program to print the characters present at Odd Index and Even index positions in a String.

Code:

```
#Vibin_20BMC046
s=input("Enter a String:")
print("Odd Index Charecters are:\n",list(s[0::2]))
print("Even Index Charecters are:\n",list(s[1::2]))
```

Output:

```
In [15]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a string:Kumaraguru College of Technology
Odd Index Charecters are:
 ['K', 'm', 'r', 'g', 'r', ' ', 'o', 'l', 'g', ' ', 'f', 'T', 'c', 'n', 'l',
'g']
Even Index Charecters are:
 ['u', 'a', 'a', 'u', 'u', 'C', 'l', 'e', 'e', 'o', ' ', 'e', 'h', 'o', 'o',
'y']

In [16]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a String:Python
Odd Index Charecters are:
 ['P', 't', 'o']
Even Index Charecters are:
 ['y', 'h', 'n']
```

4.Assuming that we have some email address of the form "username@companyname.com". Write a program to print the username of a given email address. Both user names and company names consist of letters only.

Test case	1	2
Input	inboxcse@gmail.com	csedeptgroups#yahoomail.com
Output	inboxcse	Invalid email address

Code:

```
#Vibin_20BMC046
s=input("Enter your email address:")
if '@'in s:
   a=s[0:s.index('@')]
   if a.isalpha():
      print("Username:",a)
   else:
      print("Invalid email address")
```

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Output:

```
In [21]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter your email address:csedeptgroups#yahoomail.com
Invalid email address

In [22]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter your email address:inboxcse@gmail.com
Username: inboxcse
```

5.Write a program (using functions) that takes a long sentence with multiple words as input and rearranges the words in the sentence in the reverse order.

Test Case	1	2	3
Input	My name is python	Kumaraguru College of Technology	Problem based on Strings
Output	python is name My	Technology of College Kumaraguru	Strings on based Problem

Code:

```
#Vibin_20BMC046
s=input("Enter a string with multiple words:")
l=s.split(' ')
l.reverse()
print("The Reverse is:\n")
for i in l:
    print(i,end=' ')
```

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Output:

```
In [28]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a string with multiple words:My name is python
The Reverse is:

python is name My

In [29]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a string with multiple words:Kumaraguru College of Technology
The Reverse is:

Technology of College Kumaraguru

In [30]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a string with multiple words:Problem based on Strings
The Reverse is:

Strings on based Problem
```

6.Write a program that takes a long sentence with multiple words as input and replace the string "python" into python programs.

Test Case	1	2
Input	My name is python	Problem based on python
Output	My name is python programs	Problem based on python programs

Code:

```
#Vibin_20BMC046
s=input("Enter a string with multiple words:")
print(s.replace("python","python programs"))
```

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Output:

```
In [32]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a string with multiple words:My name is python
My name is python programs

In [33]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a string with multiple words:Problem based on python
Problem based on python programs
```

7. Write a Python function that accepts a string and calculate the number of uppercase letters and lowercase letters. Sample String: The quick Brown Fox

Code:

```
#Vibin_20BMC046
s=input("Enter a string:")
u=l=0
for i in s:
   if i.isupper():
      u+=1
   elif i.islower():
      l+=1
   else:
      continue
print("Upper case:",u)
print("Lower case:",l)
```

Output:

```
In [36]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a string:The quick Brown Fox
Upper case: 3
Lower case: 13
```

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8.Write a program to check whether a given string is a palindrome or not.
A string is said to be a palindrome if the reverse of the string is the same as string. For example, "NITIN" is a palindrome but "AMIT" is not.

Code:

```
#Vibin_20BMC046
s=input("Enter a word:")
print("Palindrome" if s.upper()==s[::-1].upper() else "Not Palindrome")
```

Output:

```
In [41]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a word:Nitin
Palindrome

In [42]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a word:Amit
Not Palindrome
```

9.Write a program that takes a string as input and prints the number of occurrences of each character in the string.

Test case	1	2
Input	abbaca	icici
No. of occurrences	a=3,b=2,c=1	i-3, c-2

Code:

```
#Vibin_20BMC046
s=input("Enter a String:")
l=[]
for i in s:
    if i not in l:
        l.append(i)
for i in l:
    print(i,"=",s.count(i))
```

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Output:

```
In [45]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a String:abbaca
a = 3
b = 2
c = 1

In [46]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a String:icici
i = 3
c = 2
```

10. Write a function printValue() that can accept two strings as input and prints the longer of the two. If two strings have the same length, then the function should print both the strings.

Test case	1	2	3
Input	printValue(“one”,”three”)	printValue(“laptop”,”laptop”)	printValue(“ten”,”so”)
Output	Three	laptop laptop	ten

Code:

```
#Vibin_20BMC046
def printValue(s1,s2):
    if len(s1)>len(s2):
        print (s1)
    elif len(s1)<len(s2):
        print (s2)
    else:
        print (s1,s2)
a,b=input("Enter two Words:").split()
print("Larger String is",end=':')
printValue(a,b)
```

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Output:

```
In [55]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter two Words:One Three
Larger String is:Three

In [56]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter two Words:laptop laptop
Larger String is:laptop laptop

In [57]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter two Words:ten so
Larger String is:ten
```

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LABORATORY WORK BOOK

Exercise/Experiment Number: 8

Lab Code / Lab	**:**	**U18CSI2201- PYTHON PROGRAMMING LAB**
Course / Branch	**:**	**I BE /B.Tech**
Title of the exercise/experiment	**:**	Programs to perform operations on list

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STEP 1: INTRODUCTION

a) OBJECTIVE OF THE EXERCISE/EXPERIMENT

Solve problems using lists.

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 Python program to sum all the items in a list.

Code:

```
#Vibin_20BMC046
a=input("Enter numbers to find sum seperated by comma:").split(',')
s=0
```

```
for i in a:
   s=s+int(i)
print("The Sum of all items=",s)
```

Output:

```
In [6]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter numbers to find sum seperated by comma:5,7,9,2,6,7
The Sum of all items= 36
```

2. Write a Python program to get the largest number from a list without using built in methods.

Code:

```
#Vibin_20BMC046
a=input("Enter the numbers separated with space:").split(' ')
print("The Entered List is:",a)
max=a[0]
for i in range(1,len(a)):
   if int(a[i])>int(max):
      max=a[i]
   else:
      continue
print("The Largest in list is:",max)
```

Output:

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

Enter the numbers separated with space:23 67 84 59 25 95
The Entered List is: ['23', '67', '84', '59', '25', '95']
The Largest in list is: 95
```

3. Write a Python function that takes two lists and returns True if they have at least one common member.

Code:

```
#Vibin_20BMC046
a=input("Enter members of first list separated by spaces:").split(' ')
b=input("Enter members of second list separated by spaces:").split(' ')
```

```
print("The Entered Lists are:\n",a,"\n",b)
for i in a:
   if i in b:
      i=1
      break
   else:
      continue
print("True") if i==1 else print("Nothing common")
```

Output:

```
In [6]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter members of first list separated by spaces:10 20 30

Enter members of second list separated by spaces:20 40 60
The Entered Lists are:
 ['10', '20', '30']
 ['20', '40', '60']
True

In [7]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter members of first list separated by spaces:tin bin kin men

Enter members of second list separated by spaces:ten run fun gun
The Entered Lists are:
 ['tin', 'bin', 'kin', 'men']
 ['ten', 'run', 'fun', 'gun']
Nothing common
```

4. Write a Python program to insert a string “emp” at the beginning of all items in a list.

Code:

```
#Vibin_20BMC046
a=[23,34,45,56,67]
print("The List is:",a)
b=[]
for i in a:
   b.append("emp"+str(i))
print(b)
```

Output:

```
In [12]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')
The List is: [23, 34, 45, 56, 67]
['emp23', 'emp34', 'emp45', 'emp56', 'emp67']
```

5. Write a program to create a list with elements. Display the elements of the list that are divisible by 5 using list comprehension.

Code:

```
#Vibin_20BMC046
a=input("Enter the numbers separated by spaces:").split(' ')
s=[int(i)for i in a]
print("The Entered list is:\n",s)
print("Numbers divisible by 5:")
d=[i for i in s if i%5==0]  #using list comprehension
print(d)
```

Output:

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

Enter the numbers separated by spaces:60 23 5 85 92 6 93 105 234 235
The Entered list is:
 [60, 23, 5, 85, 92, 6, 93, 105, 234, 235]
Numbers divisible by 5:
[60, 5, 85, 105, 235]
```

6. Write a program to remove first and last element from a list.

Code:

```
#Vibin_20BMC046
a=input("Enter elements separated by spaces:").split()
print("Before removing:",a)
a.pop(0)
a.pop(-1)
print("After removing:",a)
```

Output:

```
In [21]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter elements separated by spaces:pen ten hen gun run men
Before removing: ['pen', 'ten', 'hen', 'gun', 'run', 'men']
After removing: ['ten', 'hen', 'gun', 'run']
```

7. Write a program to count the occurrences of each element within a list.

Code:

```
#Vibin_20BMC046
a=eval(input("Enter a list:"))
b=[]
[b.append(i) for i in a if i not in b]
for j in b:
    print(j,"=",a.count(j))
```

Output:

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

Enter a list:[4,6,2,4,8,1,4,2,3,7,3]
4 = 3
6 = 1
2 = 2
8 = 1
1 = 1
3 = 2
7 = 1

In [12]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter a list:[5,7,9,1,3,4]
5 = 1
7 = 1
9 = 1
1 = 1
3 = 1
4 = 1
```

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8. Write a program that prompts the user to enter the name of the fruit and its weight. The program should then display the information in the same form but in the alphabetical order.

Test case	1	2	3
Input	Kiwi, 4 kg; Apple, 6 kg; Banana, 11 kg	Gowva, 4 kg; Apple, 6 kg; Banana, 11 kg	Carrot, 4 kg; Kiwi, 6 kg; Banana, 11 kg
Output	Apple, 6 kg; Banana, 11 kg; Kiwi, 4 kg	Apple, 6 kg;Banana, 11 kg;Gowva, 4 kg	Banana, 11 kg; Carrot, 4 kg; Kiwi, 6 kg

Code:

```
#Vibin_20BMC046
a=[]
n=int(input("Enter no of fruits:"))
print("Enter fruit names and weight in kg. separated by comma:")
for i in range(0,n):
   b=input("{0}.".format(i+1)).split(',')
   a.append(b)
f_name=[]
for i in a:
   f_name.append(i[0])
f_name.sort()
sorted=[]
for i in f_name:
   for j in a:
      if i==j[0]:
         sorted.append(j)
print("\nAfter Arranging:")
print(sorted)
```

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Output:

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

Enter no of fruits:3
Enter fruit names and weight in kg. separated by comma:

1.Kiwi,4

2.Apple,6

3.Banana,11

After Arranging:
[['Apple', '6'], ['Banana', '11'], ['Kiwi', '4']]

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

Enter no of fruits:3
Enter fruit names and weight in kg. separated by comma:

1.Gowva,4

2.Apple,6

3.Banana,11

After Arranging:
[['Apple', '6'], ['Banana', '11'], ['Gowva', '4']]
```

```
In [6]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter no of fruits:4
Enter fruit names and weight in kg. separated by comma:

1.Carrot,4

2.Kiwi,6

3.Apple,6

4.Banana,11

After Arranging:
[['Apple', '6'], ['Banana', '11'], ['Carrot', '4'], ['Kiwi', '6']]
```

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9. Write a program for binary search using list.

Test case	**1**	**2**
Input	4,7,8,11,21	4,7,8,11,21
Enter the number to be searched	11	18
Output	The number is present	The number is not present

Code:

```
#Vibin_20BMC046
def search(a,key):
    low,high=0,len(a)-1
    while(low<=high):
        mid=(low+high)//2
        if a[mid]==key:
            return mid
        elif key<a[mid]:
            high=mid-1
        elif key>a[mid]:
            low=mid+1
    return -1
a=[4,7,8,11,21]
key=int(input("Enter the number to be searched:"))
r=search(a,key)
if r==-1:
    print("The number is not present.")
else:
    print("The number is present in index no.",r)
```

Output:

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

Enter the number to be searched:11
The number is present in index no. 3
```

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

Enter the number to be searched:18
The number is not present.
```

10. Write a python program to sort a given list of numbers using either bubble sort or selection sort.

Code:

```
#Vibin_20BMC046
def bub_sort(a):
   for i in range(len(a)-1,0,-1):
      for j in range(i):
         if a[j]>a[j+1]:
            temp=a[j]
            a[j]=a[j+1]
            a[j+1]=temp
   return a
a=input("Enter numbers to sort separated by space:").split(' ')
for i in range(0,len(a)):
   a[i]=int(a[i])
print("The Entered List is:\n",a)
print("The Sorted List:\n",bub_sort(a))
```

Output:

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

Enter numbers to sort separated by space:23 67 36 96 14 68 89
The Entered List is:
 [23, 67, 36, 96, 14, 68, 89]
The Sorted List:
 [14, 23, 36, 67, 68, 89, 96]

In [6]: runfile('C:/Users/Vibin/.spyder-py3/temp.py', wdir='C:/Users/
Vibin/.spyder-py3')

Enter numbers to sort separated by space:36 79 10 6 26 93
The Entered List is:
 [36, 79, 10, 6, 26, 93]
The Sorted List:
 [6, 10, 26, 36, 79, 93]
```