FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERIG
Department of Computer Engineering

Experiment 1 - Python Programs on String and List

1. Course Details:

Academic Year	**2023 - 24**	**Estimated Time**	**Experiment No. 1 – 02 Hours**
Course & Semester	**S.E. (COMP) – Sem. IV**	**Subject Name**	**Python Programming Lab**
Module No.	**01**	**Chapter Title**	**Python Basics**
Experiment Type	**Software Performance**	**Subject Code**	**CSL405**

Name of Student	Prakash P. Biswas	**Roll No.**	9947
Date of Performance.:	28/1/2024	**Date of Submission. :**	9/2/2024
CO Mapping	**CSL405.1: Demonstrate basic concepts of python such as control statements, basic data structures, functions and oops in python. (Comprehension)**		

Timeline (2)	**Preparedness (2)**	**Effort (2)**	**Result (2)**	**Documentation (2)**	**Total (10)**

2. Aim & Objective of Experiment

To implement following programs in Python.

Objective of experiment 1 is to understand the basic concepts of Python Programming. Students will be able to demonstrate how to create list and string using Python language. Students will be able to apply various operations like slicing on strings and list, control statements, various functions like append, sort, remove etc. on list.

Pre-Requisite: Any programming language like C, C++
Tools: Python IDLE

Python Lab 1(Strings and Lists)

1. Print as below:
   First Line
   Second Line
   Third Line

2. Declare a complex number a=2+3j.

Find the data type, real part, imaginary part, complex conjugate, absolute value of a.

3. Declare a string variable s=hello Print the
   outputs as:
   ell, llo, hel

4. Change the string hello to help!

5. S=' hello '
   Remove the white spaces before hello

6. Declare two lists L1=1,2,3,4 and L2=4,5,6,7 Print the
   output of L1 + L2

7. Declare a list L= [1, 2, 'apple', [12,'orange']] Change
   orange to pineapple

8. Check whether apple is there in the list L.

9. L=[1,2,3,4,'apple']
   Add an element 'orange' at the end Add element six
   between 1 and 2. Remove element 4
   Delete element 3

10. factors= [1,2,5,10], s='hello'
    Find the outputs of: factors [0] and factors [0:1] and compare with the outputs of s [0]
    and s [0:1]

11. List L= ['now', 'on', 'spaces']
    Print the output as 'now on spaces'

13. firstname ='ajeet', lastname ='tripathi'
    print fullname with the variable names

14. Declare a list of odd numbers in the range 1 to 15.

15. Explain the difference of the following codes in A and B
    A. Declare a list
       mylist= [1,2,3,4,5] copylist=mylist
       mylist. append('apple')
       print both copylist and mylist
    B. Declare a list
       mylist= [1,2,3,4,5] copylist=mylist [:]
       mylist. append('apple')
       print both copylist and mylist

16. Cars= ['bmw', 'toyota', 'audi', 'maruti']
    Permanently sort the list.

Permanently sort the list in reverse order. Temporarily
sort the list.
Reverse the order of the list

Basic Data Types Challenge 1: Letter Counter App

Description:

Write a program that will get a message and a specific letter from a user and then count the number of occurrences of that letter in the given message. You program should count "H" and "h" as an occurrence of h. Your program will then display a message to the user stating the occurrences of the given letter.

Example Output:

Welcome to the Letter Counter App
What is your name: **Guido van Rossum**
Hello Guido van Rossum!
I will count the number of times that a specific letter occurs in a message.
Please enter a message: Hello, how are you doing today? I hope that you have a happy holiday!
Which letter would you like to count the occurrences of: h
Guido, your message has 7 h's in it.

Post Lab Questions:

1. Lists Challenge 1: Grade Sorter App

Description:

Write a program that will collect four grades from a user. Your program will then sort these grades from highest to lowest. Then, your program will simulate dropping the lowest two grades the user entered. Lastly, it will comment on the users highest grade.

Example Output:

Welcome to the Grade Sorter App
What is your first grade (0-100): 82
What is your second grade (0-100): 95
What is your third grade (0-100): 100
What is your fourth grade (0-100): 61
Your grades are: [82, 95, 100, 61]
Your grades from highest to lowest are: [100, 95, 82, 61]
The lowest two grades will now be dropped.
Removed grade: 61
Removed grade: 82
Your remaining grades are: [100, 95]
Nice work! Your highest grade is a 100.

2. Lists Challenge 2: Grocery List App

Description:

Write a program that will simulate a grocery shopping list. Your
program will start with two items on the shopping list, meat and cheese, and then allow a user to add three new items to the list. To simulate shopping, your program will ask the user what item they just purchased and then remove the item from the shopping list. Upon having only two items in the shopping list, your program will inform the user that the store is out of a particular item and prompt the user to replace the item with a new item. You will use the datetime library to display the current date and time the shopping is taking place in mm/dd hh:mm format.

Note:-students are expected to paste screenshot of the program with output

```
1    print("first line")
2    print("second line")
3    print("third line")
```

1stExp

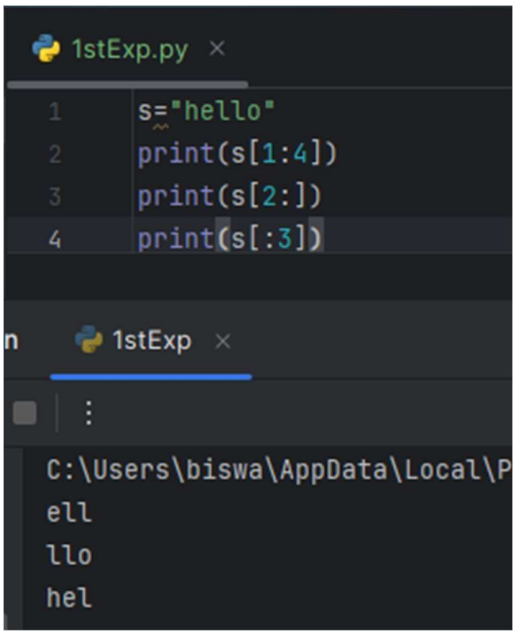
```
C:\Users\biswa\AppData\Local\Progra
first line
second line
third line
```

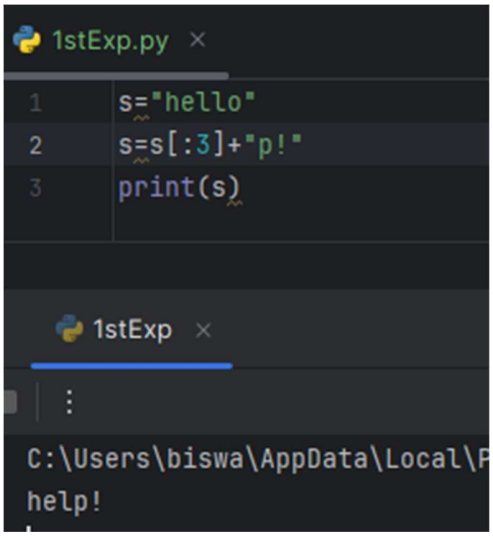
1stExp.py

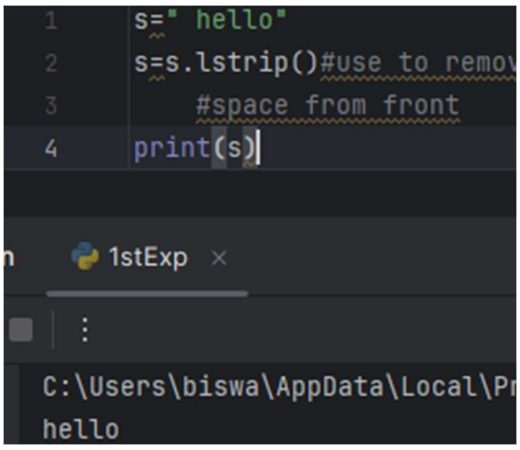
```
1    a=2+3j
2    print(type(a))
3    print(a.real)
4    print(a.imag)
5    print(a.conjugate())
6    print(abs(a))
```

1stExp

```
C:\Users\biswa\AppData\Local\Program
<class 'complex'>
2.0
3.0
(2-3j)
3.605551275463989
```


1stExp.py
1 s="hello"
2 print(s[1:4])
3 print(s[2:])
4 print(s[:3])
1stExp
C:\Users\biswa\AppData\Local\P
ell
llo
hel


1stExp.py
1 s="hello"
2 s=s[:3]+"p!"
3 print(s)
1stExp
C:\Users\biswa\AppData\Local\P
help!


1 s=" hello"
2 s=s.lstrip()#use to remov
3 #space from front
4 print(s)
1stExp
C:\Users\biswa\AppData\Local\Pr
hello

```
L1=[1,2,3,4]
L2=[4,5,6,7]
s=L1+L2
print(s)
```

```
1stExp
C:\Users\biswa\AppData\Local\Pr
[1, 2, 3, 4, 4, 5, 6, 7]
```

```
L=[1,2,"apple",[12,"orange"]]
L[3][1]="pineapple"
print(L)
```

```
1stExp
C:\Users\biswa\AppData\Local\Programs\P
[1, 2, 'apple', [12, 'pineapple']]
```

1stExp.py

```
L=[1,2,"apple",[12,"orange"]]
if 'apple' in L:
    print("Yes")
else:
    print("No")
```

else

```
1stExp
C:\Users\biswa\AppData\Local\Programs\Python
Yes
```

```python
L=[1,2,3,4,"apple"]
L.append('orange')
print(L)
L.insert( _index: 2,  _object: 6)
print(L)
L.remove(4)
print(L)
del L[3]
print(L)
```

```
1stExp
C:\Users\biswa\AppData\Local\Program
[1, 2, 3, 4, 'apple', 'orange']
[1, 2, 6, 3, 4, 'apple', 'orange']
[1, 2, 6, 3, 'apple', 'orange']
[1, 2, 6, 'apple', 'orange']
```

```python
L = ['now', 'on', 'spaces']
s = ' '.join(L)
print(s)
```

```
1stExp
C:\Users\biswa\AppData\Local\Progr
now on spaces
```

1stExp.py

```python
firstname= 'ajeet'
lastname = 'tripati'
print(firstname+' '+lastname)
```

```
1stExp
C:\Users\biswa\AppData\Local\Programs\Pyth
ajeet tripati
```

```python
odd = [i for i in range(1, 16, 2)]
print(odd)
```

```
n  1stExp ×
C:\Users\biswa\AppData\Local\Programs\Pyt
[1, 3, 5, 7, 9, 11, 13, 15]
```

```python
mylist = [1, 2, 3, 4, 5] #copy meth
copylist = mylist.copy()
mylist.append('apple')
print("Original List (mylist):", mylist)
print("Copied List (copylist):", copylist)
mylist = [1, 2, 3, 4, 5] #slicing
copylist = mylist[:]
mylist.append('apple')
print("Original List:", mylist)
print("Copied List:", copylist)
```

```
1stExp ×
C:\Users\biswa\AppData\Local\Programs\Python\Pytho
Original List (mylist): [1, 2, 3, 4, 5, 'apple']
Copied List (copylist): [1, 2, 3, 4, 5]
Original List: [1, 2, 3, 4, 5, 'apple']
Copied List: [1, 2, 3, 4, 5]
```

```python
Cars= ["bmw", "toyota", "audi", "maruti"]
Cars.sort()
print(Cars)
Cars.sort(reverse=True)
print(Cars)
sorted_cars = sorted(Cars)
print(Cars)
Cars.reverse()
print(Cars)
```

1stExp

```
C:\Users\biswa\AppData\Local\Programs\Python\Py
['audi', 'bmw', 'maruti', 'toyota']
['toyota', 'maruti', 'bmw', 'audi']
['toyota', 'maruti', 'bmw', 'audi']
['audi', 'bmw', 'maruti', 'toyota']
```

```python
print("Welcome to the Letter counter App\n")
name=input("What is your name:")
print("Hello ",name,'!')
msg=input("Please enter the message:")
ltr=input("Occuurance of letter:")
count=sum(1 for char in msg.lower() if char in (ltr.lower(),ltr.upper()))
print(name,"Your message has",count," ",ltr,"in it")
```

1stExp

```
C:\Users\biswa\AppData\Local\Programs\Python\Python312\python.exe C:\Users\bis
Welcome to the Letter counter App

What is your name:Prakash Biswas
Hello  Prakash Biswas !
Please enter the message:Dream Big
Occuurance of letter:4
Prakash Biswas Your message has 0   4 in it
```

1stExp.py

```python
print("Welcome to the grade sorter App")
print("What is your grade (0-100):")
grades = []
for i in range(4):
    grade = int(input(f"Enter grade: "))
    grades.append(grade)
sorted_grades = sorted(grades, reverse=True)
print(f"Your grades are: {grades}")
print(f"Your grades from highest to lowest are: {sorted_grades}")
print("The lowest two grades will be dropped")
dropped_grades = sorted_grades[:-2]
for grade in sorted_grades[-2:]:
    print(f"Removed Grades: {grade}")
remaining_highest = max(dropped_grades)
print(f"Your remaining grades: {dropped_grades}")
print(f"Highest grade: {remaining_highest}")

```

```
C:\Users\biswa\AppData\Local\Programs\Python\Python312\py
Welcome to the grade sorter App
What is your grade (0-100):
Enter grade: 78
Enter grade: 90
Enter grade: 87
Enter grade: 56
Your grades are: [78, 90, 87, 56]
Your grades from highest to lowest are: [90, 87, 78, 56]
The lowest two grades will be dropped
Removed Grades: 78
Removed Grades: 56
Your remaining grades: [90, 87]
Highest grade: 90
```

```python
import datetime

shopping_list = ["meat", "cheese"]
current_datetime = datetime.datetime.now()
print("Welcome to grocery shopping at", current_datetime)

for i in range(3):
    new_item = input("Add item to the shopping list: ")
    shopping_list.append(new_item)

while len(shopping_list) > 2:
    purchased_item = input("What item did you just purchase? ")
    shopping_list.remove(purchased_item)

out_of_stock_item = shopping_list[0]
print("Store is out of items")

renew_item = input("Please enter replacement item: ")
shopping_list.append(renew_item)

print("Final shopping list:", shopping_list)

current_time = datetime.datetime.now()
print("Thank you for shopping at", current_time)
```

```
C:\Users\biswa\AppData\Local\Programs\Python\Python312\python.exe C:\U
Welcome to grocery shopping at 2024-02-10 09:17:20.102436
Add item to the shopping list: apple
Add item to the shopping list: orange
Add item to the shopping list: milk
What item did you just purchase? milk
What item did you just purchase? meat
What item did you just purchase? apple
Store is out of items
Please enter replacement item: Water
Final shopping list: ['cheese', 'orange', 'Water']
Thank you for shopping at 2024-02-10 09:17:48.662372

Process finished with exit code 0
```