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	Mark Lopes	**Roll No.**	9913
Date of Performance.:	26/01/2024	**Date of Submission.:**	26/01/2024
CO Mapping	**CSL405.1: Demonstrate basic concepts of python such as control statements, basic data structures, functions and oops in python. (Comprehension)**		

Timeline (5)	Preparedness (5)	Effort (5)	Result (5)	Documentation (5)	Total (25)

2. Aim & Objective of Experiment
To implement following programs in Python.

Objective of expt 1 is to understand the basic concepts og 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, absolutevalue of a.
3. Declare a string variable s=helloPrint
   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=4,5,6,7Print
   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 endAdd
   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 theoutputs 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

Q1.

```
print("First Line\nSecond Line\nThird Line")
```

```
"C:\Users\Mark Lopes\PycharmProjects\exp
First Line
Second Line
Third Line

Process finished with exit code 0
```

Q2.

```
import numpy
a = 2+3j
print(type(a))
print(f"Real:{a.real}, Imaginary:{a.imag}")
print(numpy.conj(a))
print(abs(a))
```

```
"C:\Users\Mark Lopes\PycharmProjects\ex
<class 'complex'>
Real:2.0, Imaginary:3.0
(2-3j)
3.605551275463989

Process finished with exit code 0
```

Q3.

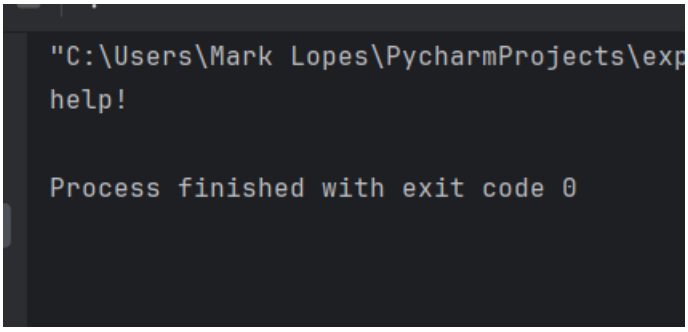
```
s = "helloPrint"
print(f"{s[1:4]}, {s[2:5]}, {s[0:3]}")
```

```
"C:\Users\Mark Lopes\PycharmProjects\e
ell, llo, hel

Process finished with exit code 0
```

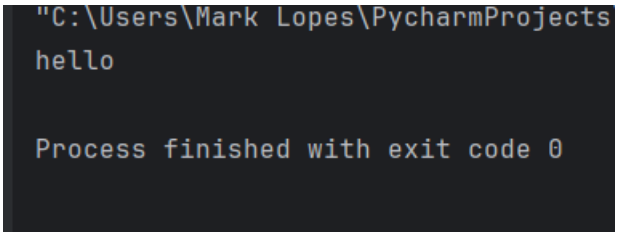
Q4.

```
string = 'hello'
print(string.replace(string,"help!"))
```



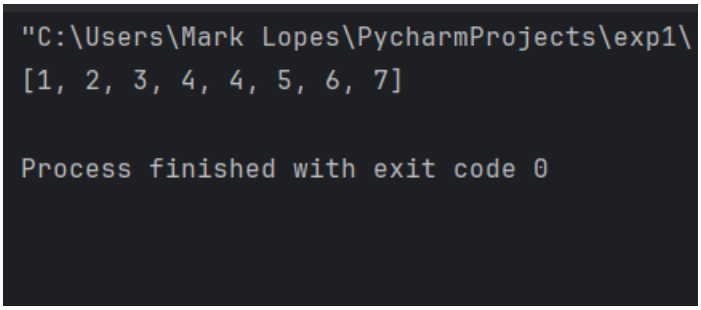
Q5.

```
S = '  hello  '
print(S.replace(" ",""))
```



Q6.

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



Q7

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

```
"C:\Users\Mark Lopes\PycharmProjects\exp1\.
[1, 2, 'apple', [12, 'pineapple']]

Process finished with exit code 0
```

Q8.

```
L = [1,2,'apple',[12,'orange']]
for item in L:
    if item == 'apple':
        print("apple is present")
```

```
"C:\Users\Mark Lopes\PycharmProjects\exp1\
apple is present

Process finished with exit code 0
```

Q9.

```
L=[1,2,3,4,'apple']
L.append('orange')
print(L)
L.insert(1,6)
print(L)
L.remove(4)
print(L)
L.remove(3)
print(L)
```

```
"C:\Users\Mark Lopes\PycharmProjects\exp
[1, 2, 3, 4, 'apple', 'orange']
[1, 6, 2, 3, 4, 'apple', 'orange']
[1, 6, 2, 3, 'apple', 'orange']
[1, 6, 2, 'apple', 'orange']

Process finished with exit code 0
```

Q10.

```
factors= [1,2,5,10]
s = 'hello'
print(factors[0] == s[0])
print(factors[0:1] == s[0:1])
```

```
"C:\Users\Mark Lopes\PycharmProjects\exp1
False
False

Process finished with exit code 0
```

Q11

```
L= ['now', 'on', 'spaces']
print(f"{L[0]} {L[1]} {L[2]}")
```

```
"C:\Users\Mark Lopes\PycharmProjec
now on spaces

Process finished with exit code 0
```

Q13.

```
firstname='ajeet'
lastname='tripathi'
print(f"firstname:{firstname} lastname:{lastname}")
```

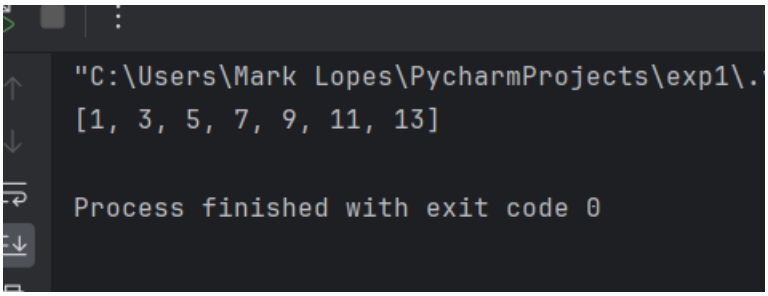
```
"C:\Users\Mark Lopes\PycharmProjects\exp1\.v
firstname:ajeet lastname:tripathi

Process finished with exit code 0
```

Q14.

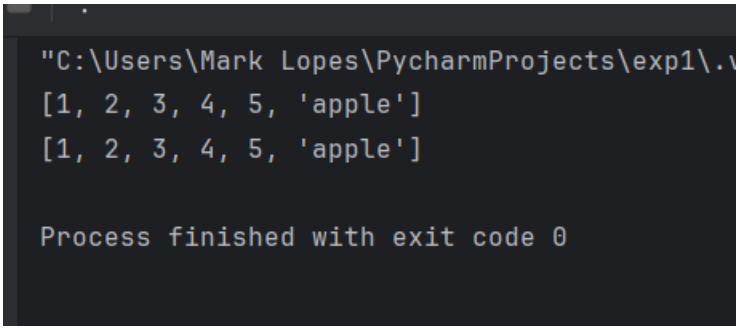
```
odd_no = []
for i in range(1,15):
    if i%2!= 0:
        odd_no.append(i)

print(odd_no)
```

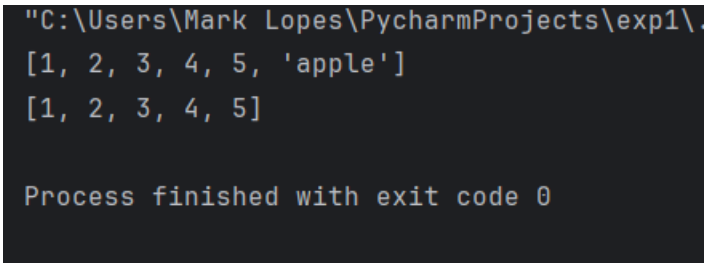


Q15.

```
mylist= [1,2,3,4,5]
copylist=mylist
mylist.append('apple')
print(mylist)
print(copylist)
```




```
mylist= [1,2,3,4,5]
copylist=mylist[:]
mylist.append('apple')
print(mylist)
print(copylist)
```



Q16.

```
Cars=['bmw', 'toyota', 'audi', 'maruti']
#sort permanent
Cars.sort()
print(Cars)
#reverse permanent
Cars.reverse()
print(Cars)
#temporary sort
Cars_sort = sorted(Cars)
print(Cars_sort)
#reverse temporary
print(Cars[::-1])
```

```
"C:\Users\Mark Lopes\PycharmProjects\exp1\.ve
['audi', 'bmw', 'maruti', 'toyota']
['toyota', 'maruti', 'bmw', 'audi']
['audi', 'bmw', 'maruti', 'toyota']
['audi', 'bmw', 'maruti', 'toyota']

Process finished with exit code 0
```

Challenge_1:-

```
def count_occurrences(message, letter):
    message = message.lower()
    letter = letter.lower()
    count = message.count(letter)
    return count


print("Welcome to the Letter Counter App")
user_name = input("What is your name: ")
print(f"Hello {user_name}!")

print("I will count the number of times that a specific letter occurs in a
message.")
message = input("Please enter a message: ")
letter = input("Which letter would you like to count the occurrences of: ")

result = count_occurrences(message, letter)

print(f"{user_name}, your message has {result} {letter}'s in it.")
```

```
"C:\Users\Mark Lopes\PycharmProjects\exp1\.venv\Scripts\python.exe" "C:\Users\Mark L
Welcome to the Letter Counter App
What is your name: Mark Lopes
Hello Mark Lopes!
I will count the number of times that a specific letter occurs in a message.
Please enter a message: My name is Mark Lopes
Which letter would you like to count the occurrences of: m
Mark Lopes, your message has 3 m's in it.

Process finished with exit code 0
```

Postlab_1:-

```python
print("Welcome to the Grade Sorter App")

grades = []
for i in range(1, 5):
    grade = int(input(f"What is your {i} grade (0-100): "))
    grades.append(grade)

print("\nYour grades are:", grades)

grades.sort()
grades.reverse()
print("Your grades from highest to lowest are:", grades)

grades_drop = grades[-2:]

for bye_grade in grades_drop:
    print(f"Removed grade: {bye_grade}")

print("\nYour remaining grades are:", grades[:-2])


print(f"Nice work! Your highest grade is a {max(grades)}.")
```

```
"C:\Users\Mark Lopes\PycharmProjects\exp1\.venv\Scripts\python.e
Welcome to the Grade Sorter App
What is your 1 grade (0-100): 80
What is your 2 grade (0-100): 90
What is your 3 grade (0-100): 50
What is your 4 grade (0-100): 100

Your grades are: [80, 90, 50, 100]
Your grades from highest to lowest are: [100, 90, 80, 50]
Removed grade: 80
Removed grade: 50

Your remaining grades are: [100, 90]
Nice work! Your highest grade is a 100.

Process finished with exit code 0
```

Postlab_2:-

```
from datetime import datetime


def display_list(items):
    print("\nCurrent Shopping List:")
    for item in items:
        print(f"- {item}")
    print()


shopping_list = ["vada pav", "biryani"]

display_list(shopping_list)

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

display_list(shopping_list)

for i in range(3):
    purchased_item = input("What item did you just purchase? ")
    try:
        shopping_list.remove(purchased_item)
        print(f"{purchased_item} removed from the shopping list.")
    except ValueError:
        print(f"Sorry, {purchased_item} is not in the shopping list. Please
check your input.")
```

```
    display_list(shopping_list)

out_of_item = shopping_list.pop()
print(f"\nThe store is out of {out_of_item}. Please replace it with a new
item.")
replacement_item = input("Enter the replacement item: ")
shopping_list.append(replacement_item)

display_list(shopping_list)

current_time = datetime.now().strftime("%m/%d %H:%M")
print(f"\nShopping completed on {current_time}.")
```

```
"C:\Users\Mark Lopes\PycharmProjects\exp1\.venv\

Current Shopping List:
- vada pav
- biryani

Add a new item to the shopping list: burger
Add a new item to the shopping list: pizza
Add a new item to the shopping list: kfc

Current Shopping List:
- vada pav
- biryani
- burger
- pizza
- kfc

What item did you just purchase? kfc
kfc removed from the shopping list.

Current Shopping List:
- vada pav
- biryani
- burger
- pizza

What item did you just purchase? pizza
pizza removed from the shopping list.
```

```
Current Shopping List:
- vada pav
- biryani
- burger

What item did you just purchase? vada pav
vada pav removed from the shopping list.

Current Shopping List:
- biryani
- burger


The store is out of burger. Please replace it with a new item.
Enter the replacement item: chicken

Current Shopping List:
- biryani
- chicken


Shopping completed on 01/26 19:29.

Process finished with exit code 0
```