NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL
DATA SCIENCE LAB ASSIGNMENT-2

Name: P MANOHAR RAO

Roll No:197158

Section: A

**1)Write a python program to create a list with n number of items (where n should be
atleast 6) with different types (integer, float, string) and perform the following
functions:**

```
l=[1,2,3,4.1,5.12,6.123,'NITW','CSE','Warangal']
l
```

```
l=[1,2,3,4.1,5.12,6.123,'NITW','CSE','Warangal']
l
```

```
[1, 2, 3, 4.1, 5.12, 6.123, 'NITW', 'CSE', 'Warangal']
```

a. Count the length of the list

```
print("length of the list is ",len(l))
```

```
print("length of the list is ",len(l))
```

```
length of the list is  9
```

b. Access the last element in the list using negative indexing.

```
c. print("last element  of the list is ",l[-1])
```

```
print("last element  of the list is ",l[-1])
```

```
last element  of the list is  Warangal
```

c. Add one item to a list using the append()method.

```
l.append('Telangana')
l
```

```
[1,
 2,
 3,
 4.1,
 5.12,
 6.123,
 'NITW',
 'CSE',
 'Warangal',
 'Telangana',
 'Telangana']
```

d. Add several items using the extend()method.

```
e. l1=['Pincode',506001,'India']
f. l.extend(l1)
g. l
```
```
[1,
 2,
 3,
 4.1,
 5.12,
 6.123,
 'NITW',
 'CSE',
 'Warangal',
 'Telangana',
 'Telangana',
 'Pincode',
 506001,
 'India']
```

e. Add a list as an item to the existing list (nested list).

```
l.append(l1)
l
```
```
[1,
 2,
 3,
 4.1,
 5.12,
 6.123,
 'NITW',
 'CSE',
 'Warangal',
 'Telangana',
 'Telangana',
 'Pincode',
 506001,
 'India',
 ['Pincode', 506001, 'India']]
```

f. Use the index operator to access the items at various location within the list. [Access 3 different index from the list] [provide comments to mention the location]

```
l[0:4] # 0 to 3
l[3:6] # 3 to 5
l[5:9] # 5 to 8
```
```
[36] l[0:4] # 0 to 3

     [1, 2, 3, 4.1]
```
```
[37] l[3:6] # 3 to 5

     [4.1, 5.12, 6.123]
```
```
l[5:9] # 5 to 8

[6.123, 'NITW', 'CSE', 'Warangal']
```

g. Add an element to the list at the specified index using insert() method. [provide comments to specify the index]

```
l.insert(0,0) # adding 0 at index 0
l
```

```
[0,
 1,
 2,
 3,
 4.1,
 5.12,
 6.123,
 'NITW',
 'CSE',
 'Warangal',
 'Telangana',
 'Telangana',
 'Pincode',
 506001,
 'India',
 ['Pincode', 506001, 'India']]
```

h. Replace an existing element from the list at a specified location. [provide comments to specify the index]

```
l[5]=5.1122
l
```

```
l[5]=5.1122
l
```

```
[0,
 1,
 2,
 3,
 4.1,
 5.1122,
 6.123,
 'NITW',
 'CSE',
 'Warangal',
 'Telangana',
 'Telangana',
 'Pincode',
 506001,
 'India',
 ['Pincode', 506001, 'India']]
```

h. Add duplicate elements to the list.

```
l.insert(5,2)
l.insert(4,2)
l
```

```
[46] l.insert(5,2)
     l.insert(4,2)
     l

     [0,
      1,
      2,
      3,
      2,
      4.1,
      2,
      5.1122,
      6.123,
      'NITW',
      'CSE',
      'Warangal',
      'Telangana',
      'Telangana',
      'Pincode',
      506001,
      'India',
      ['Pincode', 506001, 'India']]
```

i. Remove the item at the given index from the list using pop() method.

```
l.pop(4)
l
```

```
[47] l.pop(4)
     l

     [0,
      1,
      2,
      3,
      4.1,
      2,
      5.1122,
      6.123,
      'NITW',
      'CSE',
      'Warangal',
      'Telangana',
      'Telangana',
      'Pincode',
      506001,
      'India',
      ['Pincode', 506001, 'India']]
```

j. Sort the elements of the given list in a specific ascending or descending order.

```
l2=l[0:8]
l2.sort()
l2
```

```
l2=l[0:8]
l2.sort()
l2
```

```
[0, 1, 2, 2, 3, 4.1, 5.1122, 6.123]
```

k. Reverse the elements of the list using reverse() method.

```
l.reverse()
l
```

```
[['Pincode', 506001, 'India'],
 'India',
 506001,
 'Pincode',
 'Telangana',
 'Telangana',
 'Warangal',
 'CSE',
 'NITW',
 6.123,
 5.1122,
 2,
 4.1,
 3,
 2,
 1,
 0]
```

2)Write a Python program to create a tuple with n different data types and implement
the two methods: count() and index().

```
t1=(1,2,7.1,6.23,'tuples',1,'python',2,1,1)
t1
```

```
t1=(1,2,7.1,6.23,'tuples',1,'python',2,1,1)
t1
```

```
(1, 2, 7.1, 6.23, 'tuples', 1, 'python', 2, 1, 1)
```

count():

```
t1.count(1)
```

```
t1.count(1)
```

```
4
```

```
t1.count(2)
```

```
t1.count(2)

2
```

index():

```
t1.index(2)
```

```
t1.index(2)

1
```

```
t1.index('python')
```

```
[72] t1.index('python')

6
```

3)Write a Python program to create two sets (S1 and S2) with n number of different
elements [add elements to the sets S1 and S2, such that there are atleast 2 common
elements between them] and perform the following functions:

```
s1=set([1,2,8,6,3,4,7])
s1
s2={5,6,3,2,1,4,5,8,11,2,3,7,5}
s2
```

```
[81] s1=([1,2,8,6,3,4,7])
     s1

     {1, 2, 3, 4, 5, 6, 7, 8, 11}

[79] s2={5,6,3,2,1,4,5,8,11,2,3,7,5}
     s2

     {1, 2, 3, 4, 5, 6, 7, 8, 11}
```

a. Perform union and intersection

```
s1.union(s2)
```

```
s1.union(s2)

{1, 2, 3, 4, 5, 6, 7, 8, 11}
```

```
s1.intersection(s2)
```

```
[89] s1.intersection(s2)

     {1, 2, 3, 4, 6, 7, 8}
```

b. Add elements using add () and update () methods

```
s1.add(10)
s1
```

```
[91] s1.add(10)
     s1

     {1, 2, 3, 4, 6, 7, 8, 10}
```

```
s2.update()
s2
```

```
s2.update()
s2

  {1, 2, 3, 4, 5, 6, 7, 8, 11}
```

c. Perform S1 – S2

```
s1.difference(s2)
```

```
[93] s1.difference(s2)


        {10}
```

d. Find the Symmetric Difference of S1 and S2

```
s1.symmetric_difference(s2)
```

```
[94] s1.symmetric_difference(s2)


        {5, 10, 11}
```