Lab 04
OOP – BSDS

Note 1: Do your own work, talking, sharing, discussion is considered as cheating (in any case and strictly discouraged), therefore be careful. TA's will be there for your help. Wait for TA, if you have any query
Note 2: Do your best effort, partial marks will be given for your attempt

Task 1: Declare an empty list. Append 20 values in the list at random in range 1-9. Display values in a single line. Make another list, append value from first list to this second list. For each element in the new list, count how many times element exists in the list and print in the format:

```
[3, 5, 5, 3, 7, 4, 4, 4, 8, 1, 8, 1, 9, 9, 4, 8, 8, 1, 1, 8]
3 exists 2 times in the list
5 exists 2 times in the list
7 exists 1 times in the list
4 exists 4 times in the list
8 exists 5 times in the list
1 exists 4 times in the list
9 exists 2 times in the list
```

Again, declare two empty lists. One to store elements, second to store counts. Count every non-zero element from new list in the old list. Append non-zero element in one of the latest lists and append count in second latest list.

Print both of the new lists in single line. Next print every element in one of the new list, count times. Suppose your elements list have element 3, where corresponding counts list has 4, you have to print element 3, 4 times. See format of further output, it will also help you to understand the requirement.

```
[3, 1, 5, 2, 9, 4, 6, 8, 7]
[4, 4, 2, 1, 1, 3, 1, 2, 2]
3 3 3 3 1 1 1 1 5 5 2 9 4 4 4 6 8 8 7 7
```

Task 2: Declare an empty list. Append 20 **unique** values in the list at random in range 10-99. Display values in a single line. Try your best to write the code to generate unique values, however, if you fail to do so in ten minutes, leave your unique generation code in comments and initialize list with unique values in range 10-99. One sample list is:

```
[30, 33, 60, 47, 36, 64, 27, 57, 25, 83, 24, 89, 95, 94, 53, 97, 75, 35, 11, 38]
```

Take a new empty list. Copy values from old list into new list. Shuffle new list 100 times that is run a loop of 100 times, select two random indexes within the range of list and swap values at both index. See the sample new list after shuffle, match it with old list to understand the shuffle:

```
[57, 97, 83, 30, 89, 33, 75, 11, 47, 94, 38, 60, 95, 36, 27, 24, 25, 35, 64, 53]
```

Next, match every element of the old list in the new list and print element and its index in new list. See sample output again:

```
30 exists at index 3 in second list
33 exists at index 5 in second list
...
```

Finally, find distance of each element in the old list with same element in the new list. Use **abs** function to find absolute distance. Find and print the maximum distance between two values:

```
Maximum distance between two elements is: 14
```

Node down the element 97 at index 15 in first list and it is at index 1 in second list, therefore distance is 14, which is maximum distance between any two elements.

********* END OF LAB (Best of Luck) ********