Industrial Training Daily Diary
Day 3

Date: June 25
Topic:
Python Lists – Fundamental Operations & Problem Solving
Objectives of the Day
• Reinforce understanding of Python Lists through practical problem-solving.
• Implement logical operations using list manipulation.
• Strengthen problem-solving capabilities using Python list structures.
Topics Covered
Review of Python List Fundamentals
• Lists as ordered, mutable collections.
• Use of built-in functions: len(), append(), remove(), pop(), and slicing techniques.

Programs covered

- ***1. Remove duplicates from the list.***
  numbers = [1, 2, 3, 2, 4, 2, 5]

  Desired Output: [1, 2, 3, 4, 5]

```
list = [1, 2, 3, 2, 4, 2, 5]
print(set(list))
```

```
{1, 2, 3, 4, 5}
```

- ***2. Remove duplicates from the list.***
  Numbers = [1, 2, 3, 2, 4, 2, 5]

  Desired Output: [1, 2, 3, 4, 5]

```
list = [1, 2, 3, 2, 4, 2, 5]
new = []
for i in list:
 if i not in new:
 new.append(i)
print(new)
```

```
{1, 2, 3, 4, 5}
```

-
- ***3. Sort the list in ascending and descending order.***
  numbers = [3, 1, 4, 2, 5]

  Ascending Order: [1, 2, 3, 4, 5]
  Descending Order: [5, 4, 3, 2, 1]

```
def maximum(list):
 mx = list[0]
 for i in range(len(list)):
 if list[i]>mx:
 mx = list[i]
 return mx

list1 = [3, 1, 4, 2, 5]
```

```
d = []
a = []
while(len(list1)!=0):
 m = maximum(list1)
 list1.remove(m)
 d.append(m)
print("descending order : ", d)

for i in range(len(d)-1,-1,-1):
   a.append(d[i])

print("ascending order : ", a)
```

```
descending order :  [5, 4, 3, 2, 1]
ascending order :  [1, 2, 3, 4, 5]
```

- ***4. Calculate the average of numbers in the list.***
  numbers = [1, 2, 3, 4, 5]

  print(average)
  Desired Output: 3.0

```
list =  [1, 2, 3, 4, 5]
sum = 0
n = len(list)
for i in list:
 sum = sum + i
average = sum/n
print("average is ")
print(average)
```

```
average is
3.0
```

- ***5. Write a Python program to find items starting with a specific character from a list.***
  Expected Output:
  Original list:
  ['abcd', 'abc', 'bcd', 'bkie', 'cder', 'cdsw', 'sdfsd', 'dagfa', 'acjd']
  Items start with a from the said list:
  ['abcd', 'abc', 'acjd']
  Items start with d from the said list:
  ['dagfa']
  Items start with w from the said list:
  []

```
list = ['abcd', 'abc', 'bcd', 'bkie', 'cder', 'cdsw', 'sdfsd', 'dagfa', 'acjd']
char = 'd'
list2 = []

for i in list :
 if i[0]==char:
 list2.append(i)
print(list2)
```

```
['dagfa']
```

- ***6. Write a Python program to convert a given list of strings into list of lists.***
  Original list of strings:
  ['Red', 'Maroon', 'Yellow', 'Olive']
  Convert the said list of strings into list of lists:
  [['R', 'e', 'd'], ['M', 'a', 'r', 'o', 'o', 'n'], ['Y', 'e', 'l', 'l', 'o', 'w'], ['O', 'l', 'i', 'v', 'e']]

```
list =  ['Red', 'Maroon', 'Yellow', 'Olive']
l2 = []
for i in list :
 l = []
 for j in i:
 l.append(j)
 l2.append(l)
print(l2)
```

```
[['R', 'e', 'd'], ['M', 'a', 'r', 'o', 'o', 'n'], ['Y', 'e', 'l', 'l', 'o', 'w'], ['O', 'l', 'i', 'v', 'e']]
```

- ***7. Write a Python program to get the frequency of the elements in a list.***

  Original List : [10, 10, 10, 10, 20, 20, 20, 20, 40, 40, 50, 50, 30]
  10: 4
  20: 4
  40: 2
  50: 2
  30: 1

```
def count(list,num):
 count = 0
 for i in list :
 if i == num :
 count = count + 1
 return count
dup = []
list =  [10, 10, 10, 10, 20, 20, 20, 20, 40, 40, 50, 50, 30]
for i in list :
 if i not in dup :
 dup.append(i)
 print(i, " : " , count(list,i))
```

```
10  :  4
20  :  4
40  :  2
50  :  2
30  :  1
```

- ***8. Write a Python program to remove consecutive (following each other continuously) duplicates (elements) from a given list.***
  Original list:
  [0, 0, 1, 2, 3, 4, 4, 5, 6, 6, 6, 7, 8, 9, 4, 4]
  After removing consecutive duplicates:
  [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 4]

```
list = [0, 0, 1, 2, 3, 4, 4, 5, 6, 6, 6, 7, 8, 9, 4, 4]
list.append("")
new = []
for i in range(0,len(list)-1):
 if list[i]!=list[i+1]:
```

```
new.append(list[i])

print(new)
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 4]
```

- ***9. Write a Python program to remove all elements from a given list that are present in another list.***
  Original lists:
  list1: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
  list2: [2, 4, 6, 8]
  Remove all elements from 'list1' present in 'list2:
  [1, 3, 5, 7, 9, 10]

```
list1= [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
list2= [2, 4, 6, 8]
for i in list2:
 if i in list1 :
 list1.remove(i)
print(list1)
```

```
[1, 3, 5, 7, 9, 10]
```

- ***10. Write a Python program to create a list by concatenating a given list with a range from 1 to n.***

  my_list = ['p', 'q']
  n = 4

  Sample Output:

  ['p1', 'q1', 'p2', 'q2', 'p3', 'q3', 'p4', 'q4']

```
def concat(num,ch):
    temp = ch + str(num)
    ls.append(temp)

list = ['p', 'q']
n = 4
ls = []

for i in range(1,n+1):
    for j in list:
        concat(i,j)
print(ls)
```

```
['p1', 'q1', 'p2', 'q2', 'p3', 'q3', 'p4', 'q4']
```