

Industrial Training Daily Diary

Day 4

Date: June 26

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}
```

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- *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

```

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•
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-
- 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']
```