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. Write a program to print armstrong numbers between 100 to 1000***

```
def count_digits(num):
 count = 0
 while (num != 0):
 num = int(num / 10)
 count = count + 1
 return count

def check_armstrong(num) :
 x = num
 digits = count_digits(num)
 sum = 0

 while(num != 0 ):
 r = int(num%10)
 sum = sum + r**(digits)
 num = int(num/10)

 if(sum == x):
 return 1
 else:
 return -1

 #100-1000
list = []
for i in range(100,1001):
 flag = check_armstrong(i)
 if(flag == 1) :
 list.append(i)
 else:
 continue
print(list)
```

```
[153, 370, 371, 407]
```

- ***2 . Given a Python list of numbers. Turn every item on a list into its square***

  Given:

  List = [1, 2, 3, 4, 5, 6, 7]
  Expected output:

  [1, 4, 9, 16, 25, 36, 49]

```
list = [1, 2, 3, 4, 5, 6, 7]
for i in range(len(list)):
 list[i] = list[i] * list[i]
print(list)
```

```
[1, 4, 9, 16, 25, 36, 49]
```

- ***3. Given a Python list, find value 20 in the list, and if it is present, replace it with 200. Only update the first occurrence of a value***
  Given

  list1 = [5, 10, 15, 20, 25, 50, 20]
  Expected output:

  list1 = [5, 10, 15, 200, 25, 50, 20]

```
list1 = [5, 10, 15, 20, 25, 50, 20]
target = 20
replacement = 200
for i in range(0,len(list1)):
 if list1[i] == target :
 list1[i] = replacement
 break
 else :
 continue
print(list1)
```

```
[5, 10, 15, 200, 25, 50, 20]
```

- ***4. Write a program that will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included).***

```
list = []
for i in range(2000,3201):
 if (i%7==0 and i%5!=0):
 list.append(i)
print(list)
```

```
[2002, 2009, 2016, 2023, 2037, 2044, 2051, 2058, 2072, 2079, 2086, 2093, 2107, 2114, 2121, 2128, 2142, 2149, 2156,
2163, 2177, 2184, 2191, 2198, 2212, 2219, 2226, 2233, 2247, 2254, 2261, 2268, 2282, 2289, 2296, 2303, 2317, 2324,
2331, 2338, 2352, 2359, 2366, 2373, 2387, 2394, 2401, 2408, 2422, 2429, 2436, 2443, 2457, 2464, 2471, 2478, 2492,
2499, 2506, 2513, 2527, 2534, 2541, 2548, 2562, 2569, 2576, 2583, 2597, 2604, 2611, 2618, 2632, 2639, 2646, 2653,
2667, 2674, 2681, 2688, 2702, 2709, 2716, 2723, 2737, 2744, 2751, 2758, 2772, 2779, 2786, 2793, 2807, 2814, 2821,
2828, 2842, 2849, 2856, 2863, 2877, 2884, 2891, 2898, 2912, 2919, 2926, 2933, 2947, 2954, 2961, 2968, 2982, 2989,
2996, 3003, 3017, 3024, 3031, 3038, 3052, 3059, 3066, 3073, 3087, 3094, 3101, 3108, 3122, 3129, 3136, 3143, 3157,
3164, 3171, 3178, 3192, 3199]
```

- ***5. Remove empty strings from the list of strings***
  list1 = ["Mike", "", "Emma", "Kelly", "", "Brad"]
  Expected output:

  ["Mike", "Emma", "Kelly", "Brad"]

```
list1 = ["Mike", "", "Emma", "Kelly", "", "Brad"]
for i in list1:
 if i == "" :
 list1.remove(i)
print(list1)
```

```
['Mike', 'Emma', 'Kelly', 'Brad']
```

- ***6. Write a Python program to find the maximum and minimum values in a given list***
  Original list:
  [4, 3, 0, 5, 3, 0, 2, 3, 4, 2, 4, 3, 5]

  Maximum and minimum values of the said given list within the index range:
  Maximum number 5
  Minimum number 0

```
list =  [4, 3, 0, 5, 3, 0, 2, 3, 4, 2, 4, 3, 5]
max = list[0]
min = list[0]

for i in list :
 if i>max :
 max = i
 if i<min :
 min = i
print(max,min)
```

```
5 0
```

- ***7. Write a Python program to convert a list of multiple integers into a single integer.***
  Sample list: [11, 33, 50]
  Expected Output: 113350

```
string = ""
list =  [11, 33, 50]
for i in list:
 temp = str(i)
 string = string + temp
```

```
print(string)
```

```
113350
```

- ***8. reverse a list.***
  [1, 2, 3, 4] → [4, 3, 2, 1]

```
list = [1, 2, 3, 4]
reverse = []
for i in range(len(list)-1,-1,-1):
 reverse.append(list[i])
print(reverse)
```

```
[4, 3, 2, 1]
```

- ***9. the sum of elements of the list***

  [7, 8, 5, 2, 10, 12]

```
sum=0

list = [7, 8, 5, 2, 10, 12]
for i in list :
 sum = sum +i
print(sum)
```

```
44
```

- ***10. Write a Python program to push all zeros to the end of a list.***
  [7, 8,0, 5, 2,0, 10, 12,0]

  o/p = [7, 8, 5, 2, 10, 12,0,0,0]

```
list = [7, 8,0, 5, 2,0, 10, 12,0]
for i in list :
 if i == 0 :
 list.remove(i)
 list.append(0)
print(list)
```

```
[7, 8, 5, 2, 10, 12, 0, 0, 0]
```