**Day 2 session 1** **Examples programs**

**(List and Tuple)**

**(Copy and Paste the following progams in the google colab and execute them with complete realization)**

**Do the following Example programs using Google colab and Post them in your Github repository with the topic name ‘Day 2 sesson 1 Examples programs’**

**List examples**

**#Program to find the largest number in a list.**

a=[]

n=int(input("Enter number of elements:"))

for i in range(1,n+1):

b=int(input("Enter element:"))

a.append(b)

a.sort()

print("Largest element is:",a[n-1])

**Try this More pythonic 2 lines program equivalent to above codings as shown below !**

**x=0**

**print('The greatest no is',max([int(input(x)) for \_ in range(int(input("Enter no")))]))**

**#Python Program to put the even and odd elements in a list into two different lists.**

a=[]

n=int(input("Enter number of elements:"))

for i in range(1,n+1):

b=int(input("Enter element:"))

a.append(b)

even=[]

odd=[]

for j in a:

if(j%2==0):

even.append(j)

else:

odd.append(j)

print("The even list",even)

print("The odd list",odd)

**#Instead of forementioned 14 lines program, the equivalent 4 lines !**

**#Pythonic program is here ....**

**x=0**

**l=[int(input(x)) for \_ in range(int(input("Enter n")))]**

**print('even list is',[ i for i in l if i%2])**

**print('odd list is',[i for i in l if not i%2])**

**#Python Program to merge two lists and sort it.**

a=[]

c=[]

n1=int(input("Enter number of elements:"))

for i in range(1,n1+1):

b=int(input("Enter element:"))

a.append(b)

n2=int(input("Enter number of elements:"))

for i in range(1,n2+1):

d=int(input("Enter element:"))

c.append(d)

new=a+c

new.sort()

print("Sorted list is:",new)

**#Instead of forementioned 13 lines program, the equivalent 5 lines !**

**# Pythonic program is here ....**

**x=0**

**l=[int(input(x)) for \_ in range(int(input("Enter how many elements")))]**

**m=[int(input(x)) for \_ in range(int(input("Enter how many elements ")))]**

**new=l+m**

**new.sort()**

**print("Sorted list is:",new)**

**#Python Program to sort the list according to the second element in the sublist.**

a=[['A',34],['B',21],['C',26],['E',29]]

for i in range(0,len(a)):

for j in range(i+1,len(a)):

if(a[i][1]>a[j][1]):

temp=a[j]

a[j]=a[i]

a[i]=temp

print(a)

**#Instead of forementioned 8 lines program, the equivalent 3 lines !**

**#Pythonic program is here ....**

**a=[['A',34],['B',21],['C',26],['E',29]]**

**a.sort(key = lambda x: x[1])**

**print(a)**

**#Python Program to find the second largest number in a list**

a=[]

n=int(input("Enter number of elements:"))

for i in range(1,n+1):

b=int(input("Enter element:"))

a.append(b)

for i in range(0,len(a)):

for j in range(0,len(a)-i-1):

if(a[j]>a[j+1]):

temp=a[j]

a[j]=a[j+1]

a[j+1]=temp

print('Second largest number is:',a[n-2])

**#Instead of forementioned 12 lines program, the equivalent 4 lines !**

**#Pythonic program is here ....**

**x=0**

**l=[int(input(x)) for \_ in range(int(input("Enter how many elements")))]**

**l.sort()**

**print("Second largest element is :",l[-2])**

**#Program to create a list of tuples with the first element as the number and the second element as the square of the number.**

l\_range=int(input("Enter the lower range:"))

u\_range=int(input("Enter the upper range:"))

a=[(x,x\*\*2) for x in range(l\_range,u\_range+1)]

print(a)

**#The aforementioned program is already pythonic.**

**#We can still make it more pythonic as follows**

**a=[(x,x\*\*2) for x in range(int(input("Enter the lower range:")),\**

**int(input("Enter the upper range:"))+1)]**

**print(a)**

**# Of course, We can write in the most pythonic way with one line ! as follows**

**print([(x,x\*\*2) for x in range(int(input("Enter the lower range:")),\**

**int(input("Enter the upper range:"))+1)])**

**#Python Program to generate random numbers from 1 to 20 and append them to the list.**

import random

a=[]

n=int(input("Enter number of elements:"))

for j in range(n):

a.append(random.randint(1,20))

print('Randomised list is: ',a)

**List exercises**

**Do the following Exercise programs using Google colab and Post them in your Github repository with the topic name ‘Day 2 sesson 1 Exercise programs’**

**1. print multiples of 3 upto 200 using a list**

**2. print the nos only divisable by 5 and 7 between 1000 and 2000 using a list( both inclusive)**

**3. Add the n number of names in a list and print them alphabetically and reverse alphabetically.**

**4. Print perfect squares and divisible by 5 between 500 and 1000( (both inclusive) using list**

**5.Calculate the Average of the numbers in a List by getting the elements of list from keyboard .**

**6. Print lists of odd,even and multiples of 5 numbers from 1 to 1000 using list comprehension**

**Tuple Examples**

**#Write python program to have a list of words to sort them from longest to shortest using list of tuples**

txt = 'but soft what light in yonder window breaks'

words = txt.split()

t = list()

for word in words:

t.append((len(word), word))

t.sort(reverse=True)

res = list()

for length, word in t:

res.append(word)

print(res)

**o/p**

**['yonder', 'window', 'breaks', 'light', 'what', 'soft', 'but', 'in']**

**#Python program that assigns variables**

# Create packed tuple.

pair = ("dog", "cat")

# Unpack tuple.

(key, value) = pair

# Display unpacked variables.

print(key)

print(value)

**o/p**

**dog**

**cat**

**#Python program that searches tuples**

pair = ("dog", "cat")

# Search for a value.

if "cat" in pair:

print("Cat found")

# Search for a value not present.

if "bird" not in pair:

print("Bird not found")

**o/p**

**Cat found**

**Bird not found**

**Tuple exercises**

**Do the following Exercise programs using Google colab and Post them in your Github repository with the topic name ‘Day 2 sesson 1 Exercise programs’**

#### **1. Python Program to Create a List of Tuples with the First Element as the Number and Second Element as the Square of the Number**

**2. Write python program to have a list of words to sort them from shortest to longest using list of tuples**

**3.Write python program to get a list of tuples of Rollno,Name for 5 students through keyboard and sort them Rollno wise ascending order**

**4.Write python program to get a list of tuples of Rollno,Name for 5 students through keyboard and sort them by Rollno wise descending order**

**5.Write python program to get a list of tuples of Rollno,Name for 5 students through keyboard and sort them by Name wise ascending order**

**6.Write python program to get a list of tuples of Rollno,Name for 5 students through keyboard and sort them by Name wise descending order**