Python Lab Assignment, AIML, 3rd Sem, 28th and 29th August

Q1 Create a list of size 20 with random numbers from 1 to 9.

a) Write a function unique to find all the unique elements of a list. If an element is found only once in the list, then add that element to the resultant list.

b) Write a function duplicate to find all duplicates in the list. If an element is repeated more than once in the list, then add that repeated element to the resultant dictionary along with its no. of occurrences.

c) Write a function createuniq to create a list of unique elements. Each elements present once in the resultant list.

Sample Output:
L =[10, 10, 9, 1, 4, 2, 5, 4, 5, 9, 4, 5, 10, 1, 1, 5, 7, 7, 8, 8]
Unique elements are:
[2]
Duplicate elements are:
{10: 3, 9: 2, 1: 3, 4: 3, 5: 4, 7: 2, 8: 2}
List of Unique elements:
[10, 9, 1, 4, 2, 5, 7, 8]

Q2: Write a program to print the sum of second largest element from all the even position and second smallest from all the odd position of given list.

Sample Output:
L= [23, 2, 83, 9, 18, 20, 55, 65, 81, 79]
Even position elements:
[23, 83, 18, 55, 81]
Odd position elements:
[2, 9, 20, 65, 79]
Required Sum is:
90

Q3: Write a Python script to rotate the elements of a list such that the element at the first index moves to second index, the element in the second index moves to the third index, …, and the element in the last index moves to the first index.

Sample Output:
List is:
[64, 82, 31, 88, 84, 24, 50, 34, 48, 31]
List after rotation:
[31, 64, 82, 31, 88, 84, 24, 50, 34, 48]

Q4: Find mean, median, mode for the given set of numbers in a list without importing library functions from statistics

Sample Output:
List is:
[4, 1, 4, 10, 7, 6, 2, 6, 10, 3, 10, 1, 4, 5, 10, 7, 1, 8, 6, 5]
Mean / Average is: 5.5
[1, 1, 1, 2, 3, 4, 4, 4, 5, 5, 6, 6, 6, 7, 7, 8, 10, 10, 10, 10]
Median is: 5.5

Q5 : create a list with numbers from 0 to 20.

a) Use lambda along with filter function to print all numbers divisible with both 3 and 5 from the list.
b) Use map function along with lambda function to find the square of each number of the list.
c) Create a list of 5 numbers by taking input from users.
Use reduce function along with lambda to find product of all numbers

Sample Output:
a)
List is: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]
The numbers divisible by both 3 and 5 are [0, 15]
b)
Numbers in list
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]
Square Numbers in list
[0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400]
cube Numbers in list
[0, 1, 8, 27, 64, 125, 216, 343, 512, 729, 1000, 1331, 1728, 2197, 2744, 3375, 4096, 4913, 5832, 6859, 8000]
c)
List is [12, 2, 3, 4, 5]
Product of all numbers 1440

Q6 Create a decorator so that you can add some extra functionality of adding the two numbers only if they are positive. If any number is negative, then take it as 0 during adding.

Sample Output:
Enter number1:-50
Enter number2:60
without using decorator Sum is 10
with using decorator function sum is 60

Q7 Create a generator function that generates first n prime numbers.

Input the number of prime numbers you want to generate? 10
First 10 Prime numbers:
2 3 5 7 11 13 17 19 23 29