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}
ListofUnique 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:
Listis:
[4,1,4,10,7,6,2,6,10,3,10,1,4, 5,10,7,1,8,6,5]
Mean/Averageis:5.5
[1,1,1,2,3,4,4,4,5, 5,6,6,6,7,7,8,10,10,10,10]
Medianis: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 both3and 5 from the list.
b) Use map function along with lambda function to find the square of each number of thelist.
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)
Listis:[0,1,2, 3,4, 5, 6,7,8,9,10, 11,12,13,14,15,16, 17,18,19]
Thenumbersdivisiblebyboth3and5are[0,15]
b)
Numbersin list
[0,1,2,3,4,5, 6,7, 8, 9,10,11,12, 13,14,15,16,17,18, 19,20]
SquareNumbersinlist
[0,1,4,9,16,25,36,49,64,81,100,121,144,169, 196, 225,256, 289,324,361,400]
cubeNumbersinlist
[0,1,8,27,64,125,216,343,512,729,1000,1331,1728,2197,2744,3375,4096, 4913,5832,6859,8000]
c)
Listis[12,2,3,4,5]
Productofallnumbers1440

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:
Enternumber1:-50
Enter number2:60
withoutusingdecoratorSumis10
withusingdecoratorfunctionsumis60

Q7Create a generator function that generates first n prime numbers.

Inputthenumberofprimenumbersyouwanttogenerate?10 First 10

Prime numbers:
2 3 5 7 11 13 17 19 23 29

8. create a dictionary by placing key: value pairs.

(i) Print the value of a dictionary item for the specific key.

(ii) Add an item to a dictionary by assigning a value to a new key.

(iii) Remove an element from a dictionary.

(iv) Change the value of a dictionary element by referring to its key.

(v) iterate through dictionary keys one by one.

(vi) Find length of the dictionary.

9 (i) Initialize two sets (s1 and s2)

(ii) Take a few integer numbers from the user (with proper prompt) for set s1 and a few for set s2.

Some numbers may be common to both and some may be unique.

(iii) Now ask the user, which set operation (Union, Intersection, Set Difference, Symmetric difference) he/she wishes to carry out.

(iv) Depending on the input, carry out the operation and show the result to the user in appropriate format.

10 You are given a list L. Write a program to print first prime number encountered in the list L.(Treat numbers below and equal to 1 as non prime)

11 . Create a list with n numbers. accept n from user. Some elements are repeated in the list. Find indices of a number which occurred multiple times in list.

12 . Create a list. Sort the list elements using customized sort function . Where key function return abs(n-50) .

Sample:

list=[100,50,65,82,23]

Resultlist=[50,65,23,82,100]

13. Write a program to combine two lists into a dictionary. 1st list contains roll no from 1 to 25 and second list reads names from a file.