CS4051 Fundamentals of Computing

Lab work – week 6

1. Write a program that creates a new list containing only the unique elements from the original list in descending order.

   [1, 1, 2, 3, 3, 4, 4, 5, 6, 5, 6] -> [6, 5, 4, 3, 2, 1]

2. Write a program that creates a 2D list having m number of rows and n number of columns. All elements in the diagonal should be 1, the elements above the diagonal should be 2 and the elements below the diagonal should be 3. Values for m and n should be taken from the user.

3. Write a program to store the values of the matrix given below in a 2D list. Then calculate the sum of the diagonal elements, the sum of all elements above the diagonal and the sum of all the elements below the diagonal. Also find out the max and min element from the matrix.

$$A = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 5 & 6 \\ 5 & 8 & 5 \end{bmatrix}$$

4. Write a program that takes as input the names and marks obtained on a certain subject of N students. Then the data must be stored in a dictionary with the names as keys and marks as values. Then find out the highest, lowest and average marks obtained and print them out.

5. Given below is a table containing data of 5 students obtained in 5 subjects. Store the data in python using 2D lists and write code that calculates the average marks of all the students and print them out.

name	maths	english	physics	computer	nepali
john	88	86	76	66	76
sam	77	67	87	67	56
anna	67	65	67	76	65
ben	87	78	67	77	57
jeff	90	80	79	88	70