ASSESSMENT -2

BCSE101E   Computer Programming: Python

1. Write a Python program to sort a given list of tuples by a specified element.

Original list of tuples:

[('item2', 10, 10.12), ('item3', 15, 25.1), ('item1', 11, 24.5), ('item4', 12, 22.5)]

Sort on 1st element of the tuple of the said list:

[('item1', 11, 24.5), ('item2', 10, 10.12), ('item3', 15, 25.1), ('item4', 12, 22.5)]

Sort on 2nd element of the tuple of the said list:

[('item2', 10, 10.12), ('item1', 11, 24.5), ('item4', 12, 22.5), ('item3', 15, 25.1)]

Sort on 3rd element of the tuple of the said list:

[('item2', 10, 10.12), ('item4', 12, 22.5), ('item1', 11, 24.5), ('item3', 15, 25.1)]

2.a. Write a program to generate the multiplication table of a given number using a for loop. Allow the user to input the number for which they want the multiplication table.

b. Create a two list and write the code to find duplicate elements in the two lists. Remove the duplicates and combine the elements in a single list.

3. a. Write a program that asks the user to enter a password. If the password matches a predefined correct password, display a success message. If the password is incorrect, allow the user to try again. Implement a maximum number of attempts before locking them out.

b. Provide students with several lists representing different groups of students enrolled in various clubs. Write a Python script that determines if any two clubs have no members in common.

4. Write a Python program to display vertically each element of a given list, list of lists.

Original list:

['a', 'b', 'c', 'd', 'e', 'f']

Display each element vertically of the said list:

a

b

c

d

e

f

Original list:

[[1, 2, 5], [4, 5, 8], [7, 3, 6]]

Display each element vertically of the said list of lists:

1 4 7

2 5 3

5 8 6

5. a. Implement a Python program that uses tuples to represent points in 2D space. Include functions to calculate the distance between two points, the midpoint, and the slope of the line segment defined by two points.

b. Write a Python program to get the index of the first element that is greater than a specified element.

Original list:

[12, 45, 23, 67, 78, 90, 100, 76, 38, 62, 73, 29, 83]

Index of the first element which is greater than 73 in the said list:

4

Index of the first element which is greater than 21 in the said list:

1

Index of the first element which is greater than 80 in the said list:

5

Index of the first element which is greater than 55 in the said list:

3

6. Write a Python program to filter even numbers from a dictionary of values.

Original Dictionary:

{'V': [1, 4, 6, 10], 'VI': [1, 4, 12], 'VII': [1, 3, 8]}

Filter even numbers from said dictionary values:

{'V': [4, 6, 10], 'VI': [4, 12], 'VII': [8]}

Original Dictionary:

{'V': [1, 3, 5], 'VI': [1, 5], 'VII': [2, 7, 9]}

Filter even numbers from said dictionary values:

{'V': [], 'VI': [], 'VII': [2]}

7. Write a Python program to find the specified number of maximum values in a given dictionary.

Original Dictionary:

{'a': 5, 'b': 14, 'c': 32, 'd': 35, 'e': 24, 'f': 100, 'g': 57, 'h': 8, 'i': 100}

1 maximum value(s) in the said dictionary:

['f']

2 maximum value(s) in the said dictionary:

['f', 'i']

5 maximum value(s) in the said dictionary:

['f', 'i', 'g', 'd', 'c']

8. Write a Python program to extract values from a given dictionary and create a list of lists from those values.

Original Dictionary:

[{'student_id': 1, 'name': 'Jean Castro', 'class': 'V'}, {'student_id': 2, 'name': 'Lula Powell', 'class': 'V'}, {'student_id': 3, 'name': 'Brian Howell', 'class': 'VI'}, {'student_id': 4, 'name': 'Lynne Foster', 'class': 'VI'}, {'student_id': 5, 'name': 'Zachary Simon', 'class': 'VII'}]

Extract values from the said dictionaries and create a list of lists using those values:

[[1, 'Jean Castro', 'V'], [2, 'Lula Powell', 'V'], [3, 'Brian Howell', 'VI'], [4, 'Lynne Foster', 'VI'], [5, 'Zachary Simon', 'VII']]

[[1, 'Jean Castro'], [2, 'Lula Powell'], [3, 'Brian Howell'], [4, 'Lynne Foster'], [5, 'Zachary Simon']]

[['Jean Castro', 'V'], ['Lula Powell', 'V'], ['Brian Howell', 'VI'], ['Lynne Foster', 'VI'], ['Zachary Simon', 'VII']]

9. a. Write a Python program to combine two lists into a dictionary. The elements of the first one serve as keys and the elements of the second one serve as values. Each item in the first list must be unique and hashable.

Sample Output:

Original lists:

['a', 'b', 'c', 'd', 'e', 'f']

[1, 2, 3, 4, 5]

Combine the values of the said two lists into a dictionary:

{'a': 1, 'b': 2, 'c': 3, 'd': 4, 'e': 5}

b. Create a two matrix A and B. Read the values from the user. Check the elements in the matrix A and B to find the even and odd elements in a separate Matrix.

10. Create two matrix A and matrix B. Check matrix A and B holds the value from 0-9.

Check that no elements are placed in the same position of the two matrix. Display the

message " Two matrix holds same element but in different position".