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**CSC121 PYTHON Programming**

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LAB 05 **LISTS [PART I]**

# Objectives

In this lab assignment, students will learn:

- How to create a list

- How to write code to access list elements

- How to write code alter a list

- How to write iterate over a list

# Goals

In this lab assignment, students will demonstrate the abilities to:

- Create a list

- Write code to access list elements

- Write code to alter a list

- Write code to iterate over a list

# Instruction and Problems

Write a Python program for each of the problems in this lab. Please use PyCharm to type and test your programs. Submit the Python files to Blackboard for credit. In this lab, you should submit 4 Python files, one for each problem.

## Problem 1

Write a Python program to do the following:

1. Ask the user to enter as many integers from 1 to 10 as he/she wants. Store the integers entered by the user in a list. Every time after the user has entered an integer, use a yes/no type question to ask whether he/she wants to enter another one.
2. Display the list.
3. Calculate and display the average of the integers in the list.
4. If the average is higher than 7, subtract 1 from every number in the list. Display the modified list.

The following is an example:

Enter an integer from 1 to 10: 5

Enter another integer? [y/n] y

Enter an integer from 1 to 10: 8

Enter another integer? [y/n] y

Enter an integer from 1 to 10: 9

Enter another integer? [y/n] y

Enter an integer from 1 to 10: 7

Enter another integer? [y/n] y

Enter an integer from 1 to 10: 8

Enter another integer? [y/n] n

Number list: [5, 8, 9, 7, 8]

Average: 7.4

Modified number list: [4, 7, 8, 6, 7]

Save your Python program in a file named **Lab05P1.py**. Submit the file to Blackboard for credit.

## Problem 2

Write a program for course registration. Students can use this program to add and drop courses. There should be a loop in the program that tells the user to enter A to add course, D to drop course or E to exit. If A is chosen, ask the user to enter the course to add. If the user is already registered in that course, display the message “You are already registered in that course”; otherwise, add the course to the user’s course list, display the message “Course added”, sort the list and display the list. If the user chooses D, ask the user to enter the course to drop. If the user is not registered in that course, display the message “You are not registered in that course”; otherwise, remove the course from the user’s course list, display the message “Course dropped” and display the list. The loop will stop when the user enters E.

The following is an example:

Enter A to add course, D to drop course, and E to exit: A

Enter course to add: CSC151

Course added

Courses registered: ['CSC151']

Enter A to add course, D to drop course, and E to exit: A

Enter course to add: CSC134

Course added

Courses registered: ['CSC134', 'CSC151']

Enter A to add course, D to drop course, and E to exit: A

Enter course to add: CSC139

Course added

Courses registered: ['CSC134', 'CSC139', 'CSC151']

Enter A to add course, D to drop course, and E to exit: D

Enter course to drop: CSC134

Course dropped

Courses registered: ['CSC139', 'CSC151']

Enter A to add course, D to drop course, and E to exit: A

Enter course to add: CSC151

You are already registered in that course

Enter A to add course, D to drop course, and E to exit: A

Enter course to add: CSC121

Course added

Courses registered: ['CSC121', 'CSC139', 'CSC151']

Enter A to add course, D to drop course, and E to exit: E

Save your Python program in a file named **Lab05P2.py**. Submit the file to Blackboard for credit.

## Problem 3

Write a Python program to do the following:

1. Use the range function to generate this sequence of integers: 5, 9, 13, 17 and 21. Save the numbers in a list. Display the list.
2. Use a for loop to display each element in a separate line.
3. Use the range function to generate this sequence of integers: 26, 19, 12 and 5. Save the numbers in a list. Display the list.
4. Use a for loop to calculate the total of the elements in the second list. Display the total.

The following is the expected output. There is no user input in this program.

First list: [5, 9, 13, 17, 21]

Elements in the first list:

5

9

13

17

21

Second list: [26, 19, 12, 5]

Total of the elements in the second list: 62

Save your Python program in a file named **Lab05P3.py**. Submit the file to Blackboard for credit.

## Problem 4

Write a Python program to do the following:

1. Use a for loop and a random integer generator to generate 5 random integers in 1 to 9. Store the random integers in a list. Display the list.
2. Use a for loop and a random integer generator to generate 5 random integers in 2 to 8. Store the random integers in a second list. Display the second list.
3. Use a for loop to compare elements in the two lists in pairs, i.e., compare the first elements in both lists, compare the second elements in the both lists, etc. Display the larger number in each comparison.

The following is an example. There is no user input in this program.

First list: [3, 4, 7, 8, 7]

Second list: [7, 3, 2, 8, 5]

Larger number in each comparison:

7

4

7

8

7

Save your Python program in a file named **Lab05P4.py**. Submit the file to Blackboard for credit.

# Grading rubric for Problem 1

Creating and displaying list [8 points]

Calculating average [8points]

Subtracting 1 from every element if average is larger than 7 [8 points]

# Grading rubric for Problem 2

Adding course [10 points]

Dropping course [10 points]

Sort and display course list [10 points]

# Grading rubric for Problem 3

Creating lists [8 points]

Displaying every element of the first list in a separate line [8 points]

Calculating total of elements in the second list [8 points]

# Grading rubric for Problem 4

Creating lists of random integers [12 points]

Comparing elements in pairs [10 points]