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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. Create a list to store the following values: 4, 1, 7 and 6. Display the list.
2. Change the second element from 1 to 2. Display the changed element.
3. Change the last element from 6 to 5. You must use negative index. Display the changed element.
4. Add a new element 8 to the end of the list. Display the list.
5. Add a new element 9 as the new first element of the list. Display the list.

The following is the expected output:

The list: [4, 1, 7, 6]

The list: [4, 2, 7, 6]

The list: [4, 2, 7, 5]

The list: [4, 2, 7, 5, 8]

The list: [9, 4, 2, 7, 5, 8]

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

## Problem 2

Mini Airlines needs a program to create passenger lists. Write a program to do the following:

1. Enter the number of passengers
2. Enter the names of the passengers. Store the names in a list.
3. Display the passenger list.
4. Sort the passenger list. Display the sorted list.
5. Ask the user to enter a name. Search the list to see whether this name is in the list. Display the search result.
6. We need to remove a passenger from the list. Ask the user to enter the name of the passenger to be removed. Remove the passenger. Display the list.
7. Use the len function to find the length of the list. Display the length.

The following is an example:

How many passengers in this flight? 3

Enter passenger name: Joe Park

Enter passenger name: Peter Chen

Enter passenger name: Al Molin

Passenger list: ['Joe Park', 'Peter Chen', 'Al Molin']

Passenger list after sort: ['Al Molin', 'Joe Park', 'Peter Chen']

Enter a name to search for: Frank Chao

This name is not found in passenger list

Enter name of passenger to be removed: Joe Park

Passenger list after remove: ['Peter Chen', 'Al Molin']

Number of Passengers: 2

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

## Problem 3

Mini Airlines awards free tickets to passengers when they have accumulated enough mileages. Write a program for passengers to record flight mileages. The program will ask the user to enter the mileage of each flight. Every time the user has entered a new flight, display the total mileage the passenger has accumulated and the number of flights he has taken so far. The passenger enters one flight after another until he tells the computer he no longer wants to enter another flight. Before the program ends, display the mileage of each flight the user has entered in a separate line. The following is an example.

Enter mileage of a flight: 817

Number of flights so far: 1

Total mileage so far: 817

Enter another flight? [y/n] y

Enter mileage of a flight: 1200

Number of flights so far: 2

Total mileage so far: 2017

Enter another flight? [y/n] y

Enter mileage of a flight: 625

Number of flights so far: 3

Total mileage so far: 2642

Enter another flight? [y/n] y

Enter mileage of a flight: 2156

Number of flights so far: 4

Total mileage so far: 4798

Enter another flight? [y/n] n

Mileage of each flight you have taken:

817

1200

625

2156

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. Ask the user to enter 6 integers. Sore them in a list. Display the list.
2. Select elements that are larger than 20. Copy these elements to another list. Display that list.

The following is an example.

Enter an integer: 17

Enter an integer: 28

Enter an integer: 4

Enter an integer: 2

Enter an integer: 35

Enter an integer: 24

The list: [17, 28, 4, 2, 35, 24]

List of integers greater than 20: [28, 35, 24]

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

# Grading rubric for Problem 1

Creating list [4 points]

Changing elements [8 points]

Adding elements [8 points]

# Grading rubric for Problem 2

Creating list [5 points]

Sorting elements [5 points]

Searching list [5 points]

Removing element [5 points]

Finding list length [5 points]

# Grading rubric for Problem 3

Storing flight mileages in list [10 points]

Accumulating total mileage [10 points]

Counting number of flights [10 points]

Displaying flight mileages one in each line [5 points]

# Grading rubric for Problem 4

Storing six numbers in list [10 points]

Copying elements larger than 20 to another list [10 points]