CS 153 / CS 453
Lab 3 - Working with Lists

- It is recommended that you keep your work organized in separate directories.
- Add the following header comments to the top of all programs.

```
#  name of the file
#  CS 153 or CS 453
#  Written by ……
#  Date written ……
#  Date/time last modified  ……
#  Purpose:
#  Input:
#  Output:
```

Part A - numberLists.py (note: file names are case sensitive)

Write a Python program that will do the following:

1) Prompt for and input a list of integers. The integers may be positive, negative, or zero.

   The process for getting the input and converting it to a list was discussed in class.

   The user will type the input in the form of a list, enclosed in square brackets, with elements separated by commas. You may assume that there are no spaces in the input. You may assume that every element in the list is an integer. You don't have to write any code to check the element types.

   ***** print meaningful messages along with your output *****

2) Print the length of the list.

3) If the list has at least one element, print the first element of the list. (If the list is empty, print "The list is empty.")

4) If the list has at least one element, print the last element of the list. Use a negative index. (If the list is empty, print "The list is empty.")

5) Print the sum of the numbers in the list.

6) Create a new list that contains only the positive values from the input list. Do not modify the input list. Print the new list.

7) If there is a zero in the list, print the location (index) of the first zero in the list. If there is no zero in the list, print "The list does not contain a zero."

8) Print the list in reverse.

9) Create a new list that contains the elements of the input list. Do not modify the input list. Sort the new list, then print the sorted list.

Run the program several times. Each time, input a different list. Compare the **Actual** output to your **Expected** output. If there are errors, debug the program, compile again, and test again.

CS 153 Students: Problem 10 is optional and will not be counted as part of your grade for lab 3.

CS 453 Students: Problem 10 is required and will be included in the CS 453 grading rubric for lab 3.

10) Modify the input process so that it allows the user to type one or more spaces before or after each number in the input. As before, the user must put [ ] around the list and must have a comma between elements.