Lab 11 – Java Collection Framework

Answer the following questions.

Exercise:

1. Suppose that `set1` is a set that contains the strings "red", "yellow", and "green", and that `set2` is another set that contains the strings "red", "yellow", and "blue". Answer the following questions:
    a. What are `set1` and `set2` after executing `set1.addAll(set2)`?
    b. What are `set1` and `set2` after executing `set1.add(set2)`?
    c. What are `set1` and `set2` after executing `set1.removeAll(set2)`?
    d. What are `set1` and `set2` after executing `set1.remove(set2)`?
    e. What are `set1` and `set2` after executing `set1.retainAll(set2)`?

2. Suppose that `list1` is a list that contains the strings "red", "yellow", and "green", and that `list2` is another list that contains the strings "red", "yellow", and "blue". Answer the following questions.
    a. What are `list1` and `list2` after executing `list1.addAll(list2)`?
    b. What are `list1` and `list2` after executing `list1.add(list2)`?
    c. What are `list1` and `list2` after executing `list1.removeAll(list2)`?
    d. What are `list1` and `list2` after executing `list1.remove(list2)`?
    e. What are `list1` and `list2` after executing `list1.retainAll(list2)`?

3. Write a program that reads words from a text file and displays all the nonduplicate words in ascending order.

4. Write a program that reads words from a text file and displays all the words (duplicates allowed) in ascending alphabetical order.

5. Write a program that lets the user enter a set of numbers on the console. Use a linked list to store the numbers. Do not store duplicate numbers. Add operations that sort, shuffle, and reverse the list.

6. Write a program that demonstrates how to sort the elements in a tree set using the `Comparator` interface. The example creates a tree set of geometric objects. The geometric objects are sorted using the compare method in the `Comparator` interface based on their computed area.

7. Use the `Collections` class, find the minimum and maximum value in the list. Assume that the list is [2,12,98,77,55,34,7,23,5,33,77,89,12,34,5].