COLLECTION FRAMEWORK LAB ASSIGNMENT

Assignment I:

1. Draw the Hierarchical structure of Collection Framework.
2. Difference between Collections and Arrays.
3. What is collection and its advantages
4. Difference between List and Set interfaces and name their implementation classes
5. What is difference between Array and ArrayList.
6. When you use Array over ArrayList and vice-versa.
7. What is Map interface and what are the main classes implementing Map interface?
8. Why Map interface does not extend collection interface.
9. What are identityHashMap and WeakHashMap?
10. How HashMap works internally?
11. When to use HashMap and TreeMap ?
12. What is the importance of hashCode() and equals()?
13. What are similarities and difference between Vector and ArrayList.
14. Difference between Iterator and List Iterator.
15. Difference between ArrayList and LinkedList.
16. Difference between ArrayList and HashMap.
17. What is UnSupportedOperationException?
18. Difference between Comparable and Comparator.
19. What is generic and what are its advantages?
20. What is Reflection? What are its advantages?
21. What are concurrent classes? How to avoid ConcurrentModificationException while using iterator?

Assignment II:

1. How to convert an array of Strings to a list?
2. How can we sort a list of objects without using comparable and comparator.
3. How to sort list in reverse order?
4. How to make a collection read-only?
5. How to make a collection thread-safe?

Assignment III:

1. Consider the following class,

```
Class YashEmploy{
    Integer id;
    String name;
    Integer age;
    Double salary;

    //getters() & setters;
}
```

   a) Write a simple program which stores 10 YashEmploy objects in ArrayList and iterate it.
   b) Write a program that sort the list of 10 YashEmploy objects(Natural Sorting) using comparable.
   c) Write a program that sort the list of 10 YashEmploys using comparator for the following two cases :
      i) Consider that CEO wants to sort the employees based on their salaries.
      ii) Consider that HR wants to sort the employees based on their age.
   d) Write a program using HashMap that stores multiple objects by taking employee names as a key and their salaries as values.

2. Write a simple program to convert an array to collection and collection to an array.
3. Write a simple program to read objects from TreeSet using ListIterator.
4. Write a program to remove duplicate objects from ArrayList using Linked HashSet.
5. Write a simple program that ensures compile time type -checking and removing risk of ClassCastException
6. Write a program to find the duplicate characters in the given string, string=”sskdhiokkkiokkwweeemytlpmueqa”
   using HashMap with Generics and display the count of repetition.
7. Write a program that demonstrate how to create a synchronized List/Set/Map.
8. Write a program to find maximum repeated words from a file using HashMap.
9. Write a program to create run-time servlet objects using reflection API.