MIDDLE EAST TECHNICAL UNIVERSITY, NORTHERN CYPRUS CAMPUS
CNG443 – Worksheet for Lecture 5

Purpose:

In this work sheet, you will get hands-on experience with abstract class, interfaces and generics in Java.

Tasks:

1. Design an interface called Colourable with a void method named as howToColor(). Every class of a colourable object must implement the Colourable interface. Design a class named Square that extends the BGeometricObject class given in the Example-codes folder under Week-4 and implements Colorable interface. The implementation of howToColor() will only say "Color all four sides". Draw a UML diagram to represent Colorable, Square, GeometricObject. Write a test class to have an arraylist of Colourable objects and displays how to color them.

2. Write a method that returns the smallest object in an array of objects. The method signature is as follows:

   ```
   Public static Object min (Comparable[] a)
   ```

   All the objects are the instances of Comparable interface. The order of the objects in the array is determined using the CompareTo method. Write a test program that creates an array of ten Strings, an array of ten integers, and array of ten dates, and finds the smallest strings, integer and date in the array.

3. Write a class that implements the CharSequence interface found in the java.lang package. Your implementation should return the string backwards. Select one of the sentences from this book to use as the data. Write a small main method to test your class; make sure to call all four methods[1].

4. Implement the following method using the binary search

   ```
   public static <E extends Comparable <E>> int binarySearch(E[]
   list, E key)
   ```

5. Implement the following method that returns the maximum element in an array

   ```
   public static <E extends Comparable<E>> E max (E[] list)
   ```

[1] https://docs.oracle.com/javase/tutorial/java/IandI/QandE/interfaces-questions.html