CS212 Lab 24 Chapters 12 Generics

Notes:

- Generics provide us a way to re-use the code with different types of inputs by writing the code using parameterized types.
- However, you cannot instantiate a generic class with parameterized type.
- At the time of instantiation of the class, you need to use the actual data type.
- This creates an advantage as we can only hold a single type of objects. It doesn't allow us to store other objects.
- That means there no need to typecast the object.
- stronger type checks at compile time.
- Compile-time errors are easy to eliminate unlike runtime errors.
- The generic algorithms work on different types of data structures, can be customized, are type safe and easier to read.

Goal

•To write a generic class.

Write a generic Static method named insertionSort, with a parameter of type E. The type parameter should accept any type that implements the Comparable interface (for now, Integers, Doubles, Strings). However your method should work with any comparable objects. Use either array of ArrayList for storing data. Demonstrate with the method with Integers and Strings.

- 1. Import java.util.ArrayList if you are going ArrayList.
- 2. Create a class called **GenInsertionSort**, without type parameter.
- 3. Wite a generic static method called **insertionSort**.
- 4. The header need <E extends Comparable<E> > before return type, and takes generic data in array or ArrayList.
- 5. Write a static main method where you create create your using random class and sort the data. Create 1000 data elements with Integers.
- 6. With strings, create a smaller data list.
- 7. Sort your list using your sorting method.