Lecture 5 - In Class Exercise

Goal: Develop tests using JUnit to check for proper error handling and happy paths.

1 Exception to the Rule

Instructions: Work with your neighbors in groups of 2. Write tests to address the following code:

```
import java.util.*;

public class Min {
  /**
    * Returns the mininum element in a list
    * @param list Comparable list of elements to search
    * @return the minimum element in the list
    * @throws NullPointerException if list is null or if any list elements are null
    * @throws ClassCastException if list elements are not mutually comparable
    * @throws IllegalArgumentException if list is empty
    */
    public static <T extends Comparable<? super T>> T min (List<? extends T> list) {
       if (list.size() == 0) {
          throw new IllegalArgumentException ("Min.min");
       }

       Iterator<? extends T> itr = list.iterator();
       T result = itr.next();

       if (result == null) throw new NullPointerException("Min.min");

       while (itr.hasNext()) {   // throws NPE, CCE as needed
           T comp = itr.next();
           if (comp.compareTo(result) < 0) {
               result = comp;
           }
       }
       return result;
    }
}
```

Write a test to cover each of the following:

1. Throws correct exception if list is null
2. Throws correct exception if any element is null (bonus: what would be two good tests for this?)
3. Throws correct exception if the elements are not mutually comparable
4. Throws correct exception if the list is empty
5. Test the behavior works correctly if there is only 1 element in the list
6. Test the behavior works correctly if there is more than 1 element in the list

Tests that satisfy element (5) and (6) are "happy path" tests. Formally, a *happy path* is a default scenario featuring no exceptional or error conditions. What are the advantages to including happy path tests?

2 Data-Driven

Using `Min.java` write at least 5 different data-driven test setups, i.e. 5 different `@ParameterizedTest` set ups. For instance, you may wish to have a set up for String values and a set up for Integer values.