Customer Labs

These labs assume that you have completed the Prequel exercise and have a **Customer** class. If not, you will need to create it before proceeding. As always, if in doubt, ask your instructor.

1. Make your Customer class sortable by 'natural order'. You can decide what that order should be. Write code to create and sort a list of 5 Customers.

2. Sort your list using some order other than the natural order. Use Lambda expressions.

3. Write a method called **findBy** that returns a list of Customers based on search criteria that that you specify as an argument. Use the appropriate Java interface for filtering. Test your filter method using lambda expressions.

   Think of where the best place might be to put such a method.

4. Write a method to return the names of customers who have a status of **Privileged**. Use Streams.

5. Write a method to return a list of the ages of all Customers who have a status of **Normal**.

6. Write a method to calculate the average age of Customers who have the status **Restricted.**

7. Write a method to return all the phone numbers of all customers. Make sure your test data includes at least some customers with phone numbers.

8. Write a method to return only the first phone number, if any, for all customers. For your test data, make sure that some of your customers have multiple phone numbers, and at least one customer has no phone numbers.

9. Optional.
   1. Download a plain text book from the Gutenberg project http://www.gutenberg.org/
   2. Write a program that computes the "concordance" for the book
   3. A concordance is a word frequency table, indicating how many times each word is used in the book.
   4. Use streams in your solution.

10. There are three files in the **src/test/java/labs/generics** directory with some code you have to fix to make the supplied tests run. Further instructions are in comments in the files.

11. Similarly, look in **src/test/java/labs/exceptions** for lab files dealing with Exceptions. Instructions are in the code.