In Class Assignment 1 (100 Points)

In this assignment you will practice using Data Structures and Object Oriented concepts in Java. ***Your implementation should target the most efficient algorithms and data structures. You will be graded based on the efficiency of your implementation. You will not be awarded any points if you use simple nested loops to implement the below tasks.*** You should use one or more of the below data structures:

- ArrayList :
  - JavaDoc: http://docs.oracle.com/javase/7/docs/api/java/util/ArrayList.html
  - Tutorial: http://docs.oracle.com/javase/tutorial/collections/interfaces/list.html
- HashSet :
  - JavaDoc: http://docs.oracle.com/javase/7/docs/api/java/util/HashSet.html
  - Tutorial: http://docs.oracle.com/javase/tutorial/collections/interfaces/set.html
- HashMap :
  - JavaDoc: http://docs.oracle.com/javase/7/docs/api/java/util/HashMap.html
  - Tutorial: http://docs.oracle.com/javase/tutorial/collections/interfaces/map.html

Setup
- Install the Community Edition of IntelliJ IDEA https://www.jetbrains.com/idea/
- Create a new Java Command Line App
- Drag and drop the provided .java files into the "src" folder of your project. This will move the files into your project and refractor the package to match project's package.

Question 1 (10 Points)
Write a method that loops over the numbers from 1 to 20 and prints the numbers.
1. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz".
2. For numbers which are multiples of both three and five print "FizzBuzz"

Question 2 (10 Points)
Write a method that accepts an integer and returns true if the number is even and false otherwise.

Question 3 (10 Points)
Write a method that accepts an array of numbers and returns the minimum number in the array. If the array is empty return null.

Question 4 (10 Points)
You are provided with the Data class that contains a users array (Data.users) which is an array of users. Each element in the array represents a single user record. Each record is a string formatted as : firstname,lastname,age,email,gender,city,state.
You are asked to perform the following tasks:
1. Create a User class that should parse all the parameters for each user. **Hint**: extract each value from a user's record using Java's String.split() method and set the delimiter to a comma. Each user record should to be assigned to a User object.
2. Write a method that accepts an array of strings and returns an ArrayList of User objects.

Question 5 (10 Points)
Write a method that accepts an ArrayList of User objects. The method should print out the names of users that start with O, M or N.

Question 6 (10 Points)
Write a method that accepts an ArrayList of User objects, sorts the users by their age in ascending order, and prints user name and age sorted by age in ascending order. **Hint**: To sort use the Collections.sort(). http://docs.oracle.com/javase/6/docs/api/java/util/Collections.html

Question 7 (10 Points)
Write a method that accepts an ArrayList of User objects. The method should print the Top 10 oldest users.

Question 8 (10 Points)
Write a method that accepts an ArrayList of User objects. The method should count the number of users living each state, then print State, Count for each of the accumulated counts.

Question 9 (10 Points)
Write a method that accepts two Arrays of words (strings), namely listA and listB. The method should return the set of words (strings) that overlap in both lists, this is the intersection of both lists. Hint: it is a good idea to use Sets.
- You can use the Data.words_1 and Data.words_2 for testing your method.

Question 10 (10 Points)
Write a method that accepts two ArrayLists of Users. The method should return the list of User objects that exist in both lists.
- Two users are equal if all their attributes are equal.
- You can use the Data.users and Data.otherUsers for testing your method.