Lab 9
CSC 1052 - Algorithms and Data Structures II
Grading: 30 points
Due Date: March 31th, 2017 at noon

Description: In this lab you will build a guessing game using an ArrayCollection. The file `Animals.txt` contains a long list of animal names, one per line. You must create an application `AnimalGuess` that reads that file and creates a collection of animal names (using the ArrayCollection class). Your application should then generate a random character and challenge the user to repeatedly enter an animal name that begins with that character, reading the names entered by the user until they either enter a name that does not begin with the required character or is not in the collection, or they enter a name they used before. Finally, your application reports how many names they successfully entered. Here are a few guidelines for the program:

1. The program should prompt the user for a single random character at the start of the round. The user will guess only animals with that letter as the first character until they reach one of the failure conditions.

2. You will not want to modify the animal collection during the game. Think of a separate mechanism for tracking what the user has already guessed.

3. The ASCII code for the lowercase letter 'a' is 97. To generate random characters, you'll need to cast integers from 97 - 122 as type `char`

4. There is a method in the String class called `toLowerCase()` to convert all characters in the String to lowercase. Consult the Java API for instructions on proper use.

5. Recall if you are using a Scanner object with a file instead of `System.in`, you need to initialize the variable with:
   `Scanner sc = new Scanner(new File("/PATH/TO/FILE/Animals.txt"));`

6. Finally, note that ArrayCollection does NOT throw overflow exceptions, so ensure that you create your Collection with a large size or your application will silently fail to read in the rest of the animal list after the first 100.

Once you are finished, submit ONLY the file `AnimalGuess.java`.

Rubric:
(5 points) Lab compiles
(5 points) Correctly read in `Animals.txt`
(5 points) Correctly implement the random character generator
(10 points) Correctly implement the game loop and failure conditions
(5 points) Correctly implement the statistics output at the end of the game.

Deliverables: Submit the source file on Blackboard.