**CS201 Lab 6**

**35 points**  **Due**: 03/09/15

**Problem:** The winter Olympics happen every 4 years. It’s easy to see medal counts for each year, but how has each country done over time? What country has won the most medals this millennia? What if we counted medals differently, i.e. each country gets more points for gold than silver, and more for silver than bronze? Does that change the winner? We will answer some of these questions today in lab.

**Purpose:** This lab will:

* Give you experience reading data from a file
* Give you the opportunity to use decision-making & loops in Java

**Details:**

You have access to a file that has gold, silver, and bronze medal counts for each country for each Winter Olympics games during this millennia (2002, 2006, 2010, 2014). Using file processing, find the answers to the following questions:

1. How many countries have won at least X medals overall, where X is given by the user?
2. Which country has won the most gold medals this millenia?

Each line of the file contains the following data in the order shown:

Country 2002Gold 2002Silver 2002Bronze 2006Gold 2006Silver 2006Bronze 2010Gold 2010Silver 2010Bronze 2014Gold 2014Silver 2014Bronze

Your program must

* Ask the user for
  1. the number of medals for question #2 above
  2. the name of the input file
* Answer all questions by processing the file once; you do not need to read the file more than one time.
* Output answers to all questions using good usability

HINT: you will need the line “throws IOException” after public static void main

**Steps:**

1. Read through the requirements in the Details section and make sure you understand them.
2. Complete the algorithm that is already started for you in the Lab6 repository folder. **HINT**: Think about how to read in each line of the file, THEN think about how to solve question #1, THEN think about how to solve question #2. This is called *iterative development.*
3. Ask Dr. Olsen to check your algorithm and approve it before you start coding.
4. Create a new Java file and save it to your Lab6 repository folder.
5. Write your Java code following your algorithm using PAIR PROGRAMMING and *iterative development.*
6. Write comments in your code to make it clear what it is doing.
7. Draw a flowchart of your code
8. Figure out the correct answers by hand, and then test your program and fix any errors.
9. Include an updated version of the header comments. Many lines should change!

**Extra Credit:**

Once you have the lab completely working, be sure to commit your file so that you have a copy of the fully working version in case something goes wrong in the extra credit. That way you can revert back to the working copy if you need to.

Calculate the total score each country has received this millennia. Score is calculated as if gold medals are each worth 3 points, silver is worth 2, and bronze is worth 1 point. Output every country’s score, and also output which country has the highest score.

**Submit:**

1. To GitHub:
   * The completed algorithm
   * Your .java file
2. On paper in class:
   * A short reflection about what you learned in lab, what it was like working with your partner, and what gave you the most trouble. ALSO be sure to discuss why this algorithm works for converting from binary to decimal. (1 per person)
   * Your flowchart (1 copy per pair)