**Homework 5**

This homework focuses on simple Thread programming and simple GUI programming.

**Problem 1**

**Description**

Create a class named Countdown that uses an explicit Thread (don't use the Timer class for this homework) to write a countdown to the console, one number per second. You can either extend Thread or implement Runnable. Your solution is free to implement other classes, but main() should be in Countdown.

The program will not actually exit until the user hits the enter key. If the user hits the enter key before the countdown has finished, the program should print interrupted and stop immediately. See transcripts below:

java Countdown  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1  
0  
*user hits the Enter key*  
finished

java Countdown  
10  
9  
8  
7  
6  
5  
4  
*user hits the Enter key*  
  
interrupted  
finished

Notes:

* The program should exit on exceptions
* Don't use System.exit() to stop your program when the user hits Enter (although you can put it in your Exception handlers)
* the readLine() and sleep() methods will be useful
* If you have any questions, send me an e-mail. You can also check out [the Java tutorial on Threads](http://java.sun.com/docs/books/tutorial/essential/threads/).

**Extra clarification/hint**

Since we are not using System.exit( ), then a stoppable thread should check a boolean variable each time it goes around its loop to see if it should continue.

To stop the thread, one just sets the variable, and the loop will stop itself. Note that the thing stopping the thread will need a reference to the stoppable thread object. Also, the stoppable thread object must provide some public method for setting the value of the "should-I-continue" variable.

* 10 pts: Can compile, looks correct.
* 20 pts: creates thread appropriately, and  the thread can print out numbers
* 15 pts: terminates correctly
* 5  pts: For readability, proper comment, and any extra work you do.

**Problem 2**

**Description**

Write a program that displays the Olympic rings. Make the rings colored in the Olympic colors like below:



If you like to make it fancier, you can add "USA" on top the rings (not required), like following:



You are not required to draw exactly the same as in the pictures. Anything looks similar is fine. And the color in the intersection part of the rings is not strictly required.

* 10 pts: Can compile, and create the frame
* 20 pts: Draw the 5 rings correctly
* 10 pts: Color the rings correctly
* 10 pts: For readability, proper comment, and any extra work you do.
* 10 extra pts:  properly draw out the "USA"

**What to submit**

You only need to submit your .java source code and README if you have one. If you put all your comments inside .java file, it's also fine to only submit the .java files. No .class files please.