CS490 Project 1

Java Threads

# Instructions

1. Install NetBeans, or set up on a lab computer that has it installed.
2. Create a NetBeans Java project. Copy the code included with this document into it.
3. Complete the exercises in the Exercises section of this document.
4. Upload your project and the answers to the exercises to Canvas.

The next project will require you to write a program in Java from scratch, which compiles and runs using NetBeans. This project gives you a chance to ensure that you can work with Java in NetBeans. NetBeans is installed on the Windows machines in the CS department labs.

# Notes

To run a thread in Java, create a class that implements **Runnable**. Place your thread’s code into the run method.

public class CS490Thread1 implements Runnable

{

public void run()

{

// Your code here.

}

}

Start your thread by constructing a **Thread** object, give it an instance of your object, and call **start** on the thread object. Java will start a new thread and call your **run** method in it.

var myRunnable = new CS490Thread1();

var thread = new Thread(myRunnable);

thread.start();

# Terminating Threads

To terminate a thread, call Thread.interrupt(). That does not actually terminate the thread; it sets a flag, which you can then check in your run method to see if the thread has been requested to terminate. This gives you a chance to wind down your work, release resources, etc., before the thread exits.

# Exercises

1. What happens if you uncomment System.exit(0) at the end of the main program?
2. Why does uncommenting the try/catch around the call to thread.join resolve that problem?
3. Update the code to create as many message threads as are entered at the command line.
4. Update the code so that MessageWriter takes a parameter indicating how long to delay instead of always delaying 1 second. Pass 1 second to the first thread, 2 seconds to the second thread, and so on.
5. Update the code so that the MessageWriter objects share a single counter, instead of each having their own counter. This involves sharing the counter between Java threads.

Document your answers to these questions in a Word document and submit it with your code.