

## CS380 Lab Assignment – Client Server & Threads Part 2

The Fibonacci sequence is the series of numbers 0, 1, 1, 2, 3, 5, 8, ....

Formally, it can be expressed as:

$$fib_0 = 0$$

$$fib_1 = 1$$

$$fib_n = fib_{n-1} + fib_{n-2}$$

Write a multithreaded Java program that generates the Fibonacci sequence. This program should work as follows:

- The user will be prompted to enter the number of Fibonacci numbers that the program is to generate (e.g. `System.out.println("Please enter the number of Fibonacci numbers that the program should generate: ");`).
- The program will then create a separate thread that will generate the Fibonacci numbers, placing the sequence of numbers generated in an `int` array that can be shared by the threads (*tip: an array is probably the most convenient data structure – i.e. `int[]`*).
- When the thread finishes execution, the parent thread will output the sequence generated by the child thread. Because the parent thread cannot begin outputting the Fibonacci sequence until the child thread finishes, this will require having the parent thread wait for the child thread to finish.

*[tip: last week's thread reading material will help you to complete this part of the assignment]*

### **Assignment Submission Instructions:**

Submit your completed assignment through Moodle. You should submit (1) a zip file containing your Java code the assignment, (2) a zip file containing screenshots showing your code running (the output from running your code through e.g. Eclipse).

Note: you should include comments in your code (written in your own words) to explain what is happening at each part of your code. Before submitting your code ensure that it is well commented and formatted (marks will be deducted for code that is not well commented and formatted).

Assignment submission deadline is available on Moodle. Penalties will be imposed on late submissions.