Lab 4: Multithreaded networking

February 19, 2015

This lab is based on the medical monitoring example discussed during lectures. The source consists of three classes:

Reading binary message format serialisation and deserialisation.

PatientMonitor TCP monitoring client code.

DataLogger TCP server that logs readings.

Complete the exercises below by modifying these classes.

1. **Binary protocols**

   (a) Add a length field to the message format.

   (b) Explain why having a length field is unnecessary in this particular case.

2. **Multithreaded servers**

   (a) Use threading to make `DataLogger` capable of concurrently serving multiple clients.

   (b) Test your multithreaded `DataLogger` with at least three clients.

3. **Data races**

   (a) Log all readings coming from clients to a common `ArrayList`. Do you observe any anomalies when testing with multiple clients?

   (b) Fix the problem that you observed in a using proper synchronisation.