SENG2200/6220 –Programming Languages & Paradigms
Computer Lab for Week 10, Semester 1, 2020

Objectives

This lab aims to build an understanding of concurrency and Java "synchronized".

Questions

1. What is the purpose of the synchronized keyword in Java?

2. Why does Java need two separate ways of setting up and invoking threads within a Java program? Outline the two methods.

3. Write a Java code to create two threads a and b, such that

    a. Thread a: outputs from 1 to 52
    b. Thread b: outputs from A to Z

    Output a string in the form of

    12A34B45C…4950Y5152Z

4. Write a Java code to demonstrate the producer/consumer problem. Print a log whenever a new item is produced or consumed. Item production/consumption is immediate. There is only ONE producer and consumer, respectively.

5. Modify Q4 code and add three consumers. Print a log whenever a new item is produced or consumed (here, with a consumer's ID, e.g., thread ID). Are the consumers always in the same order to consume the items?

6. Write a Java code to create three threads, a, b and c. Make these threads **always** run in the following order:

    Thread a
    Thread b
    Thread c
    Thread a
    Thread b
    Thread c
    …