

Laboratory Assignment 1

Exploring Java Threads

Module: Concurrency (CS-210)
Academic year: 2020-21

Allocated marks: This assignment accounts for 2% of the total module marks.

Objectives

The learning objectives of this assignment are as follows.

- To recognise useful methods in the `Thread` class, and apply them.
- To define Java classes that can run concurrently.
- To code simple concurrent counting program.
- To identify issues with concurrency.

Resources: See under `Modules > Resources` on Canvas for the API documentation on Java 8, and Concurrency Tutorial from Oracle. You are allowed to cut and paste code from these sources.

Tasks

Please complete the following tasks.

1. Look at the available methods in the `Thread` class. Is there a method that will let a thread sleep? How do you call it? [Beware of the exception.]
2. Create a Java class that derives from the `Thread` class. The `run` method of the class should write something to the screen, sleep for a little while, and then write something to the screen again before finally returning.
3. Same as previous but as a class that implements the `Runnable` interface.
4. Write a Java program that creates one thread from each of the classes above and then starts them both. The program should wait until both threads have finished before ending.
5. Create a `Counter` class using either of the above alternatives that has a private *static* tally, a public `getValue` method that returns the current tally, and whose `run` method increments the tally 10 000 000 times.
6. Run two `Counter` threads in parallel. What is the tally after both threads have terminated?

Note: Please make sure that you have received a mark for completing all of these tasks.