Threads are everywhere. Even if the code you write never explicitly creates threads, chances are the frameworks your code uses will create threads, and your code called from these threads must be made thread safe. If writing correct programs is hard, writing correct concurrent programs is even harder!

This course is designed to give a formal introduction to concurrent programming. It does so by first focusing on the multithreading facilities of Java, and then on the equivalent facilities in Python. A series of simple programming exercises illustrate concurrency bugs and guide you through the learning process of how to fix them, and how to avoid them in the first place. Towards the end, the course touches on architectural design of multithreaded programs.

Required Materials

**Online:**

[Concurrency section (Links to an external site.)](https://docs.oracle.com/javase/tutorial/essential/concurrency/index.html) of the Java Tutorials

**Textbook**:

* [Java Concurrency in Practice (Links to an external site.)](https://www.amazon.com/Java-Concurrency-Practice-Brian-Goetz/dp/0321349601/)

**Software**:

* Java 8 or higher
* Python
* Your favorite code editor or development environment