CSC 213 Course Outline

Description

The primary goal of 213 is to help you develop a model of computation that is rooted in what really happens when a program executes.

In the first half of the course you will implement a simple instruction set in a hardware simulator and then examine how features of C are implemented in this instruction set. We will refer back to Java when considering memory management and polymorphism and to Dr Racket when considering functions as parameters. You will also develop an ability to read and understand small assembly-language programs.

In the second half of the course, devices, asynchrony and thus asynchronous programming are introduced. Asynchrony is used to motivate threads and threads to motivate synchronization. You will see both how these abstractions are implemented and how they are used. You will see the connection between thread switch and procedure call. You will be introduced to the notion of atomicity and see why atomic memory-exchange operations are needed to implement synchronization. You will also examine the difference between busy and blocking waiting and solve a set of problems using monitors and condition variables and semaphores in C.

Lectures

MWF 9:30am - noon in DMP 310

Assignments

- A total of 10 assignments. We will drop your lowest assignment score.
- Assignments are due at midnight

Quizzes

- On Canvas 30 minutes each
- Due at 8am, 30 hours after each assignment due date.
- Assess learning goals of the completed assignment.
- A total of 10 quizzes. We will drop your lowest 2 quiz scores.

Exams

Midterm: Monday, June 4, in lecture

Final: TBD

Contact info

Celina Berg (Instructor): ICCS 235, cgberg@cs.ubc.ca

Eka Nagatan: (Course Coordinator), cpsc213-admin@cs.ubc.ca

Office hours

Instructor Office hours:

I will be holding my office hours in the labs during the following times:

Wednesdays: noon-1pm, 6-7pm

Thursdays: 2:30-4:30pm

As you know, the labs are in the basement of ICCS and are held in ICCS 014, 015, 005 - I will be in one of these rooms depending on the schedule and demand.

TA office hours: during scheduled lab times

Marks

15% Assignments (best 9 of 10)
5% Quizzes (best 8 of 10)
30% Midterm
50% Final
http://www.cs.ubc.ca/~cgberg/cs213/cur

Course Companion
http://www.ugrad.cs.ubc.ca/~cs213/cur/resources/companion.pdf

Textbook
Computer Systems: A Programmer's Perspective. Randal E. Bryant and David R. O'Hallaron. Second or Third Edition.
http://csapp.cs.cmu.edu/public/students.html

Topics and Readings
Unit 1
-- Memory and Numbers (C 2.2) (T 2.1-2.3)
-- Static Scalars and Arrays (C 1, 2.1-2.3, 2.4.1-2.4.3, 2.6) (T 3.1-3.5, 3.8, 3.9.3)
-- Instance Variables and Dynamic Allocation (C 2.4.4-2.5) (T 3.9.1, 9.9, 3.10)
-- Static Control Flow (C 2.7.1-2.7.3, 2.7.5) (T 3.6.1-3.6.5)
-- Procedures and the Stack (C 2.8) (T 3.7, 3.12)
-- Dynamic Control Flow and Polymorphism (C 2.7.4, 2.7.7-2.7.8) (T 3.6.7, 3.10)
Unit 2
-- I/O Devices, Interrupts and DMA (T 8.1, 8.2.1, 8.5.1-8.5.3)
-- Virtual Processors (Threads) (T 12.3)
-- Synchronization (C 6) (T 12.4-12.7)

Collaboration and plagiarism
See this link for an explanation of the Computer Science policy on plagiarism:
https://my.cs.ubc.ca/docs/collaboration-plagiarism