Computing Science Course Outlines

CMPT 477 - D100 Intro to Formal Verification

Instructor(s): Yuepeng Wang

SFU Burnaby

Calendar Objective/Description:
Intro to Formal Verification

Instructor's Objectives:
This is an introductory course on formal verification, where the goal is to prove correctness or find mistakes in software systems. In particular, given a specification of the software, formal verification aims to prove or disprove that the software indeed satisfies the specification. This course mainly introduces deductive verification, one of the most important and popular methods for formal verification, including its logic foundations, constraint solving techniques, and verification methodologies. It also helps students get hands-on experience with a modern constraint solver Z3 and a deductive verifier Dafny.

Prerequisites:
see go.sfu.ca

Topics:
- Propositional logic
- First-order logic
- First-order theories
- SAT/SMT solvers
- Hoare logic
- Deductive verification

Grading:
Homework 30%; programming assignments 25%; midterm exam 20%; final project 25%. Details will be confirmed in the first week of classes.

Reference Books:

Academic Honesty Statement:
Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies (http://www.sfu.ca/policies/gazette/student.html).