

cs273: Programming Language Theory

Fall 2011

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Introduction

This course covers several topics in the theoretical study of programming languages, with a special focus on operational semantics. We will examine in depth a particularly effective form of operational semantics, based on small steps of evaluation. This style of semantics easily lends itself both to translation into efficient abstract machines and to use in proving type soundness results. We will then contrast this to some other styles of language specification. We will also use tools for implementing semantics. Finally, we will study the application of semantics to a real-world exercise.

Format and Schedule

For the first two months, we will read theoretical material and do homeworks ranging from worked examples to full proofs. Each reading will be accompanied by several homework problems that require formal written responses. Each segment of reading will be followed by an in-person discussion of points of interest and difficulty. In the last month we will focus on a single project. The project must be of significant scale, such as modeling a portion of a Web browser, and designed in conjunction with the professor.

Reading

- *Semantics Engineering with PLT Redex*, by Felleisen, Flatt, Findler (MIT Press, 2009)
- *Semantics with Applications*, by Nielson and Nielson (Wiley, 1992)

Grading

Assignments	40%
Project	50%
Participation	10%

Policies

Late material will be accepted only in case of justifiable circumstances outside the student's control, or with prior permission. Unless explicitly stated otherwise, all work must be done individually. Incompletes will not be given for homeworks; they will only be permitted if the student needs more time to round out their course project.