COSE212: Programming Languages

Lecture 0 — Course Overview

Hakjoo Oh
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Basic Information

Instructor: Hakjoo Oh

- **Position:** Assistant professor in Computer Science and Engineering, Korea University
- **Expertise:** Programming Languages and Compilers
- **Office:** 616c, Science Library
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- **Office Hours:** 1:00pm–3:00pm Mondays and Wednesdays (by appointment)

TAs:

- Kwonsoo Chae, Sooyoung Cha, Sunbeom So, Seongjoon Hong, Minseok Jeon
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Course Website:

- http://prl.korea.ac.kr/~pronto/home/courses/cose212/2016/
- Course materials will be available here.

About This Course

This course is *not* about

- to learn particular programming languages

- to improve your engineering skills in programming (e.g., tools, libraries, etc)

Instead, in this course you will learn

- fundamental principles of modern programming languages
- how to design and implement programming systems
- thinking formally and rigorously

To succeed in this course, you must

- have basic programming skills
- be familiar with at least two PLs (e.g., C, Java)
- have taken Theory of Computation, Data Structures, etc
- be prepared to learn "new" things

Topics

- **Part 1 (Preliminaries):** inductive definition, basics of functional programming, recursive and higher-order programming
- **Part 2 (Basic concepts):** syntax, semantics, naming, binding, scoping, environment, interpreters, states, side-effects, store, reference, mutable variables, parameter passing
- **Part 3 (Advanced concepts):** type system, typing rules, type checking, soundness/completeness, type inference, polymorphism, modules, module procedures, typed modules, objects, classes, methods, inheritance, typed object-oriented languages

Course Materials

- Essentials of Programming Languages (Third Edition) by Daniel P. Friedman and Mitchell Wand. MIT Press.

  (Not required but recommended)
- Self-contained slides will be provided.

Grading

- Homework – 60%
  - ▶ 5–6 programming assignments
- Final exam – 40%
  - ▶ 12/14 (Wed) in class

Assignment policy:

- No late submissions will be accepted.
- All assignments must be your own work.
  - ▶ **Copying gets you 0 for the entire HW score.** Strict. No exception.
  - ▶ We use both automatic and manual technology for detecting clones

Programming Assignments in OCaml
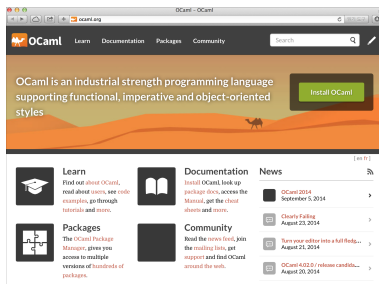
- A higher-order, strict, mostly pure, and typed language with algebraic data types.
- Inspired the design of many modern programming languages.

Next Class

Bring your notebook. We will have a tutorial session for OCaml programming by TAs:

- Installation of the language system,
- How to write and run programs,
- How to submit assignments,
- Troubleshooting, etc.