

Functional Programming: Haskell & Clojure

Independent Study, Fall 2014

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Overview

This intensive course is designed to explore two functional languages, to promote flexibility in thinking and expanded programmatic reasoning. To that effect, it takes a staggered, woven approach; Haskell and Clojure differ significantly from more popular OO languages, but also from each other. Switching between them through the semester will both encourage flexibility and allow the functional concepts learned to complement each other. The course will cover basic and intermediate concepts in both languages, and culminate in a major programming assignment in each.

Resources

Haskell:

Learn You a Haskell:

learnyouahaskell.com

Ninety-Nine Haskell Problems (H-99):

www.haskell.org/haskellwiki/H-99:_Ninety-Nine_Haskell_Problems

Project Euler:

projecteuler.net/index.php?section=problems

Real World Haskell:

book.realworldhaskell.org/read

20 intermediate Haskell exercises:

tonymorris.github.io/blog/posts/20-intermediate-haskell-exercises

Clojure:

Clojure from the Ground Up:

aphyr.com/tags/Clojure-from-the-ground-up

4clojure:

www.4clojure.com/problems

Clojure Koans:

clojurekoans.com

Clojinc:

github.com/Ispektor/clojinc

Schedule:

Week 1: First five chapters of "Learn You a Haskell for Great Good"

Solve H-99 problems relevant to first five chapters (first 28 problems? Do at least 10)

Week 2: Chapters 6-9

2 or 3 project Euler problems

Week 3&4: Clojure from the ground up, chapters 1-3 (and exercises).

Do 5 or so related problems from 4clojure's problem sets.

Work through Clojure Koans up to relevant point

Week 5: Real World Haskell 1-4; do a couple exercises from each chapter

Week 6: Real World Haskell 5-7; do a couple exercises from each chapter

Week 7: Cftgu 4, exercises; 2-4 relevant 4clojure problems. Koans.

Week 8: Cftgu 5, exercises; 2-4 or so relevant 4clojure problems. Koans.

Week 9: Real World Haskell 8-10; do a couple exercises from each chapter

Week 10: Real World Haskell 11-13; do a couple exercises from each chapter. Do all 20 intermediate haskell exercises

Week 11: Cftgu 6, exercises; 2-4 or so relevant 4clojure problems. Koans.

Week 12: Cftgu 7, exercises. Do a handful of difficult problems on 4clojure. Finish koans?

Weeks 13-15: Final projects: one large programming assignment in Clojure and Haskell.