Domain-Specific Languages

[T]he fundamental principles of designing for people: (1) provide a good conceptual model and (2) make things visible. — The Design of Everyday Things, Donald A. Norman

[E]very large scale programming project involves the design, use, and implementation of a special-purpose programming language, with its own data concepts and primitive operations, specifically oriented to that particular project.

— Hints on Programming Language Design, C. A. R. “Tony” Hoare
A studio is:

1. People
2. Process
3. Place

All work in progress is public.
Exercise: Set up our studio

Discussion space
everyone can see each other’s face

Discussion + presentation space
everyone can see each other’s face
everyone (except presenter) can see the side screen and front board

Work space
space for each person to write or work on a computer
no need to see boards easily, but it might be nice to use the boards

Easy set-up and recovery
should take no more than two minutes for all of us to set-up / reset
(perhaps after some practice :) )
Discussion Rules

- Everyone should participate equally
- Give your attention to the person who is speaking
- Yes, and… (build on discussion)
- Ben usually takes notes and talks last
- …
The plan
This course is two half-courses

A tour of DSL design & implementation techniques

Project depth
Skills

- Scala
- GitHub
- Testing
- Build system (sbt)
Concepts

- Language design
- Parsing
- Semantic models
- Software engineering
- Extensibility
- ...

Skills

- Scala
- GitHub
- Testing
- Build system (sbt)
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<th>Philosopihes</th>
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<td>People first</td>
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<td>Programming as language design</td>
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<td>How does language influence thought?</td>
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<td>The end of PLs</td>
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$111 = \frac{1}{3} \cdot (81 + 121 + 131)$

have taken or are currently enrolled in the course
Scala as a lens

no experience
Soundbite syllabus
or is it “soundbyte”?

- One-stop shop: [www.cs.hmc.edu/cs111](http://www.cs.hmc.edu/cs111) schedule, assignments, repository, syllabus, etc.
- We’ll communicate in-person, on Piazza, or on GitHub. not over email
- Come to class and participate fully.
- Concentrate more on problems than solutions.
A typical week

Class on Monday and Wednesday
we’ll need a scribe each day — sign up on the Wiki

Assignment due Wednesday at 11:59pm

Critique due Friday at 11:59pm
treat your critique partner as your collaborator

New assignment available no later than Wednesday evening

Office hours in Olin 1279
Open-door, plus TBD (probably on Monday / Tuesday / Friday)

6–9 hours / week outside of class

except this week!
(Sun / Tues)
Important places

Access to the LAC building: F&M
Access to the LAC computers: CIS

See also: www.hmc.edu/map/
Olin is the west-most building at HMC.
Ben’s office is in the northeast corner of the building.
Grading

More details next week

Participation: 20%
critiques • in-class discussion • class writeup(s)

Assignments: 40%

Project: 40%
there will be milestones, but it’s mostly on you
Key point

The primary responsibility is yours.
Music Maker

Emily Blatter — DSLs Fall 2014

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Before Monday

- Activate your Piazza account
  all communication happens in-person, on Piazza, or on GitHub (not email)

- Join our GitHub organization

- Assignment 1
  submission due Sunday
  critique due next Tuesday
  all the details are in the assignment
  ask questions on Piazza!

- Sign up to scribe a class

- Restore the room