

What is a DSL?

Today's themes:
tradeoffs and gray areas

Today's class: discussion questions

1. Groups of three

- Discussion questions on handouts
- Take notes
- Take the full time

2. Highlight the insights / questions

3. Full-class discussion

- We'll revisit the questions, see where we (dis)agree

4. Info: critiques, schedule, grading, projects

What is a
programming language?

DSL case studies

What is a DSL?

Highlight the
insights / questions

Discussion Rules

- Everyone should participate equally
- Give your attention to the person who is speaking
- Yes, and... (build on discussion)
- Prof. Ben usually takes notes and talks last
- Hand off to the next person

What is a
programming language?

What is a DSL?

What is a *Domain-Specific* Language (DSL)?

domain-specific

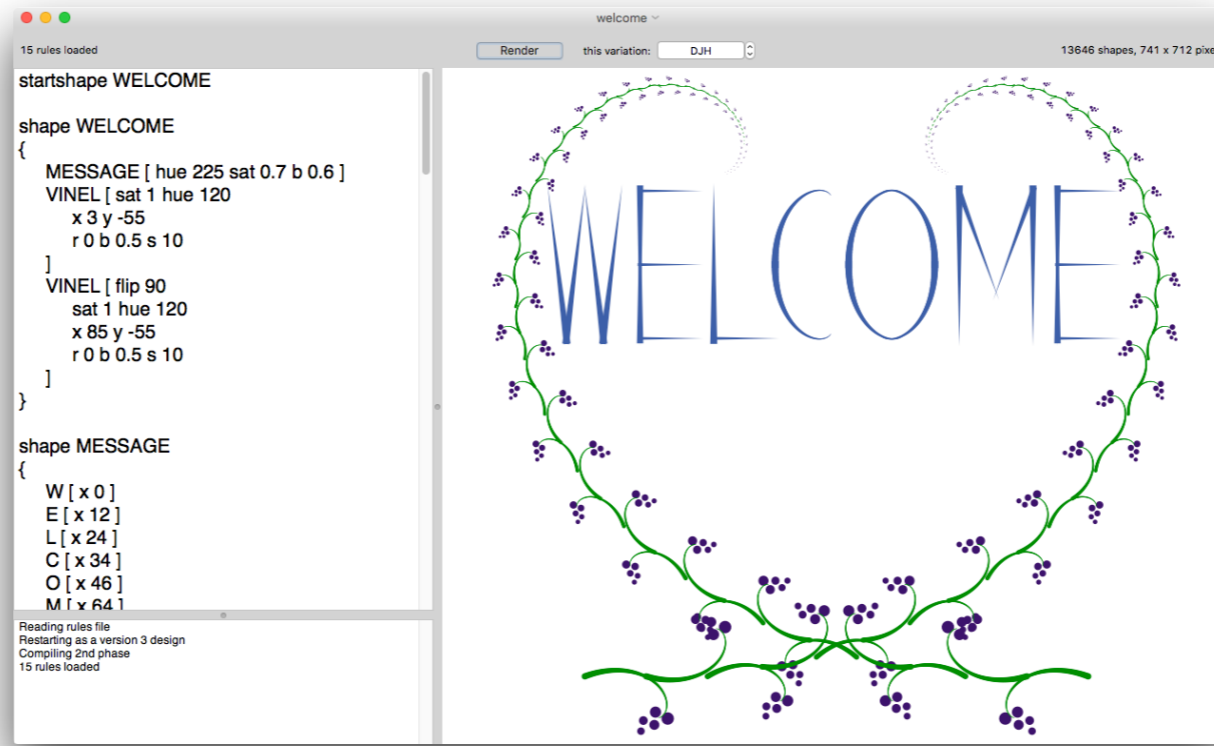
general-purpose



We should have good answers for all these questions

1. Can it satisfy our definition of a **programming language**?
2. What does a program in this language **look** like? (syntax)
3. What happens when a program **runs**? (semantics)
4. What should be **easy, difficult, impossible** in this language?

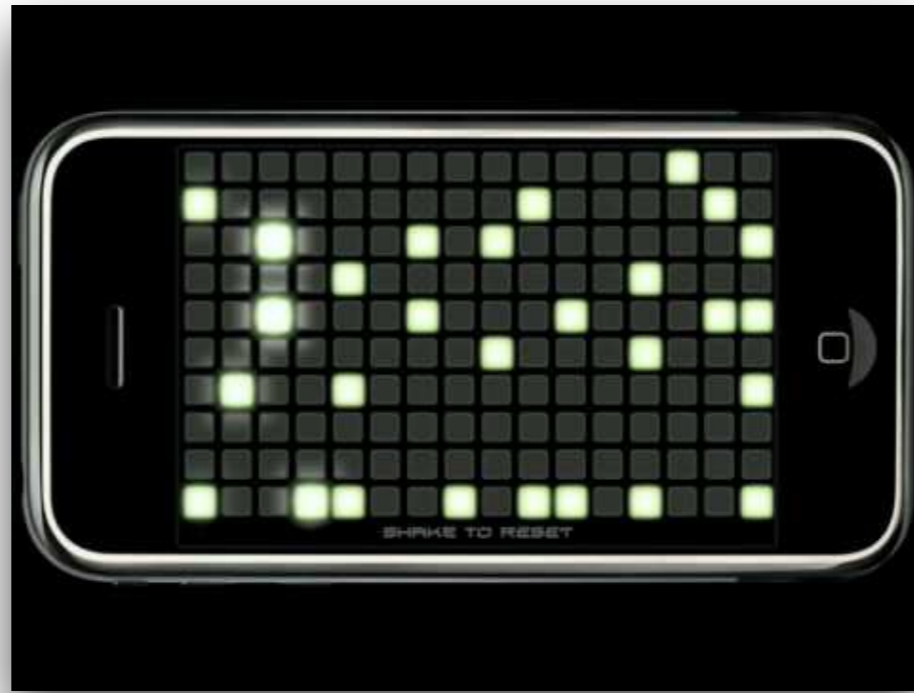
The answers to these questions help us decide if it's a DSL.



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Context Free



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Melodica

implementer effort

DSL

implementation

design / implementation
tradeoff space

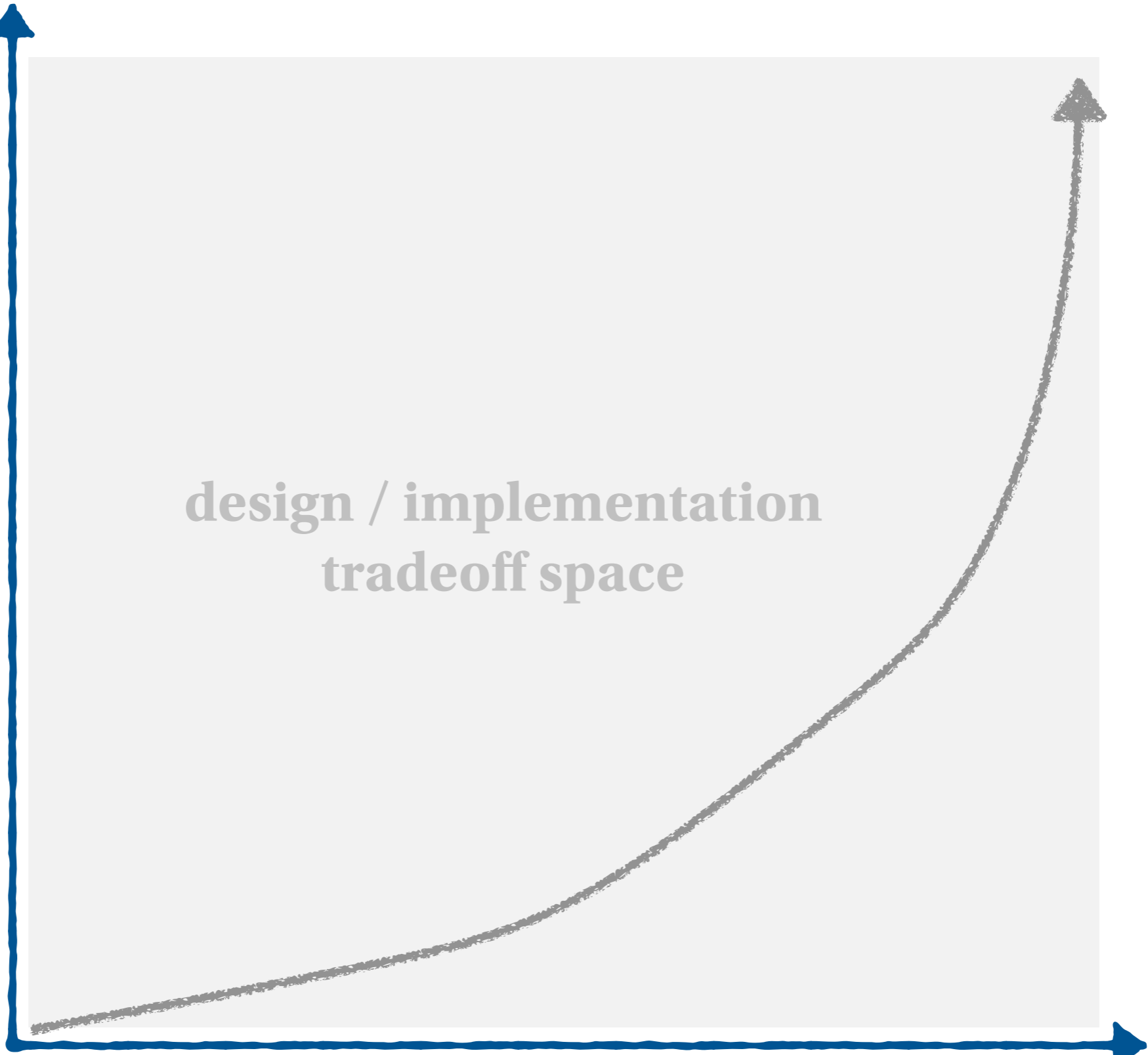
general-purpose

indirect
interaction

design

direct
interaction

user ease



The evolution of a DSL?

general-purpose

domain-specific

general-purpose?



library

API

internal

external

features

discover

add

remove

tools &

nouns & verbs

fluency

host flavor

environments

Schedule

subject to change :)

		Fall 2016			
		CS 111: Domain-Specific Languages			
		MW 1:15pm–2:30pm in SHAN 2475			
		Piazza · Syllabus · GitHub Repo · Wiki			
		Monday		Wednesday	
Language design	(0)	08 · 29 (no class)		DSLs: What, why, and how? <i>slides</i>	08 · 31 What is a DSL? Due: Sunday 9/4 at 11:59pm Critique: Tuesday 9/6 at 11:59pm
	(1)	09 · 05 What is a DSL?		Fluency	09 · 07 Language design Due: Wednesday 9/14 at 11:59pm Critique: Friday 9/16 at 11:59pm
	(2)	09 · 12 Finding problems, ignoring solutions class meets at the Hive		Language design	09 · 14 Project ideas Due: Wednesday 9/21 at 11:59pm Critique: Friday 9/23 at 11:59pm
Prep	(3)	09 · 19 Getting up and running in Scala		Scala tour	09 · 21 Practice Scala Due: Wednesday 9/28 at 11:59pm Critique: Friday 9/30 at 11:59pm
Tools: Internal DSLs	(4)	09 · 26 Internal DSLs in Scala		Lab: internal control flow	09 · 28 Internal DSL: regular expressions Due: Wednesday 10/5 at 11:59pm Critique: Friday 10/7 at 11:59pm
	(5)	10 · 03 External DSLs in Scala <i>language architecture & parser combinators</i>		Extensibility: traits	10 · 05 Language design: Piconot Due: Friday 10/14 at 5:00pm Critique: Friday 10/21 at 11:59pm
Tools: External DSLs	(6)	10 · 10 Extensibility: the Expression Problem		Common patterns in DSLs	10 · 12
	(7)	10 · 17 Fall Break (no class)		Lessons and plans	10 · 19 Project pitch Due: Sunday 10/23 at 11:59pm Critique: Tuesday 10/25 at 11:59pm
Projects	(8)	10 · 24 critique		studio	10 · 26 Project: description and plan & repositories Due: Sunday 10/30 at 11:59pm Critique: Tuesday 11/1 at 11:59pm
	(9)	10 · 31 critique		studio	11 · 02 Project: design and implementation Due / notebook: Sunday 11/6 at 11:59pm Critique: Tuesday 11/8 at 11:59pm
	(10)	11 · 07 critique		studio	11 · 09 Project: prototype Due / notebook: Sunday 11/13 at 11:59pm Critique: Tuesday 11/15 at 11:59pm
	(11)	11 · 14 critique		studio	11 · 16 Project: preliminary evaluation Due / notebook: Sunday 11/20 at 11:59pm Critique: Tuesday 11/22 at 11:59pm
	(12)	11 · 21 critique		Logos	11 · 23
	(13)	11 · 28 critique		studio	11 · 30 Notebook: Sunday 12/4 at 11:59pm Critique: Tuesday 12/6 at 11:59pm
	(14)	12 · 05 critique		The end?!	12 · 07 Project: final product and writeup Due: Friday 12/9 at 11:59pm Project: demo / presentation Wednesday 12/14, 2–5pm

Critiques

- Give yourself a budget of ~60 minutes
- Quality, not necessarily quantity
Engage. Be intentional and **specific**. Small bite, long chew!
- Some useful critique prompts
 - Prompts from the assignment
 - If someone asks a question, attempt an answer
 - If someone asks for feedback, give it
 - “I hadn’t thought of that! Can I steal it?”
 - “You could also...”
 - “I found...”
 - “I could use this for ...”

Projects

- It's never too early to start
- Next week's focus
- For now: play, percolate, talk to one another and me
- Look for something in every DSL class, every *other* class, your hobbies, your work...
- Possible outcomes
 - Make life easier for a group of people
 - Change the way someone sees the world
 - Reveal the way the world actually is

Before Wednesday

- Assignment 1
critique due Tuesday
- Write up today's class
And **everyone** can / should contribute.
- Sign up to be scribe for a class
- Restore furniture
- Bring your computer on Wednesday (if you want)
We'll also have computers here