Music Appreciation 243: Introduction to Rick Astley

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Welcome to CS193P: iPhone Application Development

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Staff

- **Lecturers**
  - Evan Doll edoll@cs.stanford.edu
  - Alan Cannistraro accannis@stanford.edu
- **Student TAs**
  - Troy Brant troyb@stanford.edu
  - Paul Salzman paulsalz@stanford.edu
- **“Professor Emeritus”**
  - Paul Marcos pmarcos@stanford.edu

How many of you...

- Are familiar with object-oriented programming?
- Have developed software with Mac OS X?
- Have developed apps for the iPhone?

Lectures, Sections, Office Hours

- Lectures
  - 320-105, Monday & Wednesday 3:15 – 4:30 PM
- Optional Section
  - 200-205, Friday 3:15 – 4:05 PM as announced
  - Guest speakers, additional topics
  - First one will be next Friday 4/10
- Office Hours
  - Troy and Paul will be holding office hours
  - Time & location TBD, check website for details

Requirements

- Prerequisite: CS 106B/X
- Recommended Book: None, we'll use Apple documentation
- You must have access to an Intel-based Macintosh
  - Running Mac OS X 10.5 Leopard
  - iPhone SDK **(Not available on cluster computers!)**
- Owning an iPhone or iPod Touch is not required
  - Assignments may be done with the iPhone Simulator
  - Loaner iPod Touches should be available, more details to come

Enrollment

- Response has been phenomenal again this quarter!
  - Enrollment limited to 60 students
  - 40 graded, 20 Pass/No Credit
  - Being signed up on Axess does not mean you're enrolled
- **You MUST fill out a survey to be considered!**
  - http://tinyurl.com/cs193p-spring09-survey
  - Required by noon tomorrow (April 2)
  - Indicate whether you're willing to enroll P/NC
- Enrollment will be determined based on prior CS courses, other relevant experience, number of quarters remaining, major
- **Non-enrolled may still attend lectures as auditors**

iPhone Developer University Program

- Stanford has joined the iPhone Developer University Program
- Free on-device development for students (normally $99)
  - Valid through the end of the quarter
  - Invites will only be issued to @stanford.edu email addresses
- You'll need to click through a "student agreement" which you should read

iPhone OS 3.0 Beta

- We won't be discussing the upcoming iPhone OS 3.0
  - Currently covered by an NDA
- Superset of iPhone OS 2.0 from a developer perspective
- Everything you'll be learning this quarter will still be useful!

Expanding our classroom...

CS193P will be available on iTunes U this quarter

CS193P on iTunes U

- For enrolled students at Stanford...
  - Your voice may be recorded
  - Not a substitute for attending lectures
    - There will be a delay of a few days before availability

CS193P on iTunes U

- For viewers on iTunes U...
  - Welcome to Stanford!
  - Feedback and suggestions are welcome
  - **We can't answer individual questions via email**
    - Visit http://devforums.apple.com

Getting More Info

- Email
  - cs193p@cs.stanford.edu
  - **Questions from enrolled students only, please!**
- Course web site
  - http://cs193p.stanford.edu
- Other web sites
  - iPhone Dev Center: http://developer.apple.com/iphone
  - Developer Forums: http://devforums.apple.com

Why Are We Here?

Why Are We Here?

To build iPhone & iPod touch applications using Cocoa Touch

Why Are We Here?

- CS193P is not just about the iPhone, Cocoa Touch or ObjC
- It's about real-world software engineering, as well as object oriented architecture and design
- Exposure to problems and solutions that you might not see in other classes

Cocoa Touch & iPhone SDK

- Based on Cocoa
  - Mature, polished, highly consistent APIs
- Provides a very rich starting point for exploring app design
- Shows “real-world” implementations of OO design patterns
- Designs learned on iPhone translate directly to Mac OS X

What We'll Cover This Quarter

Tools

Xcode

Interface Builder

Frameworks

Foundation

UIKit

Language
(& Runtime)

```
[textView setStringValue: @“Hello”];
```

Objective-C

Why Objective-C?

- Exposure to other languages is always good
- ObjC is a language focused on simplicity and the elegance of object oriented design
  - Based on ANSI C
  - Brings many object oriented principles, but with a minimal amount of syntax
- A data point to compare with designs of C, C++, Java and other languages

Applications You Will Build

	HelloStanford & Obj-C Tool
	HelloPoly - 2 weeks
	Presence - 4 weeks
	Final Project (your choice) - 3 weeks

Assignments, Grading & Late Policy

- 7 weekly assignments
- Final project of your choice
  - End of quarter demos at Apple...
- Grading: Nice & simple: ✓, ✓+ and ✓-
- Late Policy: 3 late days, use them wisely!

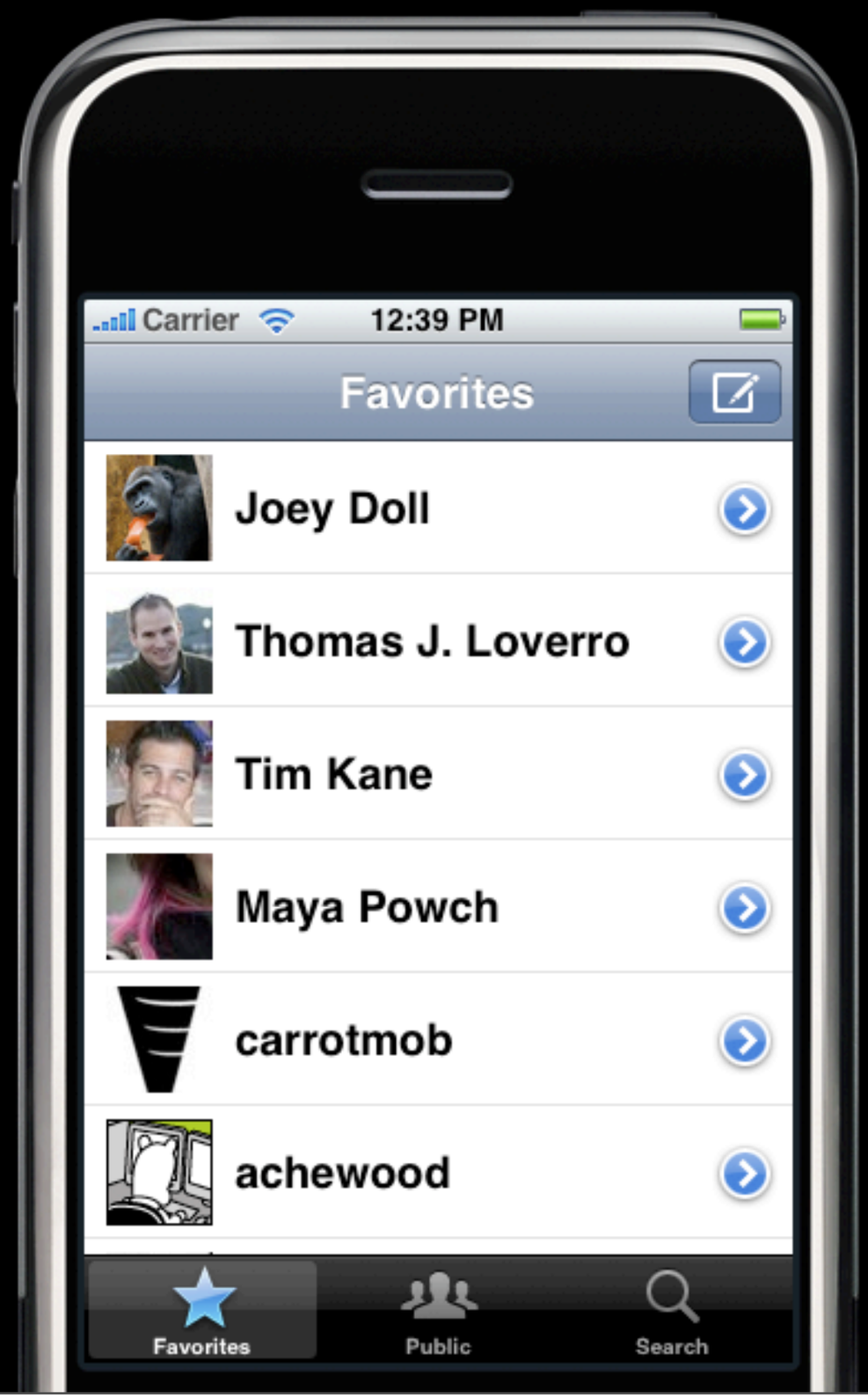
First Assignment

- First assignment handed out today, in two parts
- Intended to get you situated with tools and start off with Obj-C
- Includes a comprehensive walkthrough
- We suggest trying to do the first half before Monday to help work out any tools or installation issues
- **Due on Thursday 4/9**

Presence

- The “Hello World” of iPhone applications...
  - A twitter client
- Build a fully functional application from scratch over 4 weeks
- Each assignment builds on the previous one

Presence


Carrier
12:39 PM
Favorites
Joey Doll
Thomas J. Loverro
Tim Kane
Maya Powch
carrotmob
achewood
Favorites
Public
Search


Carrier
12:38 PM
Favorites
Joey Doll
Statuses
Cassie in San Diego for 36 hours and it all falls apart; no showers, high on coffee, house in shambles
whoa, carrotmob on page 73 of the jan 31st economist. craziness.
@odshine ah sheeit. they got you too.
coffee, writing, coffee, writing
working on the mother of all PCBs. it slices, it dices!
google reader has decided that it knows who my friends are better than i do
Favorites
Public
Search

What We'll Cover

- Application design patterns
- View controllers
- Displaying data
  - Table views
- Dealing with local & remote data
  - Property lists, SQLite, web services
- Text input
- Multithreading
- Address Book and other system integration

Final Projects

- Last 3 weeks of the course
- By yourself or with a partner
- It's never too early to think of something and propose it to us
- Categories to consider:
  - Student life apps
  - Educational tools
  - Games
  - Social / location-aware software
- Something that you or your friends would actually like to use!
- Post it on the app store?
  - http://www.stanfordiphoneclassapps.com

Questions?

iPhone OS Overview

iPhone

Mac OS X

Mac OS X


Cocoa
Media
Core Services
Core OS


Cocoa Touch
Media
Core Services
Core OS


iPhone OS
Cocoa Touch
Media
Core Services
Core OS

Core OS

OS X Kernel
Mach 3.0
BSD
Sockets
Security
Power Mgmt
Keychain
Certificates
File System
Bonjour

Core Services

Collections
Address Book
Networking
File Access
SQLite
Core Location
Net Services
Threading
Preferences
URL utilities

Media

Core Audio

OpenAL

Audio Mixing

Audio Recording

Video Playback

JPG, PNG, TIFF

PDF

Quartz (2D)

Core Animation

OpenGL ES

Cocoa Touch

Multi-Touch Events
Multi-Touch Controls
Accelerometer
View Hierarchy
Localization
Alerts
Web Views
People Picker
Image Picker
Controllers


iPhone OS
Cocoa Touch
Media
Core Services
Core OS

Tools

Xcode

Interface Builder

Frameworks

Foundation

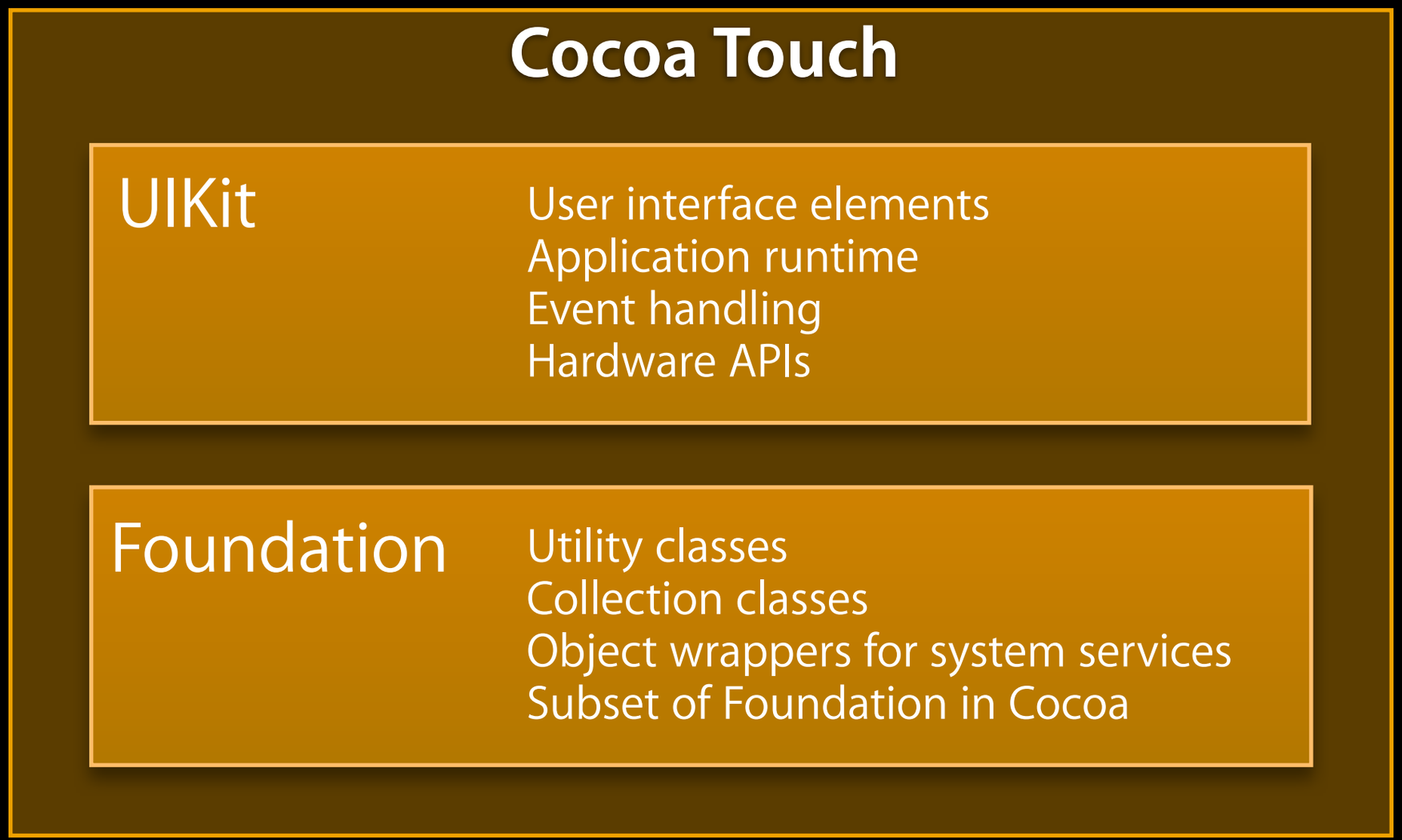
UIKit

Language
(& Runtime)

```
[textView setStringValue: @“Hello”];
```

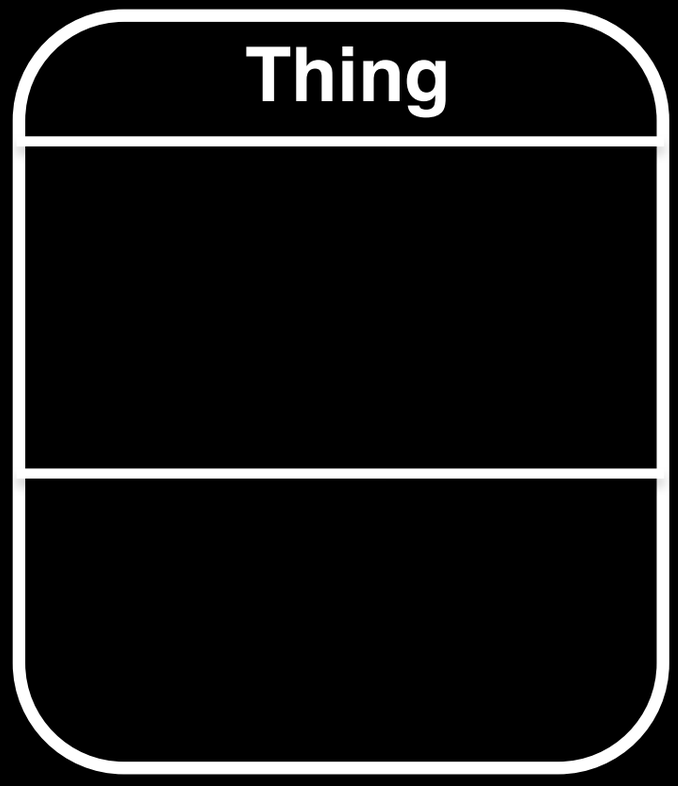
Objective-C

Cocoa Touch Architecture

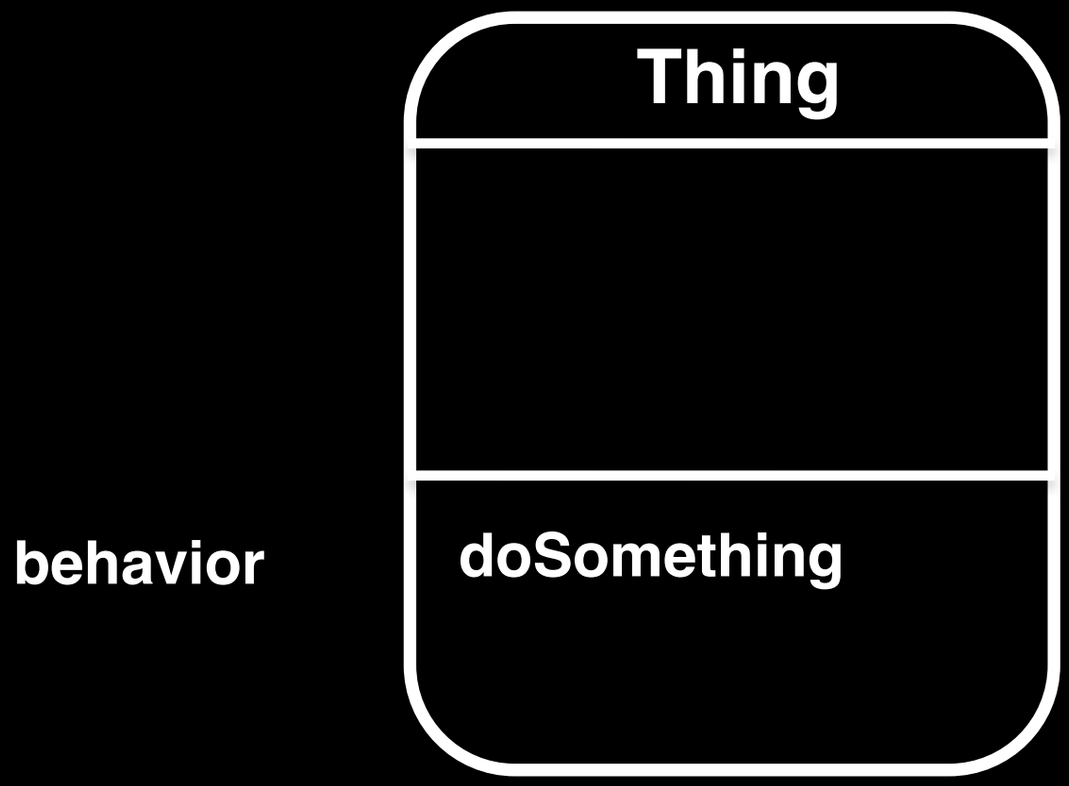


Objects

Object

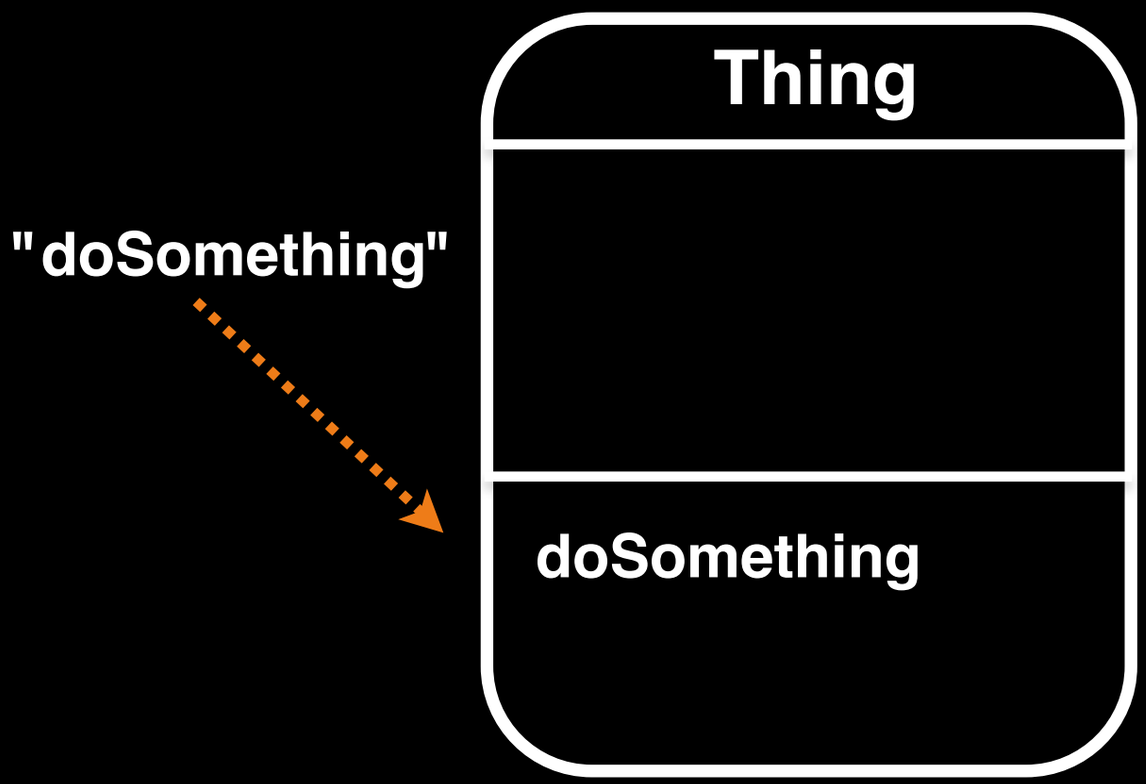


Behavior

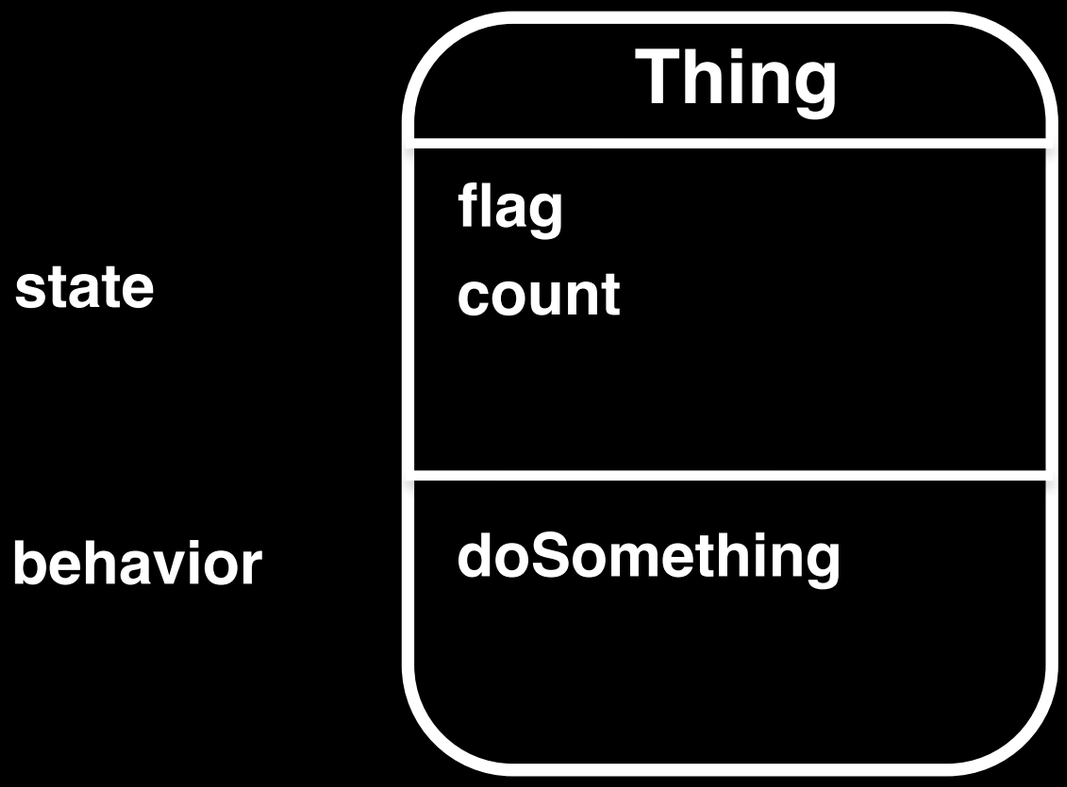


behavior

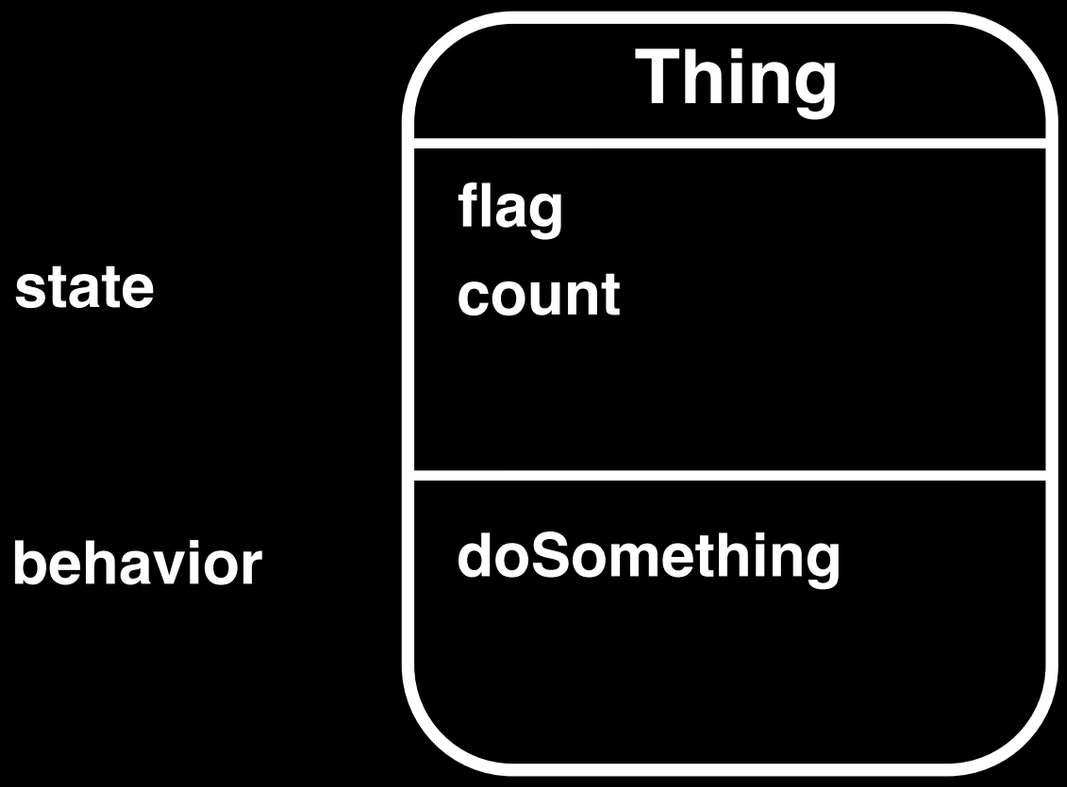
Message



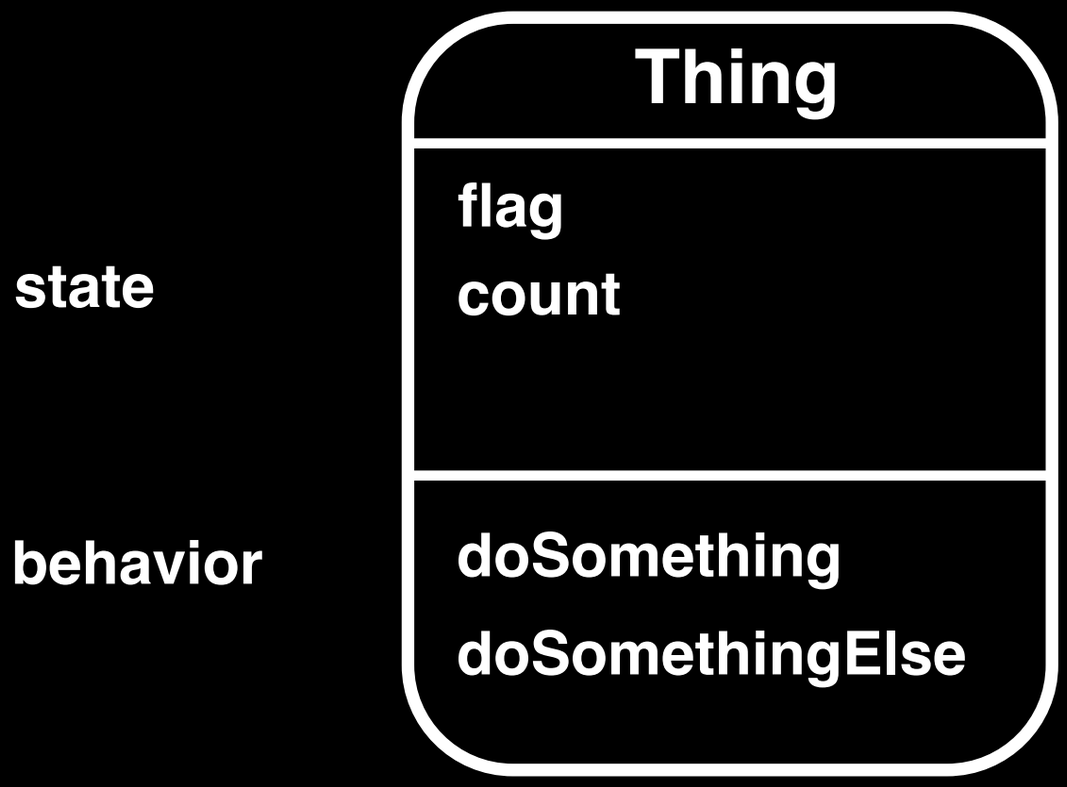
State



Other Objects As State



Other Objects As State

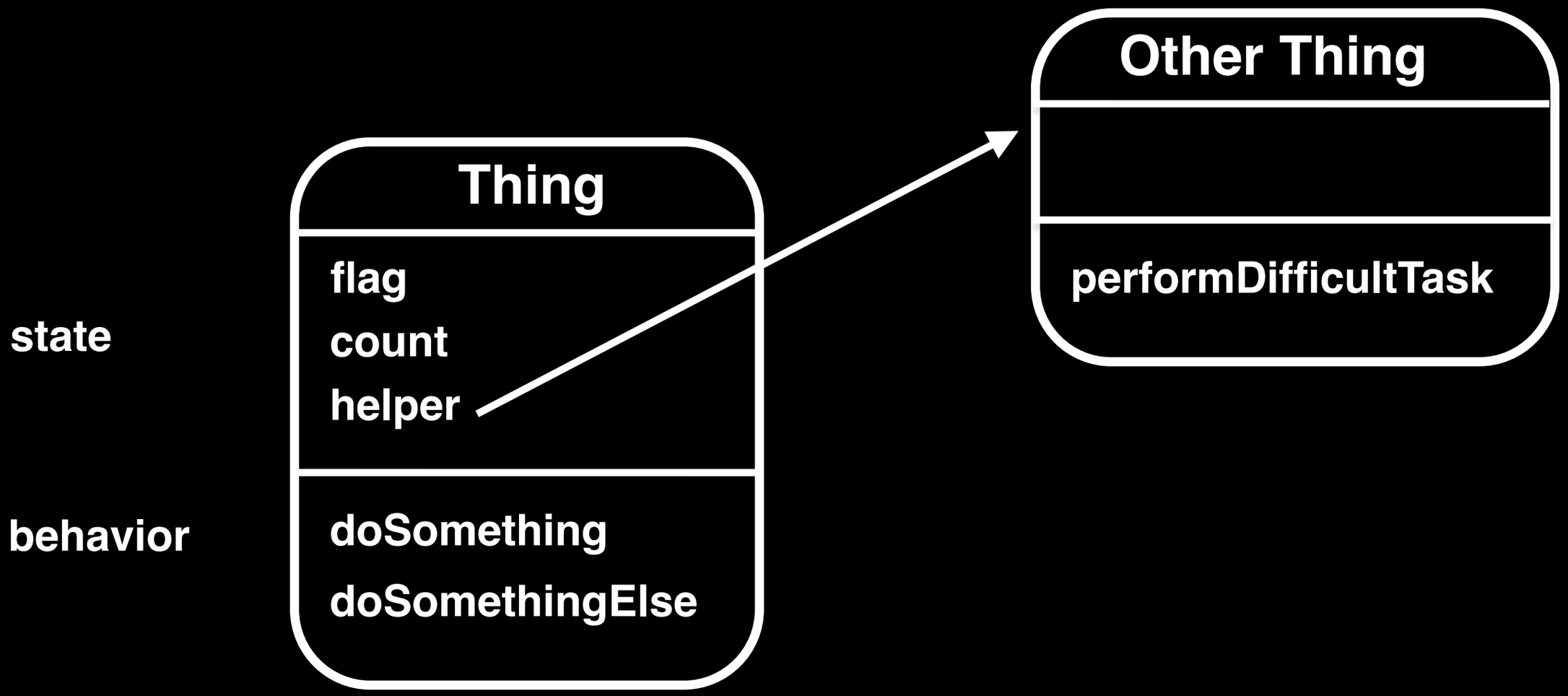


Other Objects As State

state

behavior

Other Objects As State

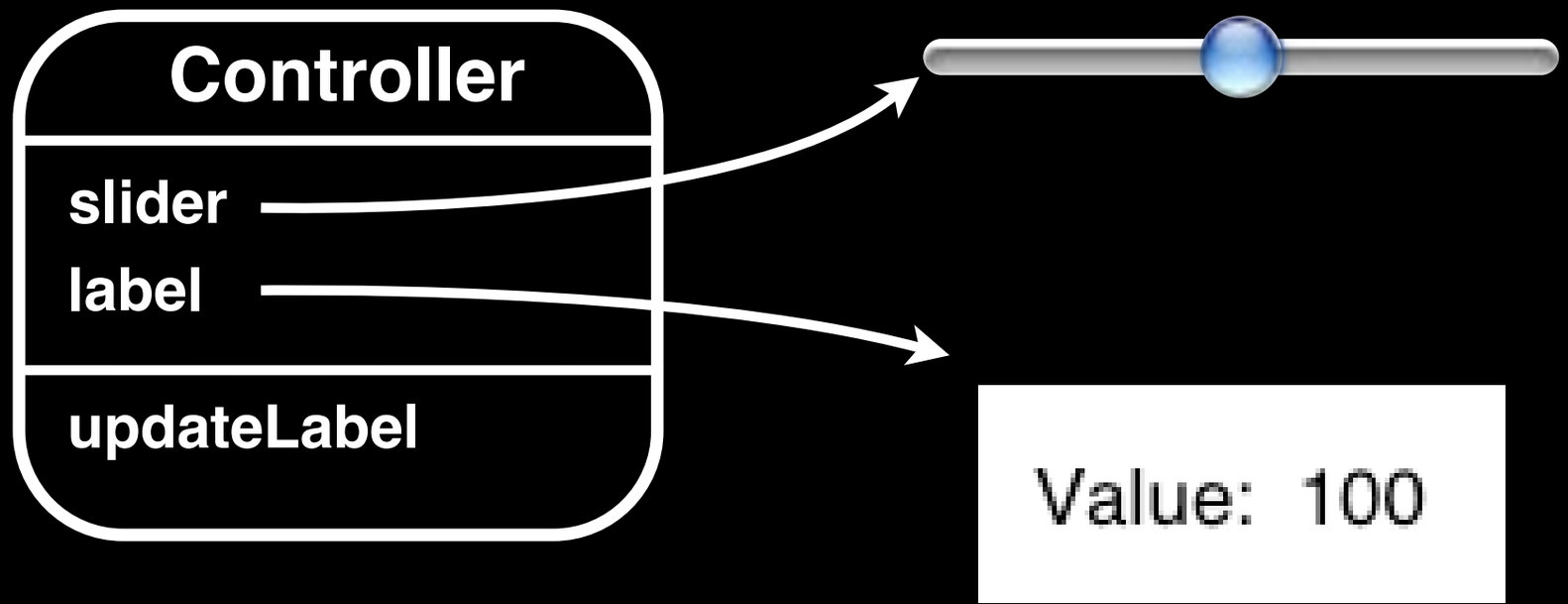


Outlets

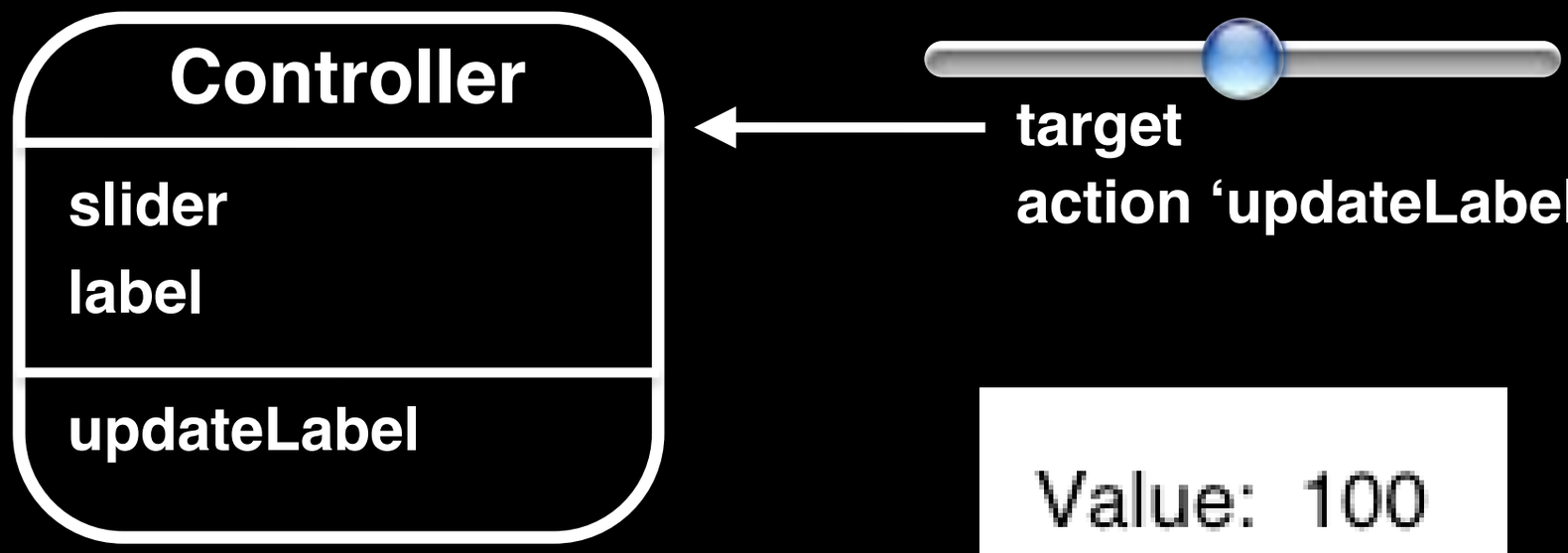
Need to decide what the demo would be and update slide to appropriate material.

- text field / slider?

- color tabs?



Target / Action



Demo

What did we just see?

- Keep application logic separate from interface elements
- Outlets connect controllers to views
- Use target/action to customize behavior
  - Don’t require subclassing

Questions?