# Welcome to CS193E

## Mac OS X Cocoa Programming

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# Intros

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- TA - David Black <dcblack@cs.stanford.edu>

# Logistics

- Lectures: Skilling 193

    Tues & Thurs 12:50 - 2:05 PM

- Prerequisite: CS 106B/X

- Recommended Book: *Cocoa Programming for Mac OS X* by Aaron Hillegass, 2nd edition.

    - 7 concurrent licenses available online

- Software:  Mac OS X 10.4 (Tiger)

# Quick Survey

- Have worked with Java or C++?
- Have a Macintosh?
- Have OS X 10.5 Leopard installed?
- Have done development on a Mac?

# Why Are We Here?



**To build Mac OS X applications with Cocoa**

# Why Are We Here?

- 193E is not just about Cocoa and ObjC

- It's about Software Engineering as well as object oriented architecture and design

- Exposure to problems and solutions that you might not see in other classes
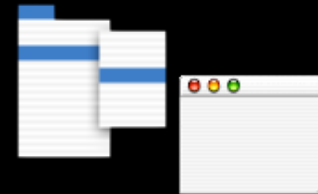
# Things to Learn

| | | |
|---|---|---|
| **Tools** | Xcode | Interface Builder |
| **Frameworks** | Foundation | AppKit |
| **Language (& Runtime)** | `[textView setStringValue: @"Hello"];` Objective-C | |

# Why Cocoa?

- Cocoa is a mature, well thought out with highly consistent APIs
- Provides a very rich starting point for exploring application design
- Shows "real-world" implementations of OO design patterns

# Why ObjC?

- Exposure to other languages is always good
- A language focused on simplicity and the elegance of OO 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++ and Java

# Cocoa Applications

| | | |
|:---:|:---:|:---:|
| Mail | Safari | iChat |
| Photo Booth | Automator | iPhoto |
| Keynote | Aperture | Interface Builder |

# Applications You Will Build

| | |
|---|---|
|  | Temp Converter & Obj-C Tool |
|  | Favorite Things |
|  | Timeline - 4 weekly assignments |
|  | Final Project - You Decide! |

# 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 part of first assignment handed out today
- Intended to get you familiar with tools and dip a toe in the language
- Includes a comprehensive walkthrough
- We suggest trying to do 1A before Thursday to help work out any tools or installation issues

# Office Hours & Web Site

- Office hours
  - Mon & Weds 10:30 - 12:30 in Gates B24A
- Email: cs193e@cs.stanford.edu
- Web site: http://cs193e.stanford.edu

# Questions?

# Mac OS X
# Overview

# Mac OS X Architecture
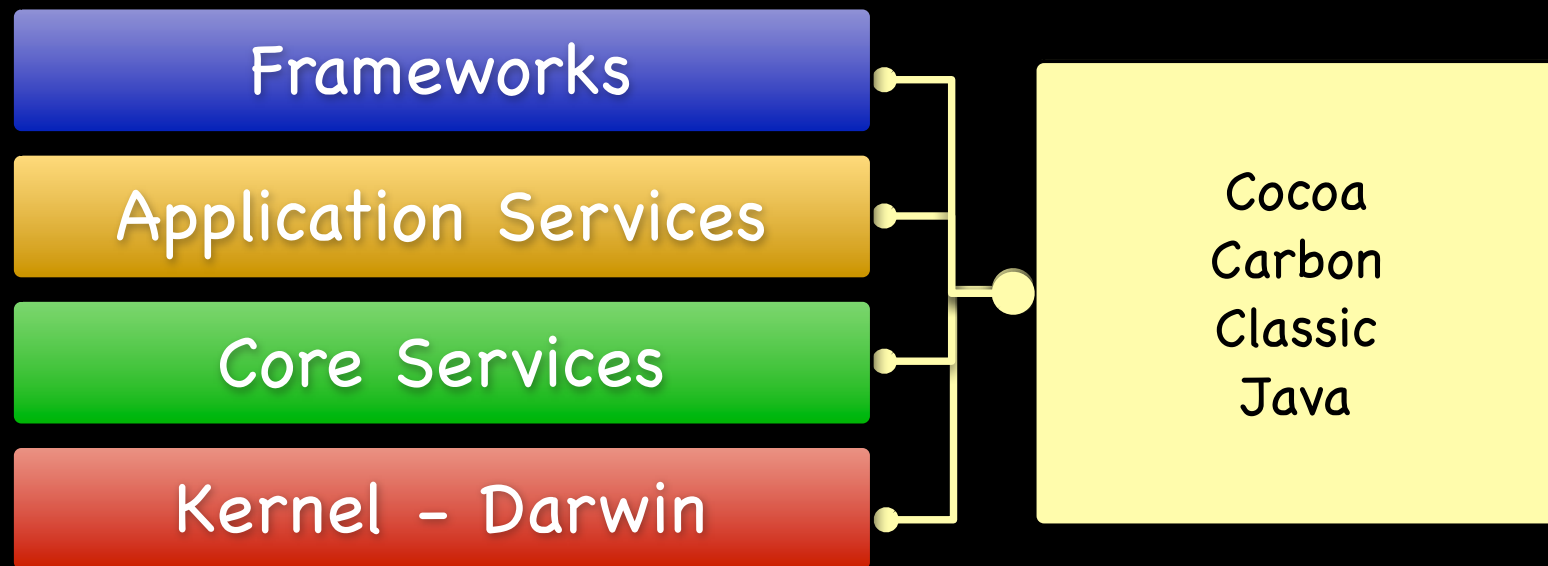


| | |
|---|---|
| **Frameworks** | Cocoa |
| **Application Services** | Carbon |
| **Core Services** | Classic |
| **Kernel - Darwin** | Java |
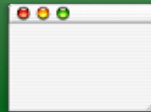
**Tools**

Xcode

Interface Builder

**Frameworks**

Foundation

AppKit

**Language (& Runtime)**

```
[textView setStringValue: @"Hello"];
```

Objective-C

# Notes about Tools

- We'll be using Xcode 2.5 tools
- If you have 10.4 Tiger, you may need to update or install
- If you have 10.5 Leopard, you need to install Xcode 2.5
- If you need Xcode 2.5, download for free from Apple Developer Connection
  - http://developer.apple.com/tools/download
  - Sign up for free Online ADC account
- Xcode 2.5 and Xcode 3.0 can happily coexist on a Leopard machine
  - Read the XCode 2.5 release notes for details

# Cocoa Architecture
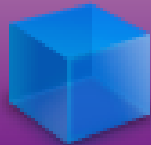
# Using Cocoa

- GUI (Graphical User Interface) applications
- Command-line tools
- Plug-ins
- Even device drivers!

# Objects

# Object
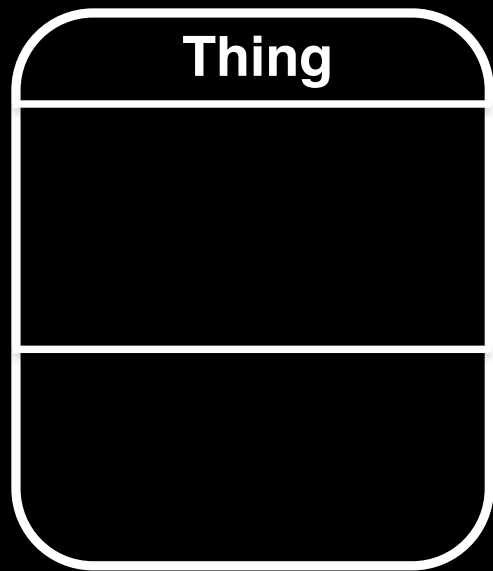
# Behavior
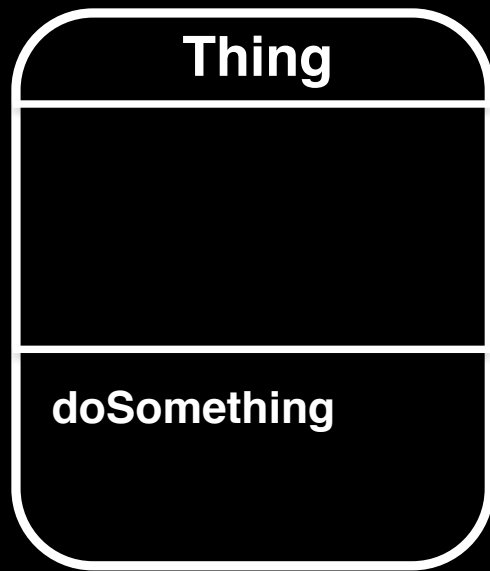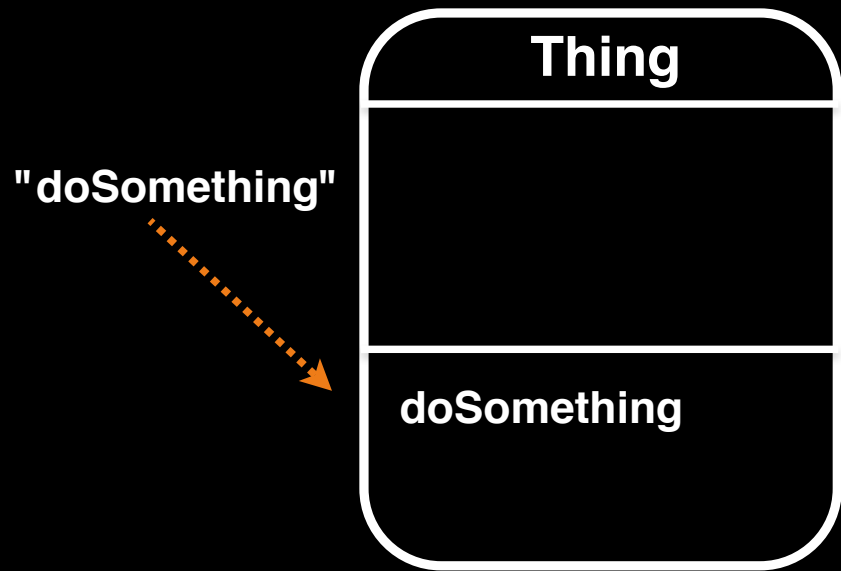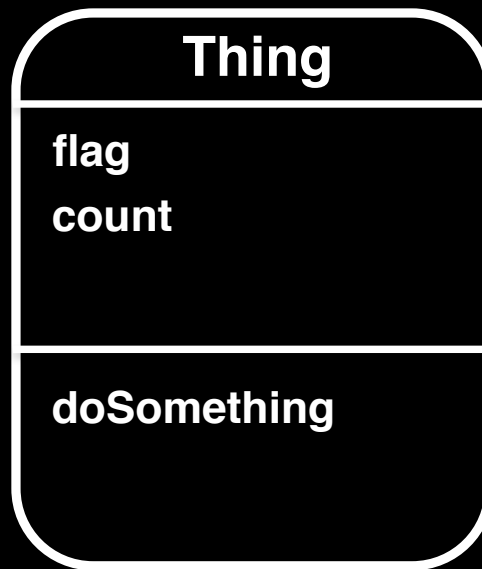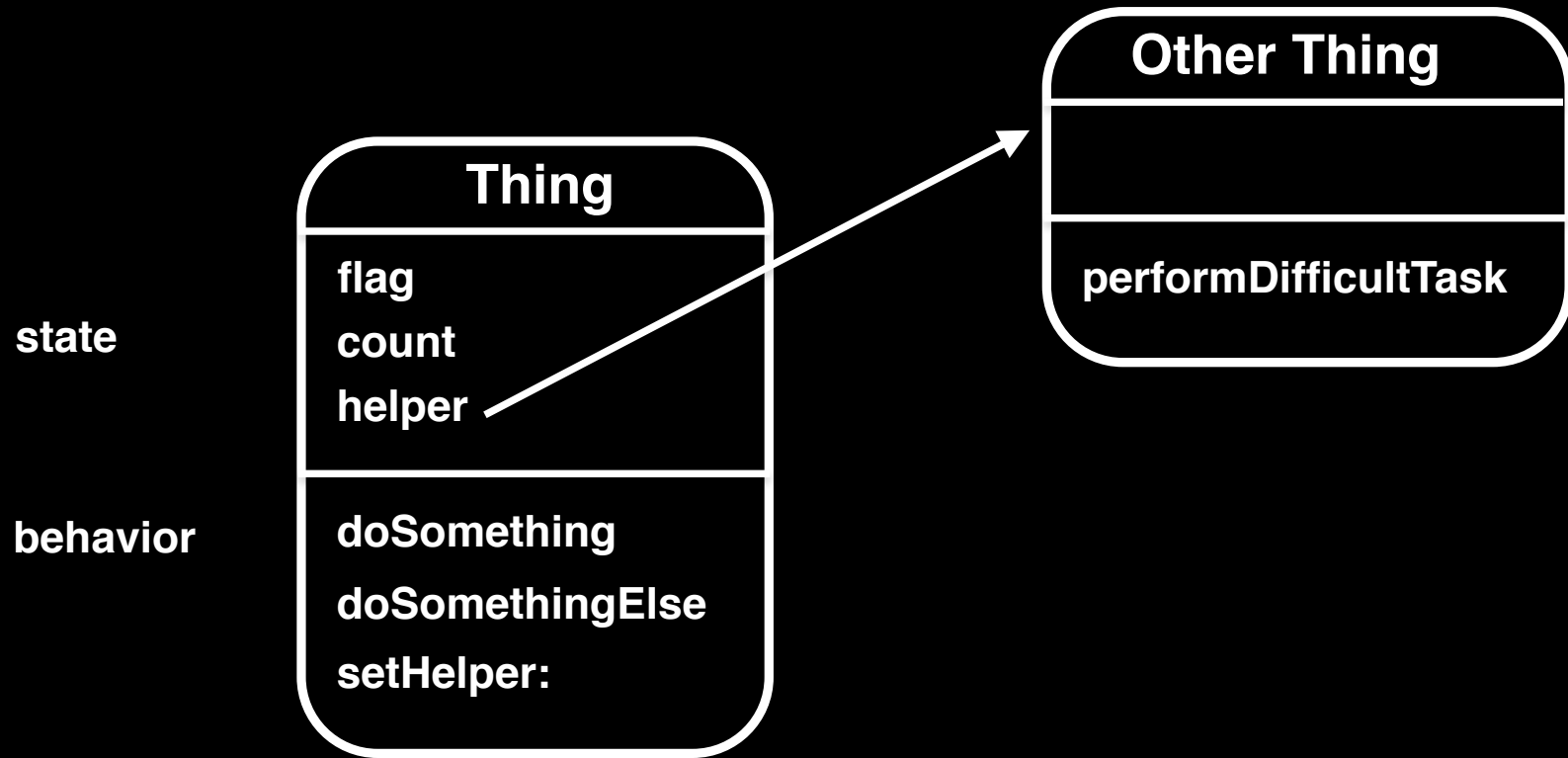
# Message

# State

# Other Objects As State

# Message Identifiers As State

**Thing**

state

behavior

flag
count
helper
message    "lastName"

doSomething
doSomethingElse
setHelper:

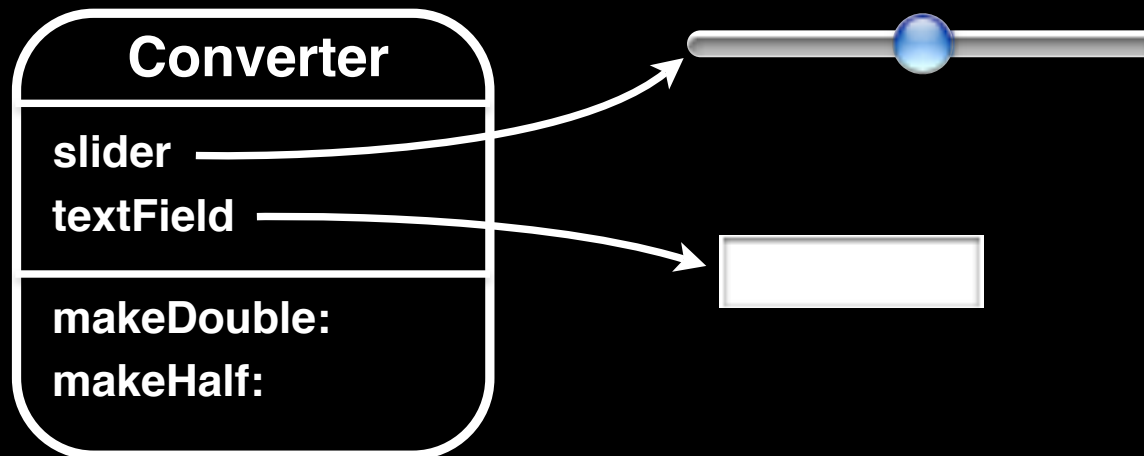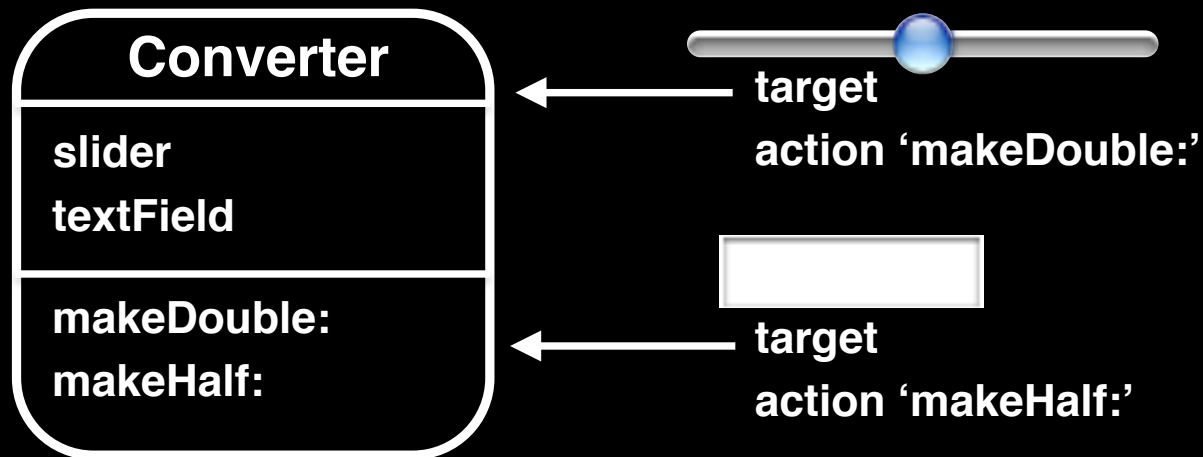**Other Thing**

performDifficultTask
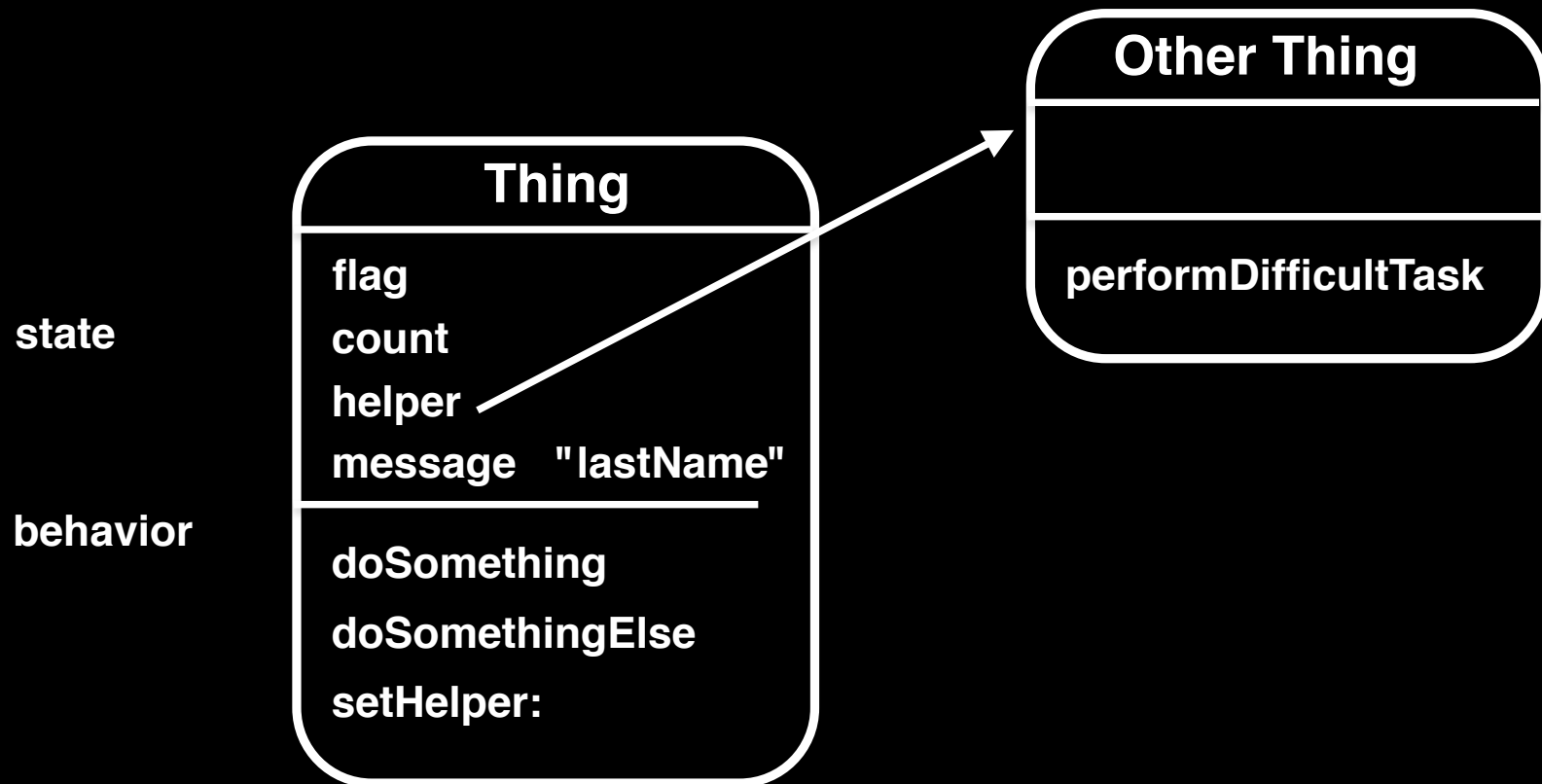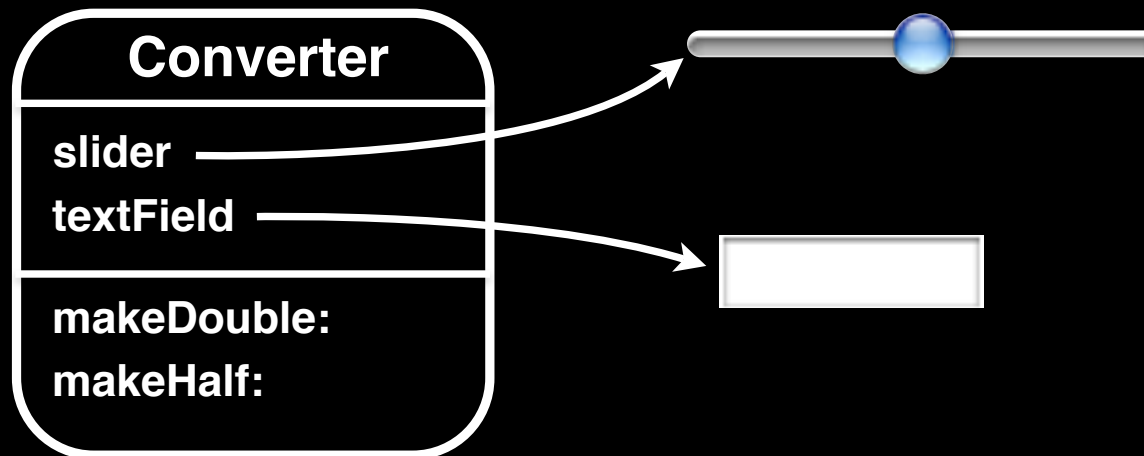
# Outlets
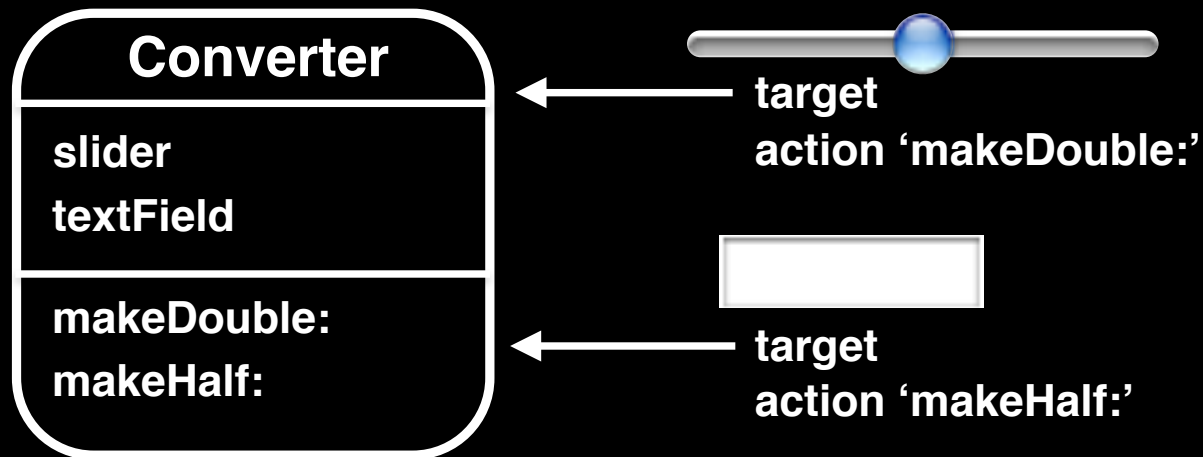
# Target / Action

# Demo

# Outlets

# Target / Action

# Questions?