

# Welcome to CS193P

道場へようこそ

iPhone Application Development

iPhone アプリ開発道場「入門コース」

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日本語解説

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# Introductions

- Lecturers
  - Alan Cannistraro <[accannis@stanford.edu](mailto:accannis@stanford.edu)> 丸刈：聞き取りやすい
  - Josh Shaffer <[joshh@stanford.edu](mailto:joshh@stanford.edu)> やや早口
- Student TAs
  - Paul Salzman <[paulsalz@stanford.edu](mailto:paulsalz@stanford.edu)>
  - David Jacobs <[dejacobs@stanford.edu](mailto:dejacobs@stanford.edu)>
- Grand-Master Chief
  - Paul Marcos <[pmarcos@apple.com](mailto:pmarcos@apple.com)>

# Quick Survey プチ調査

- Have worked with Object Oriented Programming??
- Have developed apps for Mac OS X?
- Have installed the iPhone SDK and done iPhone development?
- Have submitted apps to the App Store?
- オブジェクト指向プログラミングをしたことある??
- Mac OS X でアプリ開発したことある?
- iPhone SDK をインストールして iPhone アプリ開発は?
- アプリを App Store に出展したことある?

# Logistics **ダンドリ** (物流・後方支援)

- Lectures: **講義は...**
  - Education 128
  - Tuesday & Thursday 4:15 - 5:30 PM
- Optional Section **オマケ講義** (道場ではやりません)
  - Room & Time - TBD (TBD = to be decided 後日決定)
  - Guest speakers & hot topics
- Office Hours
  - Paul & David will hold office hours **道場開催日の午後**
  - See website for details  
<http://www.myu.ac.jp/~xkozima/lab/mobile-iphone1.html>

# Requirements (履修のための) 要件

- **Prerequisite:** CS 106B/X 「オブジェクト指向プログラミング」  
前提条件
- **Recommended Book:** None! We'll use Apple documentation  
オススメの教科書：なし！（Apple のドキュメントを使う）
- **Required Hardware & Software:** Leopard or Snow Leopard
  - Intel-based Macintosh, running Mac OS X 10.5 Leopard
  - iPhone SDK (*not currently available* on cluster computers)必要なハード&ソフト：Mac と iPhone SDK
- **iPhone or iPod touch is not required**
  - Assignments may be completed using the iPhone Simulator
  - Loaner iPod touches will be available

iPhone や iPod touch は必要ない  
宿題は iPhone Simulator で出来るはず  
貸出用 iPod touch も用意する

# Enrollment 登録 (入学) . . . 省略

- **Response has been phenomenal (again)!**
  - Enrollment limited to 60 students
  - 40 Graded, 20 Pass/No Credit
- **You MUST fill out a survey to be considered**
  - <http://tinyurl.com/cs193p-2010>
  - Need to be completed by noon tomorrow (1/6)
- Enrollment will be determined based on prior CS courses, other relevant experience, number of quarters remaining, major
- **Auditors welcome!** 聴講歓迎

# iPhone Developer University Program

- Stanford is part of the iPhone Developer University Program
  - Do not sign up for this! 宮城大学も Program に加盟  
(だから個人で) 登録しないように
- **Free on-device development for students (save \$99!)**
  - Valid through the end of the quarter
  - Invites will be issued to your @stanford.edu email address
  - Read through a Student Agreement to get started

デバイス上での開発が無料できる (年1万円の節約)

この四半期の終わりまで (宮城大学では「卒業」するまで)

招待状は @myu.ac.jp のメールに発送

「学生同意書」を読んでスタート

利用可

Available on iTunes U



<http://itunes.stanford.edu/>



# CS193P on iTunes U

## For enrolled students at Stanford

Stanford での履修生へ...

- Your voice may be recorded      あなたの声が録音されるかも
- Not a substitute for attending lectures      iTune視聴      授業出席
- There will be a delay of a few days before lectures and materials are available      レクチャ・資料が  
用意できるまで2～3日の  
遅れがでる

# CS193P on iTunes U

- For viewers on iTunes U:**    iTune U の視聴者へ...
- Welcome to Stanford!    Stanford へようこそ
  - Feedback and suggestions are welcome    ご意見・ご提案を歓迎
  - **We can't answer individual questions via email**    メール質問はX
  - Download materials now, if you want them later!    必要ならDL

# Communication and Materials

- Email
  - cs193p@cs.stanford.edu
  - Questions from enrolled students only, please!  
質問は履修学生からのみ！
- Course web site 授業ウェブサイト
  - <http://cs193p.stanford.edu>
  - <http://www{.campus}.myu.ac.jp/~xkozima/lab/mobile-iphone1.html>
- Other web sites 他のウェブサイト
  - Apple Dev Center: <http://developer.apple.com>
  - Developer Forums: <http://devforums.apple.com>
  - External resources:
    - <http://cs193p.com>
    - <http://groups.google.com/group/iphone-appdev-auditors/>

宮城大学での本講義について  
メール質問はご遠慮ください

# Communication and Materials

- Auditors 聴講者 (聴衆)
  - [cs193p-auditors@lists.stanford.edu](mailto:cs193p-auditors@lists.stanford.edu)
  - Self-add email list 自分で登録するメーリングリスト
  - Low volume, but allows us to communicate with all folks following along
  - To sign up, go to:
    - <http://lists.stanford.edu>
    - <https://mailman.stanford.edu/mailman/listinfo/cs193p-auditors>

# Why Are We Here?

なぜ私たちはここにいるのか？



To build iPhone & iPod touch applications  
using Cocoa Touch

Cocoa Touch を使った iPhone や iPod touch の  
アプリをつくるため

# Why Are We Here?

- CS193P is not just about the iPhone, Cocoa Touch or ObjC

この講義は単なる iPhone, Cocoa Touch や ObjC のものではない

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

(この講義は) オブジェクト指向アーキテクチャ/デザインなど

ソフトウェア工学についてのものである

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

他の授業では見る事がないであろう課題/解決を経験していく

# Cocoa Touch & iPhone SDK

- Based on Cocoa (Mac OS X の) Cocoa がベース
  - Mature, polished, highly consistent APIs  
成熟 (安定 ; 20+年) , 洗練 (磨かれた) , 一貫性の高い API
- Provides a very rich starting point for exploring app design  
アプリデザインを探求するためのリッチな出発点を提供
- Shows “real-world” implementations of OO design patterns  
OOデザインパターンの「实际的」なインプリメンテーションを提示
- Designs learned on iPhone translate directly to Mac OS X  
iPhone で学んだデザインは直接 Mac OS X に移行できる

# Things We'll Cover

私たちが扱う事柄



## Tools



Xcode



Interface Builder

## Frameworks



Foundation



UIKit

## Language (& Runtime)

```
[textView setStringValue: @"Hello"];  
Objective-C
```

# Why Objective-C? なぜ Objective-C なのか?

- Exposure to other languages is always good いろいろな言語に出会うことはよい
- ObjC is a language focused on simplicity and the elegance of OO design ObjC は OOデザインのシンプルさとエレガンスに
  - Based on ANSI C 焦点をあてた言語 / ANSI C がベース
  - Brings many object oriented principles, but with a minimal amount of syntax OOの考えの多くを取り入れつつ, 最低限な文法
- A data point to compare with designs of C, C++ and Java C, C++, Java のデザインとの比較するとよい

宿題

成績評価

# 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!

道場では宿題・成績評価はなし

# Applications You Will Build

道場では宿題・成績評価はなし

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


# First Assignment

道場では宿題・成績評価はなし

- 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 Thursday to help work out any tools or installation issues
- Due on Jan 13 (next Wednesday)

# Paparazzi

道場では宿題・成績評価はなし

- Build a fully functional application from scratch over 4 weeks
- Access photos on 
- Each assignment builds on the previous one
  - Don't fall behind!
- Covers a wide variety of topics in the UIKit framework...

# What We'll Cover

- Application design patterns
- View controllers
- Presenting data
  - Table views
- Loading & saving data
  - Property lists, Core Data, web services
- Text input
- Threading and Performance
- Address Book and other system integration
- iPhone SDK 3.0 stuff!
  - MapKit, Video & Photo APIs, & more

# Final Projects

道場では宿題・成績評価はなし

- 3 weeks to work on them
- 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
- Find a project 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





## Core OS

OS X Kernel

Mach 3.0

BSD

Sockets

Security

Power Mgmt

Keychain

Certificates

File System

Bonjour



## Core Services

Collections

Core Location

Address Book

Net Services

Networking

Threading

File Access

Preferences

SQLite

URL utilities



## Media

Core Audio	JPG, PNG, TIFF
OpenAL	PDF
Audio Mixing	Quartz (2D)
Audio Recording	Core Animation
Video Playback	OpenGL ES



## Cocoa Touch

Multi-Touch Events

Alerts

Multi-Touch Controls

Web View

Accelerometer

People Picker

View Hierarchy

Image Picker

Localization

Camera



## Tools



Xcode



Interface Builder

## Frameworks



Foundation



UIKit

## Language (& Runtime)

```
[textView setValue: @"Hello"];  
Objective-C
```

# Cocoa Touch Architecture

Cocoa Touch のアーキテクチャ

## Cocoa Touch

### UIKit

User interface elements  
Application runtime  
Event handling  
Hardware APIs

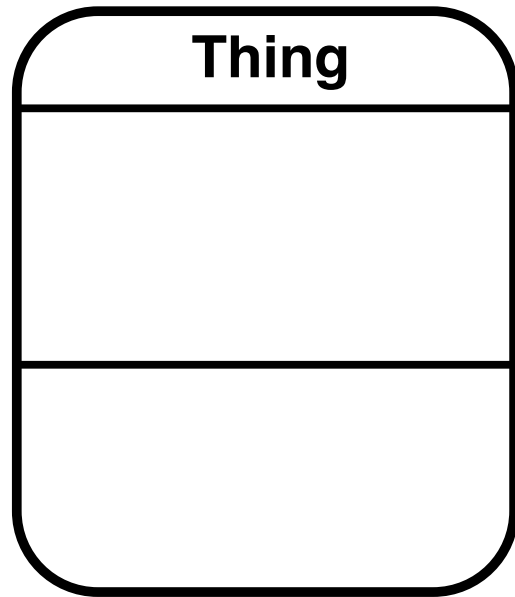
### Foundation

Utility classes  
Collection classes  
Object wrappers for system services  
Subset of Foundation in Cocoa

# Objects オブジェクト

# Object

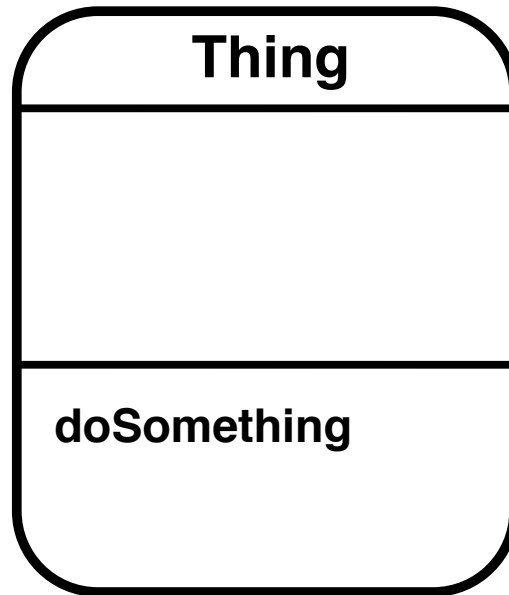
オブジェクト



# Behavior

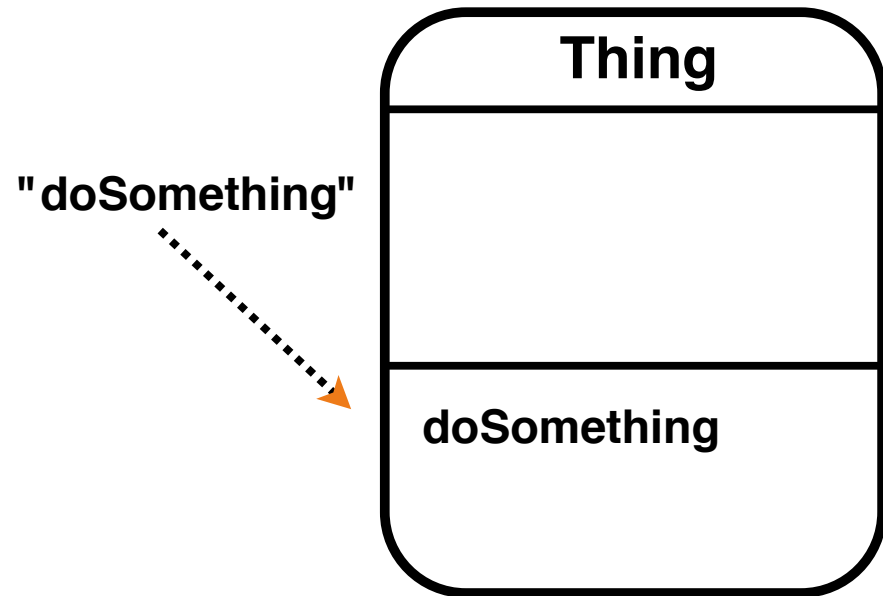
動作（振る舞い）

behavior  
動作



# Message

メッセージ

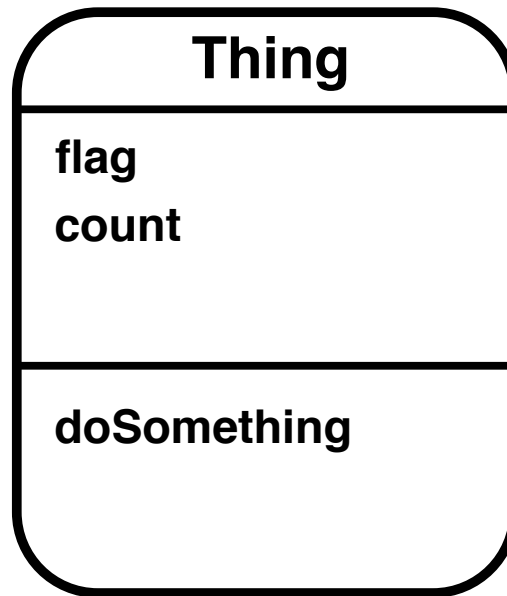


# State

状態 (内部状態)

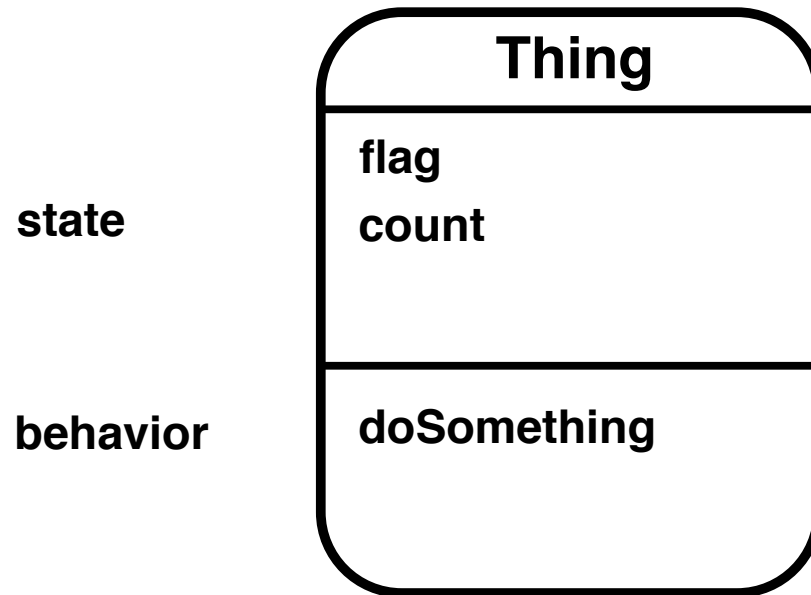
state

behavior



# Other Objects As State

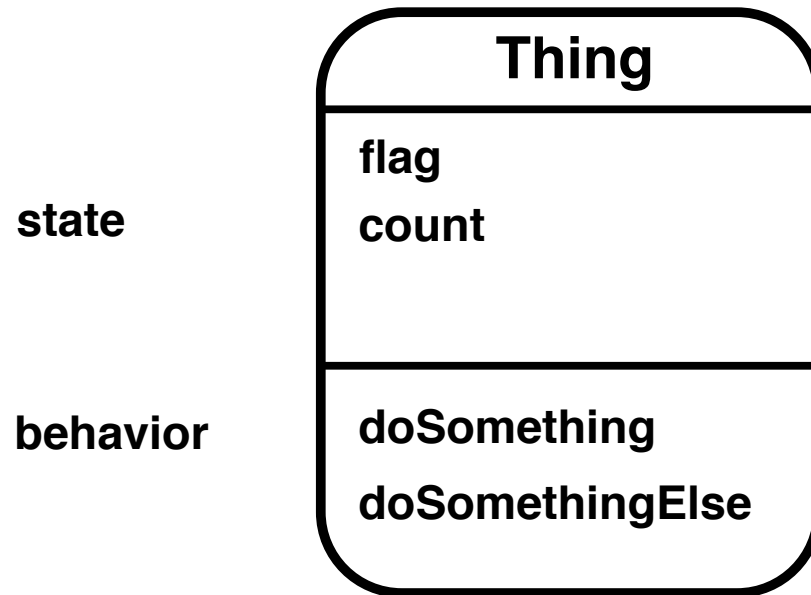
内部状態としての他オブジェクト（への参照）





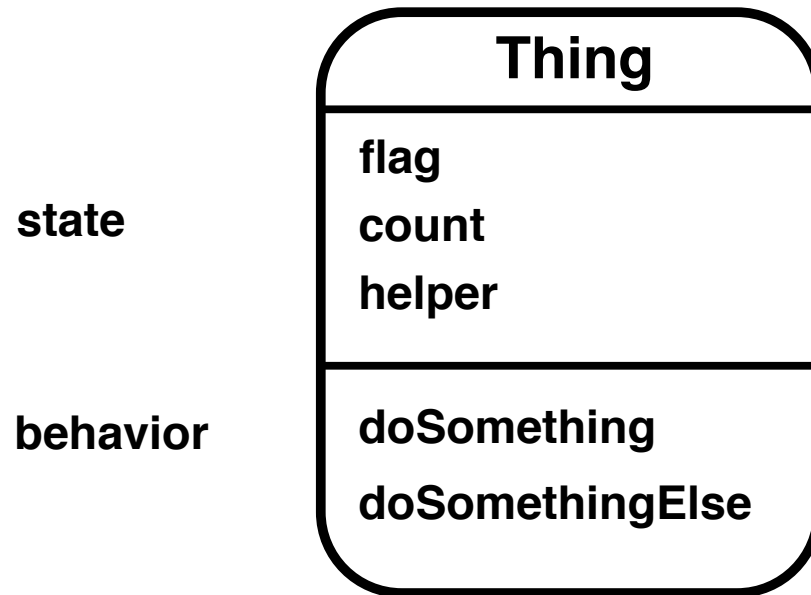
# Other Objects As State

内部状態としての他オブジェクト（への参照）



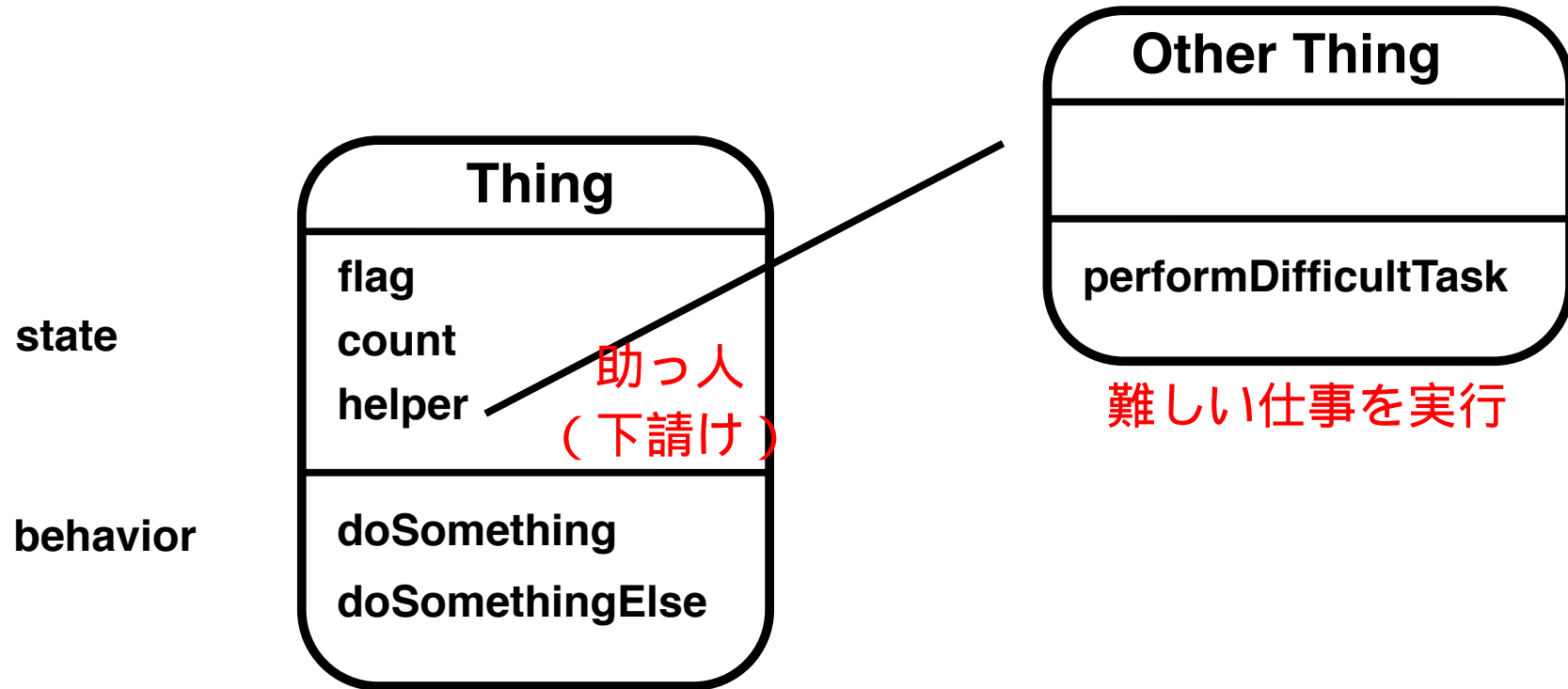
# Other Objects As State

内部状態としての他オブジェクト（への参照）



# Other Objects As State

内部状態としての他オブジェクト（への参照）



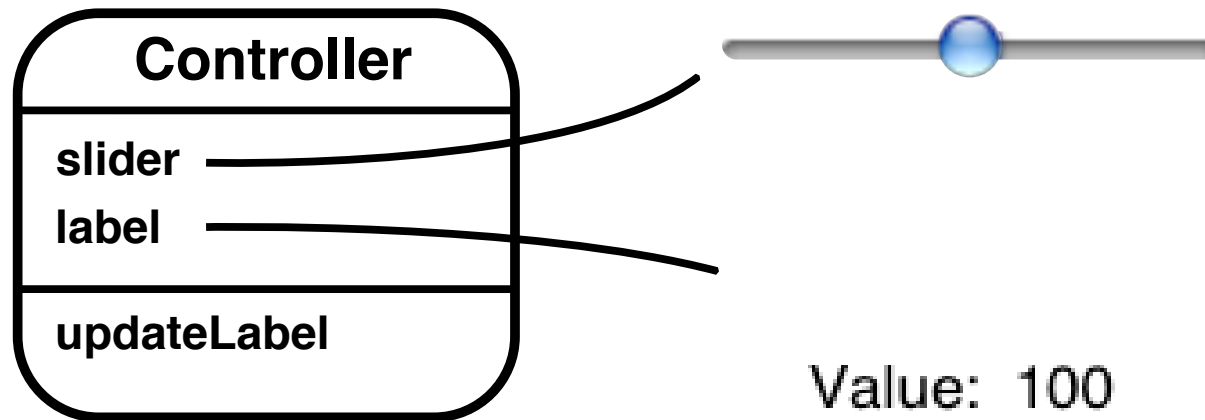
# Outlets

アウトレット (出力端子)

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

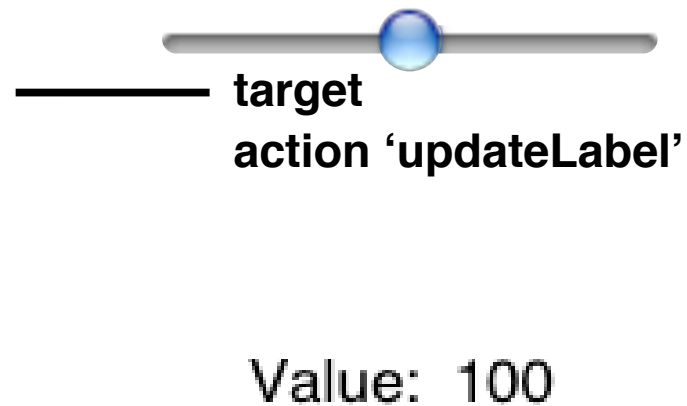
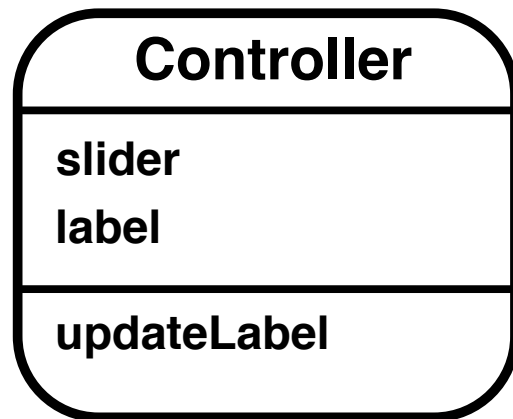
- text field / slider?

- color tabs?



# Target / Action

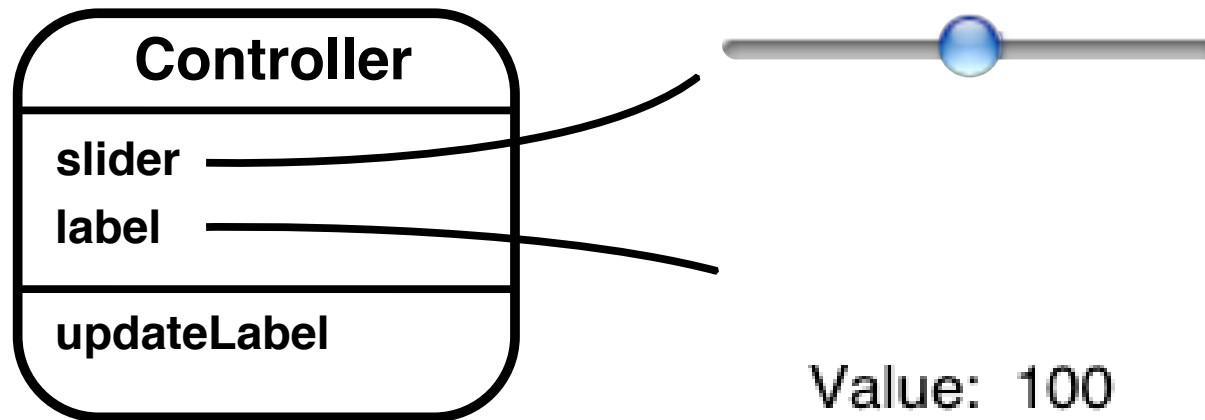
ターゲット / アクション



# Demo

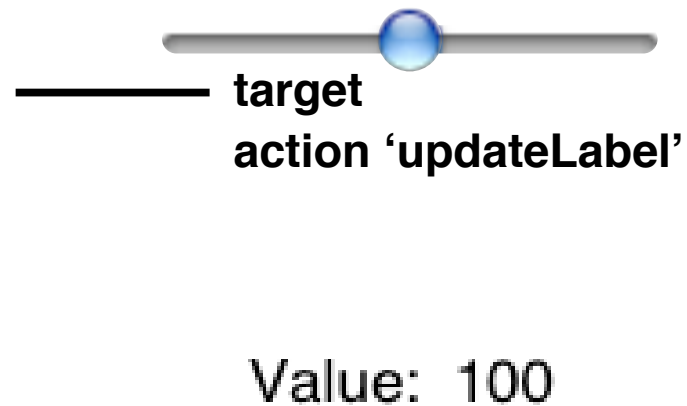
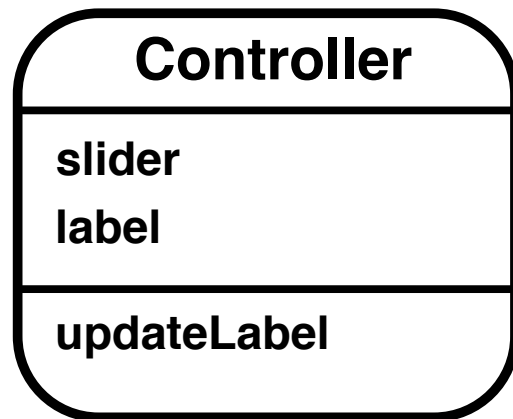
# Outlets

アウトレット (出力端子)



# Target / Action

ターゲット / アクション





# Questions?