Getting Started

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Overview

- Getting Started
- iOS Overview
- OOP

Why are we here?

- To build iPhone/iPad applications using Swift

Requirements

- Hardware & Software
  - Intel-based Macintosh, running **Mac OS X 10.10 Yosemite**
  - Hardware required for final project (iPad) and iPad loaners available
  - **iPhone SDK iOS 9 & Xcode 7**
- Apple Developer Account
  - http://developer.apple.com/programs/start/register/create.php
  - Sign up for Apple's iOS Developer Program
  - You must have an Intel-based Mac running on Mac OS X Yosemite or later to develop Mac OS X and iOS apps for the App Store.

iPhone SDK

- Go to iOS Dev Center
  - https://developer.apple.com/xcode/downloads/
- Download Xcode 7
  - Included iOS SDK : iOS 9
  - Included Max SDK : Mac OS X 10.10
  - **Included Swift 2**

Download Xcode for Free

Xcode 7.1 beta 2

iPhone SDK

- Uninstall older version of Xcode
  - http://macdevelopertips.com/xcode/how-to-uninstall-xcode.html
  - sudo <Xcode>/Library/uninstall-devtools --mode=all
- Install Xcode
  - Double-clicking on "xcode_xxx.dmg"
- Launch Xcode
  - Open "Macintosh HD" (finder) and then go to >Developer>Applications>Xcode

Xcode

iOS Overview
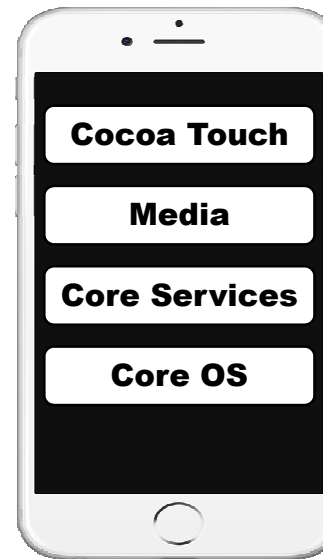
Mac OS X

Cocoa

Media

Core Services

Core OS

iPhone OS

Cocoa Touch
Media
Core Services
Core OS

Core OS
OS X Kernel Power Mgmt
Mach 2.0   Keychain
BSD   Certificates
Sockets   File System
Security   Bonjour

iPhone OS

Cocoa Touch
Media
Core Services
Core OS

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

iPhone OS

Cocoa Touch
Media
Core Services
Core OS

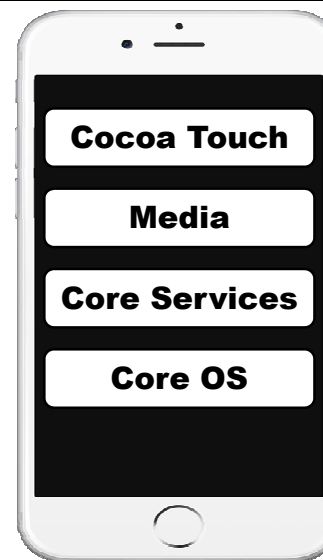**Media**
Core Audio   JPEG, PNG, TIFF
OpenAL   PDF
Audio Mixing Quartz (2D)
Audio Recording   Core Animation
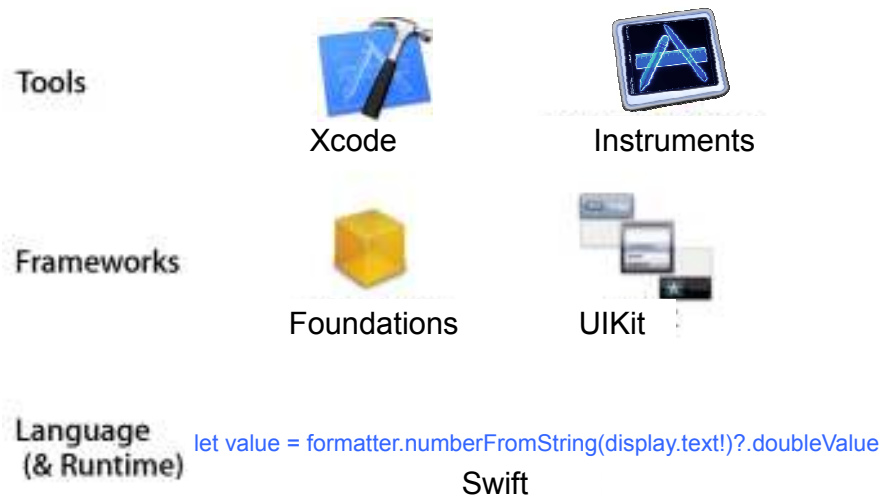Video Playback   OpenGL ES
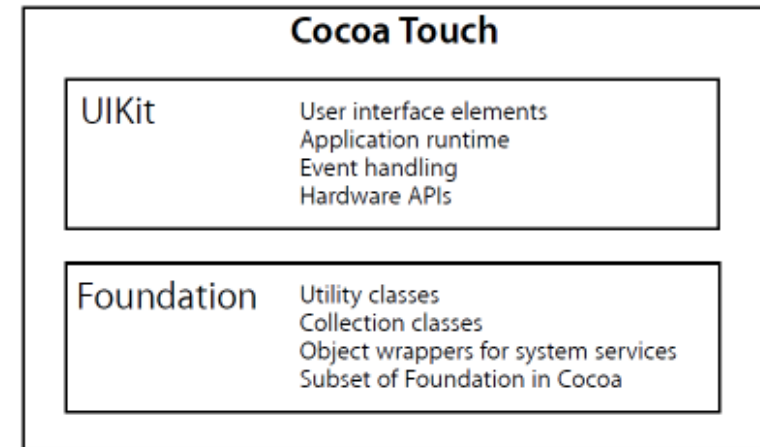
iPhone OS

Cocoa Touch
Media
Core Services
Core OS

Cocoa Touch
Multi-Touch   Alerts
Core Motion Web View
View Hierarchy   Map Kit
Localization Image Picker
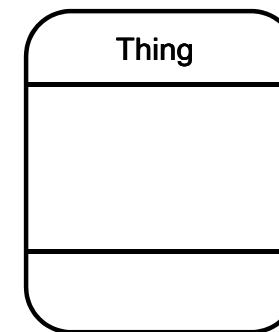Controls   Camera

Platform Components
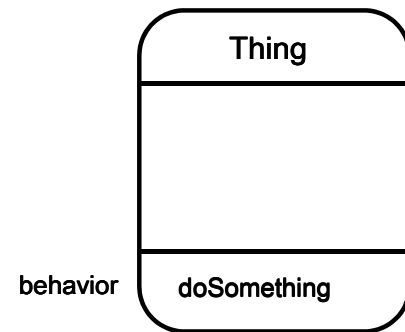
Tools	Xcode	Instruments
Frameworks	Foundations	UIKit
Language (& Runtime)	`let value = formatter.numberFromString(display.text!)?.doubleValue` Swift	

Cocoa Touch Architecture

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

Object-Oriented Programming

Object
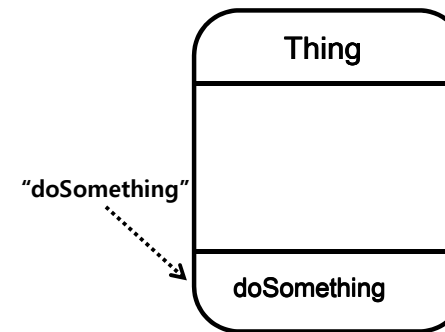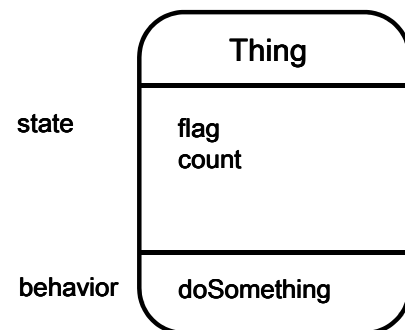
Thing

Behavior

Thing

behavior | doSomething

Message

Thing

"doSomething"

doSomething

State

Thing

state | flag
count

behavior | doSomething

Other Objects As State

Other Thing

performDifficultTask

Thing

state | flag
count
helper

behavior | doSomething
doSomethingElse

Outlets

Controller
slider
label
updateLabel

Value: 100

Target/Action

Controller
slider
label
updateLabel
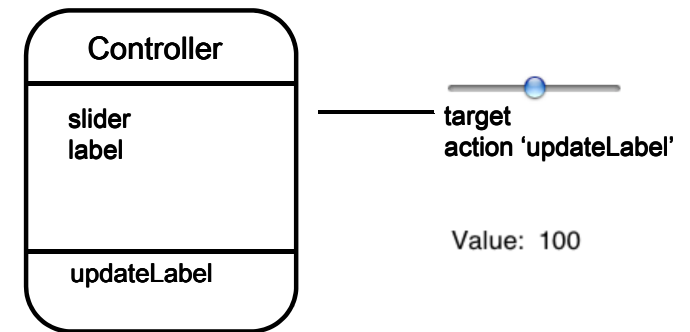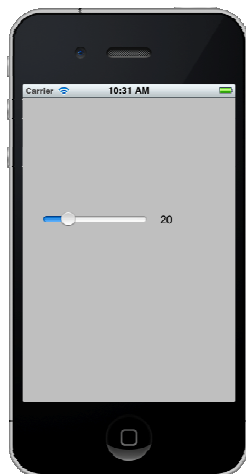
target
action 'updateLabel'

Value: 100
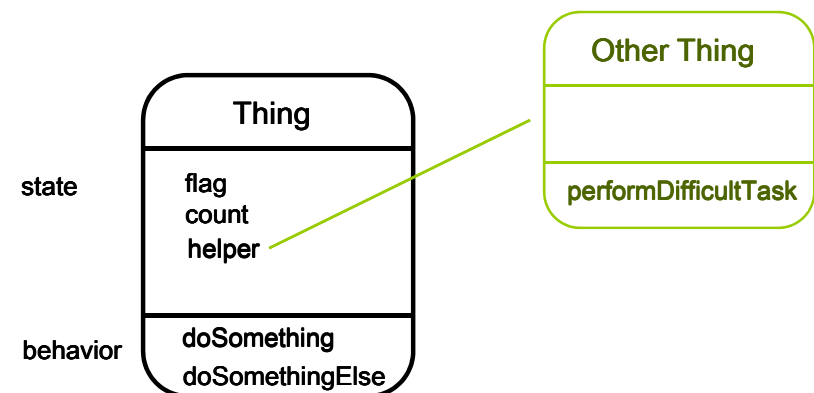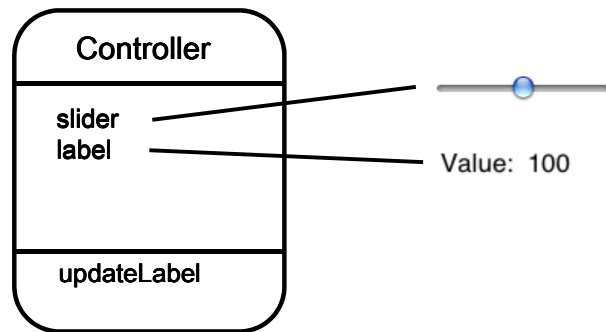
Demo

Object-Oriented Programming

- ◻ Class
  - ▪ Defines the grouping of data and code, the "type" of an object
- ◻ Instance
  - ▪ A specific allocation of a class
- ◻ Message
  - ▪ Sent to objects to make them act
- ◻ Method
  - ▪ A "function" that an object knows how to perform
- ◻ Instance variable
  - ▪ A specific piece of data belonging to an object
- ◻ Property
  - ▪ A way to access instance variables and other attributes of an object
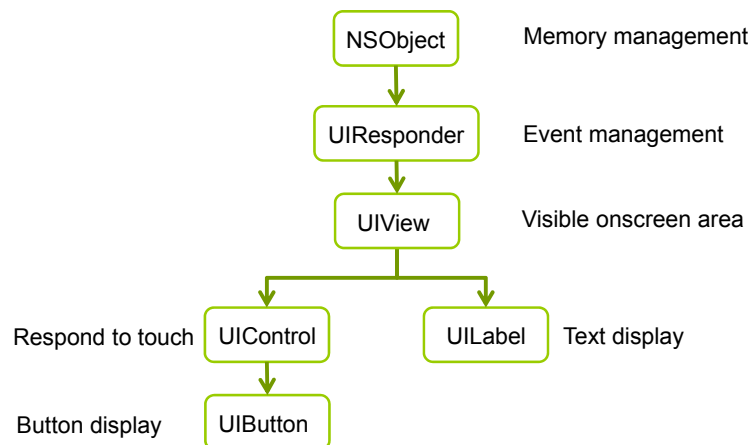
Object-Oriented Programming

- Encapsulation
  - Keep implementation private and separate from interface
- Polymorphism
  - Different objects, same interface
- Inheritance
  - Hierarchical organization, share code, customize or extend behaviors

Inheritance

Superclass

Subclass

```
NSObject  ← Memory management
   |
UIControl  ← Generic behaviors
   |
UIButton    UITextField  Specific behaviors
```
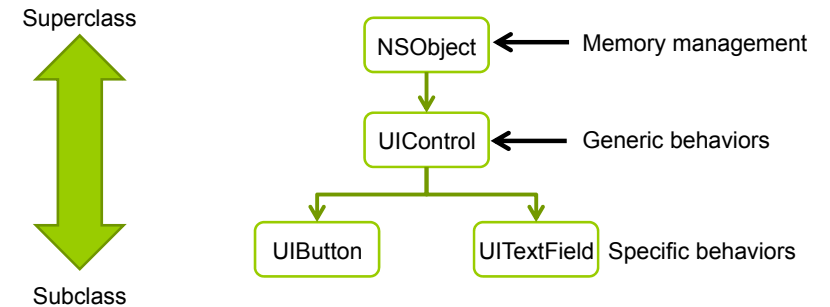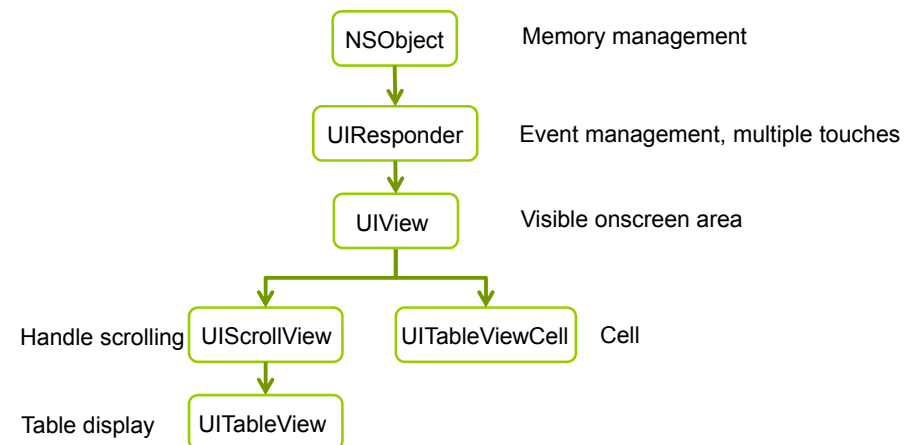
- Hierarchical relation between classes
- Subclass "inherit" behavior and data from superclass
- Subclasses can use, augment or replace superclass methods

Inheritance

```
NSObject      Memory management
   |
UIResponder   Event management
   |
UIView        Visible onscreen area
   |
Respond to touch  UIControl    UILabel   Text display
   |
Button display   UIButton
```

Inheritance

```
NSObject      Memory management
   |
UIResponder   Event management, multiple touches
   |
UIView        Visible onscreen area
   |
Handle scrolling  UIScrollView   UITableViewCell   Cell
   |
Table display   UITableView
```

Inheritance

```
┌──────────┐
│ NSObject │        Memory management
└──────────┘
     │
     ▼
┌──────────┐
│UIResponder│       Event management, multiple touches
└──────────┘
     │
     ▼
┌───────────────┐
│UIViewController│   General View Controller
└───────────────┘
     │
     ▼
┌────────────────────┐
│UITableViewController│  TableView Controller
└────────────────────┘
```
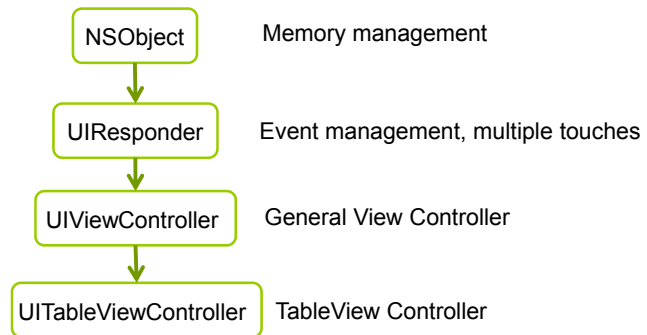
References

- Lecture 1 Slide from Developing iOS8 Apps with Swift (Winter 2015) @Stanford University