Stanford CS193p

Developing Applications for iOS
Winter 2017

CS193p
Winter 2017

Today

- What is this class all about?
  Why am I here?
- Prerequisites
  You must be a strong object-oriented programmer.
- iOS Overview
  What's in iOS?
- Show me!
  A demo with a thousand words is worth tens of thousands of words.

What will I learn in this course?

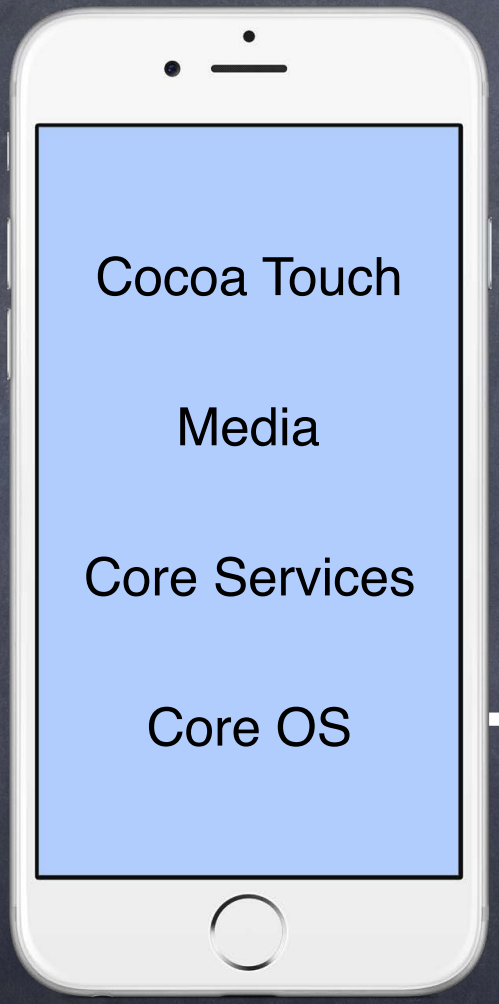
- How to build cool apps
  - Easy to build even very complex applications.
  - Result lives in your pocket or backpack!
  - Very easy to distribute your application through the AppStore.
  - Vibrant development community.
- Real-life Object-Oriented Programming
  - The heart of Cocoa Touch is 100% object-oriented.
  - Application of MVC design model.
  - Many computer science concepts applied in a commercial development platform:
    - Databases, Graphics, Multimedia, Multithreading, Animation, Networking, and much, much more!
  - Numerous students have gone on to sell products on the AppStore.

Prerequisites

- Prior Coursework

  Object-Oriented Programming experience mandatory.
  CS106A&B (or X) required & CS107 or CS108 or CS110 also (at a minimum) required.
  (or equivalent for non-Stanford undergrads)

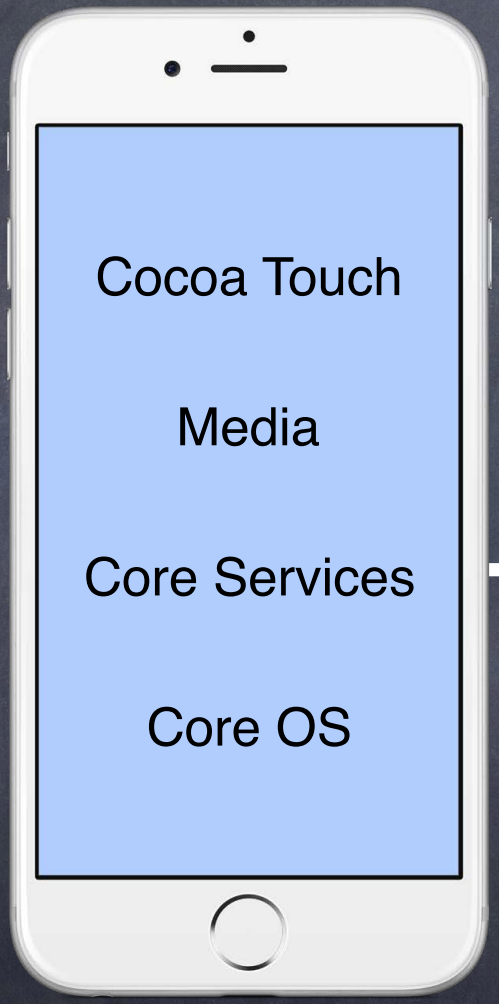
What's in iOS?



Core OS

OSX Kernel	Power Management
Mach 3.0	Keychain Access
BSD	Certificates
Sockets	File System
Security	Bonjour

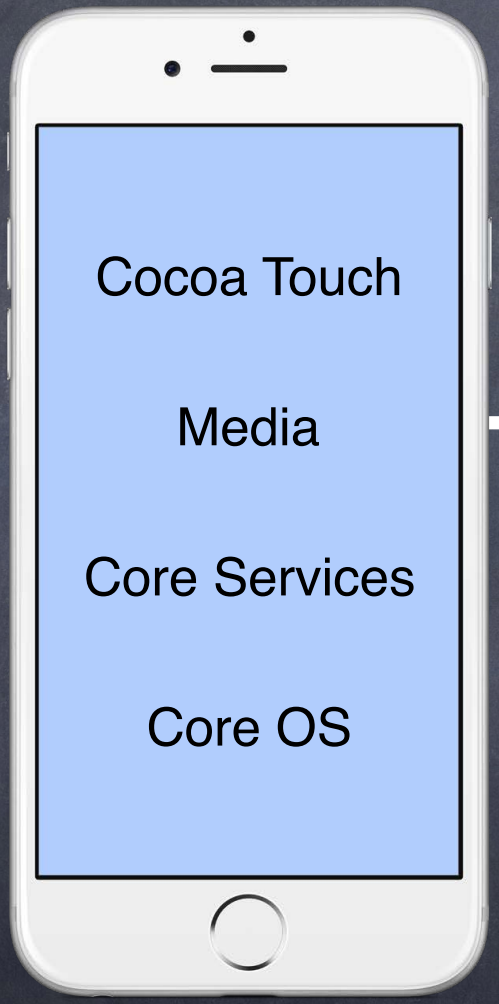
What's in iOS?



Core Services

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

What's in iOS?



Media

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

What's in iOS?

Cocoa Touch

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

Platform Components

- Tools

Xcode 8

Instruments

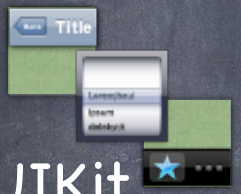
- Language(s)

```
let value = formatter.numberFromString(display.text!)?.doubleValue
```

- Frameworks

Foundation

Core Data



UIKit

Core Motion

Map Kit

- Design Strategy

MVC

Demo

- Calculator
  - All this stuff can be very abstract until you see it in action.
  - We'll start getting comfortable with Swift 3 and Xcode 8 by building something right away.
  - Two part demo starting today, finishing on Wednesday.
- Today's topics in the demo ...
  - Creating a Project in Xcode 8
  - Building a UI
  - The iOS Simulator
  - print (outputting to the console using \() notation)
  - Defining a class in Swift, including how to specify instance variables and methods
  - Connecting properties (instance variables) from our Swift code to the UI (outlets)
  - Connecting UI elements to invoke methods in our Swift code (actions)
  - Accessing iOS documentation from our code
  - Optionals (?, unwrapping implicitly by declaring with !, and unwrapping explicitly with ! and if let)