



# Stanford CS193p

Developing Applications for iOS  
Spring 2016



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# 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)

## • You should know well the meaning of these terms ...

Class (description/template for an object)

Instance (manifestation of a class)

Message (sent to object to make it act)

Method (code invoked by a Message)

Instance Variable (object-specific storage)

Superclass/Subclass (Inheritance)

If you are not very comfortable with all of these, this is probably not the class for you!

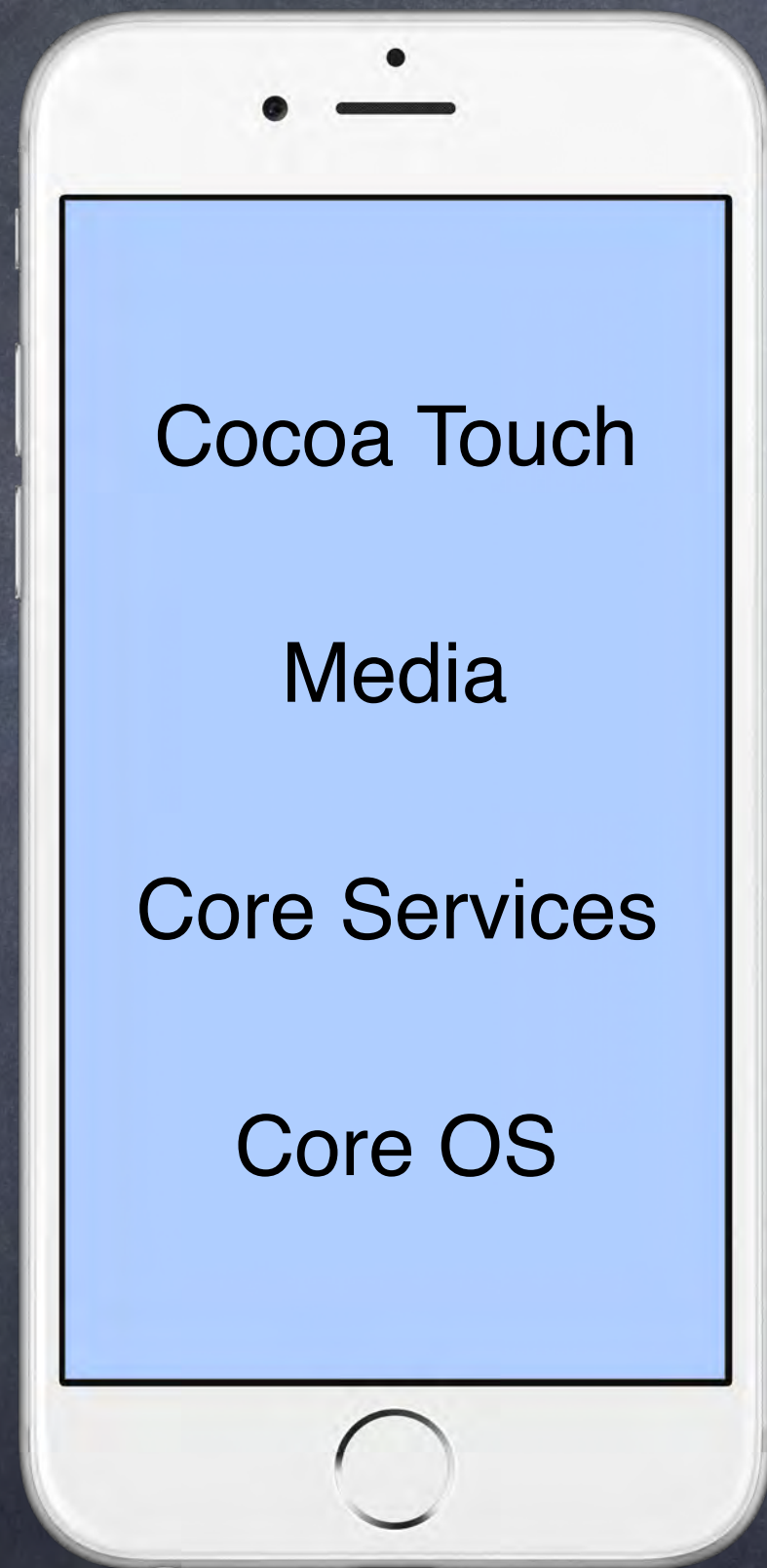
## • Programming Experience

This is an upper-level CS course.

If you have never written a program where you had to design and implement more than a handful of classes, this will be a big step up in difficulty for you.



# What's in iOS?



## Core OS

OSX Kernel    Power Management

Mach 3.0    Keychain Access

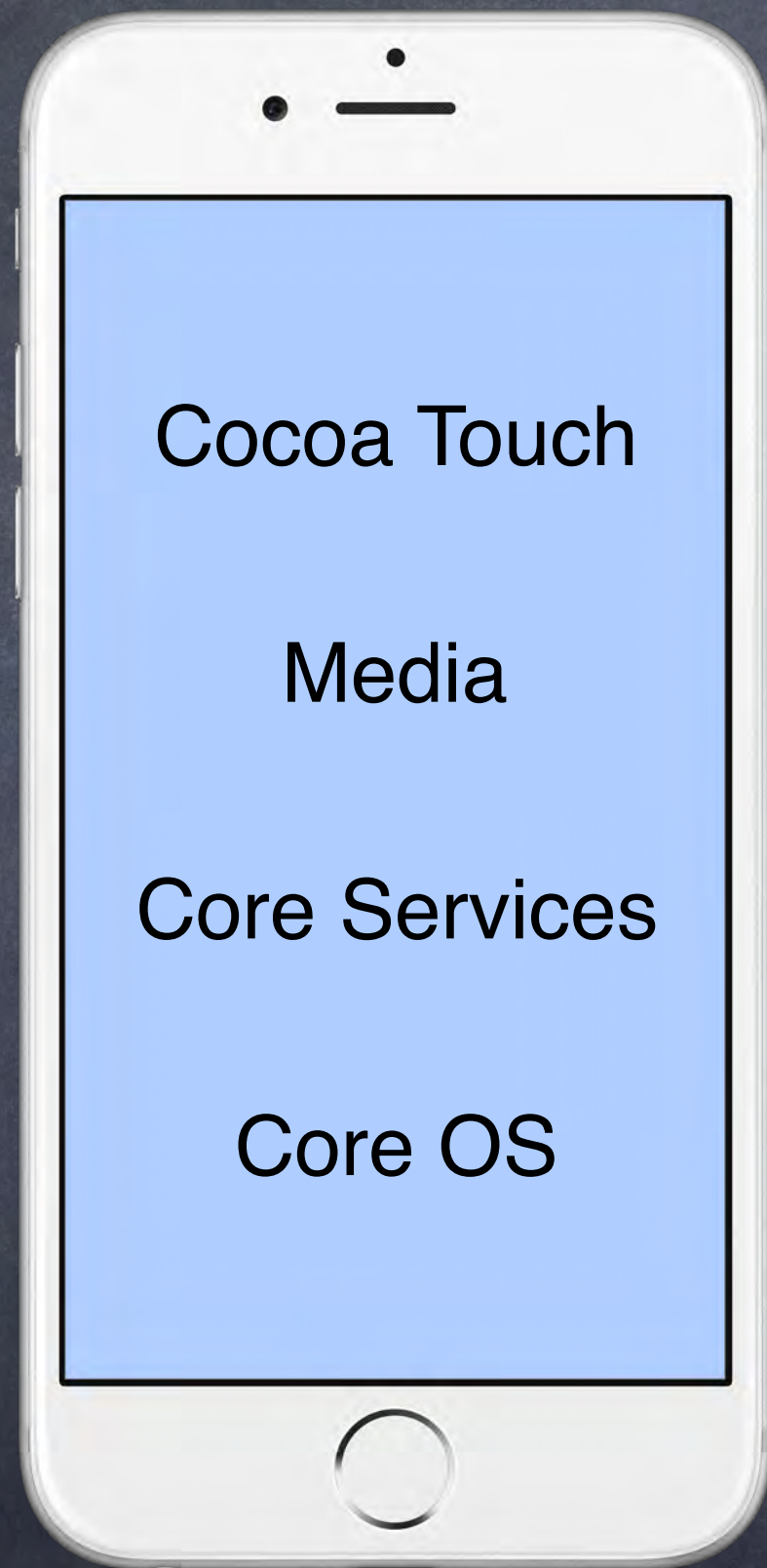
BSD    Certificates

Sockets    File System

Security    Bonjour



# What's in iOS?



## Core Services

Collections

Core Location

Address Book

Net Services

Networking

Threading

File Access

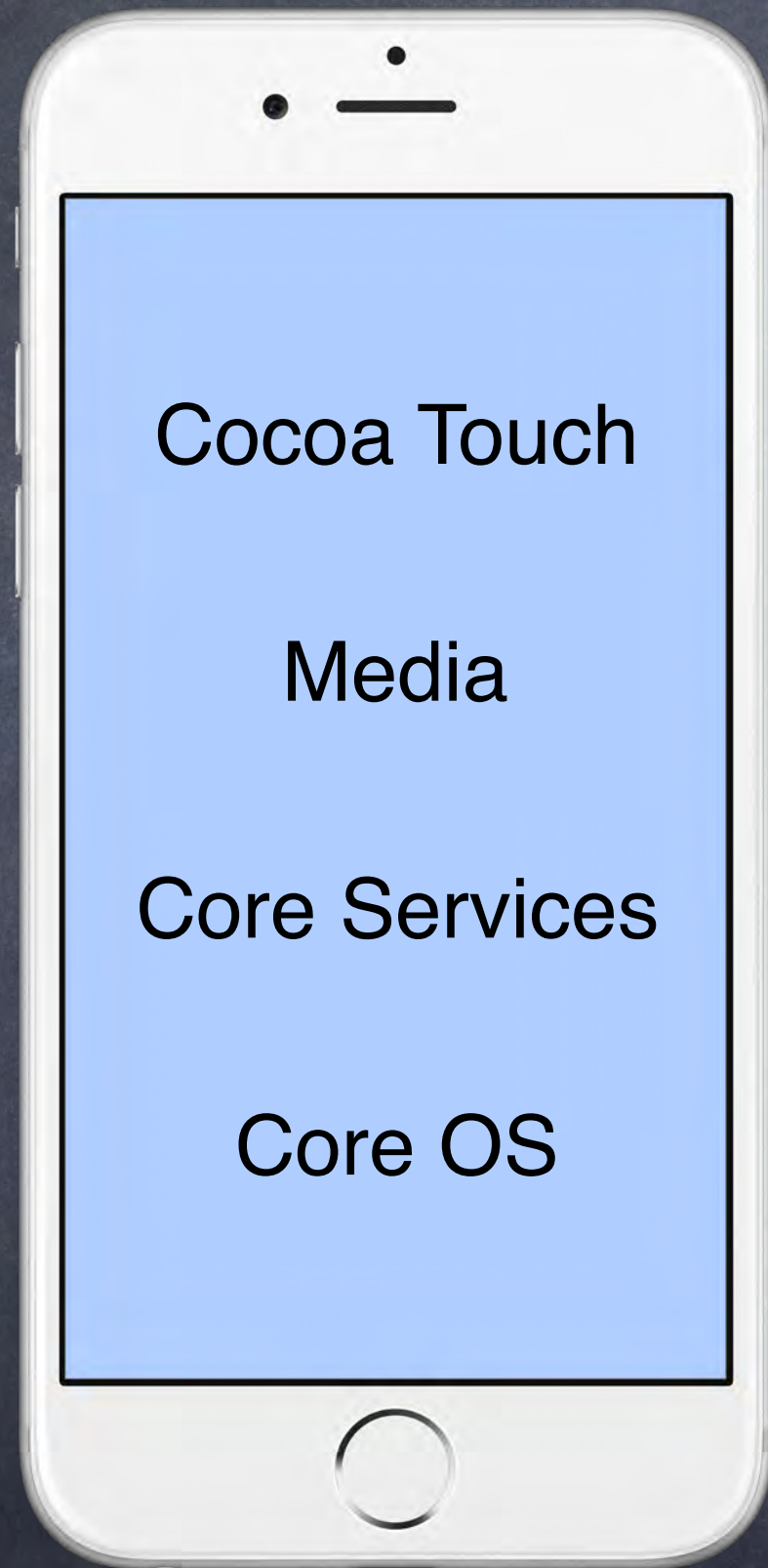
Preferences

SQLite

URL Utilities



# What's in iOS?



## Media

Core Audio

JPEG, PNG, TIFF

OpenAL

PDF

Audio Mixing

Quartz (2D)

Audio Recording

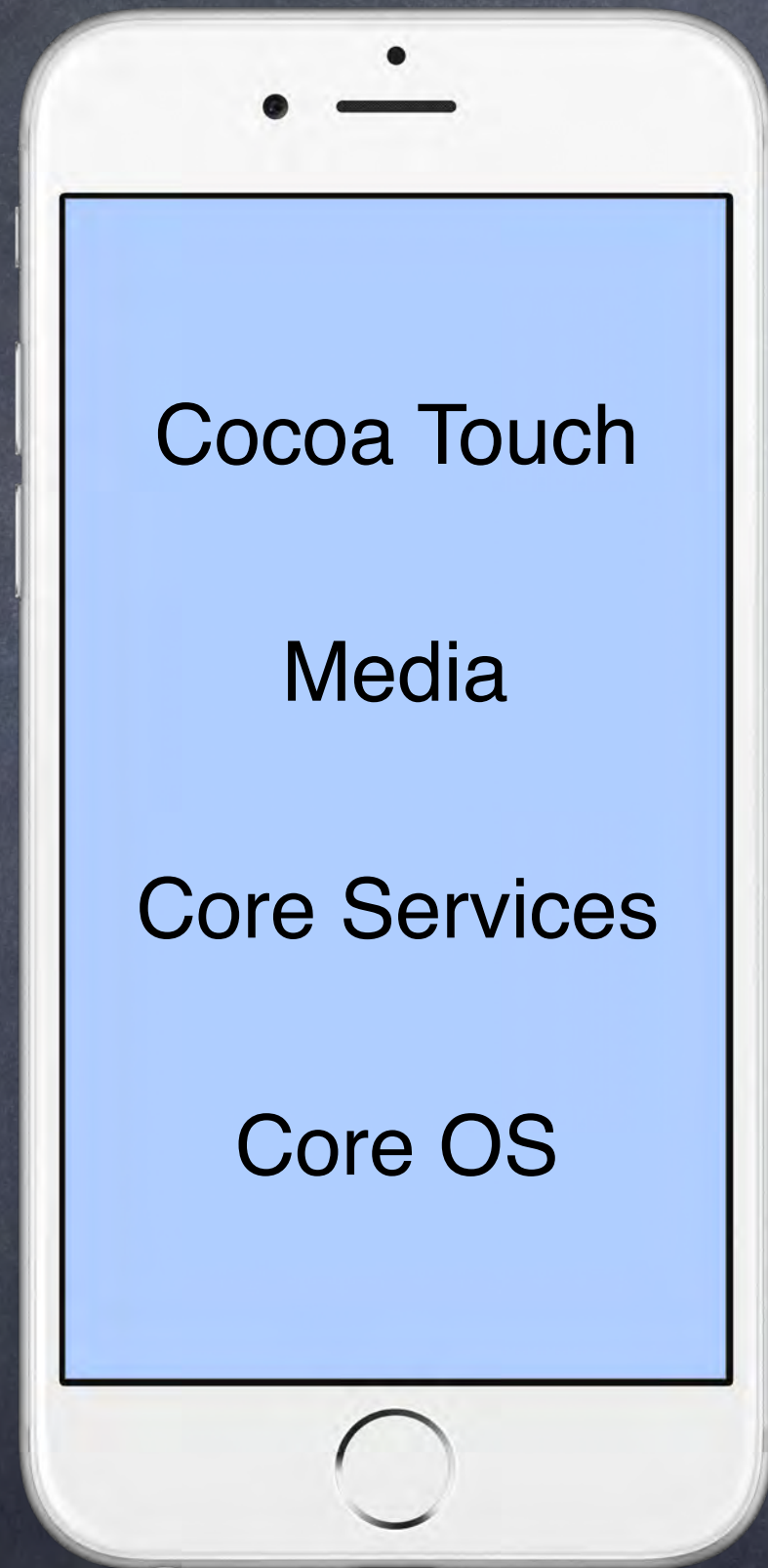
Core Animation

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 7



Instruments

- Language(s)

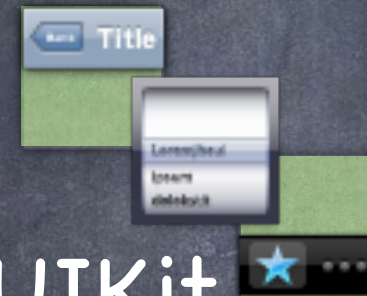
```
let value = formatter.numberFromString(display.text!).doubleValue
```

- 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 and Xcode 7 by building something right away.

Two part demo starting today, finishing on Wednesday.

## • Today's topics in the demo ...

Creating a Project in Xcode 7

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`)

