Link for Today

https://tinyurl.com/programming101-ios

Today

- UIKit
- Anatomy of an iOS App
  - UIViewController, UIView, subclasses
- Xcode introduction
  - Workspace tour + Storyboards
  - Live Demo: passcode app

Logistics

Spring 2020 19x Lecture Topics

- ~~21 Jan. — Linux/Unix commands~~
- ~~28 Jan. — Version control with Git + GitHub~~
- 4 Feb. — HTML/CSS/Internet Basics

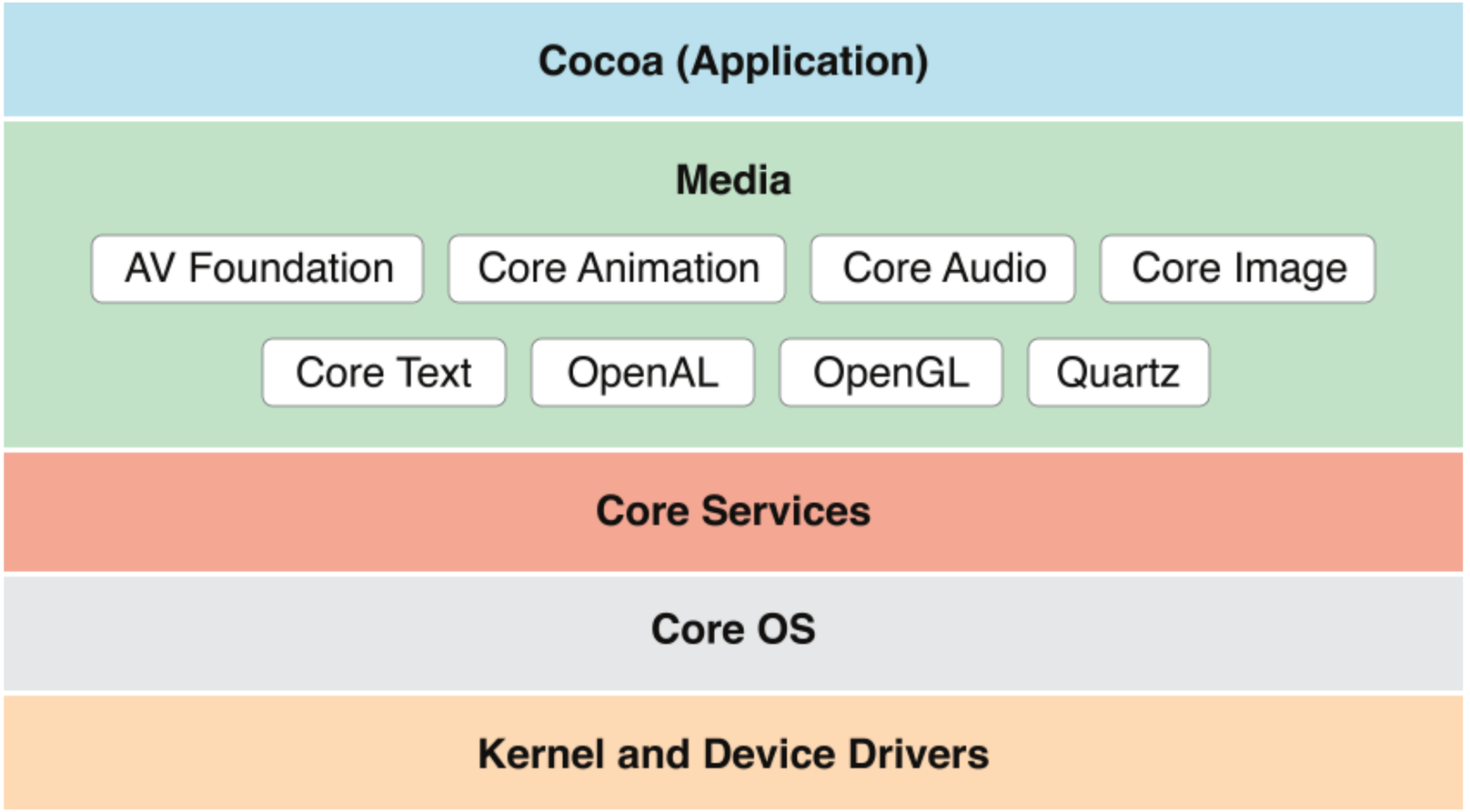
- These will be useful! If you don’t know these topics, you should go.

UIKit

We will learn...

- ~~**Swift 5**~~
- XCode IDE
  - Simulating iOS apps
- **UIKit**
  - Protocol-based programming
  - Imperative UI

The iOS Stack

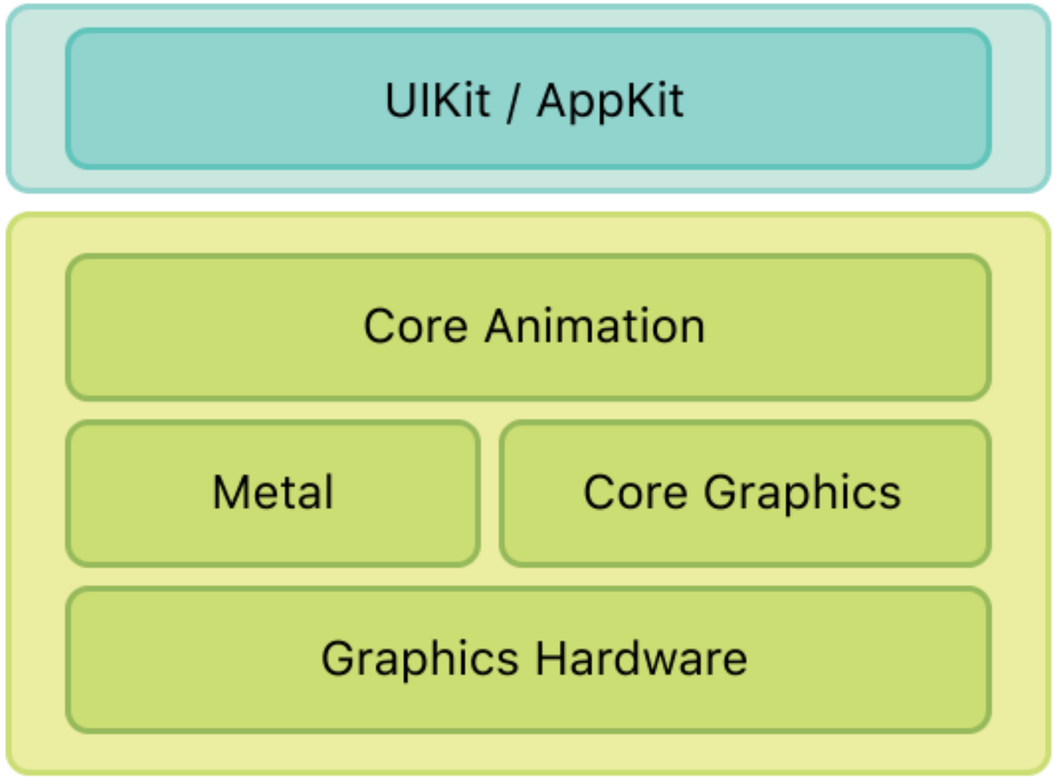


UIKit lives here

We access these layers for advanced functionality

UIKit and AppKit (MacOS)

- UIKit is for iOS devices, AppKit is for MacOS. *AppKit is very, very old*.
- UIKit is younger, but built on the same tech.
- UIKit written in obj-C.
- The old AppKit views have **NS** prefix (this stands for *NextStep*).
  - UIKit views have **UI** prefix.
  - We mostly use UIKit classes, but we encounter the occasional NS class in older frameworks.



SwiftUI

- The future
- Intended to replace all UI frameworks (UIKit, WatchKit, AppKit) across all Apple platforms
- Ready for “tinkering” and small apps.

Anatomy of an App

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Settings

Search

Dominic Holmes
Apple ID, iCloud, iTunes & App Store

Airplane Mode

Wi-Fi AirPennNet

Bluetooth On

Cellular

Personal Hotspot Off

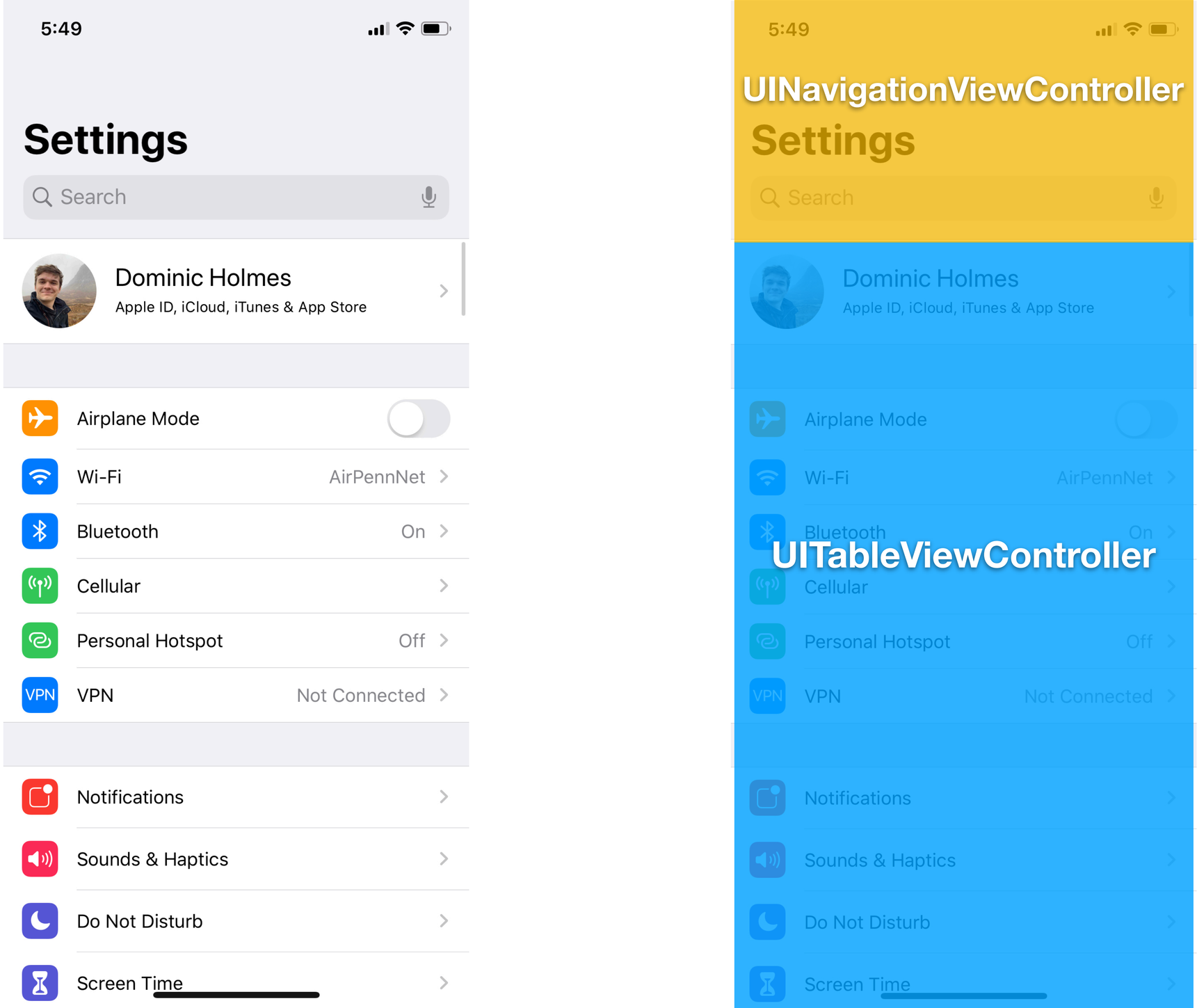
VPN Not Connected

Notifications

Sounds & Haptics

Do Not Disturb

Screen Time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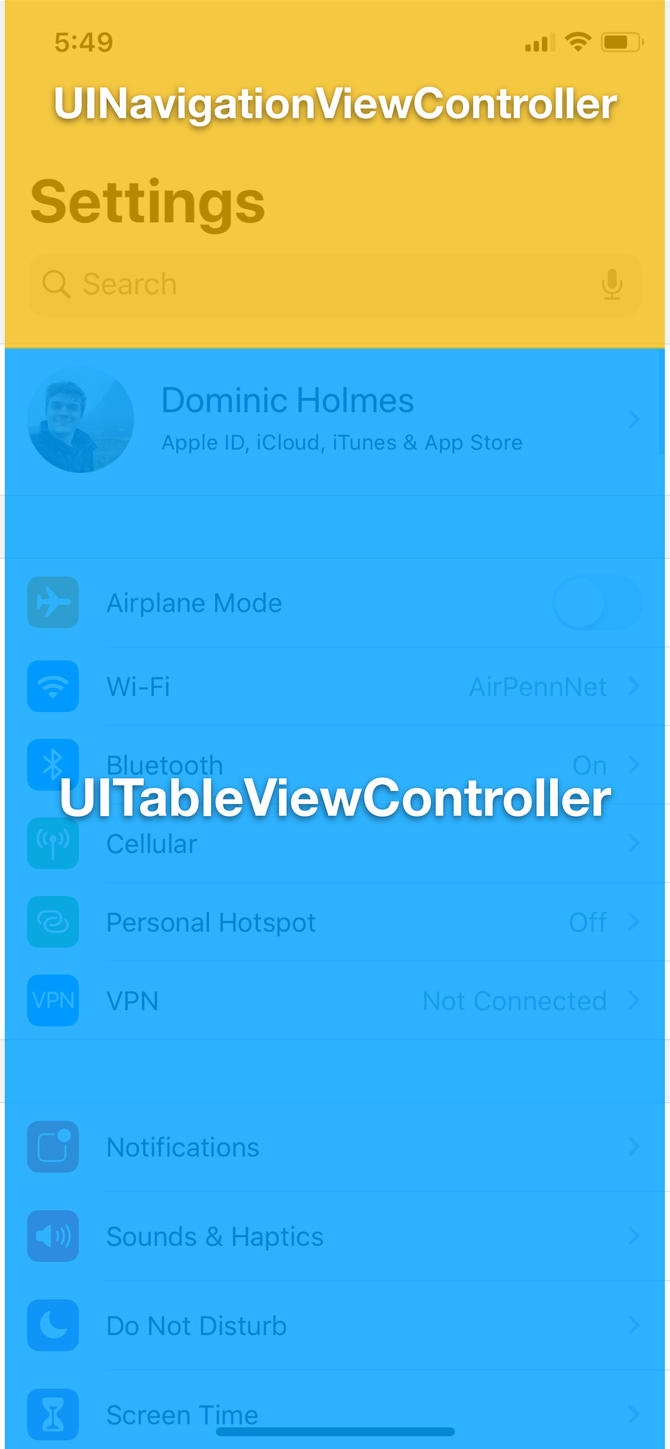
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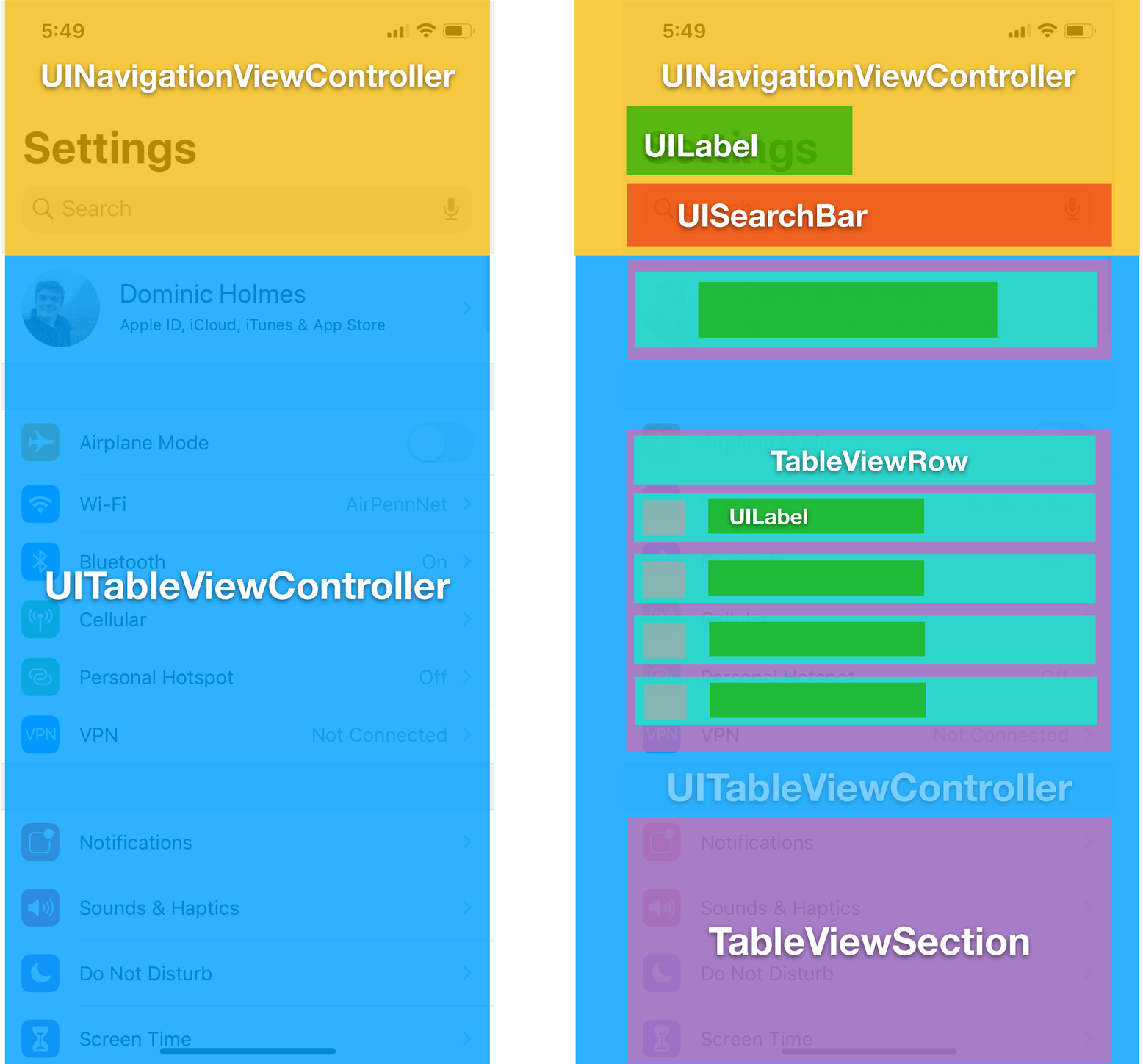
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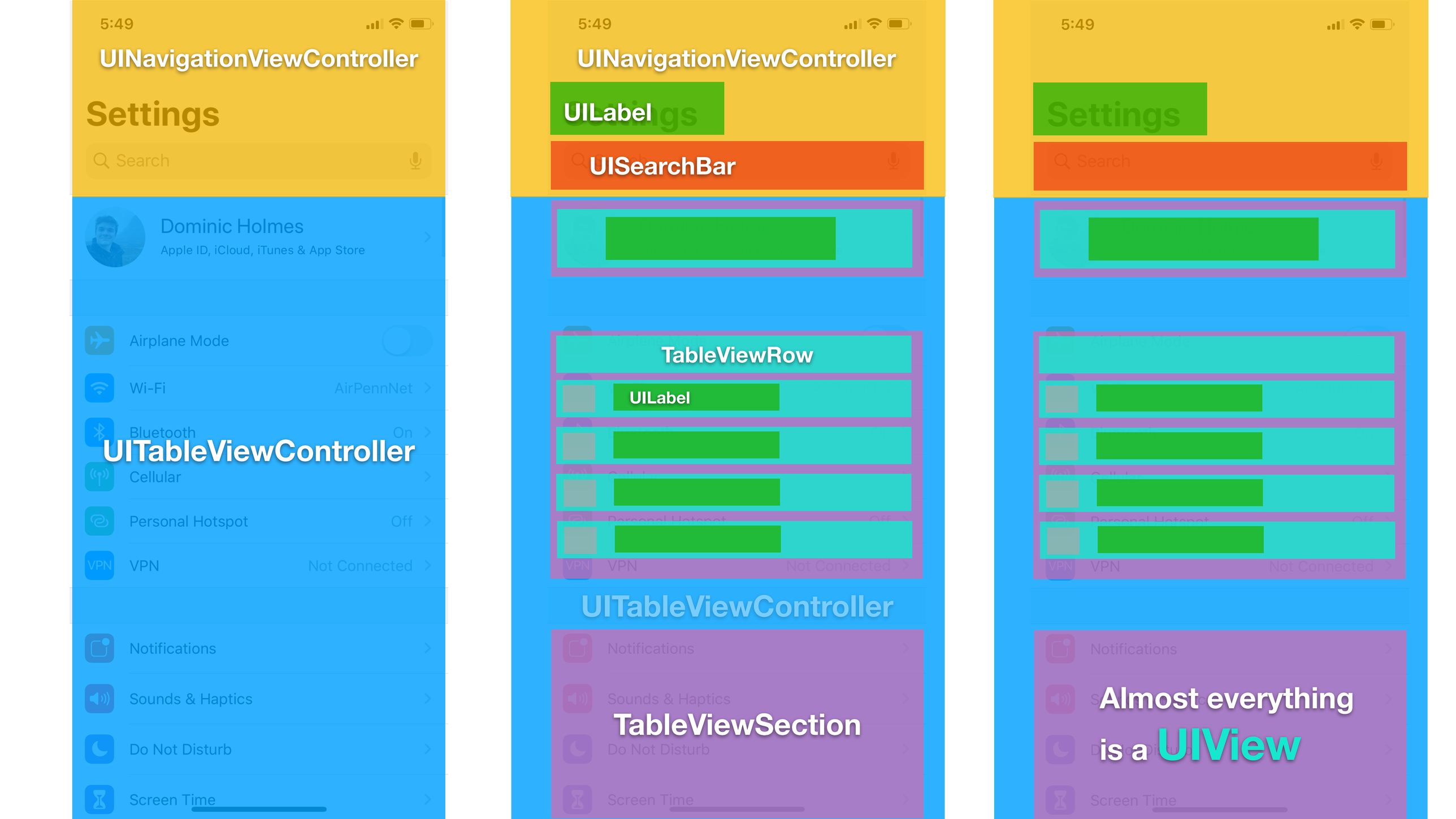
TableViewSection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Settings
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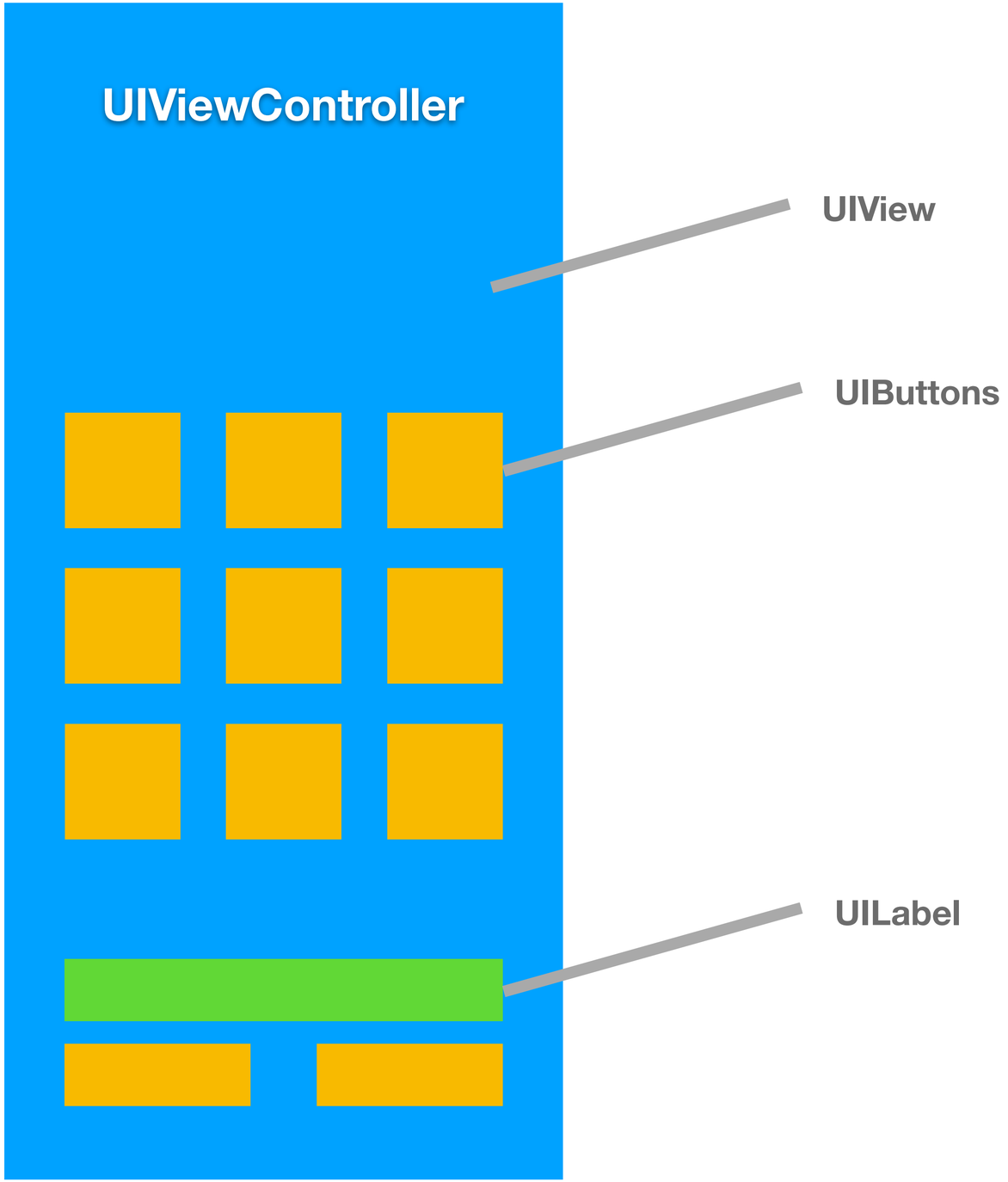
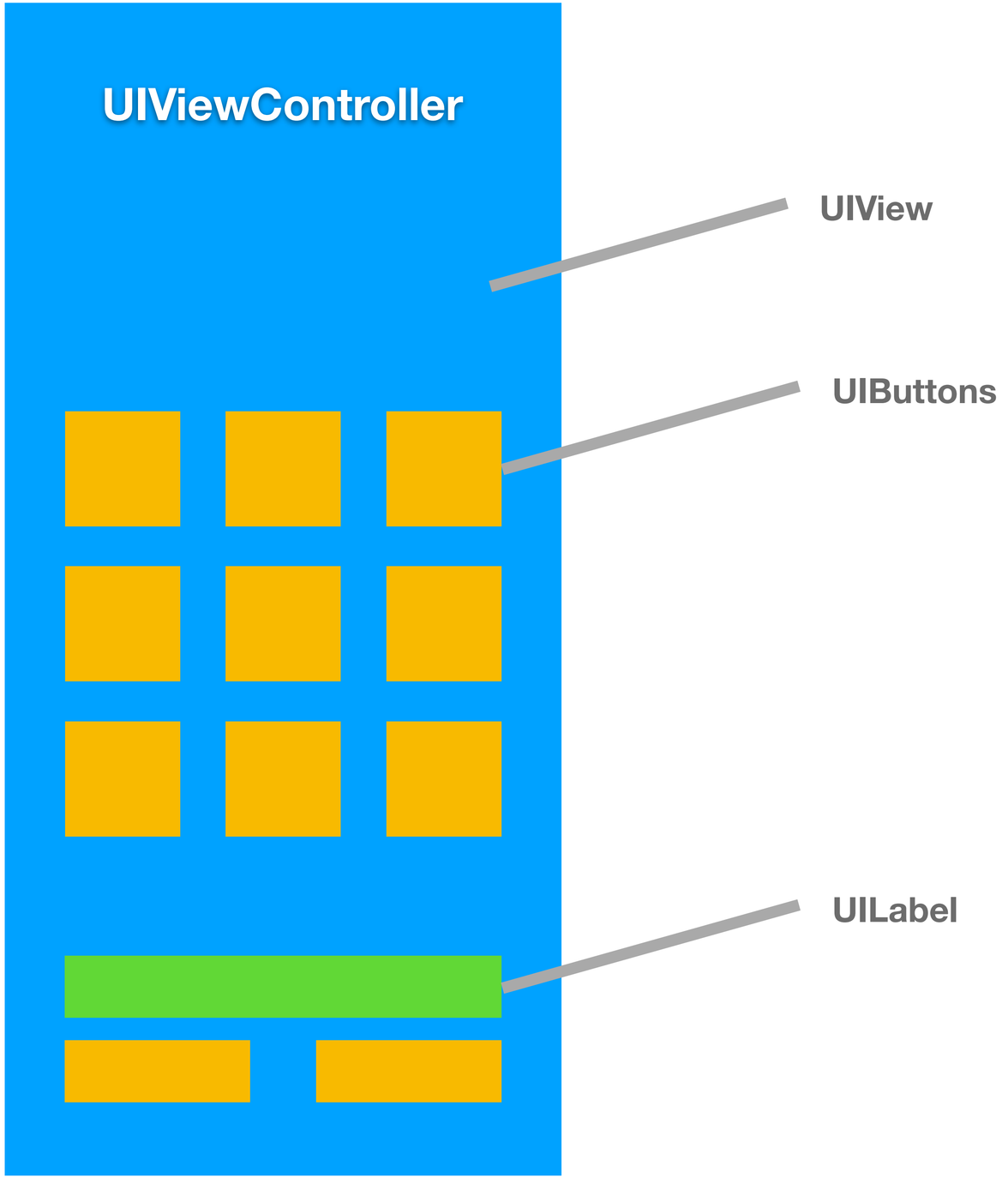
Almost everything
is a UIView

This week



UIViewController

- Generally — one for **each “screen”**
- Has a single attached **UIView**
  - Inside this UIView are whatever custom views you define (the **child views**)
- VC handles **interaction, lifecycle, and state** for all its child views
  - Ex: A button is pushed. The VC receives this event, modifies a label, and makes sure those changes are reflected on-screen.



UIView

- Most visual components in iOS are UIViews
- Has properties like **background color**
- Most UIKit classes are a **subclass** of UIView
  - UIButton, UILabel, UIImageView, UISwitch
  - …. and more

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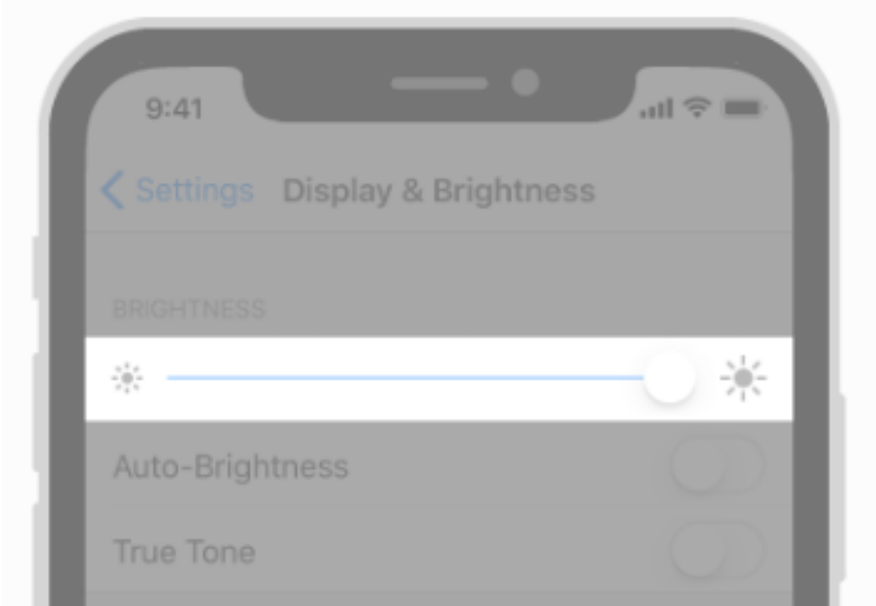

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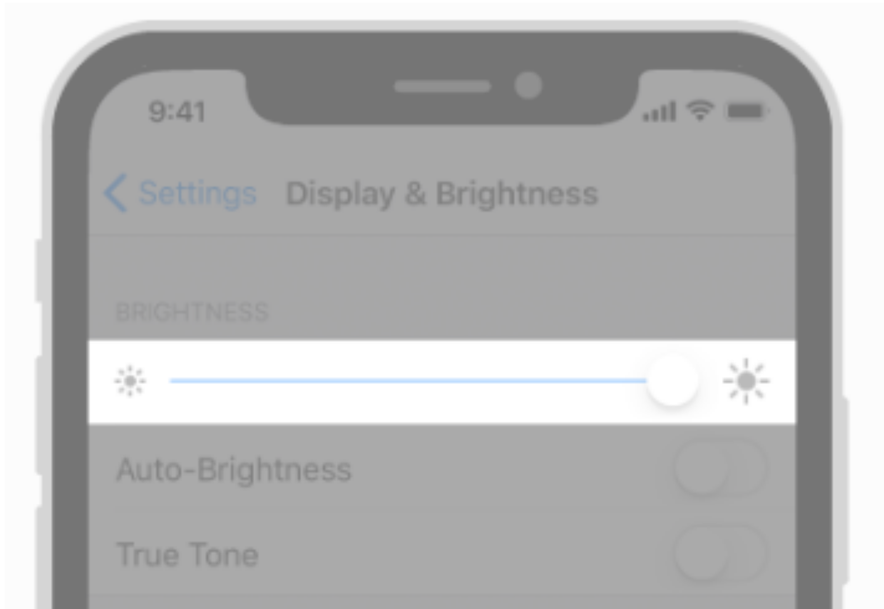

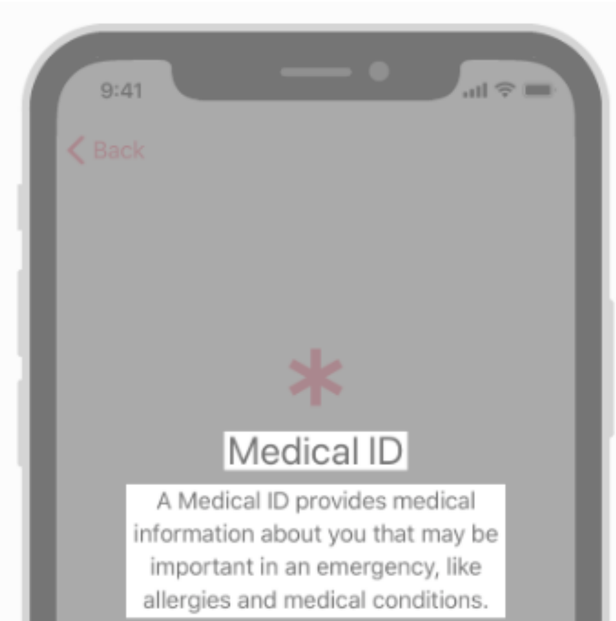

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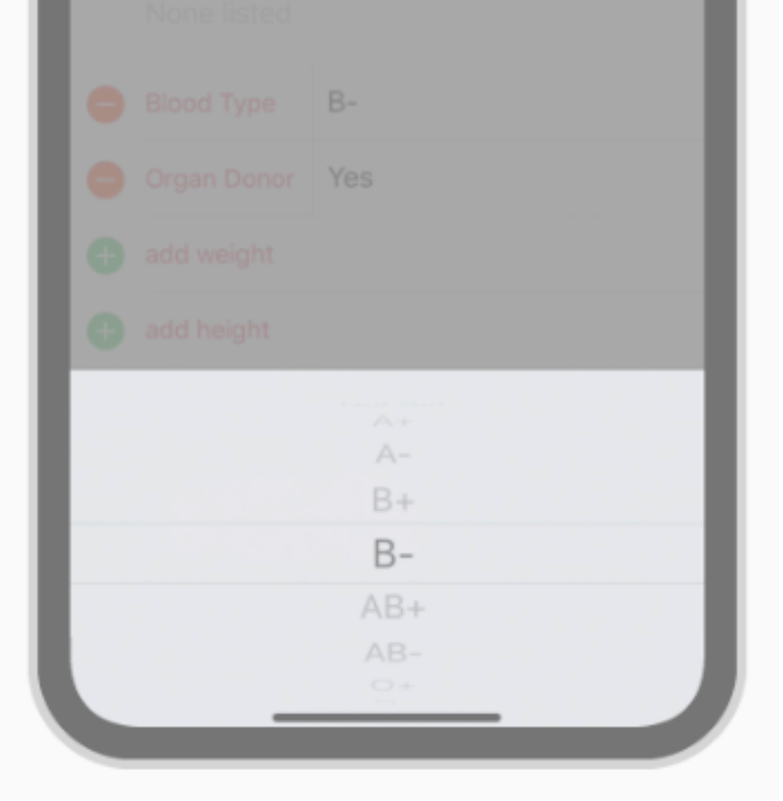
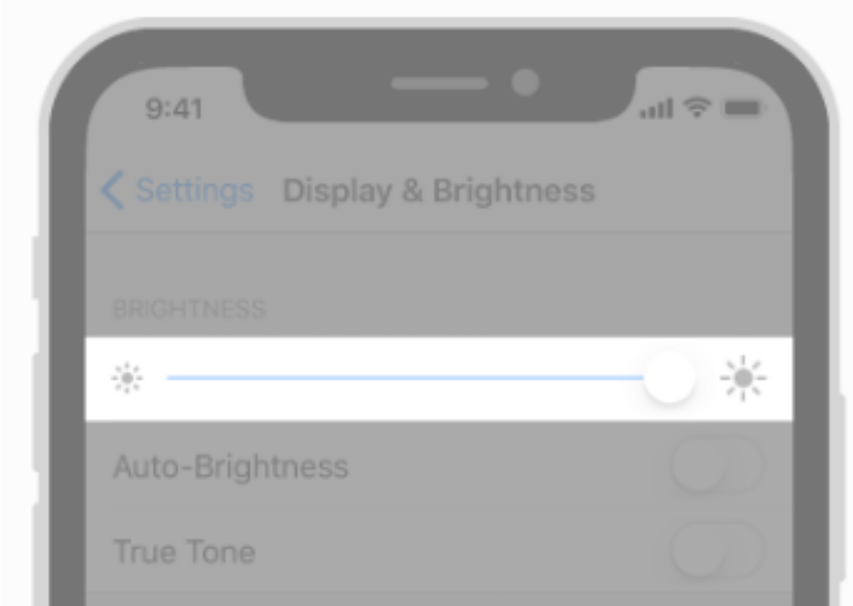
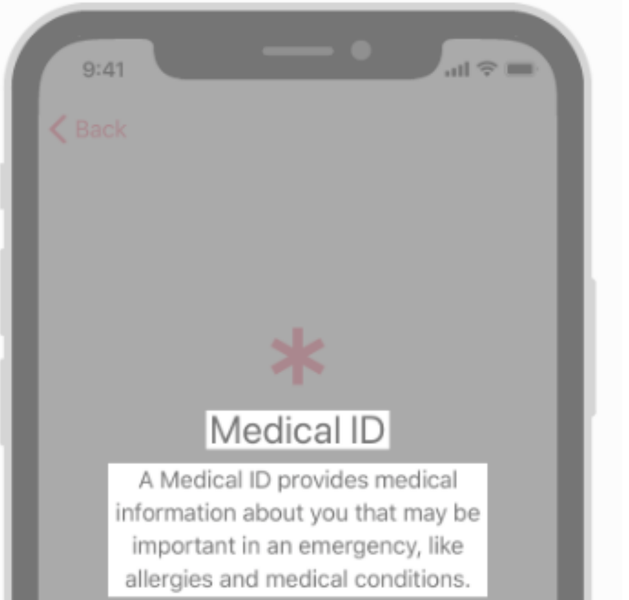
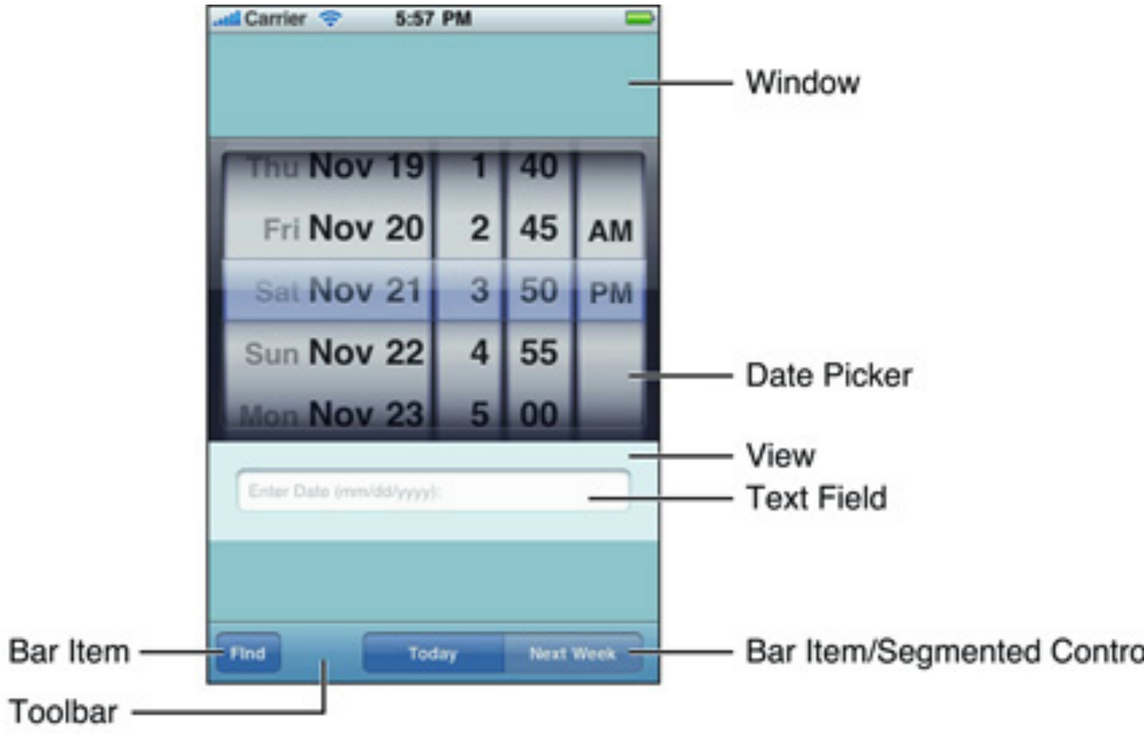


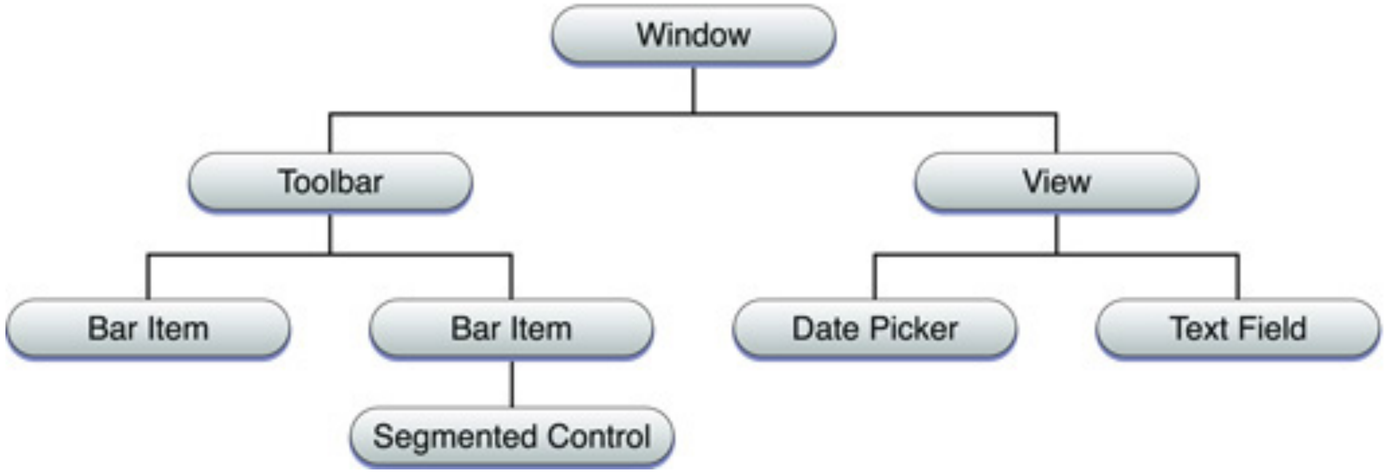




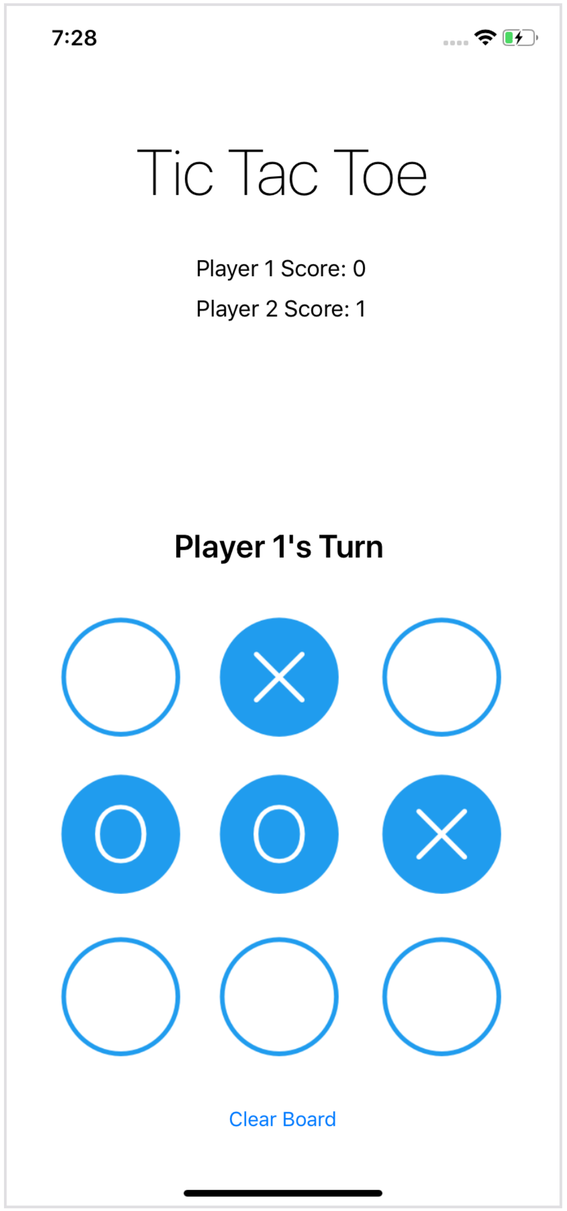
UIView

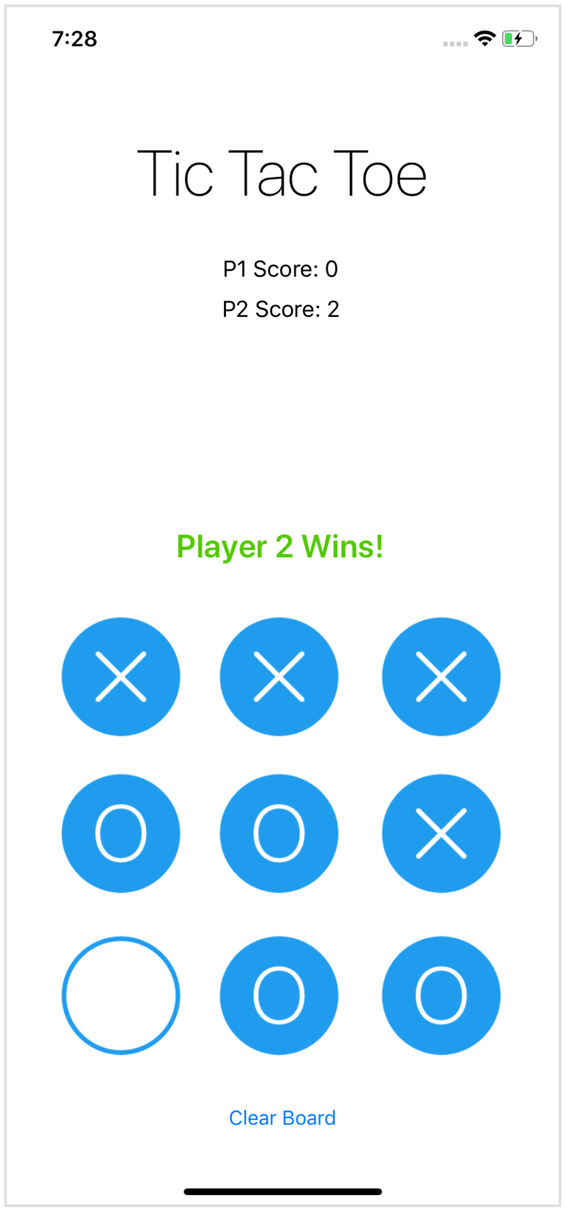
- ***Views are arranged in a tree structure***
- This dictates event propagation (like Touches), the drawing order, etc

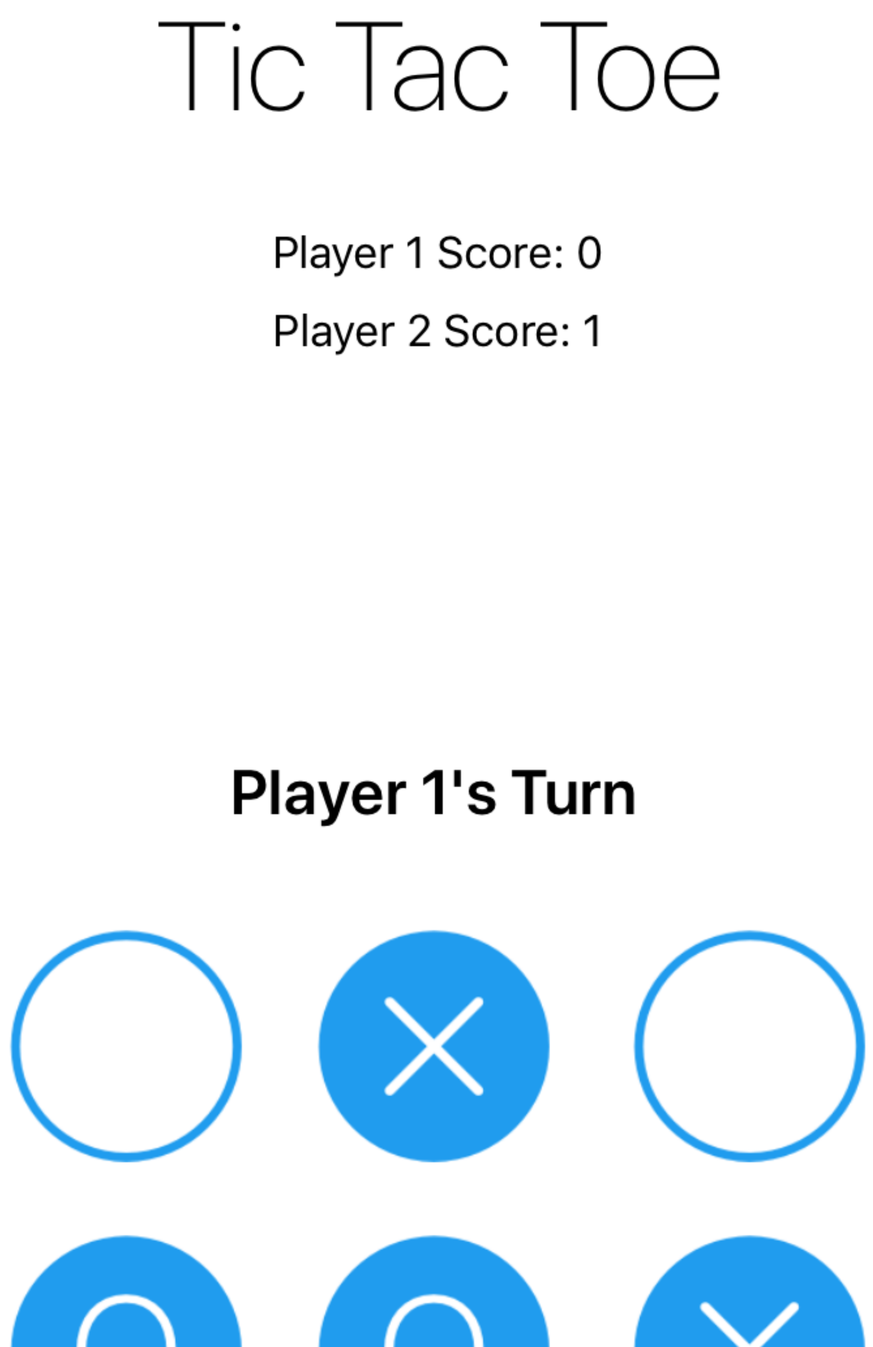




App 1: Tic Tac Toe



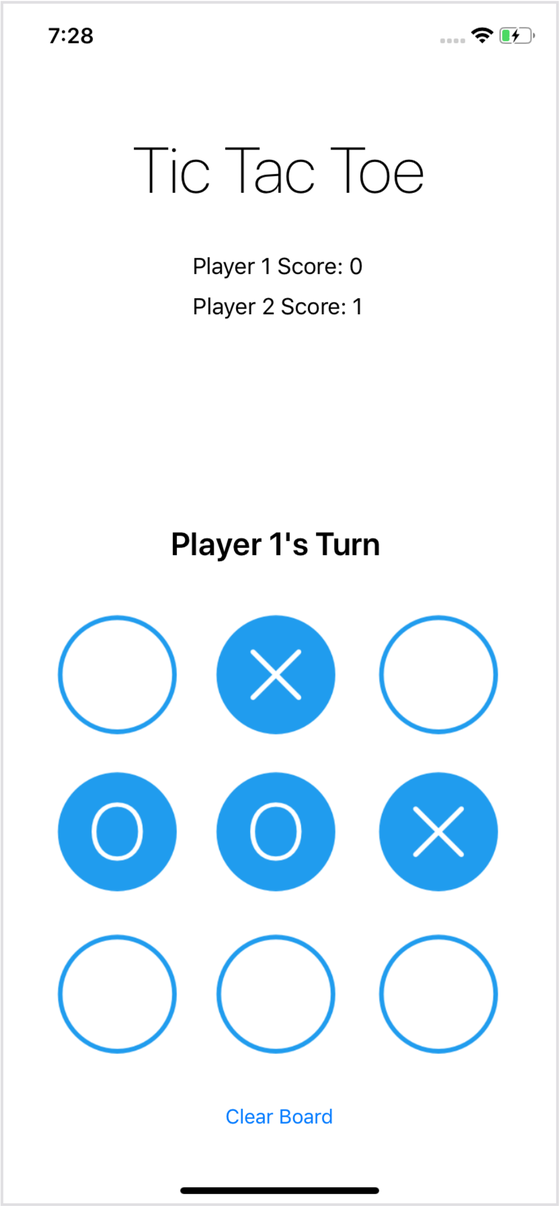




App 1: Tic Tac Toe

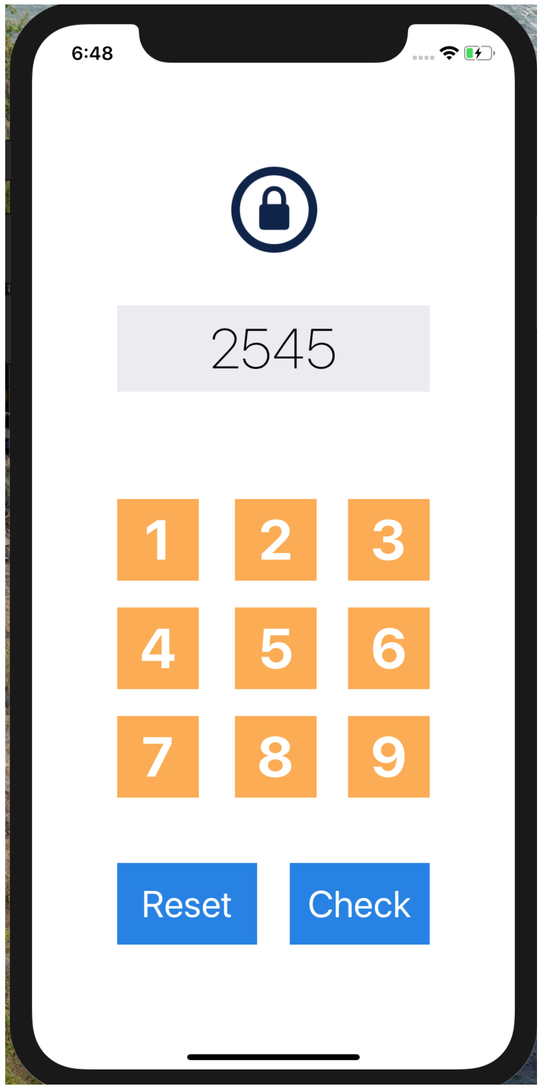
- Due next Thursday at 4:20pm:
  - The visual and **interactive** components
  - So tapping a bubble should change it to an X or an O… but it can be random. No game logic required.
- Due the week after that:
  - The full game logic

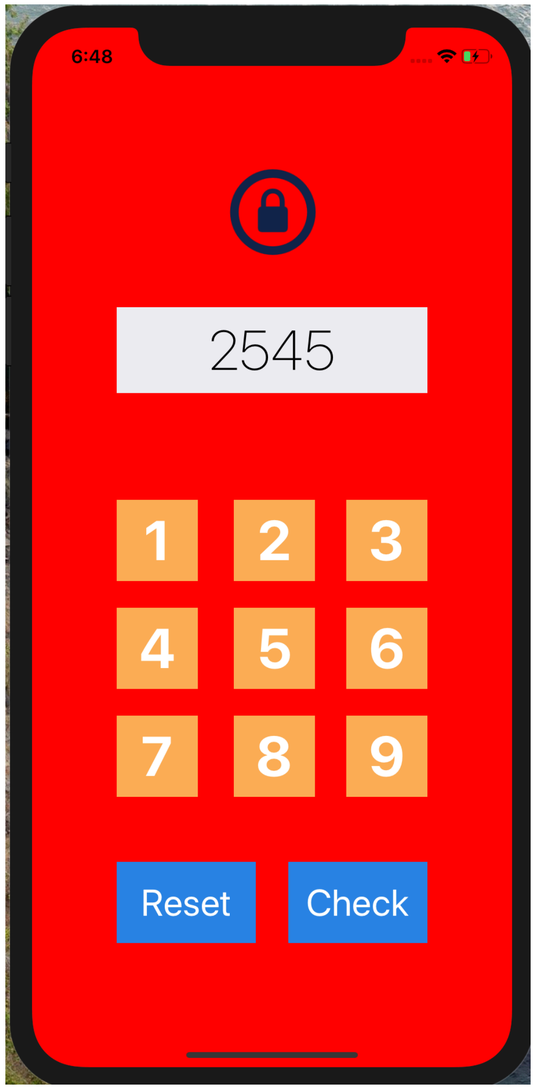
- Released tonight

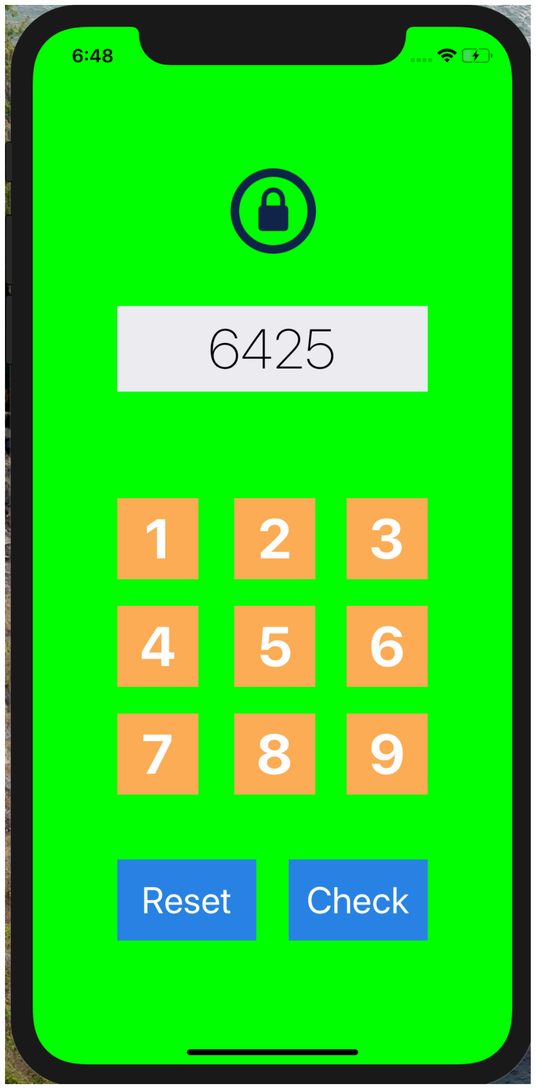


Live Demo: Passcode

Live Demo 1: Passcode App







Due Before Next Class

- App 2: Tic Tac Toe (Part A)
- Tutorial 1: MVC

Links

- Survey: tiny.cc/cis195-lec3
- Piazza: tiny.cc/cis195-piazza