

# Lecture 3

# Probably time to start making apps

# Attendance

**[tiny.cc/cis195-lec3](https://tiny.cc/cis195-lec3)**

# 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.



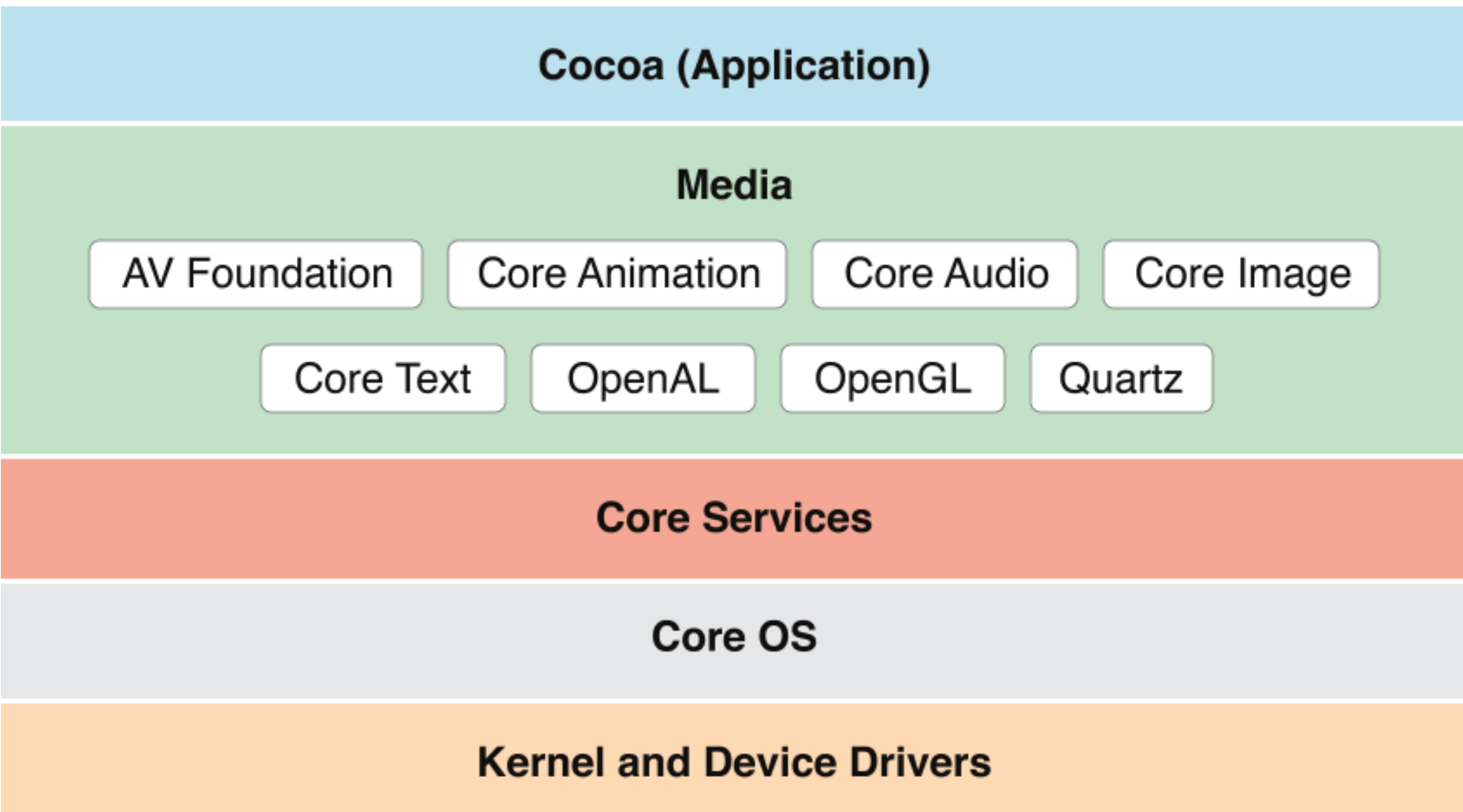
# UIKit

# We will learn...

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



# The iOS Stack

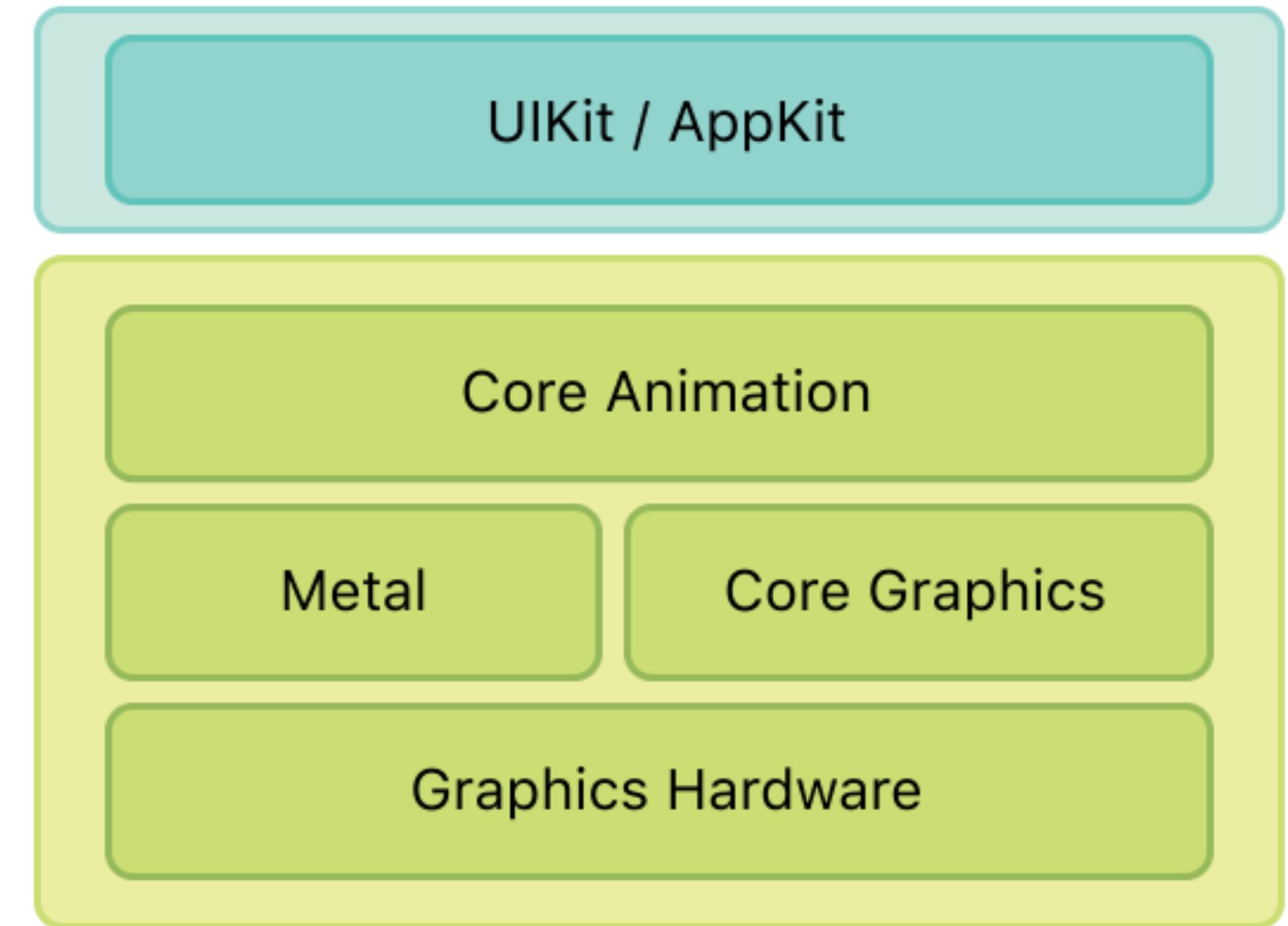


**UIKit lives here**

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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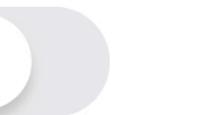


Dominic Holmes

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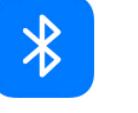


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Wi-Fi

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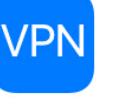


Cellular



Personal Hotspot

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VPN

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Notifications



Sounds & Haptics



Do Not Disturb



Screen Time



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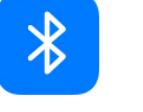


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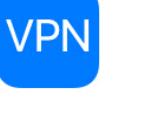


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# UINavigationController Settings

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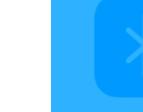


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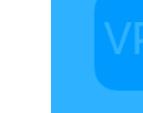
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## UINavigationViewController

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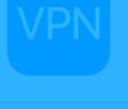
## UITableViewController



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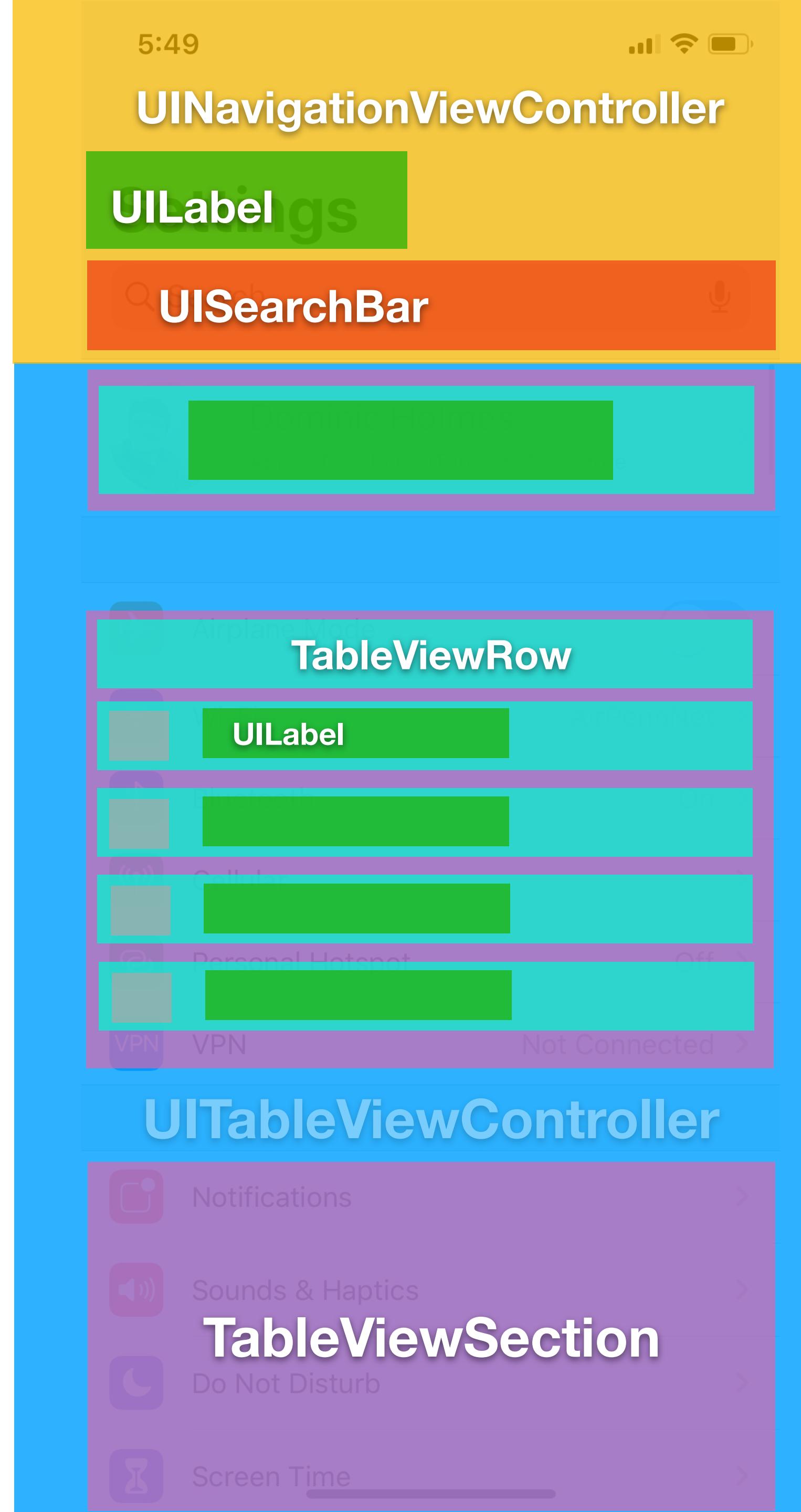
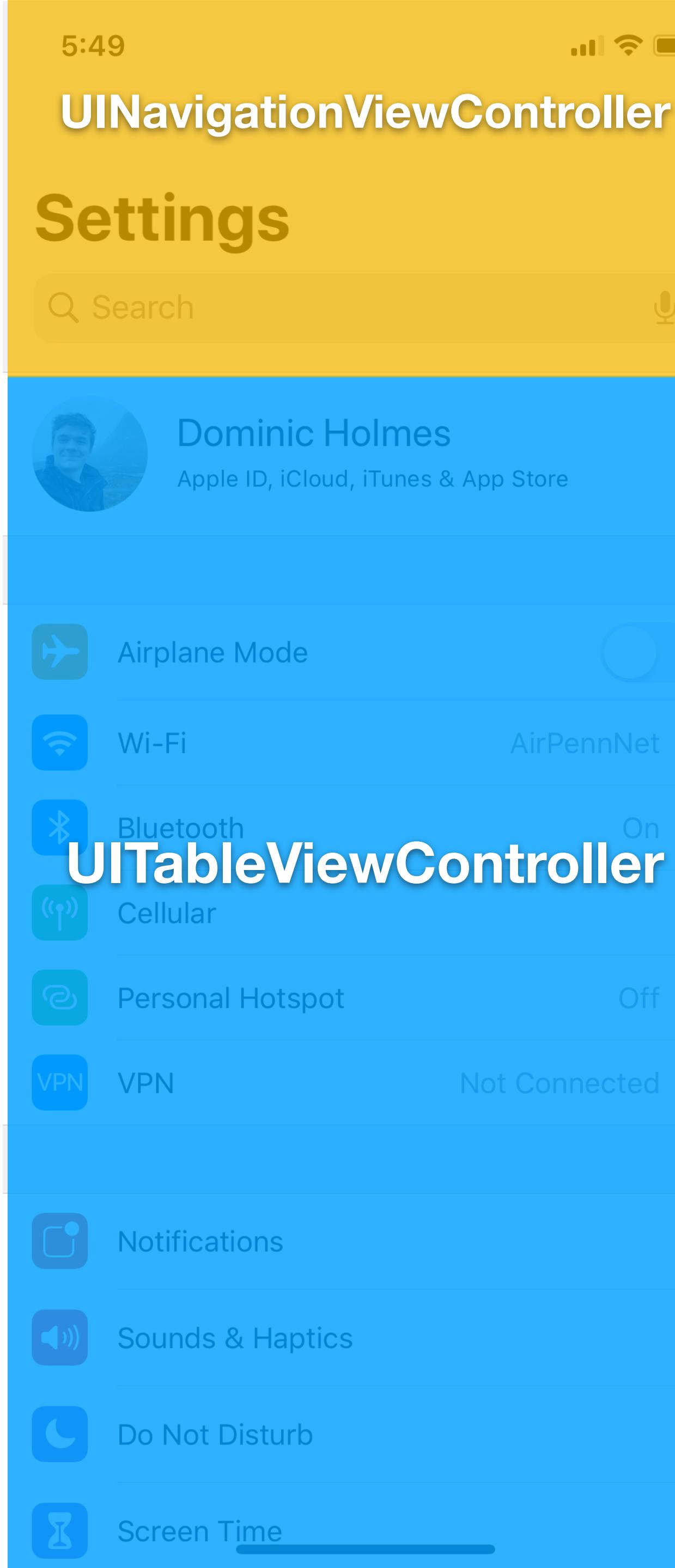


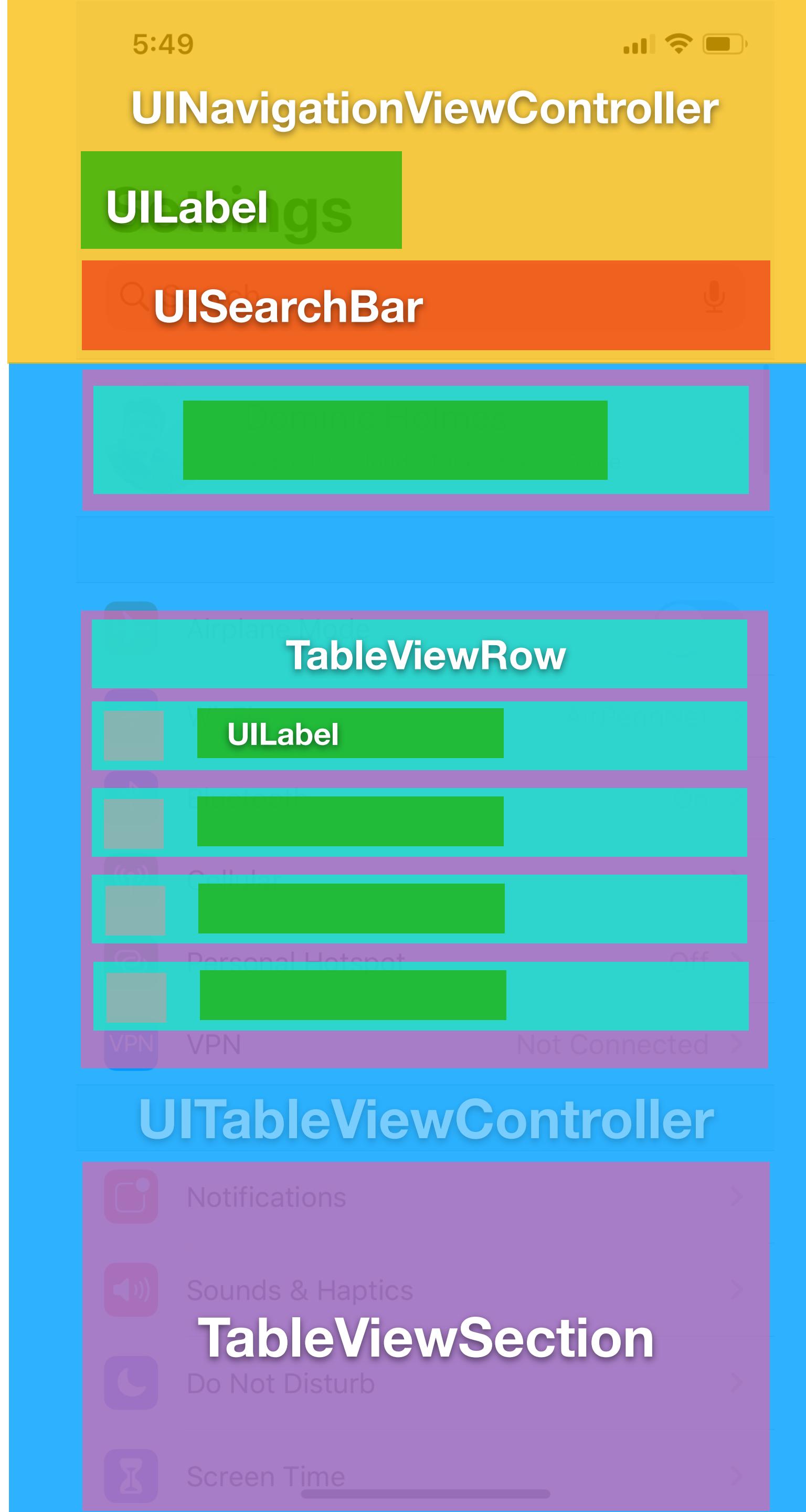
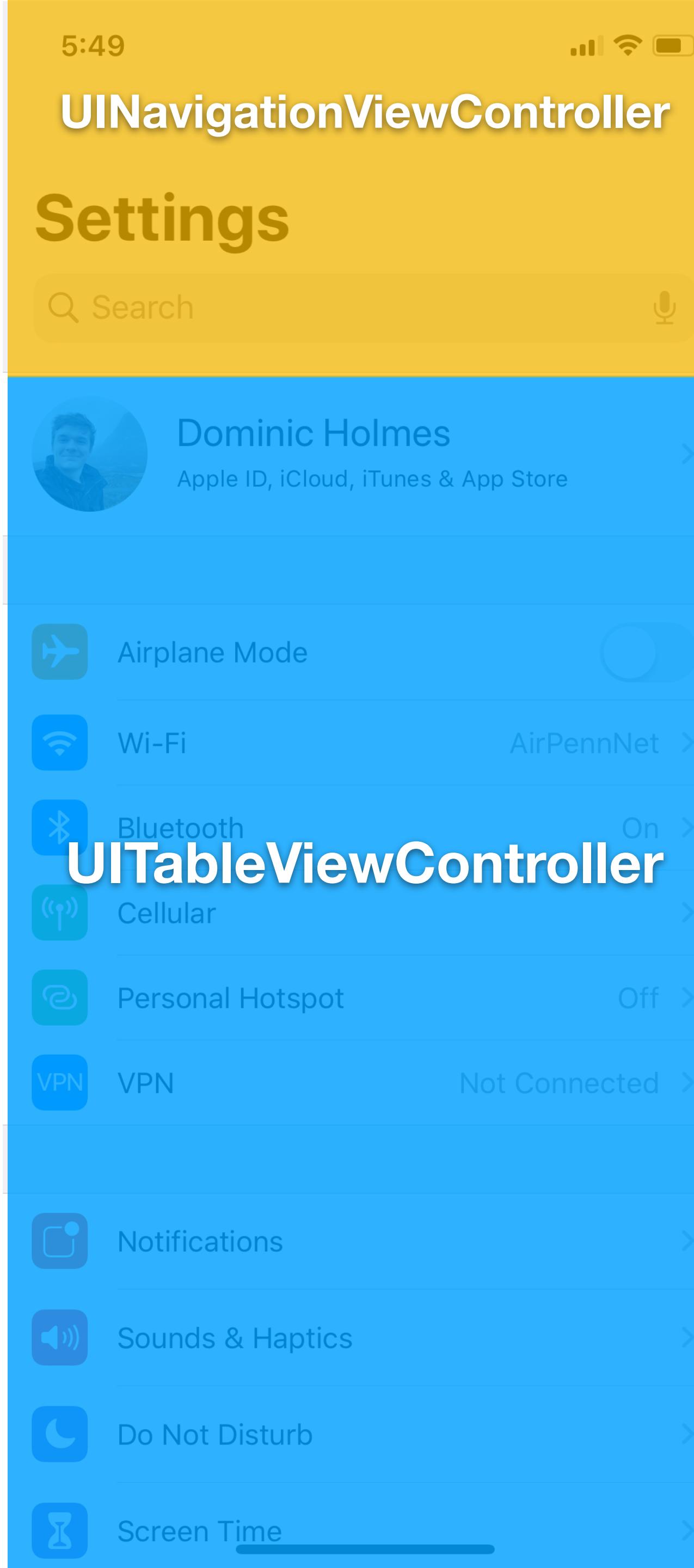
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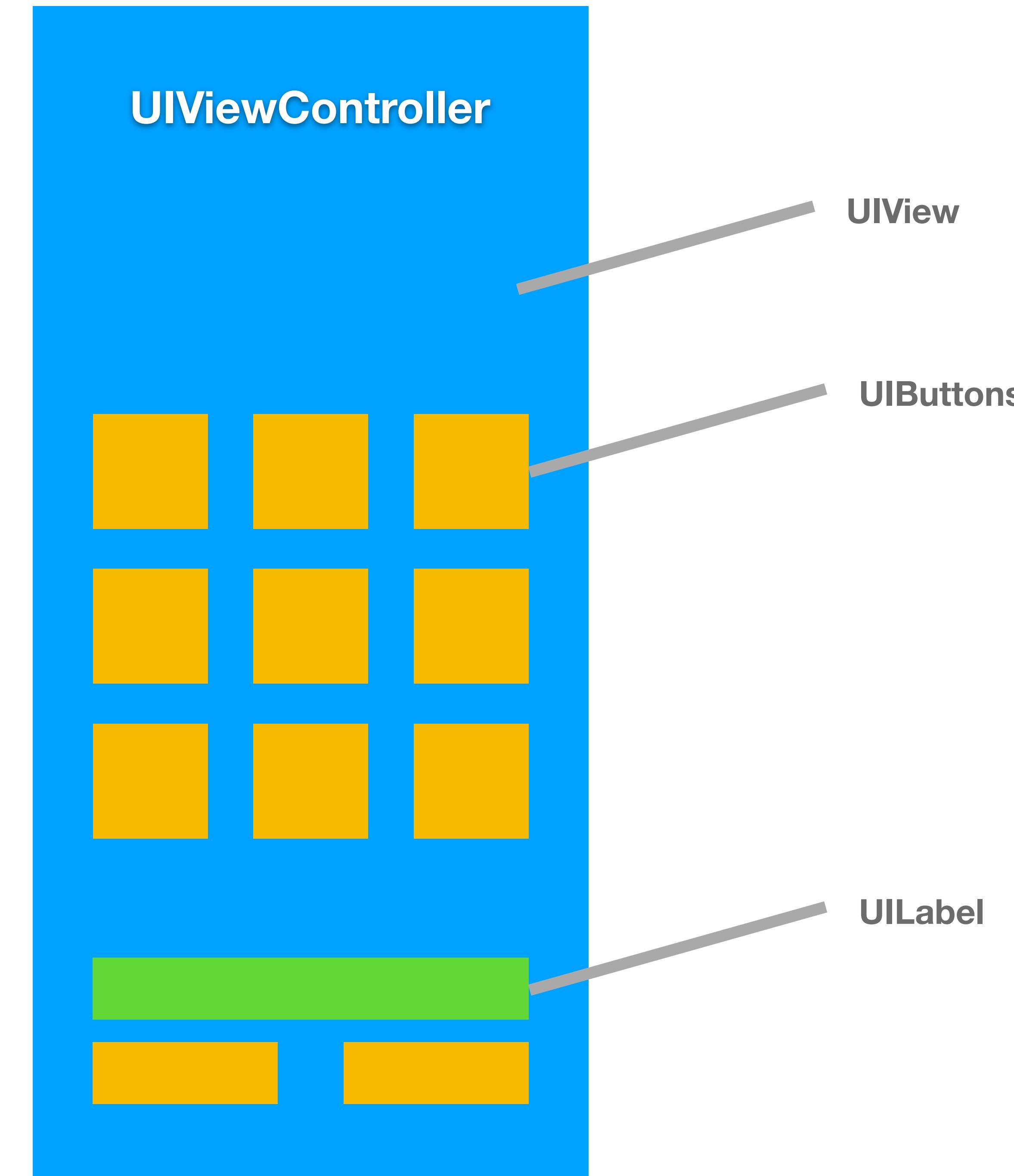
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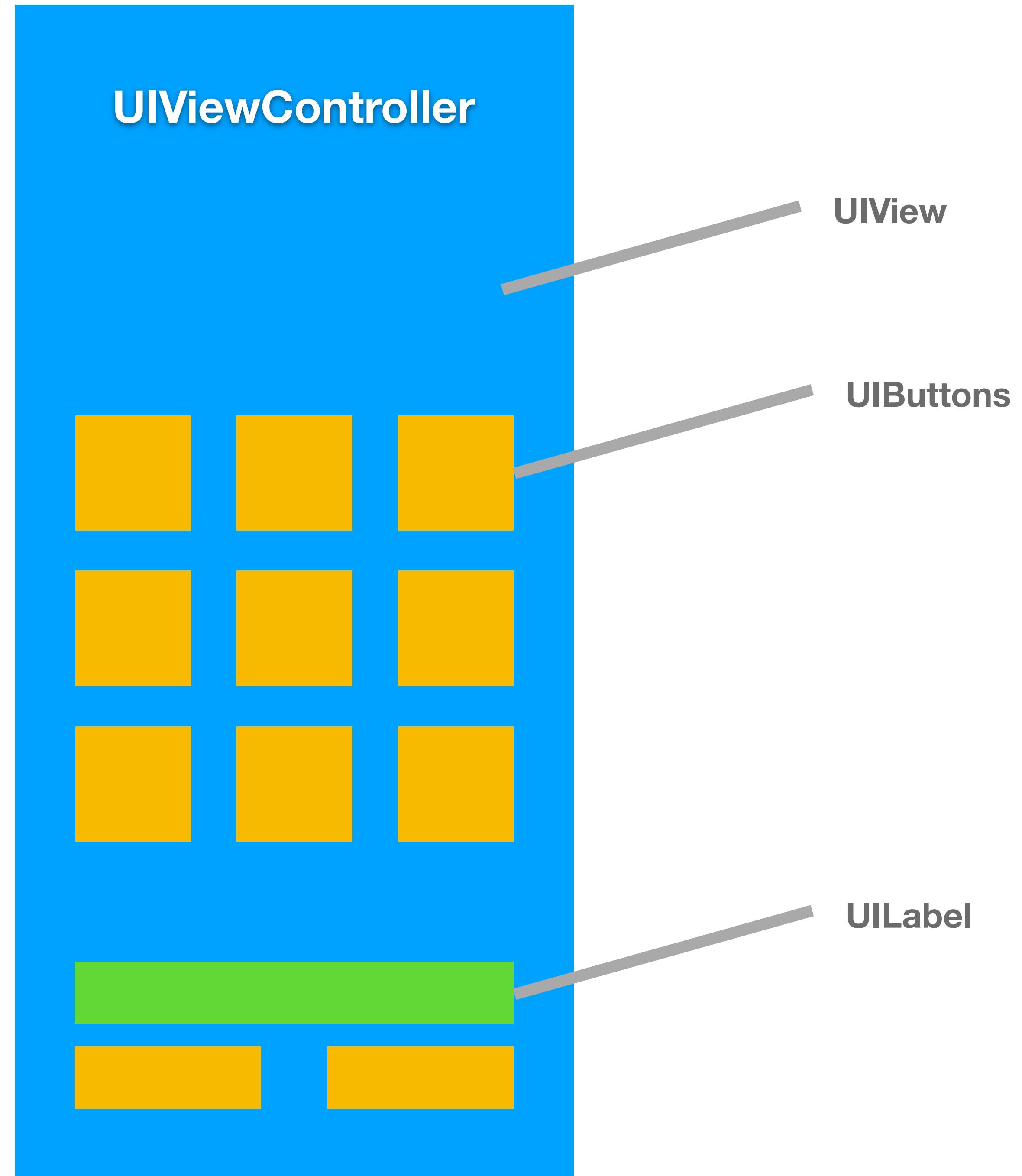


# This week



# 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.

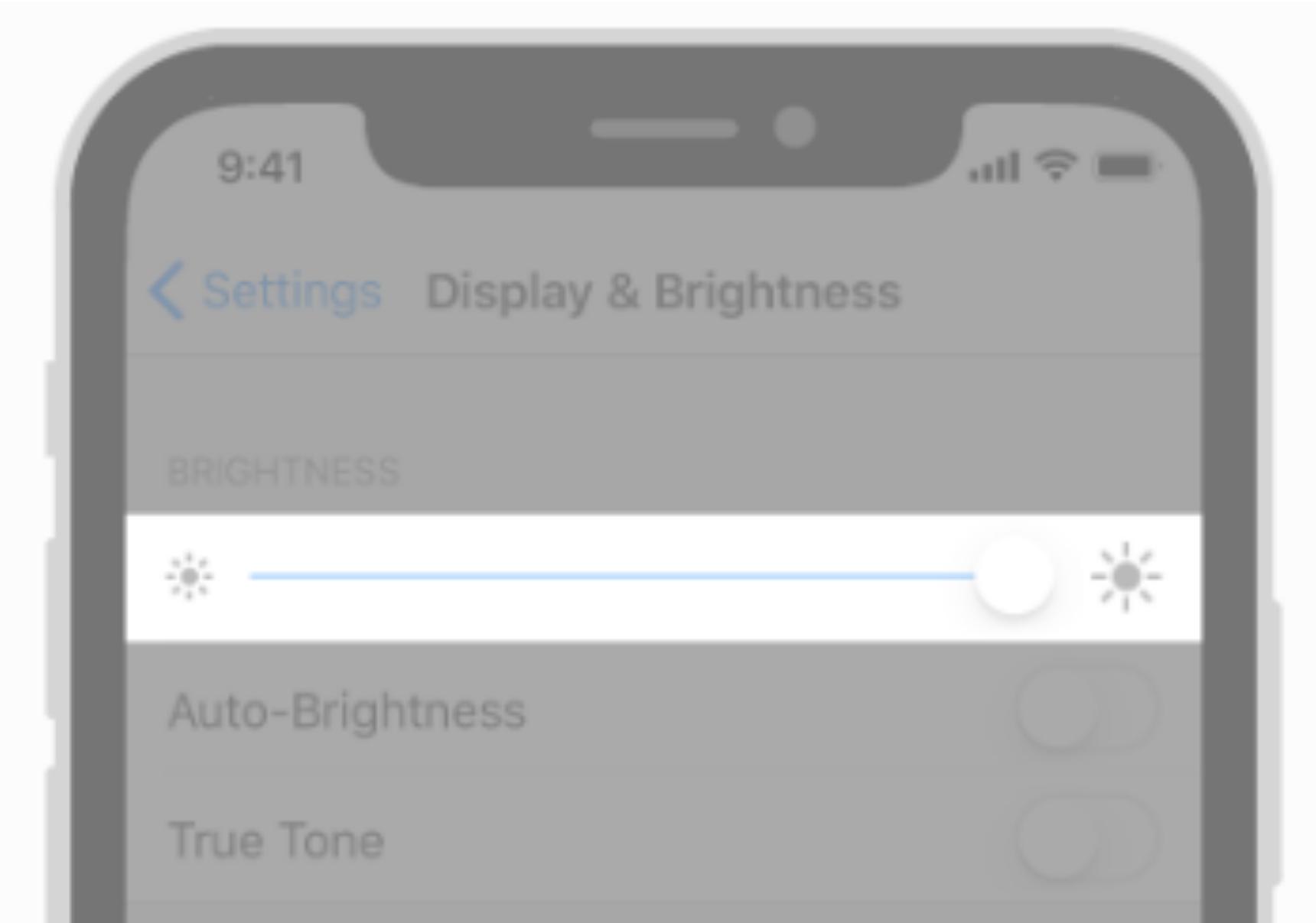


# UIView

- 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

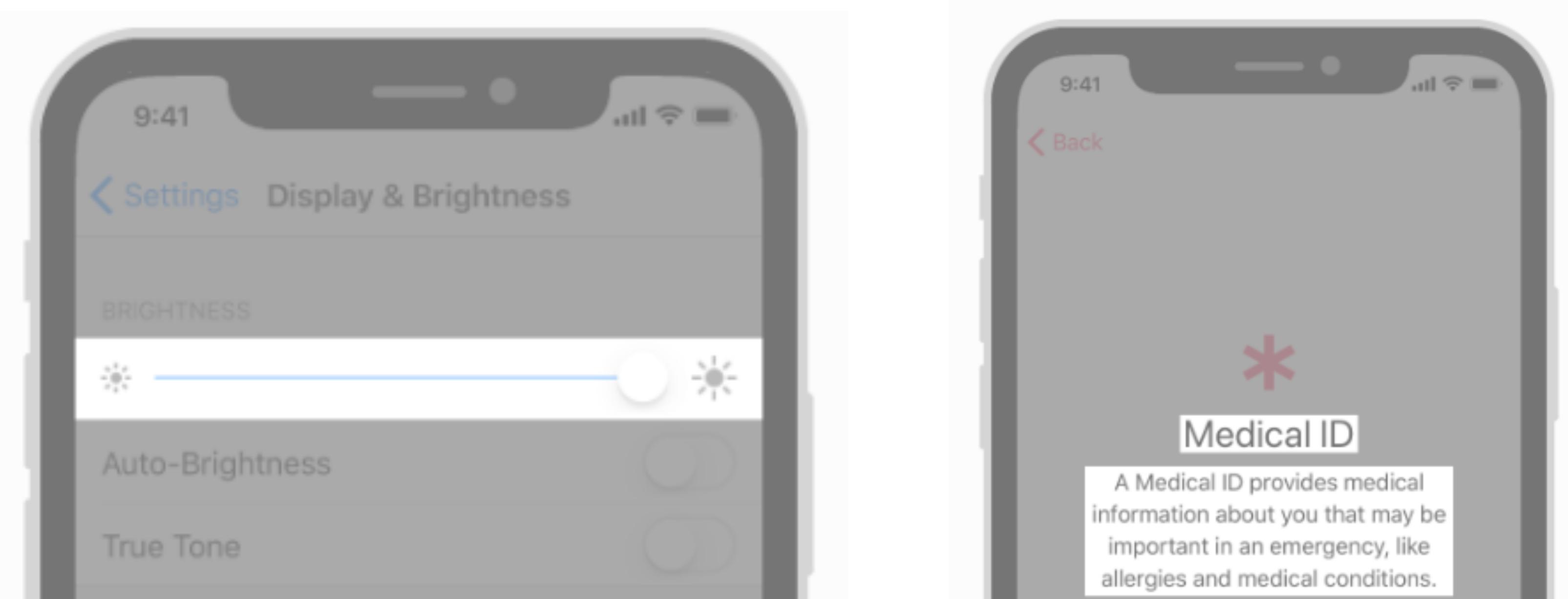
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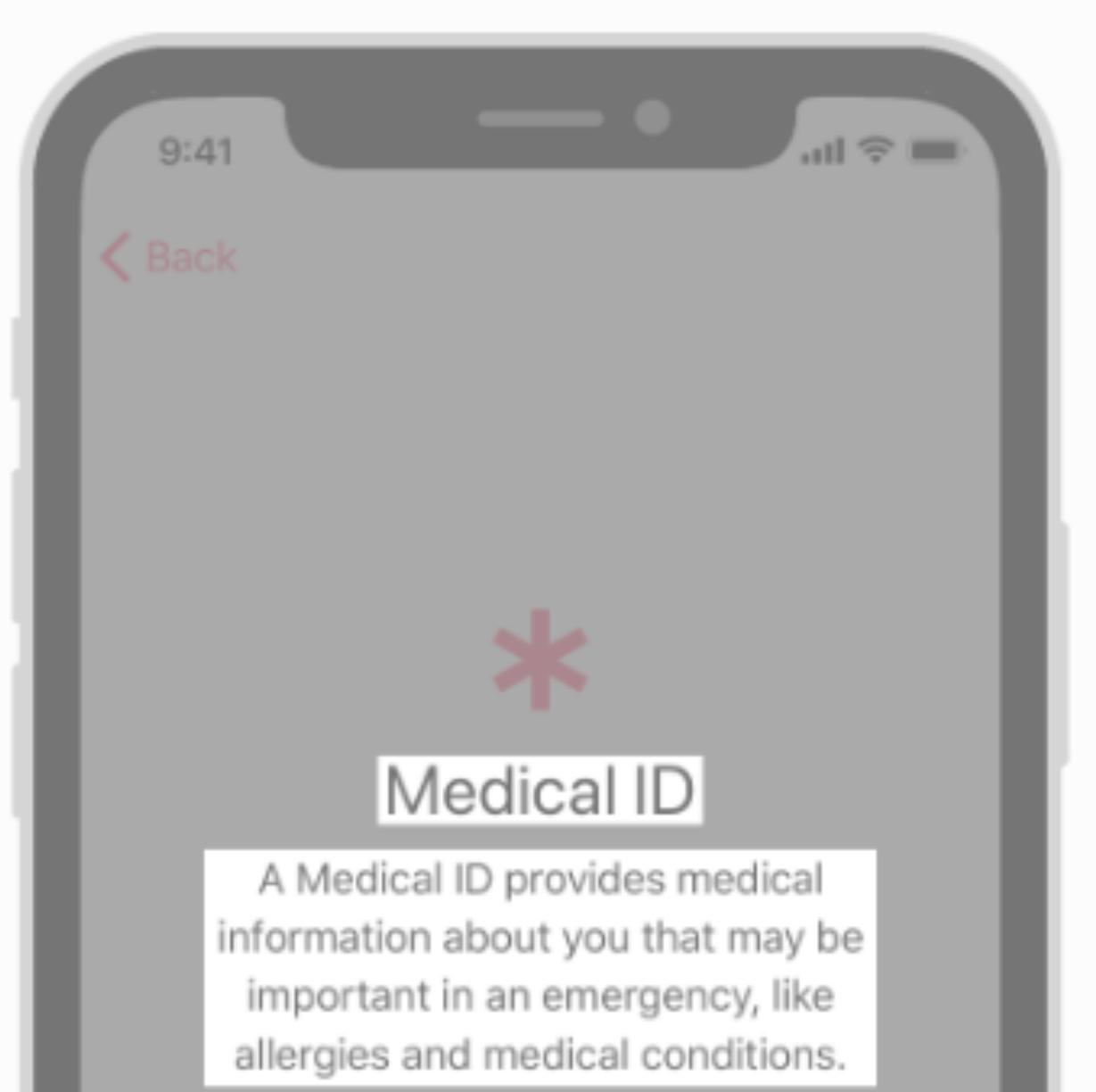
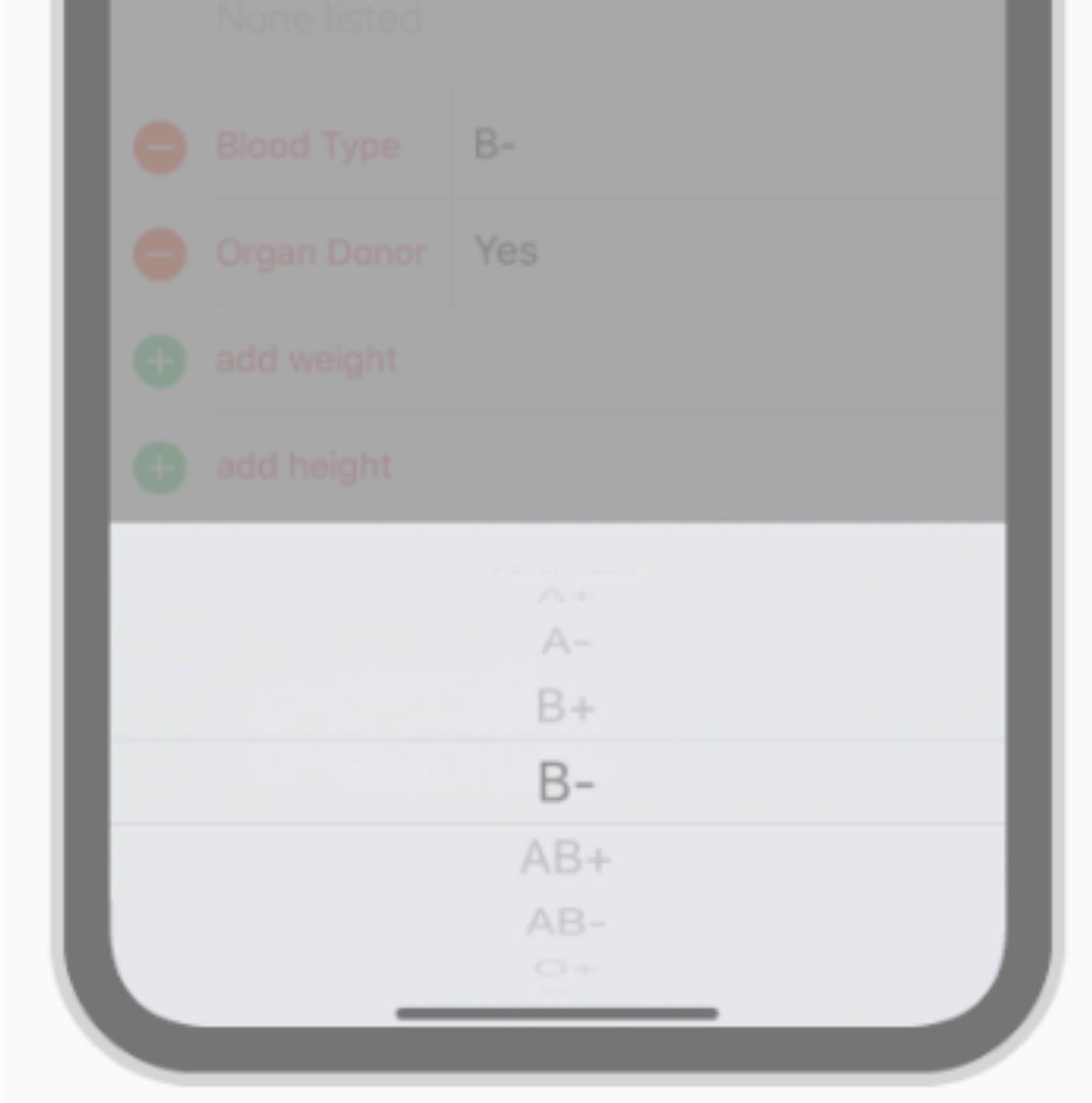
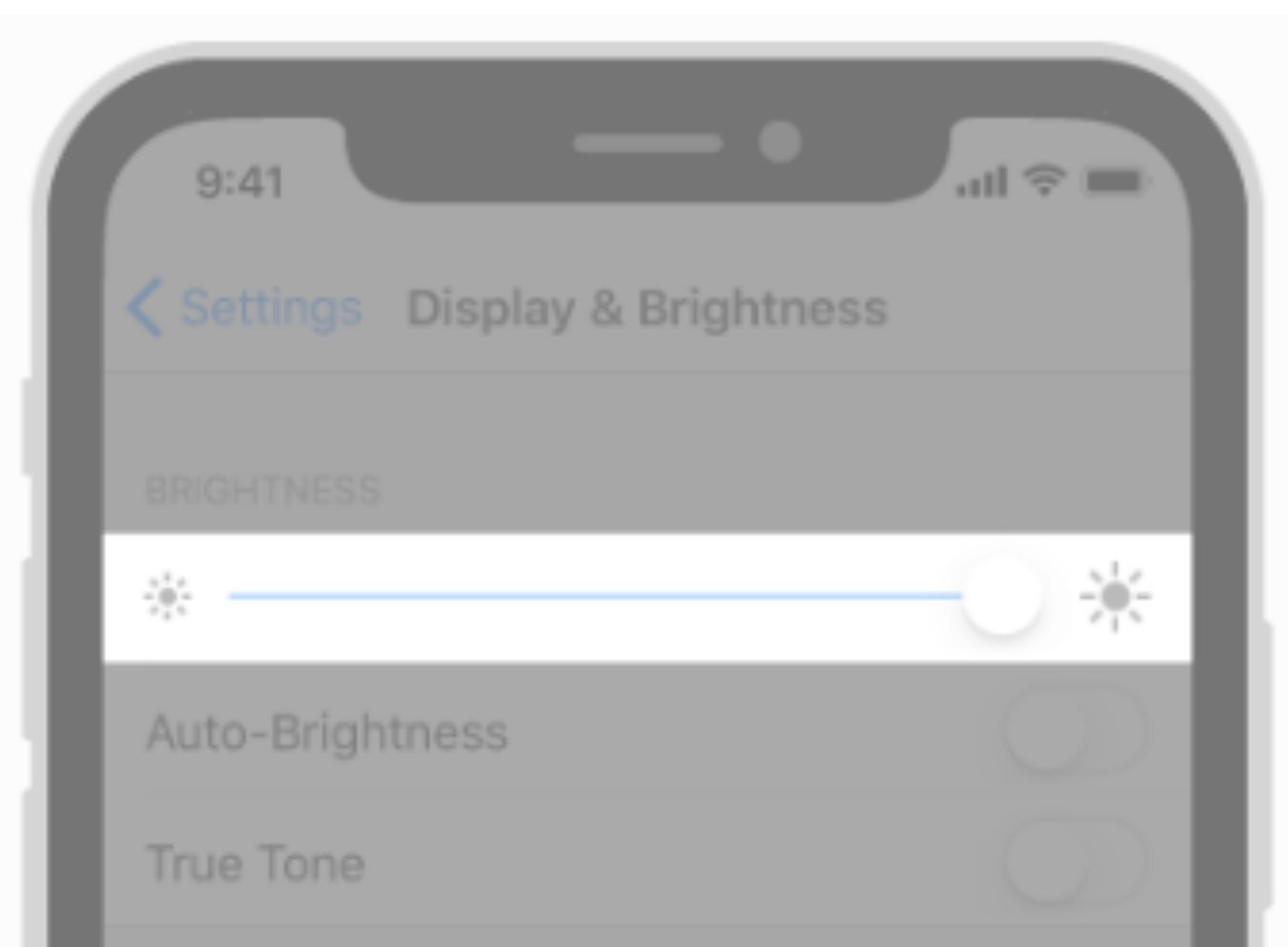
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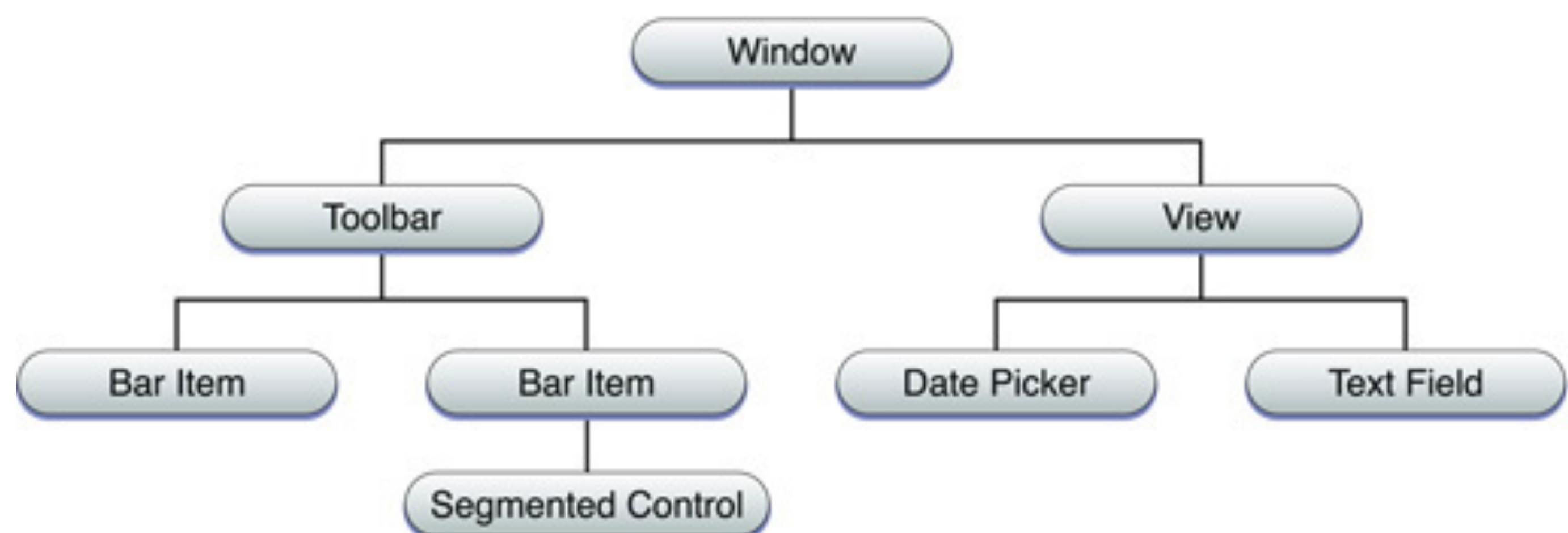
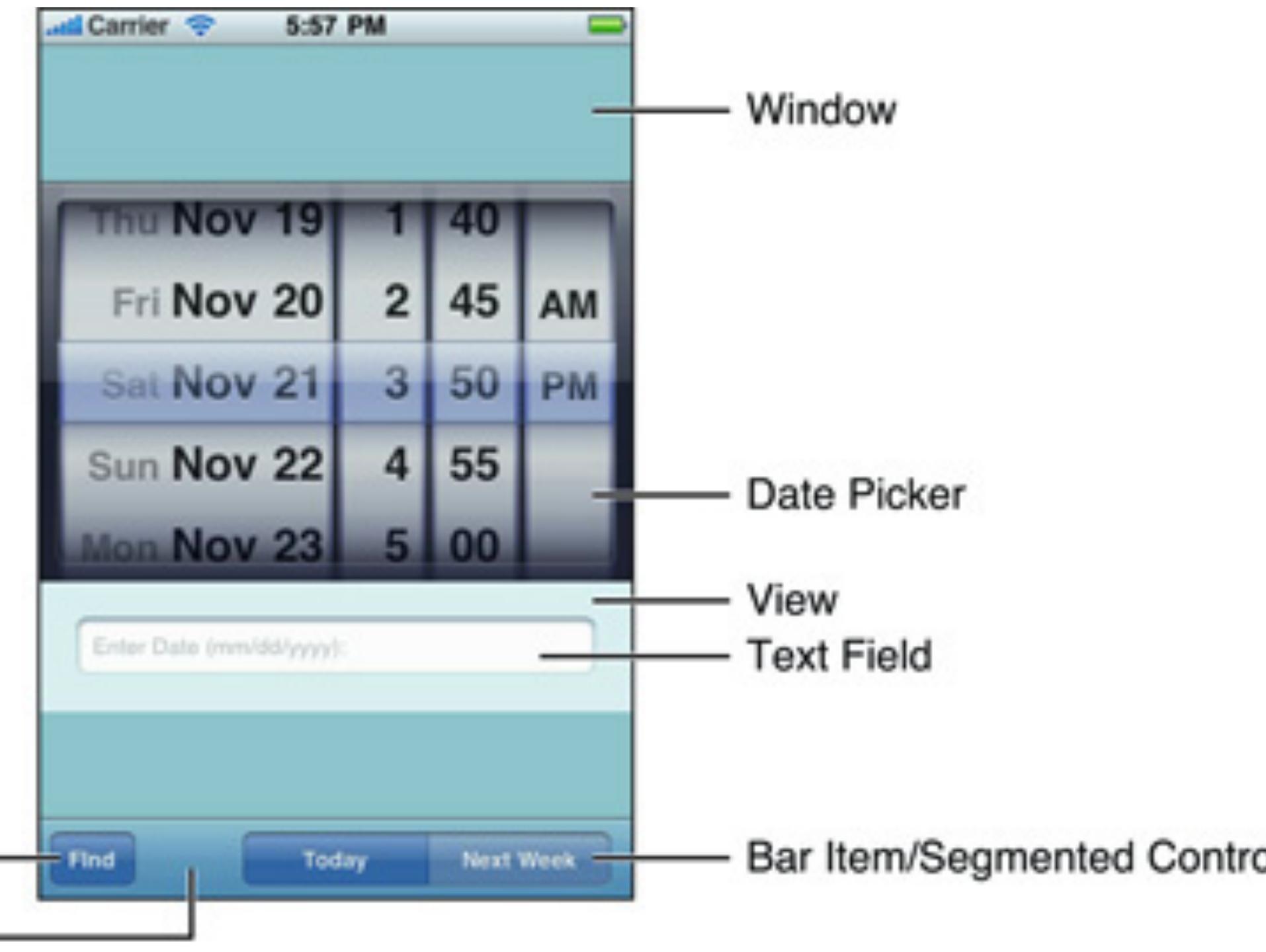
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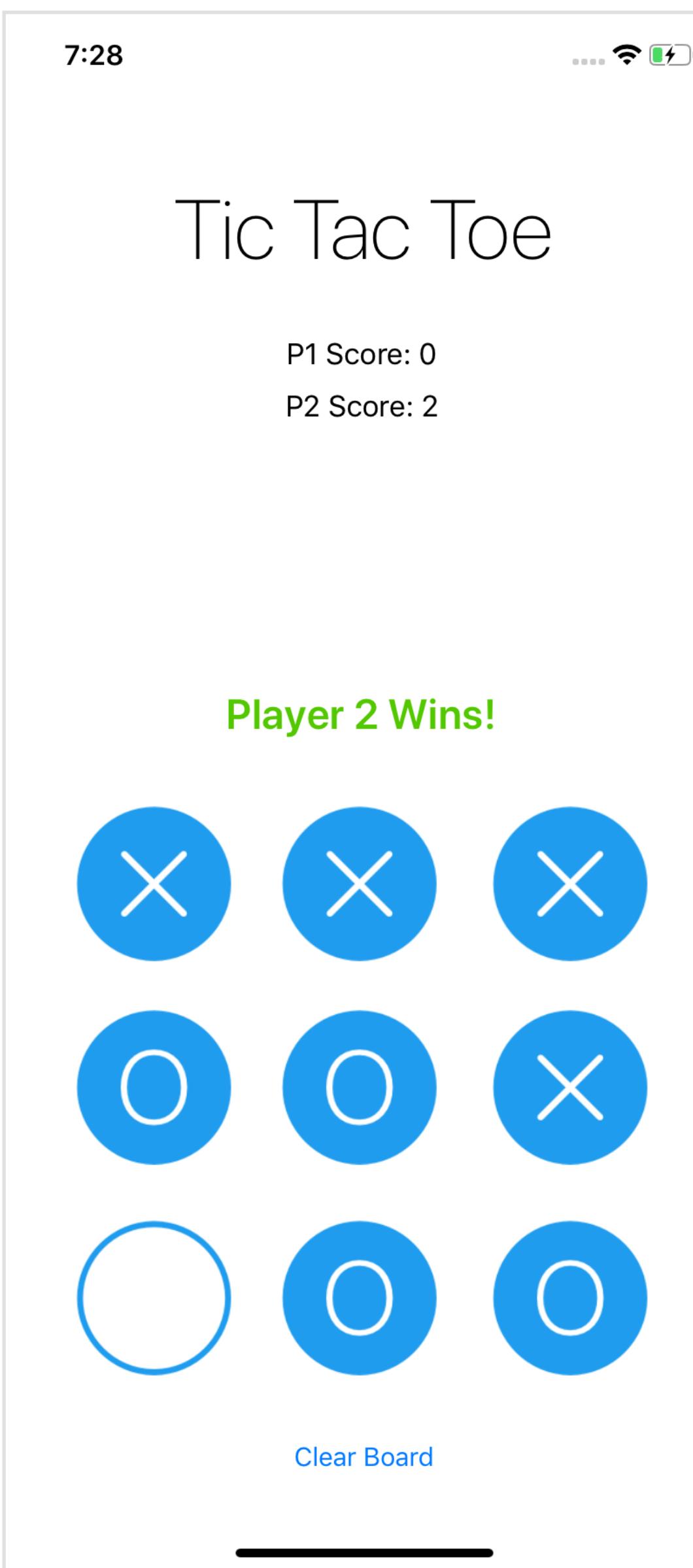
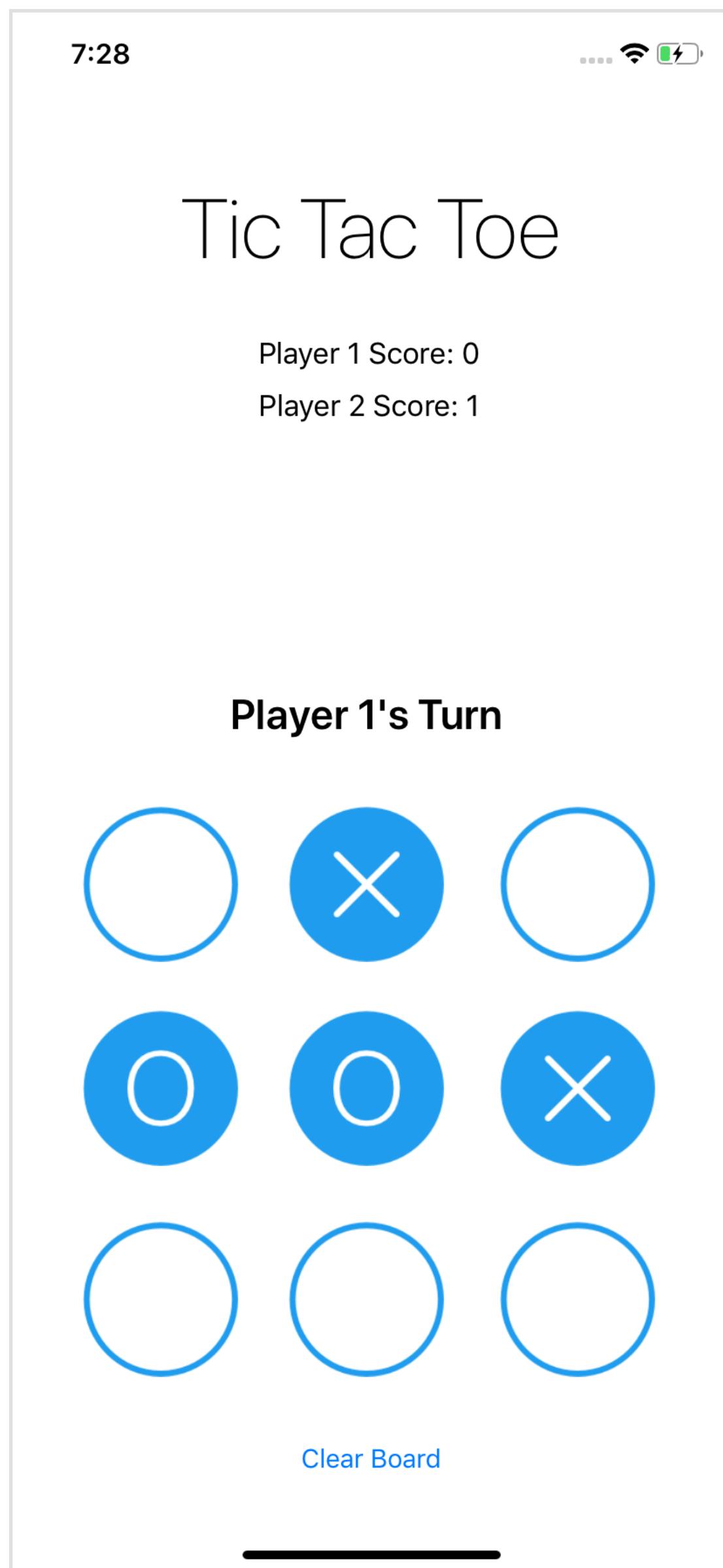


# UIView

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



# App 1: Tic Tac Toe



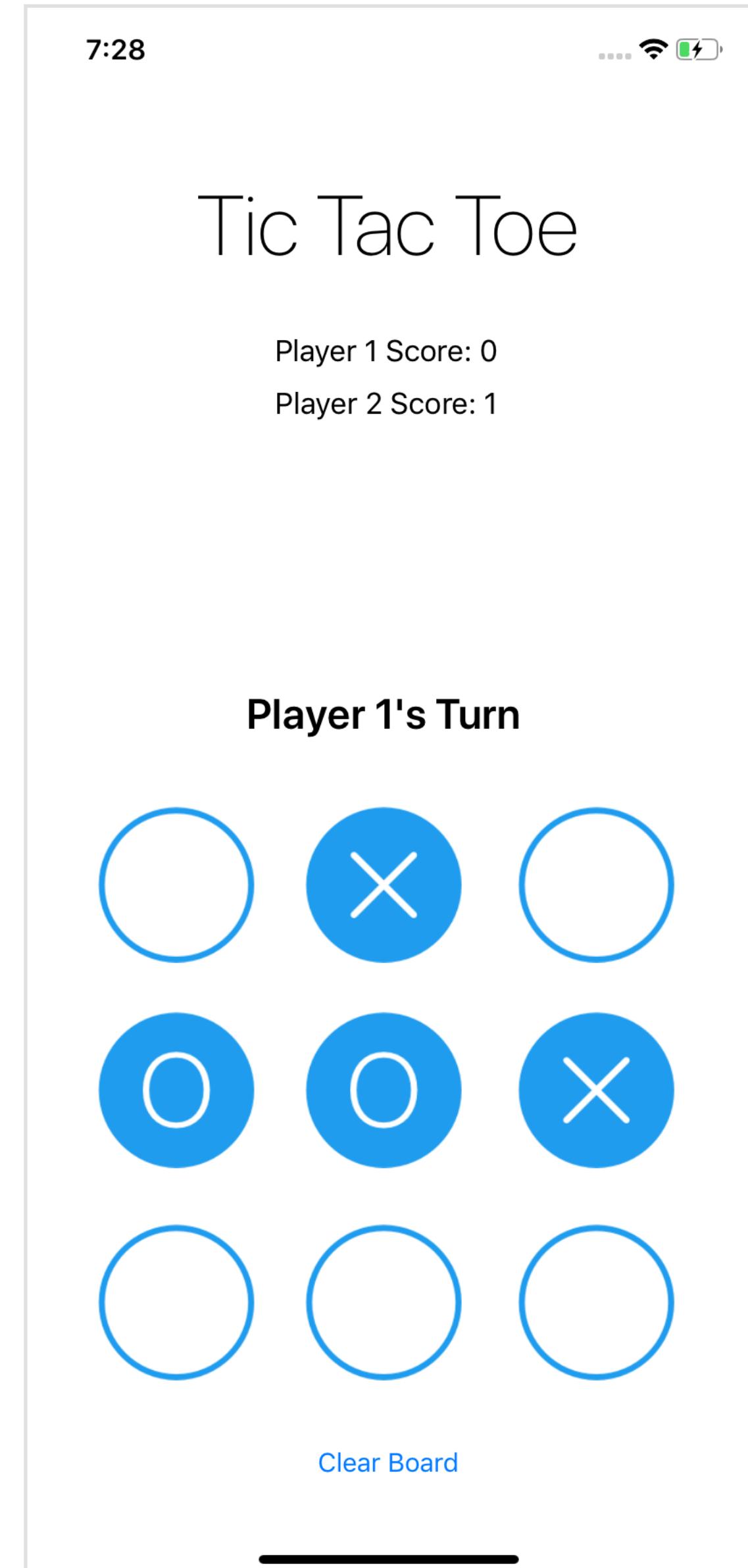
# Tic Tac Toe

Player 1 Score: 0  
Player 2 Score: 1



# App 1: Tic Tac Toe

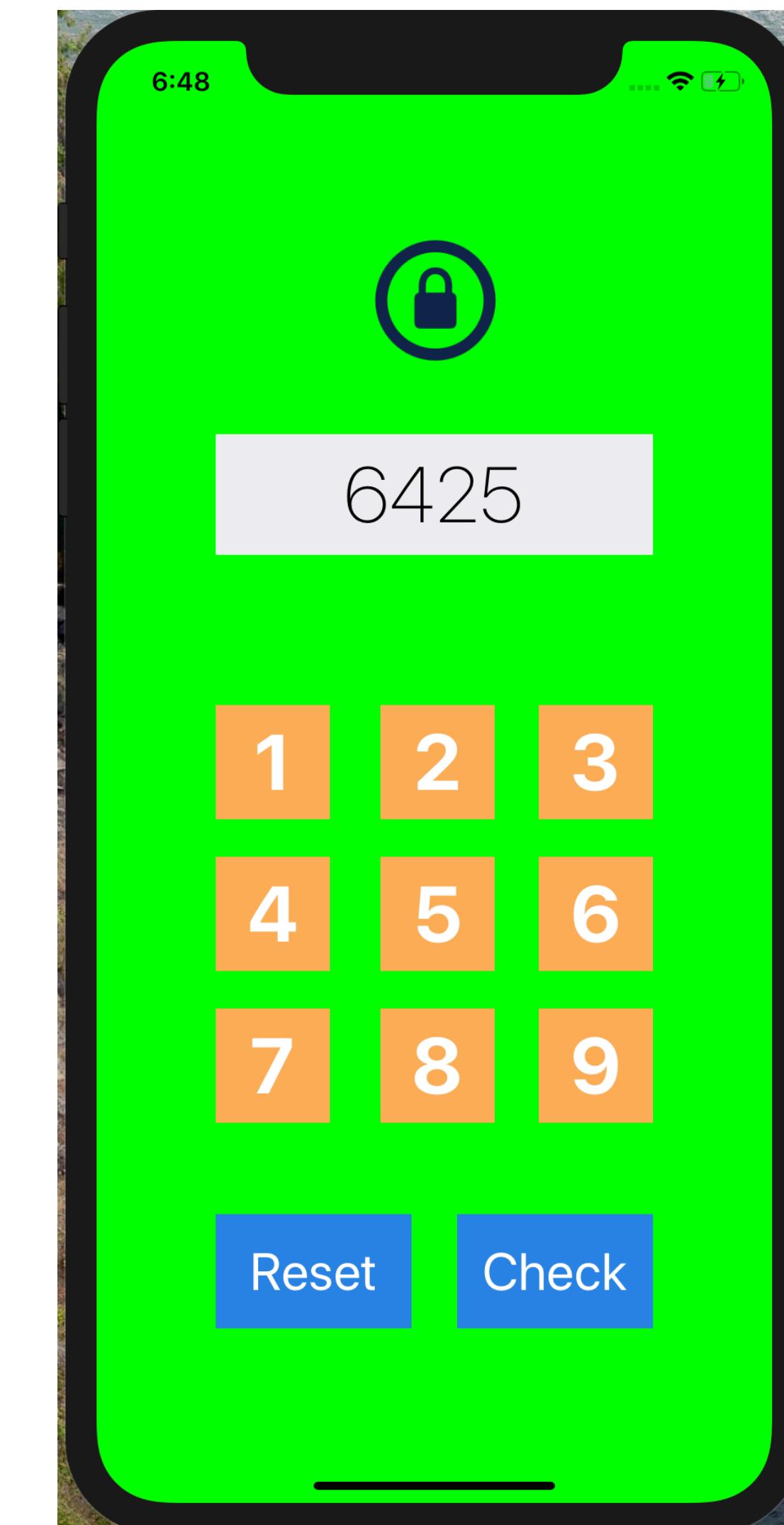
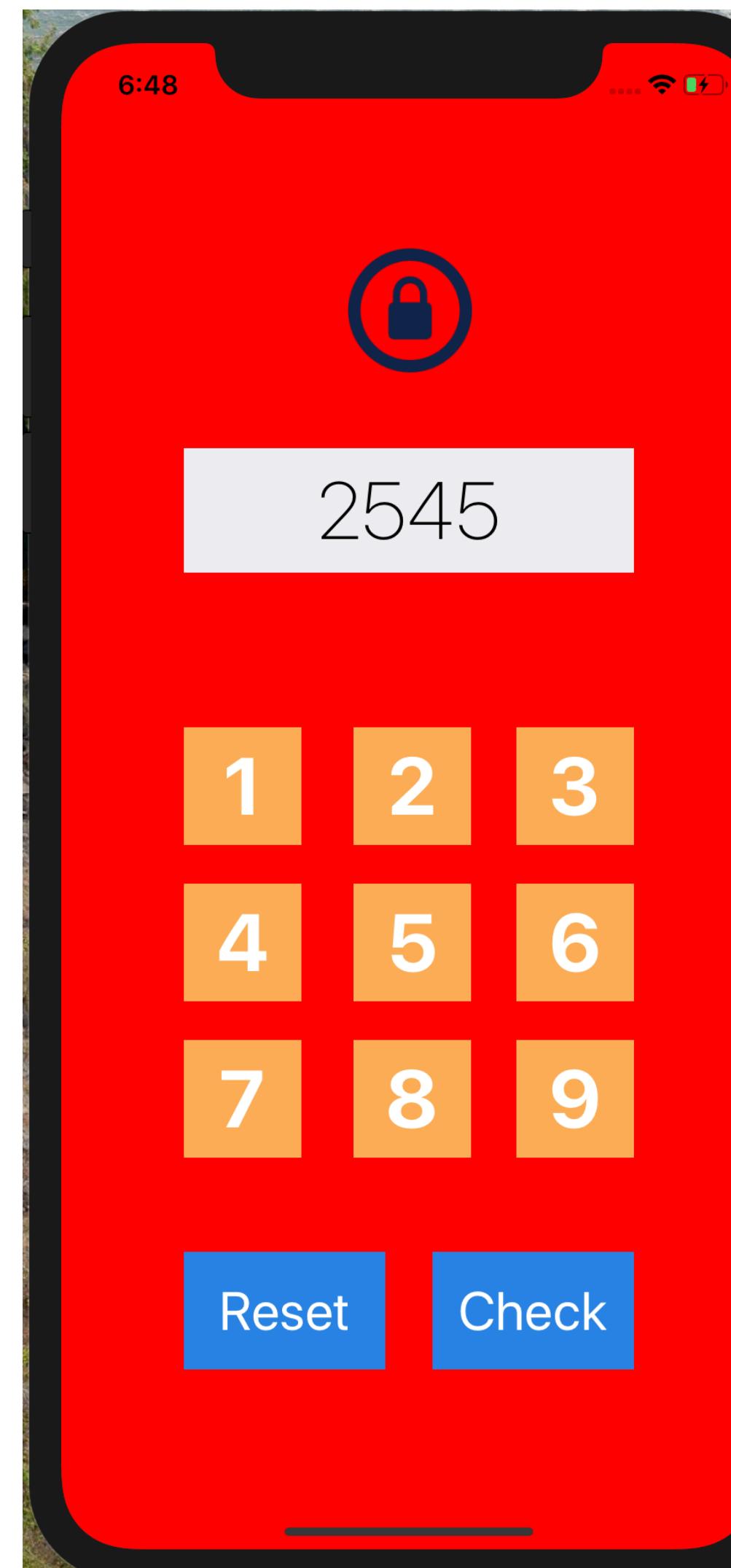
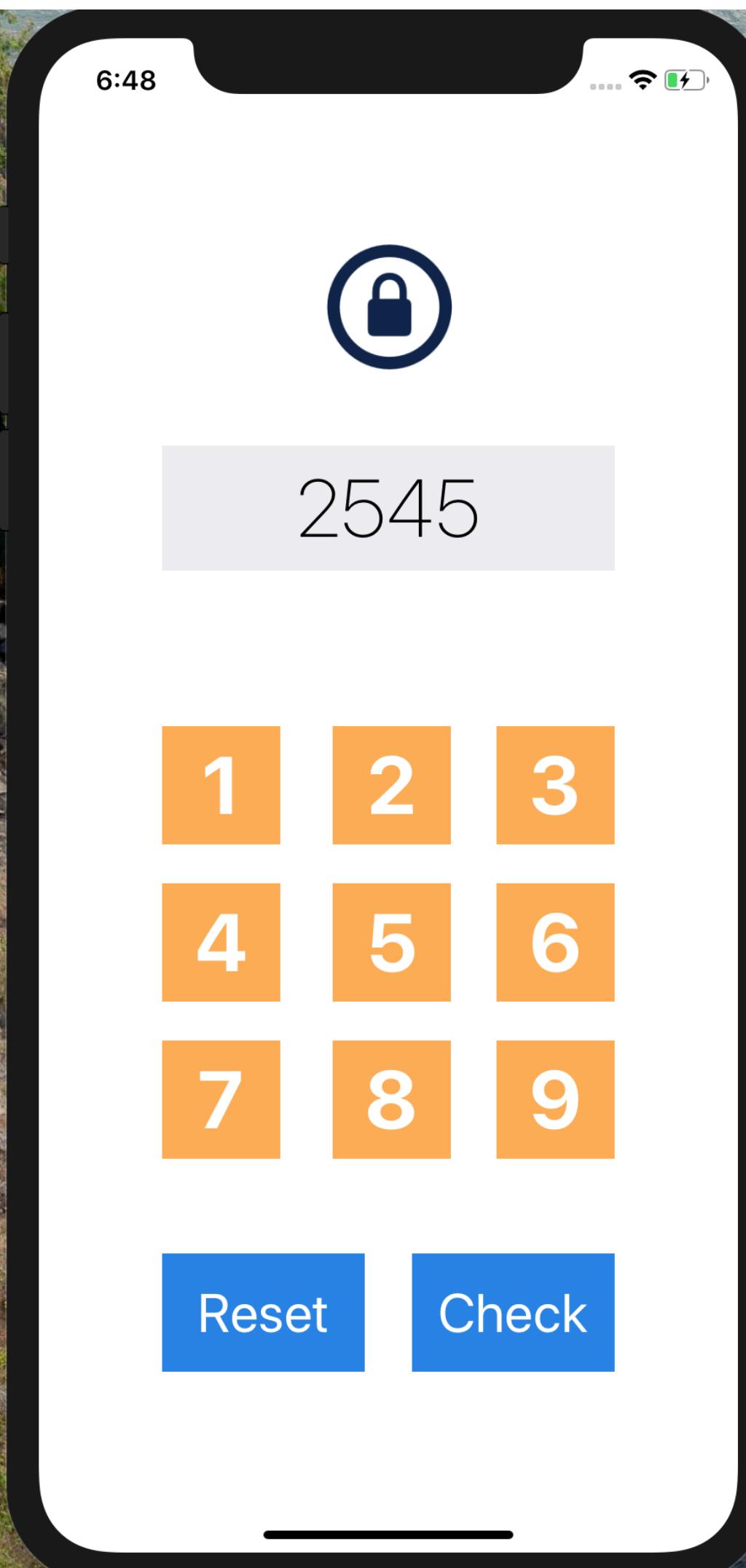
- Due next Thursday at 4:20pm:
  - The visual and **interactive** components
  - So tapping a bubble should change it to an X or an O... but it can be random. No game logic required.
- Due the week after that:
  - The full game logic
- Released tonight





# 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](http://tiny.cc/cis195-lec3)
- Piazza: [tiny.cc/cis195-piazza](http://tiny.cc/cis195-piazza)