Announcements

• Lab 1 due on Thursday by 11:59 PM
  – Email it to cse438ta@gmail.com
  – All labs must run on the iPhone 11 Pro

• We will hold Studio 2 on Thursday

Today’s Topics

• Views Introduction

• MVC

• Auto Layout Demo

• Lab 2

• MVC Demo
Views

View Fundamentals

- Rectangular area on screen
- Draws content
- Handles events
- Subclass of UIResponder (event handling class)
- Views arranged hierarchically
  - every view has one *superview*
  - every view has zero or more *subviews*
View Hierarchy - UIWindow

- Views live inside of a window

- UIWindow is actually just a view
  - adds some additional functionality specific to top level view

- One UIWindow for an iOS app
  - Contains the entire view hierarchy
  - Set up by default in Xcode template project

UIView Coordinate System

- Origin in upper left corner
- y axis grows downwards
- Units are points, not pixels
  - Points are units of coordinate system
  - Pixels are min size unit of drawing
  - Typically 2 pixels per point
  - `var ContentScaleFactor`
**View Controllers**

- **UIViewController**
  - Basic building block
  - Manages a screenful of content
  - Subclass to add your application logic
Model, View, Controller
**Model**

- Manages the app data and state
- Not concerned with UI or presentation
- Often persists somewhere
- Same model should be reusable, unchanged in different interfaces

**View**

- Present the Model to the user in an appropriate interface
- Allows user to manipulate data
- Does not store any data
  - (except to cache state)
- Easily reusable & configurable to display different data
### Controller

- Intermediary between Model & View
- Updates the view when the model changes
- Updates the model when the user manipulates the view
- Typically where the app logic lives

### Model, View, Controller
Why Model-View-Controller?

- Separating responsibilities also leads to reusability
- By minimizing dependencies, you can take a model or view class you’ve already written and use it elsewhere
- Think of ways to write fewer lines of code

Model, View, Controller

![Diagram of Model, View, Controller relationship]
Auto Layout Demo

Lab 1
Lab 2 Preview

MVC Demo