Today’s Topics

• Designing iPhone Applications
• Model-View-Controller (Why and How?)
• View Controllers

Designing iPhone Applications
Different Flavors of Mail

Organizing Content
Organizing Content

- Focus on your user’s data
- One thing at a time
- Screenfuls of content

Patterns for Organizing Content

**Navigation Bar**

**Tab Bar**
Navigation Bar

- Hierarchy of content
- Drill down into greater detail

Tab Bar

- Self-contained modes
A Screenful of Content

- Slice of your application
- Views, data, logic
Parts of a Screenful

Model-View-Controller
(Why and How?)
Why Model-View-Controller?

- Ever used the word “spaghetti” to describe code?
- Clear responsibilities make things easier to maintain
- Avoid having one monster class that does everything

- 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
Communication and MVC

View Controllers
Problem: Managing a Screenful

- Controller manages views, data and application logic
- Apps are made up of many of these
- Would be nice to have a well-defined starting point
  - A la UIView for views
  - Common language for talking about controllers

Problem: Building Typical Apps

- Some application flows are very common
  - Navigation-based
  - Tab bar-based
  - Combine the two
- Don’t reinvent the wheel
- Plug individual screens together to build an app
UIViewController

- Basic building block
- Manages a screenful of content
- Subclass to add your application logic

“Your” and Apple View Controllers

- Create your own UIViewController subclass for each screenful
- Plug them together using existing composite view controllers
“Your” and “Our” View Controllers

- Create your own UIViewController subclass for each screenful

- Plug them together using existing composite view controllers

```swift
import UIKit

class MyViewController: UIViewController {
    // A view controller will usually
    // manage views and data
    var myData = [String]()

    // And respond to actions
    @IBAction func doSomeAction(_ sender: UIButton) {
        // Do something here when button pressed
    }
}
```
The “View” in “View Controller”

- **UIViewController** superclass has a view property
  - `view`: `UIView`

- **Loads lazily**
  - On demand when requested
    - OS figures this out
  - Can be purged on demand as well (low memory)

- **Sizing and positioning the view?**
  - Depends on where it’s being used
  - Don’t make assumptions, be flexible

When to call `-loadView`?

- Don’t do it!

- **Cocoa tends to embrace a lazy philosophy**
  - Call `setNeedsDisplay()` instead of `draw(_:)`

- **Allows work to be deferred**
  - Performance!
    - Consider time to launching an application
override func viewDidLoad() {
    // Your view has been loaded
    // Customize it here if needed

    view.someWeirdProperty = true
}

override func viewWillAppear(animated: Bool)
{
    super.viewWillAppear(animated)
    // Your view is about to show on the screen
    beginLoadingDataFromTheWeb()
    startShowingLoadingProgress()
}
override func viewWillDisappear(_ animated: Bool) {
    super.viewWillDisappear(animated)
    // Your view is about to leave the screen
    rememberScrollPosition()
    saveDataToDisk()
}

Navigation View Controller Demo
Loading and Saving Data

- Lots of options out there, depends on what you need
  - UserDefaults
  - Property lists
  - SQLite
  - Web services
- Covering in greater depth in a few lectures

Saving State Across App Launches

- UserDefaults (renamed from NSUserDefaults) to read and write prefs & state
- Singleton object: `UserDefaults.standard`
- Methods for storing & fetching common types:
  ```swift
  integer(forKey: String)
  set(value: Int, forKey: String)
  ```
- Find an appropriate time to store and restore your state
UserDefaults Demo