UI Design and Storyboarding

Mobile Application Development in iOS
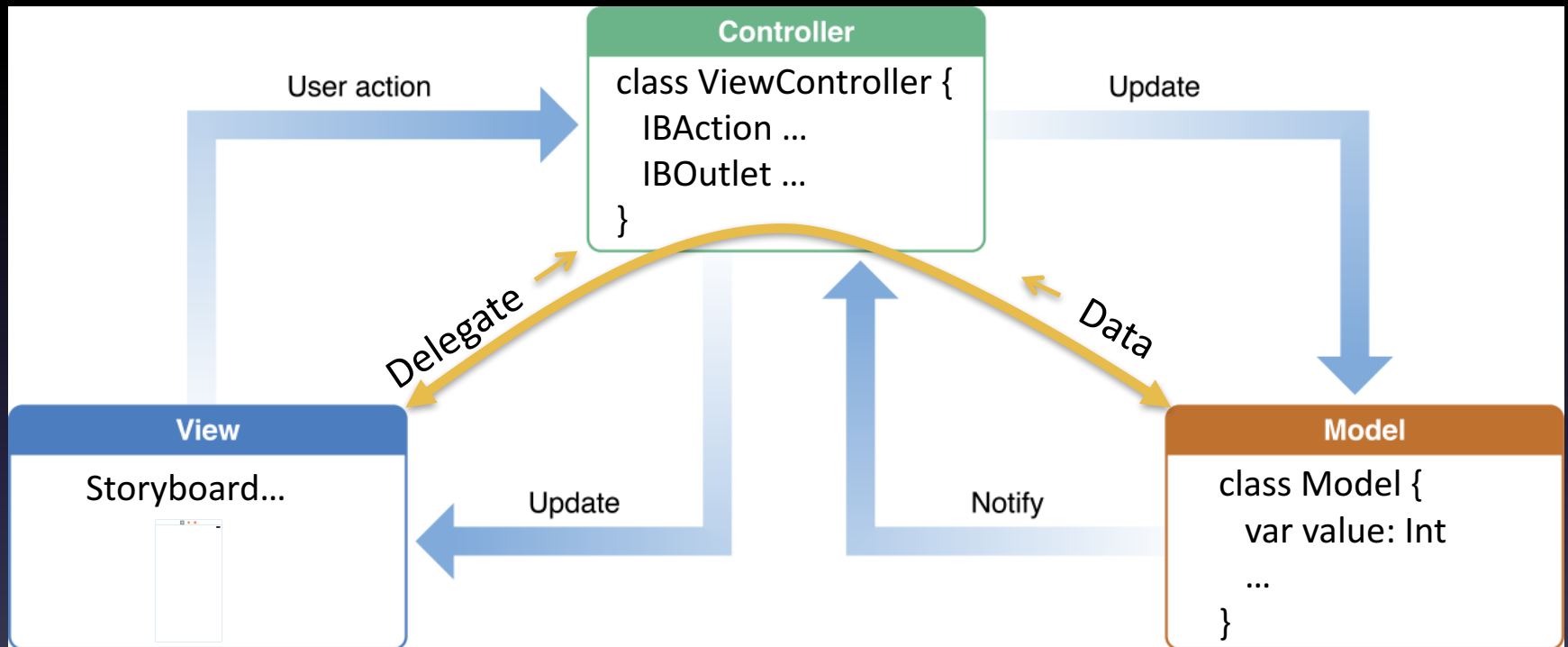
School of EECS

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Outline

- Model-View-Controller (MVC) design

- Storyboarding

- Delegates

- Multi-threading and timers

Model-View-Controller (MVC)

Model

```swift
class MyTimer {
    var initial: Int
    var current: Int
    var message: String
    var running: Bool

    init (initial: Int, message: String) {
        self.initial = initial
        self.current = initial
        self.message = message
        self.running = false
    }

    func start () {
        self.running = true
    }

    func stop () {
        self.running = false
    }
```

Model (cont.)

```
...
func reset () {
    self.running = false
    self.current = self.initial
}

// Decrements timer if running; returns true if time's up
func decrement () -> Bool {
    if (self.running) {
        current = current - 1
        if (current == 0) {
            self.running = false
            return true
        }
    }
    return false
}
}
```
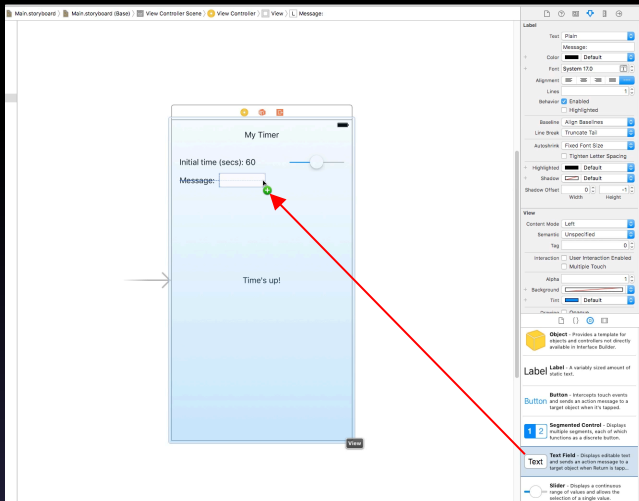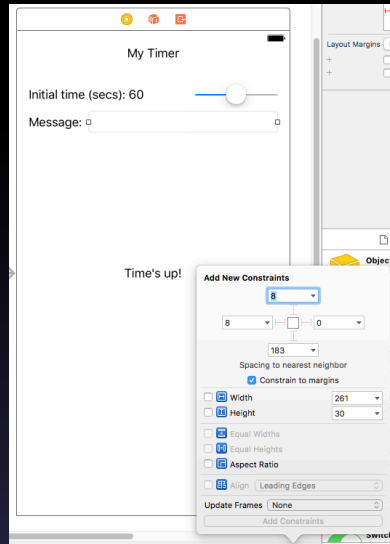
Storyboard
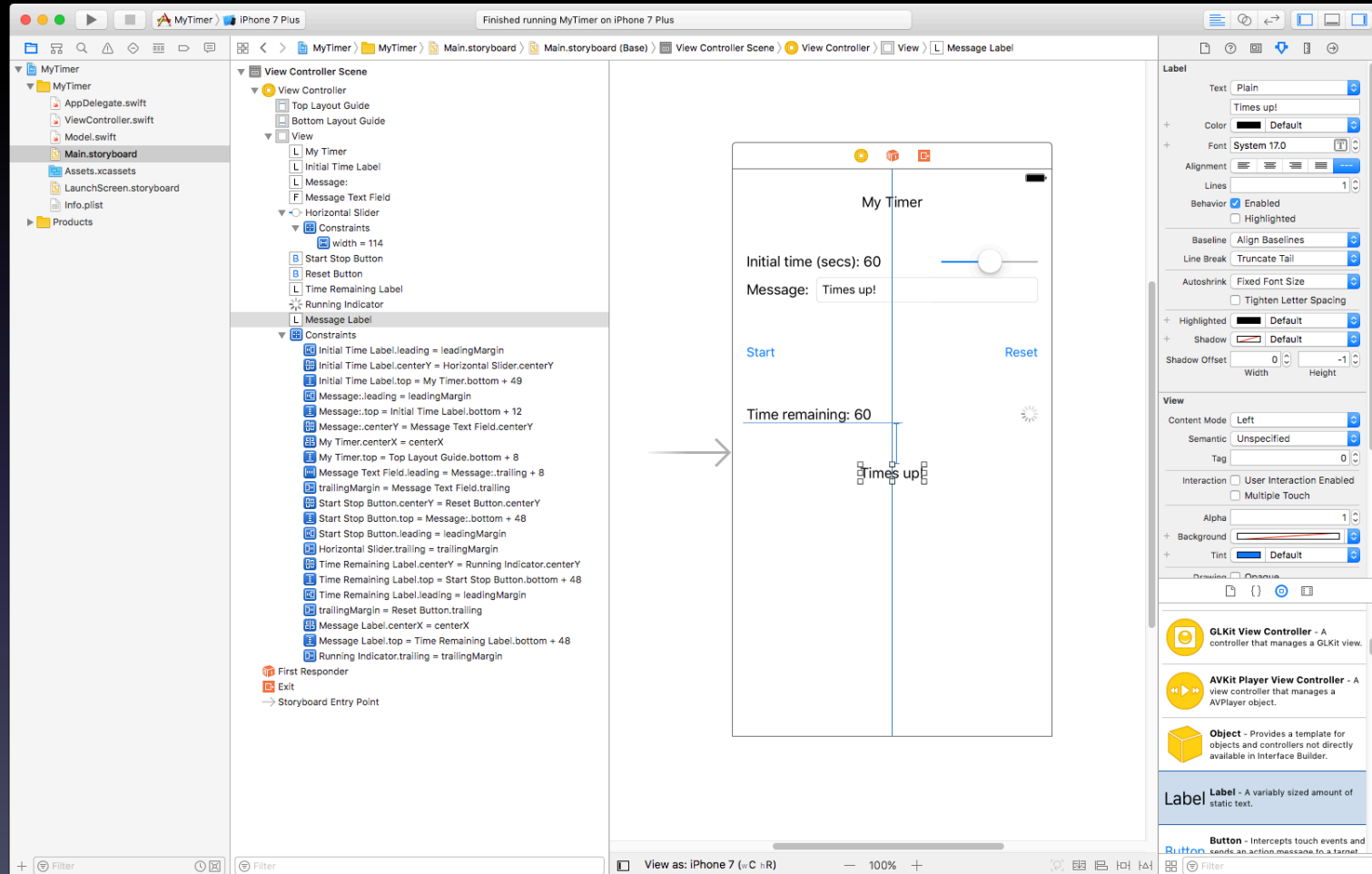
Storyboard: Adding Elements

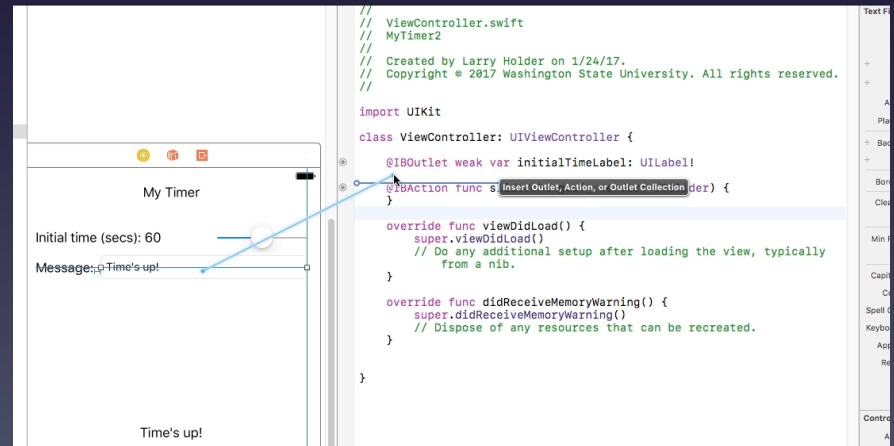**1. Drag element into view.**

2. Add layout constraints.

3. Connect element to view controller.

- Adding elements to views

  - Create IBOutlet to get/set properties of element

  - Create IBAction to detect interaction with element

Delegate

- Object that responds to events from another object

- Defines a <u>protocol</u> that must be followed
  - Required methods
  - Optional methods

- View elements generating multiple different actions used delegates (rather than IBAction)

Delegate Example: UITextField

- UITextFieldDelegate

  - textFieldDidBeginEditing

  - textFieldDidEndEditing

  - textFieldShouldReturn

- More

  - developer.apple.com/reference/uikit/uitextfielddelegate

UITextField Delegate

```swift
class ViewController: UIViewController, UITextFieldDelegate {
    @IBOutlet weak var messageTextField: UITextField!
    @IBOutlet weak var timesUpMessage: UILabel!

    func textFieldDidEndEditing(_ textField: UITextField) {
        timesUpMessage.text = textField.text
    }

    func textFieldShouldReturn(_ textField: UITextField) -> Bool {
        textField.resignFirstResponder()  // remove keyboard on Return
        return false   // do default behavior? (no difference here)
    }

    override func viewDidLoad() {
        super.viewDidLoad()
        messageTextField.delegate = self
    }
}
```

Multi-Threading

- Next time…

Timers

- Next time…