

CSC 471 / 371
Mobile Application
Development for iOS



Prof. Xiaoping Jia
School of Computing, CDM
DePaul University
xjia@cdm.depaul.edu
[@DePaulSWEEng](https://twitter.com/DePaulSWEEng)

Building UI
with Segues

Outline

- Multiple view apps
- Segues



DEPAUL UNIVERSITY 3

An App with
Two Scenes

An App with Two Scenes –
Using Segue

- Multiple scenes in a storyboard
- Using segue to switch between scenes
- The architecture
 - A storyboard with two scenes
 - The *Blue* and *Yellow* view controller
 - Each view controller has a toolbar and a button
 - The *Blue* view controller is the initial scene
 - A segue from the *Blue* scene to the *Yellow* scene

DEPAUL UNIVERSITY 5

The Blue and Yellow Screens



DEPAUL UNIVERSITY 6

The Initial Scene in Storyboard

- Start with a single view app
- Edit the initial scene in the storyboard
 - Set the background color
 - Add a Toolbar and a Bar Button Item
 - Add a Label and Buttons
 - Add constraints

DEPAUL UNIVERSITY 7

Add a New View Controller

- New File | iOS | Source | Cocoa Touch Class
- Choose options for the file
 - Class: **YellowViewController**
 - Subclass of: **UIViewController**
 - Uncheck “Also create XIB file”
 - Language: Swift

DEPAUL UNIVERSITY 8

Add a New Scene

- Add a scene in the storyboard
 - Drag a *view controller*
- Set class to **YellowViewController**
- Edit the scene
 - Set the background color
 - Add a Toolbar and a Bar Button Item
 - Add a Label and Buttons
 - Add constraints

DEPAUL UNIVERSITY 9

The Storyboard with Two Scenes

DEPAUL UNIVERSITY 10

Add a Segue – Connect the Scenes

- Control-drag from the “To Yellow” button to the the *Yellow* scene

DEPAUL UNIVERSITY 11

Add a Segue – Choose Action

- Control-drag from the “To Yellow” button to the the *Yellow* scene
 - Action segue: *Show*

DEPAUL UNIVERSITY 12

Storyboard with a Segue

Run, press *To Yellow* – perform the segue
but no return (yet).

DEPAUL UNIVERSITY 13

Switch Back to the Blue Scene

- Connect an action to the *To Blue* button in the *YellowViewController*
 - Implement the action

```
@IBAction func switchToBlue(sender: UIBarButtonItem) {
    dismissViewControllerAnimated(true, completion: nil)
}
```
- Run,
To Yellow – perform the segue
To Blue – invoke the action to dismiss view controller

DEPAUL UNIVERSITY 14

Passing Data Through Segues

The Segue App

- Three scenes and three view controllers
 - Blue, Yellow, Green
- Segues
 - Blue → Yellow
 - Yellow → Green
- Return action by dismissing view controllers
 - Yellow → Blue
 - Green → Yellow
 - Green → Blue

DEPAUL UNIVERSITY 16

Scenes and View Controllers

- Start with a single view app
- Edit the initial scene in the storyboard
 - Set the background to blue
 - Add a toolbar and button
 - Add labels and a text field
- Change the view controller name to *BlueViewController*

DEPAUL UNIVERSITY 17

Scenes and View Controllers

- Add two similar scenes to the storyboard and add two new view controller classes

DEPAUL UNIVERSITY 18

Add Segues

- Add “Show” segues
 - From the “To Yellow” button of the *Blue* scene to the *Yellow* scene
 - From the “To Green” button of the *Yellow* scene to the *Green* scene

DEPAUL UNIVERSITY 19

Dismiss View Controllers – From Yellow View Controller

- Connect the “To Blue” button of the *Yellow* scene to an action in the *YellowViewController*
- The return action to the *Blue* scene

```
@IBAction func switchToBlue(sender: UIBarButtonItem) {
    dismissViewControllerAnimated(true, completion: nil)
}
```

DEPAUL UNIVERSITY

20

Dismiss View Controllers – From Green View Controller

- Connect the “To Blue” and “To Yellow” buttons of the *Green* scene to actions in the *GreenViewController*
 - The return actions to the *Yellow* scene and the *Blue* scene

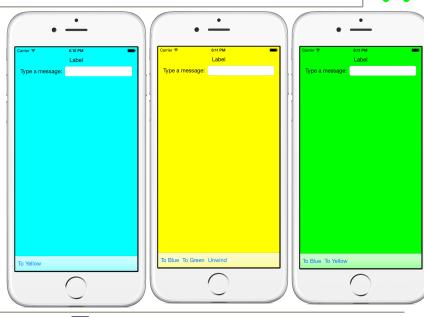
```
@IBAction func switchToBlue(sender: UIBarButtonItem) {
    var top: UIViewController = self;
    while top.presentingViewController != nil {
        top = top.presentingViewController!;
    }
    top.dismissViewControllerAnimated(true, completion: nil)
}

@IBAction func switchToYellow(sender: UIBarButtonItem) {
    dismissViewControllerAnimated(true, completion: nil)
}
```

DEPAUL UNIVERSITY 21

Run ...

- To *Yellow*
- To *Green*
- And back



DEPAUL UNIVERSITY

22

Passing Data Through Segues

- Use the method in the *presenting* view controller, i.e., the *source*

```
func prepareForSegue(segue: UIStoryboardSegue,
                    sender: AnyObject?)
```
- Invoked before the segue is performed
- The *destination* view controller can be accessed as `segue.destinationViewController`
- The presenting view controller can put data directly in the destination view controller
 - Will have examples

DEPAUL UNIVERSITY 23

Connecting Outlets

- For each view controller
 - Connect outlets to the message label and the text field
 - Connect an action to the “Did End on Exit” of the text field to dismiss keyboard

```
class BlueViewController: UIViewController {
    @IBOutlet weak var label: UILabel!
    @IBOutlet weak var textField: UITextField!
    @IBAction func doneEditing(sender: UITextField) {
        sender.resignFirstResponder()
    }
    ...
}
```

DEPAUL UNIVERSITY

24

Prepare for Segue

- Define the method `prepareForSegue` in the `BlueViewController`
- To prepare for the segue from the `Blue` scene to the `Yellow` scene

```
override func prepareForSegue(segue: UIStoryboardSegue,
                             sender: AnyObject?) {
    if let target = segue.destinationViewController as?
        YellowViewController {
        target.label.text = "From BlueViewController"
    }
}
```

DEPAUL UNIVERSITY

25

Prepare for Segue

- Let's run the app
 - Press the “`To Yellow`” button
 - Crash!

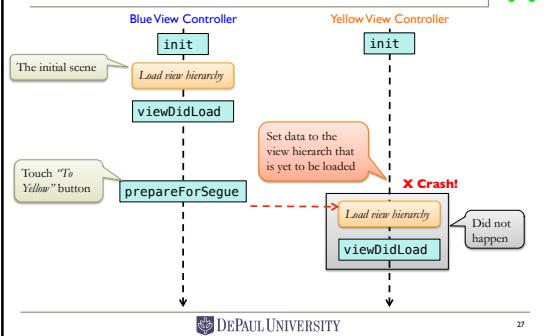
fatal error: unexpectedly found nil while unwrapping an Optional value

- Why?
 - The `Yellow` view controller has been initialized, but not its view hierarchy
 - The view hierarchy is initialize when the view becomes visible.
 - Important:** Access the view objects only from within the view controller associated with the view.

DEPAUL UNIVERSITY

26

View Controllers and View Hierarchies



DEPAUL UNIVERSITY

27

Passing Data

- Store data in the properties of view controllers, not in view objects.
- For each view controller,
 - Add a property `message` for storing data
 - Implement the lifecycle callback `viewWillAppear`

```
class BlueViewController: UIViewController {
    @IBOutlet weak var label: UILabel!
    var message: String = "BlueViewController"
    override func viewWillAppear(animated: Bool) {
        label.text = message
    }
    ...
}
```

DEPAUL UNIVERSITY

28

Prepare for Segue, 2nd Attempt

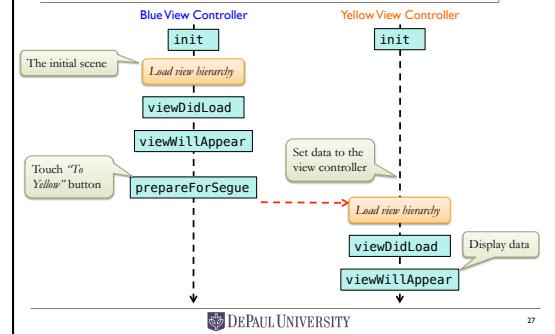
- Define the method `prepareForSegue` in the `BlueViewController`

```
override func prepareForSegue(segue: UIStoryboardSegue,
                             sender: AnyObject?) {
    if let target = segue.destinationViewController as?
        YellowViewController {
        target.message = "From BlueViewController"
        if let text = textField.text {
            target.message += "\nMessage: \(text)"
        }
    }
}
```

DEPAUL UNIVERSITY

29

View Controllers and View Hierarchies



DEPAUL UNIVERSITY

27

Run ...

- To Yellow
- To Green

DEPAUL UNIVERSITY 30

Passing Data in Return

- Revised dismiss action from the *Yellow* scene to the *Blue* scene

- The *presenting view controller*

```
@IBAction func switchToBlue(sender: UIBarButtonItem) {
    if let from = presentingViewController as?
        BlueViewController {
        from.message = "From YellowViewController"
        if let text = textField.text {
            from.message += "\nMessage: \(text)"
        }
    }
    dismissViewControllerAnimated(true, completion: nil)
}
```

DEPAUL UNIVERSITY

31

Passing Data in Return

- Revised dismiss actions of the *Green* scene
- The *presenting view controller*

```
@IBAction func switchToYellow(sender: UIBarButtonItem) {
    if let from = presentingViewController as?
        YellowViewController {
        from.message = "From GreenViewController"
        if let text = textField.text {
            from.message += "\nMessage: \(text)"
        }
    }
    dismissViewControllerAnimated(true, completion: nil)
}
```

DEPAUL UNIVERSITY 32

Passing Data in Return

```
@IBAction func switchToBlue(sender: UIBarButtonItem) {
    var top: UIViewController = self;
    while top.presentingViewController != nil {
        top = top.presentingViewController!
    }
    if let blue = top as? BlueViewController {
        blue.message = "From YellowViewController"
        if let text = textField.text {
            blue.message += "\nMessage: \(text)"
        }
    }
    top.dismissViewControllerAnimated(true, completion: nil)
}
```

DEPAUL UNIVERSITY

33

Run ...

- Return from *Green* to *Yellow*

DEPAUL UNIVERSITY 34

Unwind Segues

Unwind Segue

- You can *unwind* a segue, i.e., return to the previous scene, using an *unwind segue*
- You can also *unwind* to any previous scenes, one or more steps away
- How:
 - Define one or more *unwind actions*
 - In swift code, the destination of unwinding
 - Add *unwind segues*
 - In storyboard

DEPAUL UNIVERSITY

36

Unwind Action & Unwind Segue

- Add an *unwind action* in the destination view controller, i.e., the view controller you want to unwind to
 - Unwind action is a method with the following signature:
`@IBAction func name(segue : UIStoryboardSegue)`
 - The *name* must be unique within the context of application.
- Add an *unwind segue*
 - Control-drag from the trigger button to the *Exit* icon of the source view controller
 - Select the name of the unwind action

DEPAUL UNIVERSITY

37

Unwind Action

- Define an unwind action in the *BlueViewController*

```
@IBAction func unwindToBlue(segue : UIStoryboardSegue) {
    if let from = segue.sourceViewController as?
        YellowViewController {
        message = "Unwind from YellowViewController"
        if !from.textField.text.isEmpty {
            message += "\nMessage: \(from.textField.text)"
        }
    }
}
```

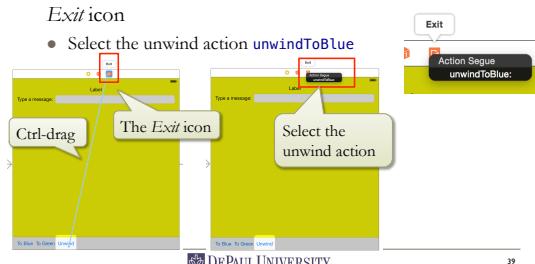
DEPAUL UNIVERSITY

38

Add an Unwind Segue

- In storyboard, add an unwind segue in the *YellowViewController*, from the “Unwind” button to the *Exit* icon

- Select the unwind action *unwindToBlue*

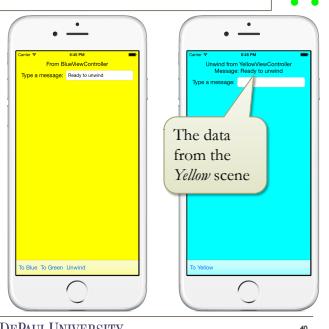


DEPAUL UNIVERSITY

39

Run ...

- Unwind from *Yellow* to *Blue*



DEPAUL UNIVERSITY

40

Sample Code

- TwoViews.zip
- Segues.zip

DEPAUL UNIVERSITY

41



Next ...

- Tabbed views
- Pickers
- Table views, static and dynamic
- Navigation views

❖ iOS is a trademark of Apple Inc.

DEPAUL UNIVERSITY