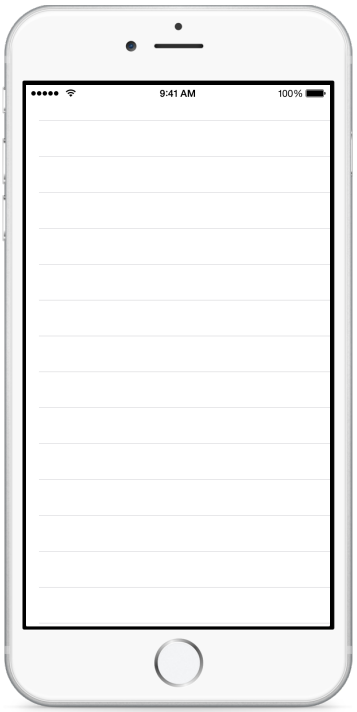
Journal
Lesson 3

Description

Add a table view controller class to the project, and bind it to the table view controller in the storyboard.



Learning Outcomes

- Practice binding user-defined classes to view controllers with Interface Builder.
- Discover the datasource and delegate dependencies of table views.
- Discover how table view controllers automatically assign a table view delegate and datasource.
- Describe the concepts of delegates and delegation, and relate them to protocols.
- Discover how table views efficiently manage memory occupied by table cells.

Vocabulary

table view controller	table view	`UITableViewController`
`UITableView`	delegate	delegation
protocol	`UITableViewDataSource`	`UITableViewDelegate`
table cell prototype	cell prototype identifier	

Materials

- **Journal Lesson 3** Xcode project
- **Table View Controllers** presentation

- **Delegates and Delegation** presentation
- **Protocols** presentation

Opening

How can we get some rows of data to appear in the table view?

Agenda

- Discuss how a table view controller manages a collection of cells, and manages the user interaction of scrolling and selecting table rows.
- Using Interface Builder, select the table view controller, open the Identity Inspector (⌥⌘3), and observe how the **Class** managing the table is a default `UITableViewController`.
- Add a new Cocoa Touch Class (⌘N) to the project called JournalTableViewController and specify a **Subclass of** `UITableViewController`.

```
import UIKit

class JournalTableViewController: UITableViewController {
...
```

- Discuss that, by specifying a `UITableViewController` subclass, Xcode generates a class definition with commonly used boilerplate code.
- Using Interface Builder, select the table view controller, and use the Identity Inspector (⌥⌘3) to change the **Class** attribute to `JournalTableViewController`.
- Run the app (⌘R), observe the empty table rows, and draw attention to the warning raised by Xcode.
- Discuss the "prototype cells must have reuse identifier" warning raised by Xcode.
- Using Interface Builder and the Document Outline (⊟), expand the hierarchy of the Journal Table View Controller, and observe how the Table View contains a Table View Cell and Content View.
- Using Interface Builder and the Document Outline (⊟), Control-click the Table View and observe how the `JournalTableViewController` is configured to act as the `delegate` and `dataSource` for the table view.
- Present the concept of table view controllers.
- Using the Documentation and API Reference (⇧⌘0), explore the `UITableViewController` class reference, and observe how it conforms to the `UITableViewDelegate` and the `UITableViewDataSource` protocols.
- Present the concept of protocols.

- Using the Documentation and API Reference (⇧⌘0), explore the `UITableViewDelegate` and the `UITableViewDataSource` protocol references.
- Present the concept of delegates and delegation.
- Using Interface Builder, select the prototype cell in the table view controller, open the Attributes Inspector (⌥⌘4), set the **Identifier** attribute to **JournalEntryCell**, and observe the Xcode warning disappear.
- Discuss how the value **JournalEntryCell** will serve as the cell reuse identifier when the table view displays the cell for a table row.
- Add a `cellIdentifier` property to the `JournalTableViewController` class.

```
class JournalTableViewController: UITableViewController {

    let cellReuseIdentifier = "JournalEntryCell"
    ...
```

- Using the Xcode Documentation and API Reference (⇧⌘0), explore the `UITableViewDelegate` protocol reference, drawing attention to the `numberOfSectionsInTableView:`, `tableView:numberOfRowsInSection:`, and `tableView:cellForRowAtIndexPath:` methods.
- Update the implementation of the `numberOfSectionsInTableView:` method.

```
override func numberOfSectionsInTableView(tableView: UITableView) ->
    Int {
    return 1
}
```

- Explain how table views in some apps may consist of multiple sections, but the journal entry list will only consist of a single section.
- Discuss how the value returned by `tableView:numberOfRowsInSection:` will eventually be determined by the data model.

```
override func tableView(tableView: UITableView,
    numberOfRowsInSection section: Int) -> Int {
    // TODO: determined by number of journal entries
    return 0
}
```

- Uncomment and update the boilerplate `tableView:cellForRowAtIndexPath:` method implementation.

```
override func tableView(tableView: UITableView, cellForRowAtIndexPath
   indexPath: NSIndexPath) -> UITableViewCell {
   let cell =
      tableView.dequeueReusableCellWithIdentifier(cellReuseIdentifier,
         forIndexPath: indexPath) as! UITableViewCell
   // Configure the cell...
   return cell
}
```

- Discuss how the `cellReuseIdentifier` property value matches the cell prototype **Identifier** attribute specified in Interface Builder.
- Run the app (⌘R), observe the empty table cells appear, and observe that Xcode does not report any warnings.

Closing

What is the significance of the `#MARK` comments we see in the `JournalTableViewController` implementation?

Modifications and Extensions

- Create one new class that adopts the `UITableViewDataSource` protocol, and another class that adopts the `UITableViewDelegate` protocol. Delete the existing `dataSource` and `delegate` connections of the table view, and re-establish the connections to instances of the delegate and protocol classes you create.

Resources

Table View Programming Guide for iOS https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/TableView_iPhone/AboutTableViewsiPhone/AboutTableViewsiPhone.html

Cocoa Core Competencies: Delegation https://developer.apple.com/library/ios/documentation/General/Conceptual/DevPedia-CocoaCore/Delegation.html

Cocoa Core Competencies: Protocol https://developer.apple.com/library/ios/documentation/General/Conceptual/DevPedia-CocoaCore/Protocol.html

UIKit User Interface Catalog: Table Views https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/UIKitUICatalog/UITableView.html

UITableViewController Class Reference https://developer.apple.com/library/ios/documentation/UIKit/Reference/UITableViewController_Class/index.html

UITableView Class Reference https://developer.apple.com/library/ios/documentation/UIKit/Reference/UITableView_Class/index.html

UITableViewDelegate Protocol Reference https://developer.apple.com/library/ios/documentation/UIKit/Reference/UITableViewDelegate_Protocol/index.html

UITableViewDataSource Protocol Reference https://developer.apple.com/library/ios/documentation/UIKit/Reference/UITableViewDataSource_Protocol/index.html