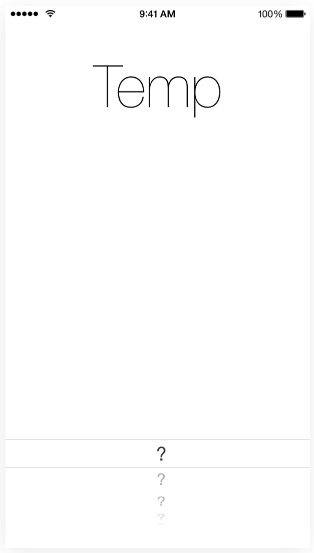
UnitConverter
Lesson 2

Description

Set the main view controller as the picker view data source.



Learning Outcomes

- Recognize the dependencies of interface components, such as `UIPickerView`.
- Define Swift protocols and relate them to object-oriented interfaces.
- Apply a protocol adoption in Swift.
- Experiment with protocol method implementations to observe how they affect the caller.
- Recognize the Swift external parameter name syntax.

Vocabulary

connection well	`UIPickerView`	protocol
object-oriented interface	protocol adoption	Issue Navigator
`UIPickerViewDataSource`	method prototype	implementation
external parameter name		

Materials

- **UnitConverter Lesson 2** Xcode project
- **Picker Views** presentation
- **Protocols** presentation

Opening

What does the picker view need in order to do its job?

Agenda

- Run the app (`⌘R`) and observe that the picker is unpopulated with the California city names.
- Present the picker view, and the need for a data source and delegate.
- Using Interface Builder, set the main View Controller as the picker view datasource by Control-clicking on the picker view, and dragging a connection from the `dataSource` connection well to the View Controller in the Document Outline (◧).
- Run the app, observe the crash, and inspect the console output: "[UnitConverter.ViewController numberOfComponentsInPickerView:]: unrecognized selector sent to instance."
- Discuss how the picker view's data source is the view controller, but the `ViewController` class does not yet implement the methods that conform to the `UIPickerViewDataSource` protocol.
- Using the Xcode Documentation and API Reference (`⇧⌘0`), explore the `UIPickerViewDataSource` Protocol Reference and the methods `numberOfComponentsInPickerView:` and `pickerView:numberOfRowsInComponent:`.
- Add the `UIPickerViewDataSource` protocol declaration to the controller class.

```
class ViewController: UIViewController, UIPickerViewDataSource {
```

- Present the concept of protocols.
- View the Issue Navigator (`⌘4`), and notice the warnings indicating the methods necessary for conforming to the `UIPickerViewDataSource` protocol.
- Implement `numberOfComponentsInPickerView:` and `pickerView:numberOfRowsInComponent:`.

```
func numberOfComponentsInPickerView(pickerView: UIPickerView) -> Int {
   return 1
}

func pickerView(pickerView: UIPickerView, numberOfRowsInComponent
   component: Int) -> Int {
   return 10
}
```

- Explain the use of the external parameter name in the `pickerView:numberOfRowsInComponent:` method and the need to include the name when calling the method.
- Explain how the picker view will call these methods to determine how many flickable components it has and how many rows are in the picker view.
- Run the app (⌘R), and observe that the picker has one scrollable element that contains ten rows.
- Experiment with different return values for `numberOfComponentsInPickerView:` (e.g., `3`) and `pickerView:numberOfRowsInComponent:` (e.g., `2` or `20`). Run the app (⌘R) to observe how the picker view changes based on the return values from these two protocol methods.
- Discuss the relationship between the two protocol methods and the picker view.

Closing

Why do you think the picker view itself does not determine how many components and rows it contains?

Modifications And Extensions

- Add the picker view as a `UIPickerView` property in the `ViewController` class, and set its `dataSource` with code in `viewDidLoad`.

Resources

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

UIPickerView Class Reference https://developer.apple.com/library/ios/documentation/UIKit/Reference/UIPickerView_Class/

UIPickerViewDataSource Protocol Reference https://developer.apple.com/library/ios/documentation/iPhone/Reference/UIPickerViewDataSource_Protocol/

The Swift Programming Language: Protocols https://developer.apple.com/library/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Protocols.html

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

The Swift Programming Language: External Parameter Names https://developer.apple.com/library/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Functions.html#//apple_ref/doc/uid/TP40014097-CH10-ID167

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