GENERAL ASSEMBLY

MOBILE DEVELOPMENT

OPTIONALS + UITABLEVIEWS

Kishin Manglani

AGENDA

- Recap
- Optionals
- UITableView

RECAP

INITIALIZERS

- Initializers are called to create a new instance of a particular type. In its simplest form, an initializer is like an instance method with no parameters, written using the init keyword

```
init() {
    // perform some initialization here
}
```

ARRAY

- Arrays have some useful properties
  - count: returns the number (Int) of objects in the array
  - isEmpty: returns a Bool checking if the array is empty (0 objects)
- Append method: adds an object to the array
  - shoppingList.append(“carrots”)

```
var shoppingList = ["Eggs", "Milk"]
shoppingList.append("Carrots")
shoppingList[2]
shoppingList.isEmpty
shoppingList.count
```

```
["Eggs", "Milk"]
["Eggs", "Milk", "Carrots"]
"Carrots"
false
3
```

DICTIONARIES

- Associates keys of the same type with values of the same type
- No defined/specified ordering
- Each value is associated with a unique key, which acts as an identifier for that value within the dictionary
- Similar to a traditional dictionary: we use a key (word) to look up a value (definition)
- Provides more meaning than merely index numbers

```
var favoriteColors = ["Kishin" : "blue", "John" : "green"]
favoriteColors["Kishin"]
favoriteColors["Kishin"] = "orange"
favoriteColors["Kishin"]
```

FOR LOOPS

```
for var i = 0; i < 3; i++
{
    print(i)
}
```

FOR LOOPS

```
for i in 0...2 {
    print(i)
}
```

FOR LOOPS

```
var shoppingList = ["Eggs", "Milk", "Cheese"]
for item in shoppingList {
    print(item)
}
```

```
["Eggs", "Milk", "Cheese"]

(3 times)
```

INHERITANCE

- A class can inherit methods, properties, and other characteristics from another class. When one class inherits from another, the inheriting class is known as a subclass, and the class it inherits from is known as its superclass

```
class SomeSubclass: SomeSuperclass {
    // subclass definition goes here
}
```

PROTOCOLS

- Here's an example:

```
protocol Swimmer {
    func swim()
}
```

- Notice how we do not need to provide an implementation (any code for the function) it is just the definition

PROTOCOLS

- Here's how we adopt the protocol

```
class Frog: Animal, Swimmer {
    func swim() {
        print("I'm swimming")
    }
}
```

- When adopting the protocol we need to implement the required methods

SUMMARY

- Variable
- Constant
- Int
- Bool
- String
- Double
- UIView
- UIViewController
- Navigation Controller
- Tab Bar Controller
- Segue
- Storyboard
- IBOutlet
- IBAction
- If/Else
- <, >, <=, >=, ==
- &&, ||
- Class
- Subclass
- Superclass
- Override
- Initializer
- Protocol
- Array
- Set
- Dictionary
- For Loop

OBJECTIVES

- Learn what optionals are and why we use them
- Start building with UITableView

OPTIONALS

OPTIONALS

- Is zero the same as nothing?

OPTIONALS

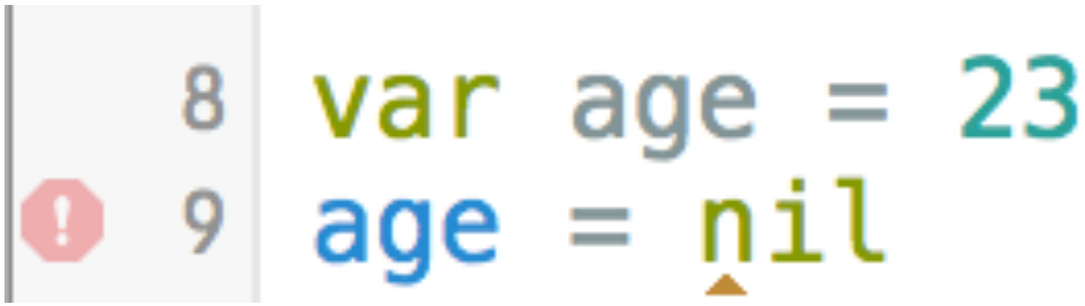
```
func findItem(itemName: String, shoppingList: Array<String>) -> String {
    for item in shoppingList {
        if item == itemName {
            return item
        }
    }
    //return ??
}
```

OPTIONALS

- What does optional mean in English? Not required
- An optional in Swift means that value is not required
- Before when we created an Int variable it needed to actually have some number value
- Now we can set that value to nothing, in other words the value is not required

OPTIONALS

- So we actually need a name or object to represent nothing
- In Swift we use nil to represent nothing
- Before we could not assign nil to a variable



OPTIONALS

- Instead, to declare something as optional we can add a ? to the end of the type
- Adding the ? makes it an optional type, meaning that variable can now be assigned nil

```
var height: Int? = 180
height = nil
```

OPTIONALS

- Optionals say either “there is a value, and it equals x” or “there isn’t a value at all” (nil)
- Something can only be nil if it is an optional

OPTIONAL BINDING

- Here we can check to see if the optional is assigned a value:

```
if let constantName = someOptional {
    statements
}
```

FORCED UNWRAPPING

- Sometimes it's clear that our optional will ALWAYS have a valuable
- If we know that a value will always have a value, we can use an !
- We can just think of it as Swift saying, "Hey, I know you are an optional, and I know you have a value"

```
var height: Int? = 180

func incrementInt(number: Int) -> Int {
    return number + 1
}

incrementInt(height!)
```

OPTIONAL CHAINING

- If we use ! and the value doesn’t exist our app can crash, that’s why I call it a force unwrap

OPTIONALS

- Why would we want to assign an object to nil?
- Sometimes things fail or sometimes things don't have values because it doesn't make sense

```
let possibleNumber = "123"
let convertedNumber = Int(possibleNumber)
```

OPTIONALS

- To sum up optionals:
  - Now variables and constants can be assigned nil (nothing)
  - In order to be assigned nil, they need to be of the Optional type
  - To make something an Optional type we add a ? to the end of the type name

UITABLEVIEW

TABLE VIEWS

- Table views are a one dimensional list
  - Vocabulary:
    - Section: All table views contain 1 or more sections; these are logical divisions of data
    - Row: Every section has a number of rows, which are entries in that section, each row has a UITableViewCell
    - Index path: The combination of a section and row that is a unique position in a table view
    - Cell: The view that is displayed for an index path (the class UITableViewCell is a subclass of UIView)
- Table views must have a number of sections, a number of cells in each section, and (optionally), the cells themselves
- Table views have a data source and a delegate (these are protocols)
  - Data source: Provides cells, number of cells and sections
  - Delegate: Gets called when things happen to the table view, provides some views (e.g. header and footer)

CODE ALONG

CHALLENGE

LAB

- Challenge 1: Add an array of strings to the view controller and display each item in the array in a row
- Challenge 2: Create a new Swift file called Todo. In the file create a class called Todo with a String property called item and a Bool isDone property.
- Challenge 3: Replace the array of Strings with an array of Todos and display each todo item
- Challenge 4: Add a checkmark to each Todo item (hint: look at cell.accessoryType)
- Challenge 5: implement the didSelectRowAtIndexPath method to toggle the checkmark