GENERAL ASSEMBLY

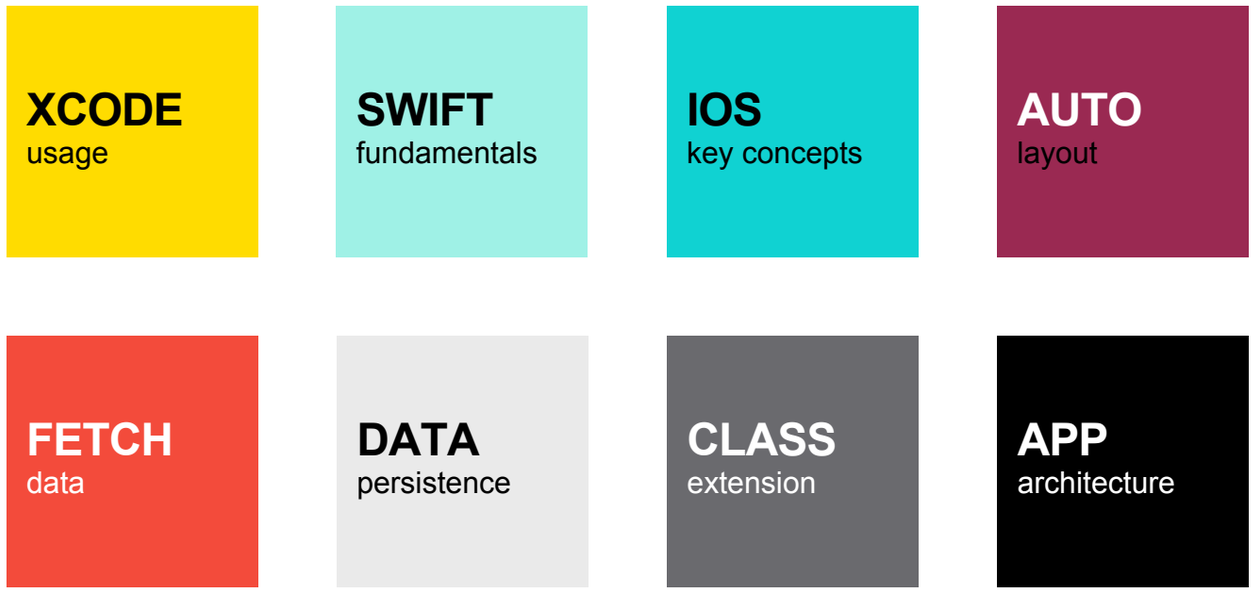
INTRO TO SWIFT

Giorgio Natili @giorgionatili, Lead UI Engineer / Mobile Developer / Agile Coach

AGENDA

- What’s New in XCODE 6
- The Swift Language
- Key Concepts
- Generic, Extensions and Overload
- iOS Auto Layout
- User Interaction and Segues
- Remote and Local Data
- Core Data Basic
- UITableView and Custom Cells

TAKEAWAY


XCODE
usage
SWIFT
fundamentals
IOS
key concepts
AUTO
layout
FETCH
data
DATA
persistence
CLASS
extension
APP
architecture

HELLO!

GIORGIO NATILI

- Lead UI Engineer / Mobile Developer / Agile Coach
- Front-end Developer
- Mobile Full Stack (Cordova, iOS, Android)
- Technology Enthusiast
- Open Source Fellow
- Mentor @ Airpair.com

HELLO!

ISAAC ZARSKY

- Software Engineer and UI/UX Designer
- Full Stack Developer
- Trying to Teach Himself Guitar Without Much Success
- Just This Guy, You Know?

MOBILE TEA

mobile tea

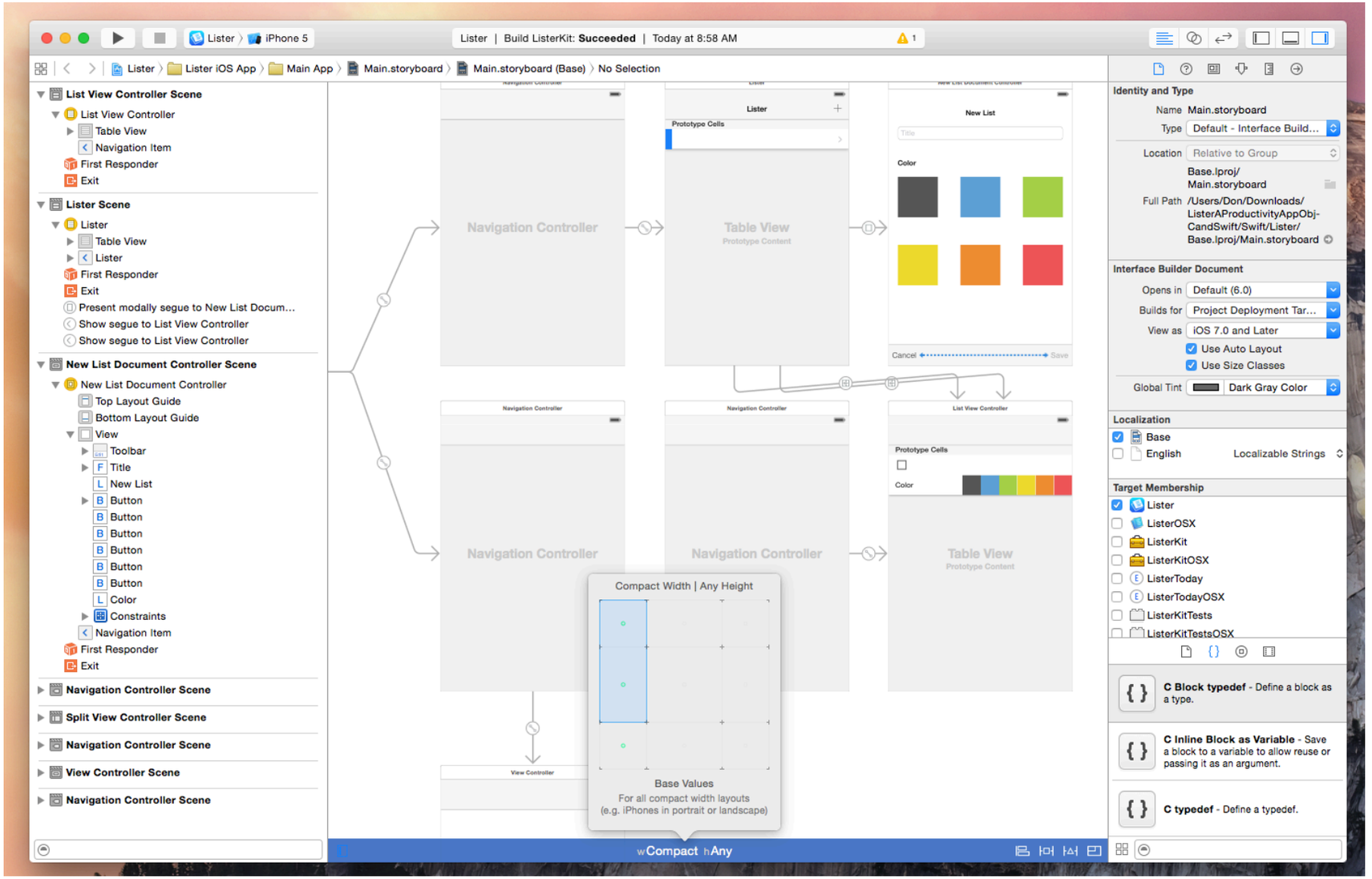
http://www.meetup.com/mobiletea

XCODE 6.X

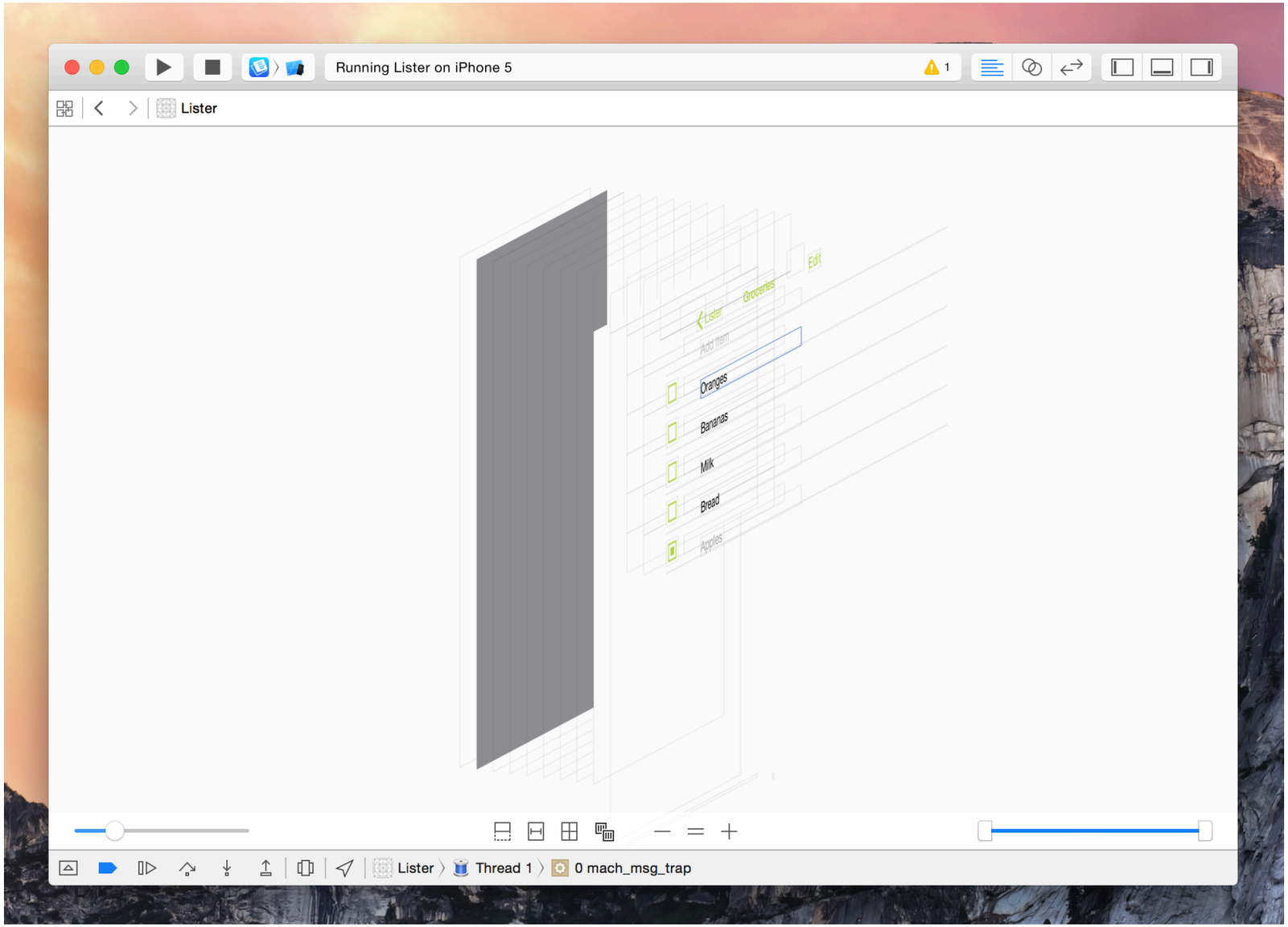
FEATURES

- Live rendering
- Size Classes
- Visual view debugging
- Playground
- Read-eval-print loop CLI
- Swift
- Asynchronous code testing
- iOS simulator

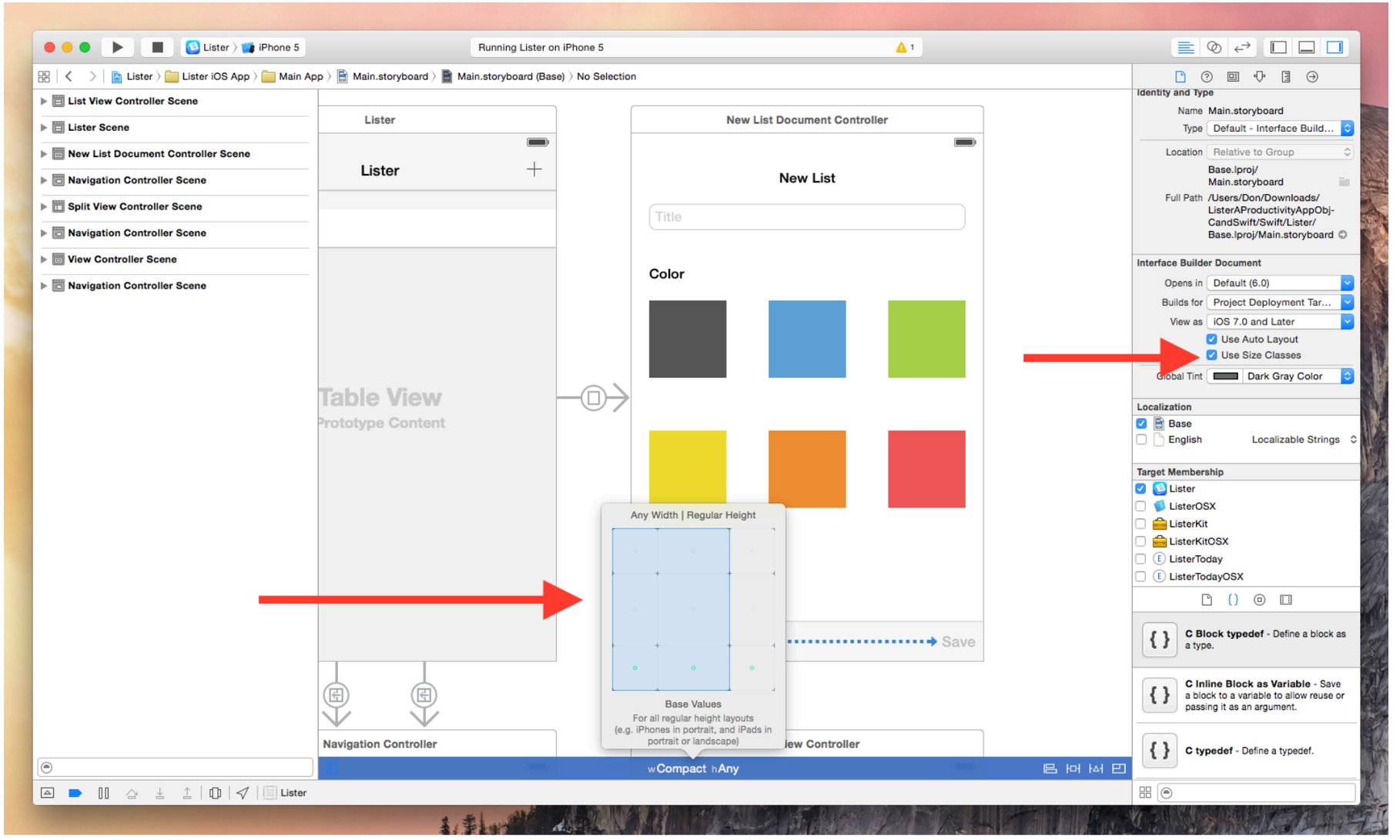
VISUAL DESIGN



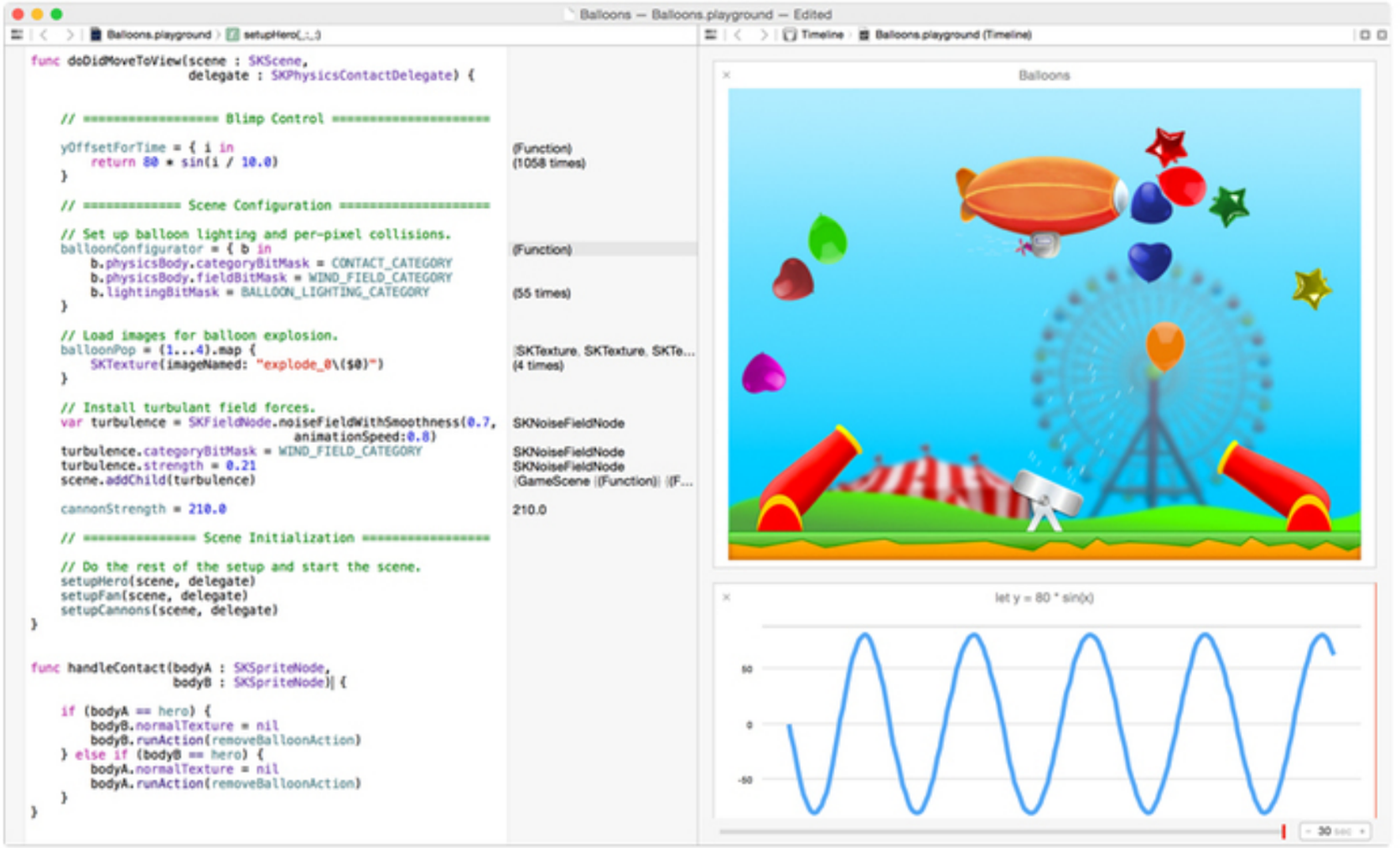
LIVE RENDERING



MULTI SCREEN DESIGN



PLAYGROUND


Balloons — Balloons.playground — Edited
Balloons.playground
setupHero(_:_:)
Timeline
Balloons.playground (Timeline)
Balloons
let y = 80 * sin(x)
50
0
-50
func doDidMoveToView(scene : SKScene,
delegate : SKPhysicsContactDelegate) {
// ================== Blimp Control ====================
yOffsetForTime = { i in
return 80 * sin(i / 10.0)
}
// ============= Scene Configuration ====================
// Set up balloon lighting and per-pixel collisions.
balloonConfigurator = { b in
b.physicsBody.categoryBitMask = CONTACT_CATEGORY
b.physicsBody.fieldBitMask = WIND_FIELD_CATEGORY
b.lightingBitMask = BALLOON_LIGHTING_CATEGORY
}
// Load images for balloon explosion.
balloonPop = (1...4).map {
SKTexture(imageNamed: "explode_0\($0)")
}
// Install turbulant field forces.
var turbulence = SKFieldNode.noiseFieldWithSmoothness(0.7,
animationSpeed:0.8)
turbulence.categoryBitMask = WIND_FIELD_CATEGORY
turbulence.strength = 0.21
scene.addChild(turbulence)
cannonStrength = 210.0
// ============== Scene Initialization =================
// Do the rest of the setup and start the scene.
setupHero(scene, delegate)
setupFan(scene, delegate)
setupCannons(scene, delegate)
}
func handleContact(bodyA : SKSpriteNode,
bodyB : SKSpriteNode) {
if (bodyA == hero) {
bodyB.normalTexture = nil
bodyB.runAction(removeBalloonAction)
} else if (bodyB == hero) {
bodyA.normalTexture = nil
bodyA.runAction(removeBalloonAction)
}
}
(Function)
(1058 times)
(Function)
(55 times)
[SKTexture, SKTexture, SKTe...
(4 times)
SKNoiseFieldNode
SKNoiseFieldNode
SKNoiseFieldNode
[GameScene, (Function), (F...
210.0

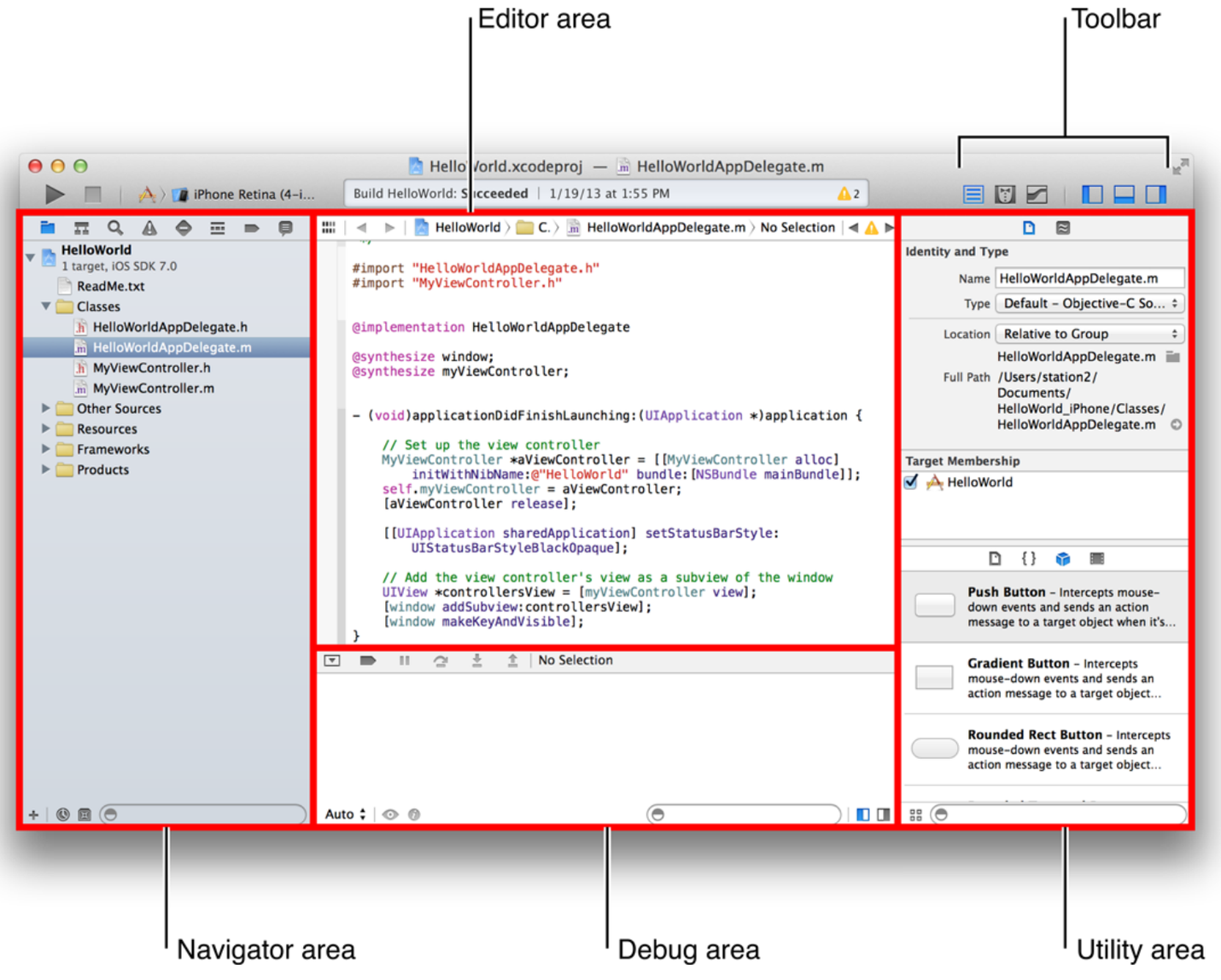
IOS SIMULATOR

- Improved SDK maintaining
- More devices
- Resizable devices

ASYNCHRONOUS CODE TESTING

- XCTest API enhancements
- Network calls
- File IO

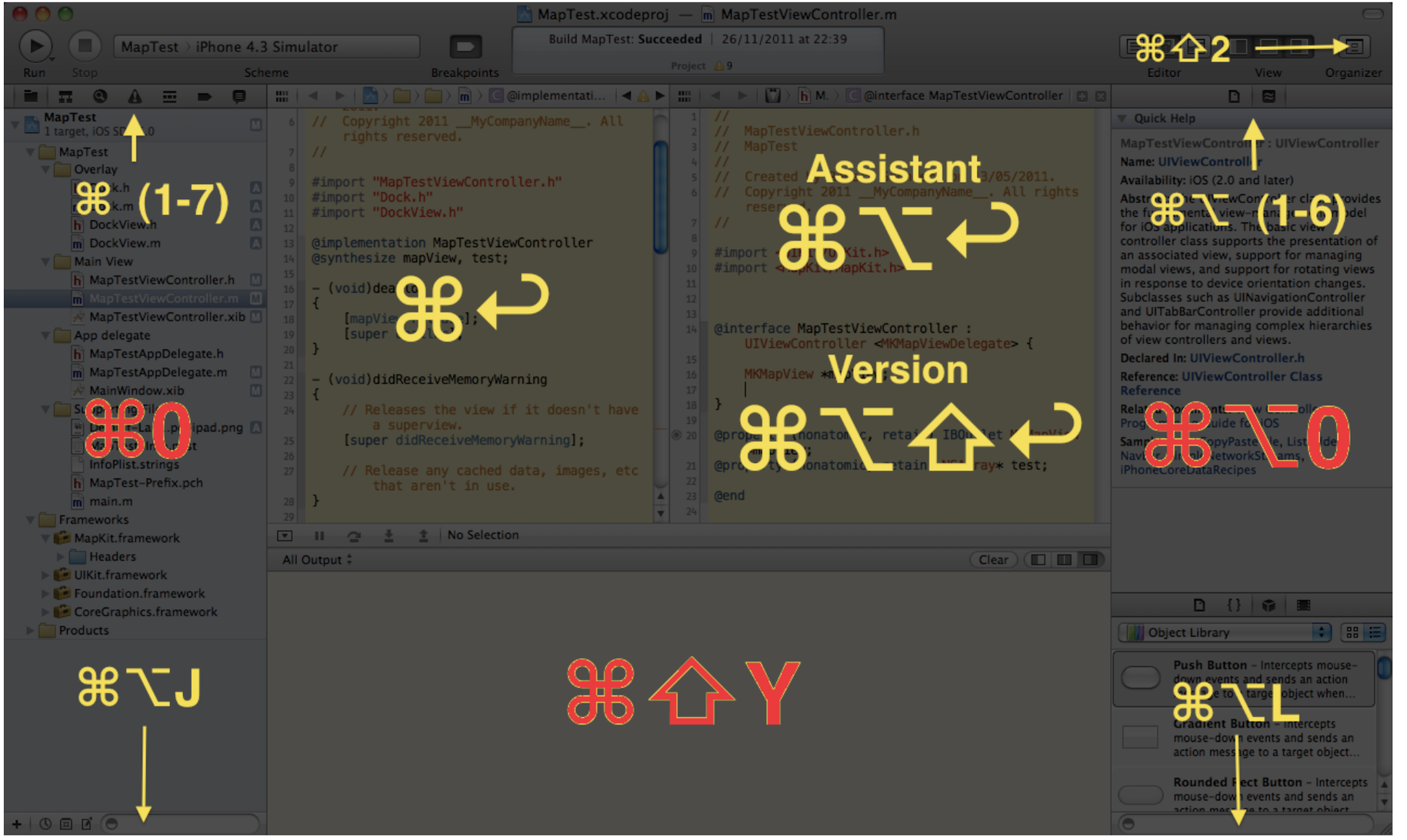
XCODE AT A GLANCE



SHORTCUTS – COMMON KEYS

- ⌘ = Command
- ⇧ = Shift
- ⌥ = Option/Alt
- ^ = Control
- ⇠⇢ = Left/Right Arrow Keys
- ⇡⇣ = Up/Down Arrow Keys

WORKSPACE AND SHORTCUTS



http://www.rsaunders.co.uk/2011/11/xcode-shortcuts.html

SHORTCUTS – BOOST PRODUCTIVITY

⇧ + ⌘ + O	*Open a file*
^ + ⌘ + ⇡ OR ⇣	*Switch between .m and .h files*
⌘ + click on a variable/type	*Go to definition*
^ + ⌘ + ⇠ OR ⇢	*Go forward / Go back*
^ + ⌘ + E	*Edit all in scope*
⌘ + T	*Open a new tab*
⌘ + W	*Close the current tab*
⇧ + ⌘ + [**or**]	*Go forward / Go back in tabs*

SHORTCUTS – BUILD, RUNNING AND TESTING

⌘ + B	Build
⇧ + ⌘ + K	Clean
⌘ + R	*Run the app (and eventually build)*
⌘ + U	*Run the tests*

SHORTCUTS – DEBUGGING

F6	*Step over*
F7	*Step into*
⌘ + \	*Add/remove breakpoint*
⌘ + Y	*Disable/enable all breakpoints*
^ + ⌘ + Y	*Pause/Play the debugger*

SHORTCUTS

A complete list of shortcuts is available here http://bit.ly/xcode-short-cuts

SWIFT BASICS

DATA TYPES – BASICS

- `Char`
- `Int`
- `Float`
- `Double`

NAMED AND COMPOUND TYPES

- A named type can have a name assigned

  Structures (e.g. Number and Strings), Classes, Enumeration, Protocols

- A compound type has no name

  Tuples and functions (+closures)

NAMED TYPES

- A type identifier (i.e. name) can be a defined by a custom Class, Structure, etc.
- Using the `typealias` keyword it's possible to specify a type identifier

```
typealias Point = (0,0) // Actually this is a tuple
```

COMPOUND TYPES

- A function definition is composed by its name and its signature representing the type definition

```
func doubleNum(val:Int) -> Int
```

- A tuple defines a type specifying the types of values it contains

```
let someTuple: (Double, Double) = (3.14159, 2.71828)
```

VARIABLES AND CONSTANTS

In Swift you can define a variable or a constant using different key words:

- `var`
- `let`

The general syntax to specify the type of the value stored in the var/const is:

```
var/let identifier: <Type>
```

TYPE INFERENCE

The variable or constant *types* are defined from the compiler

`var i:Int = 10` *is the same of* `var i = 10`

Type inference also happens in closures, the syntax is then very compact

```
let reversed = sorted(names) { s1, s2 in
    return s1 > s2
}
```

ARITHMETIC EXPRESSIONS

- Most of the commons defined in other modern languages: `+`, `-`, `/`, `=`, `%`, `+=`, `-=`, `*=`, `%=`
- Pre and post increment/decrement operators: `++x`, `x++`, `--x`, `x--`

```
var x = 0
var y = x++     // Assign and then increment

var y = ++x     // Increment and assign
```

CUSTOM OPERATORS

- You can declare and implement your own custom operators in addition to the standard operators

- New operators are declared at a global level using the `operator` keyword, and are marked with the `prefix`, `infix` or `postfix` modifiers

```
prefix operator +++ {
    // Do something
}
```

BOOLEAN EXPRESSIONS

- Relational operations as in other modern languages: ==, <, >, <=, =>, !=
- Ternary operator: ?

```
[condition] ? [execute if true] : [execute if false]
```

CONDITIONAL STATEMENTS

```
if <condition>{

}

switch value {
    case something:
    case somethingElse:
    default:
}
```

CONTROL TRANSFER STATEMENTS

- `return`: stops the execution and return a value
- `falltrough`, force a C style behavior and also subsequent cases are evaluated
- `continue`, tells a loop to stop what it is doing and start again at the beginning of the next iteration
- `break`, ends execution of an entire control flow statement immediately

SWITCH AND FALLTHROUGH

- Swift switch statements do not implicitly fall-through
- Cases can match against ranges

```
switch aNumber{
case 0...5:
    println("This number is between 0 and 5")
    fallthrough
case 6...10:
    println("This number is between 6 and 10")
    fallthrough
case aNumber % 2:
    println("it's an odd number")
default:
    println("I dunno in which range is this number")
}
```

LOOPS

Supports the most common loops: `for`, `while`, `do…while`, etc. but has couple of nice hints for ranges and parameters:

```
// Using ranges
for i in 0...9{
    println("i = \(i) ")
}

// Ignoring the variable iterator
for _ in 0..<10{
    println("I don’t care about i")
}
```

COLLECTION TYPES – ARRAY VS DICTIONARY

- Arrays provide random access of a sequential set of data, dictionaries provide a map from a set of keys to a set of values
- Arrays are ordered while dictionaries are unordered

```
var dict:[String: Int] = ["giorgio": 74, "isaac": 82, "jonathan": 94]
for (key, value) in dict{
    println(key)
}
```

COLLECTION TYPES – ARRAY

- There is no more distinction between `NSArray` and `NSMutableArray` in Swift
- An array can be instantiated using the literal syntax or the array type syntax

```
var languages: [String] = ["swift", "objc"]
```

is the same of

```
var languages = ["swift", "objc"]
```

COLLECTION TYPES – ARRAY METHODS

- `count`
- `isEmpty`
- `append`
- `insert(that, atIndex:)`
- `removeAtIndex(index)`

COLLECTION TYPES – DICTIONARY

A dictionary it's a collection that stores key-value pairs with all the keys having the same type and all values having the same type as well.

```
var states = ["NY": "New York", "MA": "Massachusett"]
```

- `count`
- `isEmpty`
- `updateValue(val, forKey:)`
- `removeValueForKey`

LAB 1

Create an Array with 5 numbers (e.g. `[1, 2, 3, 7, 8]`) and using a Range add to the array the missing numbers; as a bonus add the string `"9"` to the end of the array.

FUNCTIONS

- `func` is followed by the `identifier`
- `identifier`, is followed by a parameter list enclosed in parentheses
- `->`, optionally specifies the return type of the function

```
func sayHello(name:String)->String{
    return "Hello " + name
}
```

FUNCTIONS – CONSTANT AND VARIABLE PARAMETERS

- By default functions parameters are constant
- Optionally can be declared as variables `var`

```
func hello(var message:String, name:String)->String{

    message += name
    return message

}
```

FUNCTIONS – NAMED ARGUMENTS

Sometimes giving a name to an external argument makes the code more readable when the function is called

```
func wishYou(name:String, holidayName holiday:String){
    println("Dear \(name), my best wishes for the next \(holiday) holiday!”)
}
wishYou("giorgio", holidayName: "xmas")
```

- Using the # sign the external argument name is the same of the argument

```
 func wishYou(name:String, #holiday:String){
    println("Dear \(name), my best wishes for the next \(holiday) holiday!”)
}
wishYou("giorgio", holiday: "easter")
```

FUNCTIONS – SKIP NAMED ARGUMENTS

- By default class methods use the argument name as a named argument
- Sometimes it’s useful to ignore the named argument adding an _ in front of it

```
func hello(name: String, _ location: String) {
    println("Hello \(name). I live in \(location) too.")
 }
```

FUNCTIONS – VARIADIC PARAMETERS

- Functions can accept an indefinite number of parameters
- The variadic parameters are represented with 3 dots, every function can have just one variadic parameter

```
func hello(...people:String) {
    for p in people{
        println("Hello \(p)")
    }
}
```

FUNCTIONS – INOUT PARAMETERS

- When a function is used to modify an existing value it's possible to pass it as an `inout` parameter
- The argument is then passed by reference and updated accordingly to the body of the function

```
var value
func updateValue(inout data:T){
    // Do something
}
updateArray(&value)
```

FUNCTIONS – OVERLOAD

- One of the most powerful features of Swift is the capability to overload functions
- Different implementations of the same function can live together letting the compiler deciding which one to use

```
func helloWorld(){
    println("Hello world”)
}
func helloWorld(from:String){
    println("Hello world by \(from)”)
}
```

FUNCTIONS – OPERATORS OVERLOAD

- Swift has the ability to overload operators such that existing operators, like +, can be made to work with additional types

- To overload an operator, simply define a new function for the operator symbol, taking the appropriate number of arguments

```
func * (left, right) -> String {
    // Return something
}
```

LAB 2

Calculate the average number of a series of numbers stored in an Array using a function (it’s assumed you will use the Playground) and print out the output.

LAB 3

A common task when programming is to join the strings, handle the use case when the strings can be passed as an Array or as a variable list of arguments.

CLOSURES

Closures are expressions that resemble “anonymous” or unnamed functions; a closure is a self-contained blocks of functionality that can be passed around in your code

```
{ (parameters) -> return type in
    // Statements
}
```

CLOSURES – INFERRING FROM THE CONTEXT

When a closure is passed as an argument of another function that will use it with its other arguments, the argument of the closure are inferred by the context (i.e. no need to declare the data type of the arguments)

```
let helloFromClosure = {(name) -> String in
    return "Hello " + name + " from your closure! "
}
```

CLOSURES – SHORTHAND ARGUMENTS

In a closure you can refer to the arguments using the `$index` syntax (where index is an integer starting from `0`) without specifying them at all

```
var hellos = ["giorgio", "jonathan", "isaac"].map({"Hello " + $0})
```

CLOSURES + ARRAY

Ordering an Array with a closure make the code more compact and easy to read

```
let animals = ["Dog", "Cat", "Fish", "Worm"]
let sortedStrings = animals.sorted(
                {(one:String, two:String) -> Bool in
                    return one < two
})
```

LAB 4

Find the sum of all even numbers between 1 and 10 contained in an Array using a function or a closure.

CLASSES

- The syntax is similar to the one of the most common languages
- A class can contains method and `stored` or `computed` properties

```
class Person{
    var name:String = "Giorgio"
        var computedName:String {
            get { return name + " " + rand().description}
    }
}
```

CLASSES – COMPUTED PROPERTIES

- Do not actually store a value
- Provide a getter + an optional setter to retrieve and set other properties indirectly

```
class Teacher{
    var name:String = "Giorgio", surname:String = "Natili"
    var fullname:String {
        get { return name + " " + surname}
        set(value){
            var data = split(value) {$0 == " "}
            name = data[0]
            surname = data[1]
        }
    }
}
```

CLASSES – INITIALIZERS

- Each class must have an initializer
- Strictly speaking the initializer is where the class member will be initialized (partially not true)
- An initializer accept parameters like a function
- A class can have multiple initializers that differ in their signature

CLASSES – MULTIPLE INITIALIZERS

```
class Animal{
    init(){ // Some code }
}

class Animal{
    init(specie:String){
        println("I am a \(specie)")
    }
    init(specie:String, gender:String){
        println("I am a \(specie), my gender is \(gender)")
    }
}
```

CLASSES – MEMBERS SIGNATURE

- By default all the members have an `internal` access level
- Other optional access levels are `public`, `private`, `final` and `static`
- The access level of a custom type affect all the members of that type

THE INTERNAL LEVEL

It means internal to a product, a product is an app or a framework or any other distributable compiled item.

PROTOCOLS

- A protocol is a specification that list the properties and methods an implementer has to support
- A property is specified declaring a variable followed with a type and then either `{get}` or `{get set}`
- A method is specified using the `func` keyword followed by the function signature

```
protocol DailyGreting{
    var userName:String {get set}
    func welcome() -> String
}
```

LAB 5

Imagine to work in the finance industry and define a protocol to ensure that all the type of bank account are able to print out the full name of the owner, the balance and the account id. Once the protocol is ready define a an account class that implement the protocol.

REFERENCE TYPES VS VALUE TYPES

Reference is usually associated with a pointer; meaning the memory address where your variable reside is actually holding another memory address of the actual object in a different memory location

`class` are reference type, it means if you assign a instance of the class to another variable, it will hold only the reference of the instance not copy

`struct` are value types, it means if you copy the instance of the structure to another variable it just copied to the variable

STRUCTS

- A `struct` is a complex data type declaration that defines a physically grouped list of variables to be placed under one name in a block of memory (*wikipedia*)
- A `struct` is a value type ,in general, it doesn't behave
- A typical value type has no implicit dependencies on the behavior of any external components
- Because a value type is copied every time it's assigned to a new variable, all of those copies are completely interchangeable

STRUCS – MUTATING METHODS

A `struct` can have properties, methods, initializers and can be extended; a method that changes the value of a property is marked as `mutating`

```
struct Account{
    var accountId:Int
    var amount:UInt8 = 0
    init(id:Int){
        accountId = id
    }
    mutating func manageAmount(value:UInt8){ amount += value}
}
```

STRUCS – IMPLEMENTING A STRINGS STACK

The `struct` values can be accessed using the `subscript` syntax like an Array

```
struct StringsStack {
    private var items = [String]()
    mutating func push(item:String){
        items.append(item)
    }
    mutating func pop() -> String{
        return items.removeLast()
    }
    subscript(i:Int) -> String{
        return items[i]
    }
}
```

ENUMERATIONS

An enumeration is a common type for encapsulating a group of related values which can be accessed in a type-safe way within the code

```
enum AccountType{
     case Savings
     case Checking
}
```

ENUMERATIONS – WITH DATA TYPES

```
enum AccountType:String{
    case Savings = "savings"
    case Checking = "checking"
}

// Emun as a place holder for future values
enum AccountID{
    case inString (String)
    case inNumber (Int)
}
```

ENUMERATIONS – MUTATING FUNCTIONS

An enumeration can define a mutating function that change its state

```
enum TwoStateSwitch {
    case Off, On
    mutating func next() {
        switch self {
        case Off:
            self = On
        case On:
            self = Off
    }
}
```

SWIFT OPTIONAL VALUES

- Using optional values it's possible to assign a `nil` value to a variable
- An optional is defined using the `?` sign

```
var age:Int? = nil
```

- Optional is an enumeration defined in the Swift language protocol

```
 enum Optional : NilLiteralConvertible {
   case None
   case Some(T)
}
```

SWIFT OPTIONALS – UNWRAPPING

- An optional value needs to be unwrapped before using it, you can force the unwrap with the ! sign
- It’s safer to unwrap an optional using a kind of bind technique

```
if let value = possibleValue {

    // Something happens

}
```

FUNC OPTIONAL RETURN VALUES

- It’s possible that a function doesn’t return a value, an optional can be used also in the function return type

```
func maxValue(nums: [Int]) -> Int?{

    return nums.reduce(Int.min, { max($0, $1) })

}
```

TUPLES

Tuples enable you to create and pass around groupings of values

```
let http404Error = (404, "Not Found")
// http404Error.0 or http404Error.1
```

Tuples can also define named group of values

```
var namedHttp404Error: (satatusCode:Int, statusText:String)
namedHttp404Error.satatusCode = 404
namedHttp404Error.statusText = "Not Found"
```

LAB 6

Implement a function able to return a tuple containing the max, the min and the average value of a sequence of numbers; the returned tuple values should be accessed by name.

EXTENSIONS

- Extensions add new functionality to an existing class, structure, or enumeration type
- This includes the ability to extend types for which you do not have access to the original source code (known as retroactive modeling)
- Explore the syntax https://github.com/pNre/ExSwift

LAB 7

Create an extension for the Int class in order to determine if a number is odd or even.

GENERICS

Generics allow a programmer to tell their functions and classes, "I am going to give you a type later and I want you to enforce that type everywhere I specify”

```
// Function definition
func areValuesEqual<T: Equatable>(a: T, b: T) -> Bool {
    return a == b
}
```

WE LOVE SWIFT!

https://github.com/raywenderlich/swift-style-guide

HELLO WORLD!

HELLO WORLD APP

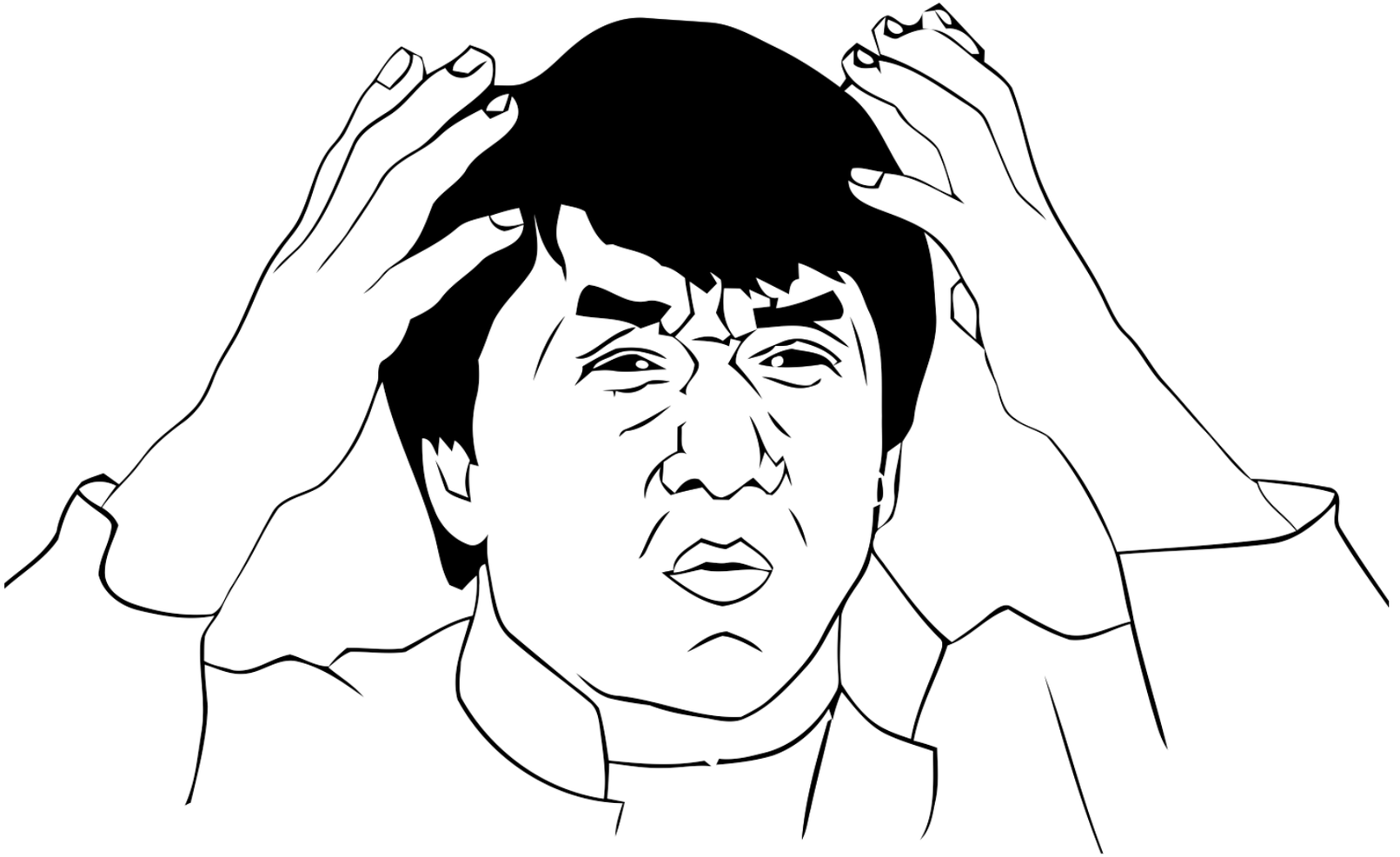
- Open XCODE
- Create a single view app
- Drag a button to the main view in the storyboard
- Right click on the button and create a binding for the touch up inside event
- Open an alert from the event handler

```
let alertController = UIAlertController(title: "Welcome to My First App", message:
"Hello World", preferredStyle: UIAlertControllerStyle.Alert)


alertController.addAction(UIAlertAction(title: "OK", style:
UIAlertActionStyle.Default, handler: nil))


self.presentViewController(alertController, animated: true, completion: nil)
```

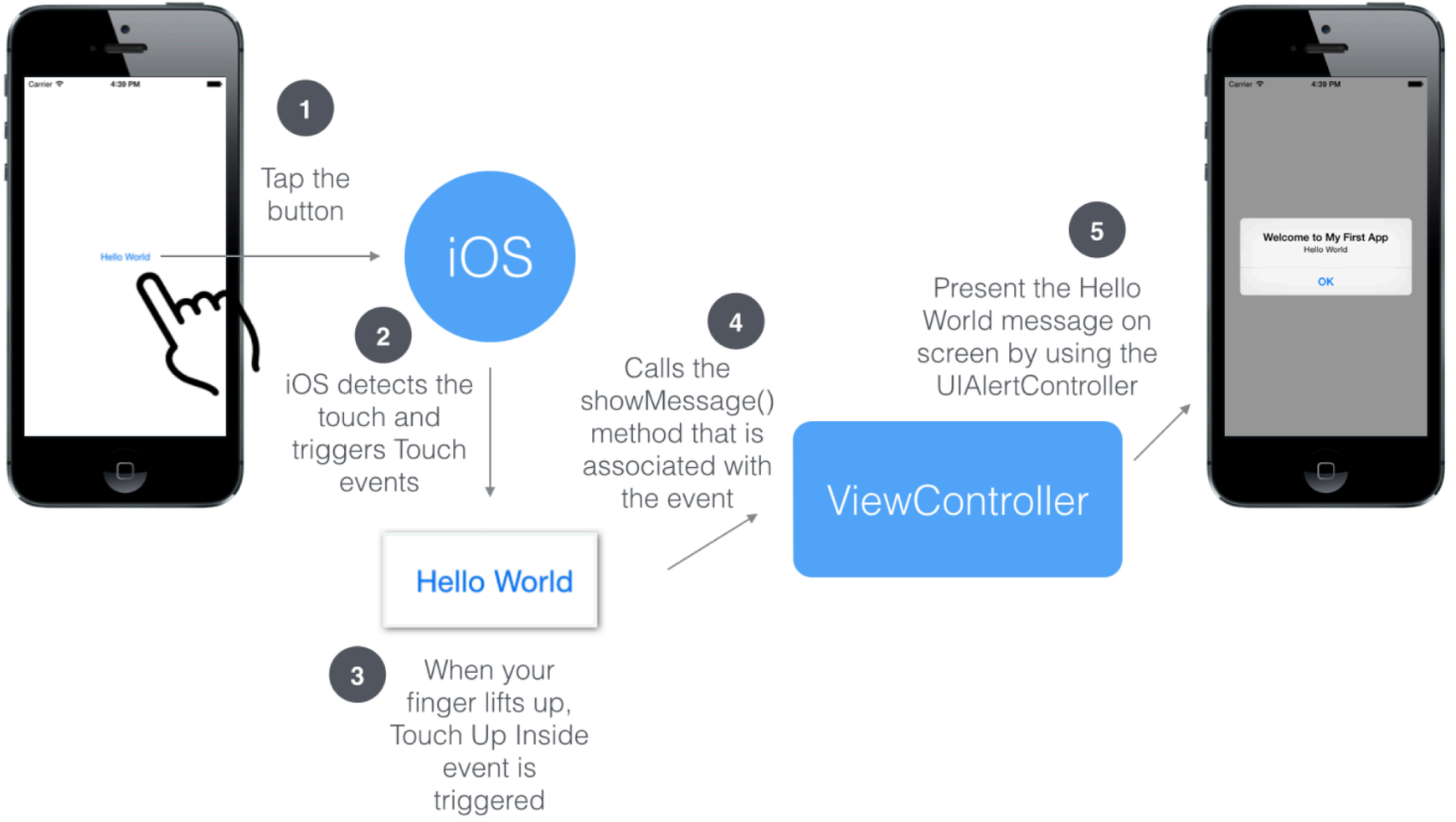
WHAT'S HAPPENED?



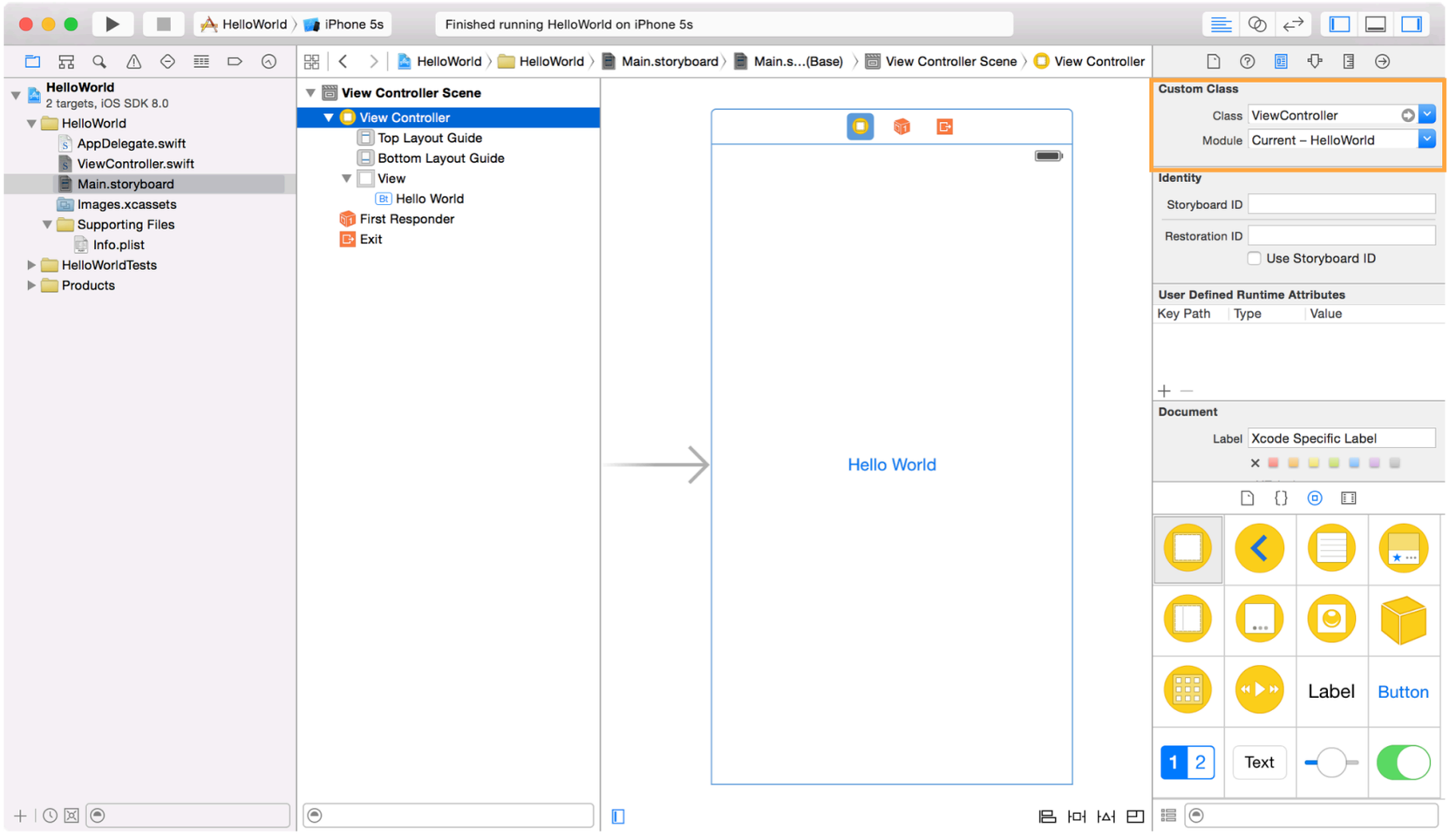
BASIC CONCEPTS

- The user interface in storyboard is the interface, while the code is the implementation
- The user interface elements (e.g. button) communicate with the code via messages
- The `@IBAction` keyword allows to connect your source code to user interface objects in Interface Builder

UNDER THE HOOD



UI AND VIEW CONTROLLERS



OWNER, RESPONDER AND EXIT

- The *File Owner* is an instantiated, runtime object that owns the contents of your .xib and its outlets/actions when the .xib is loaded
- The *First Responder* is simply the first object in the responder chain that can respond to events (i.e. a proxy)
- The *Exit* is the method to be executed when .xib or the View Controller are unloaded from the view

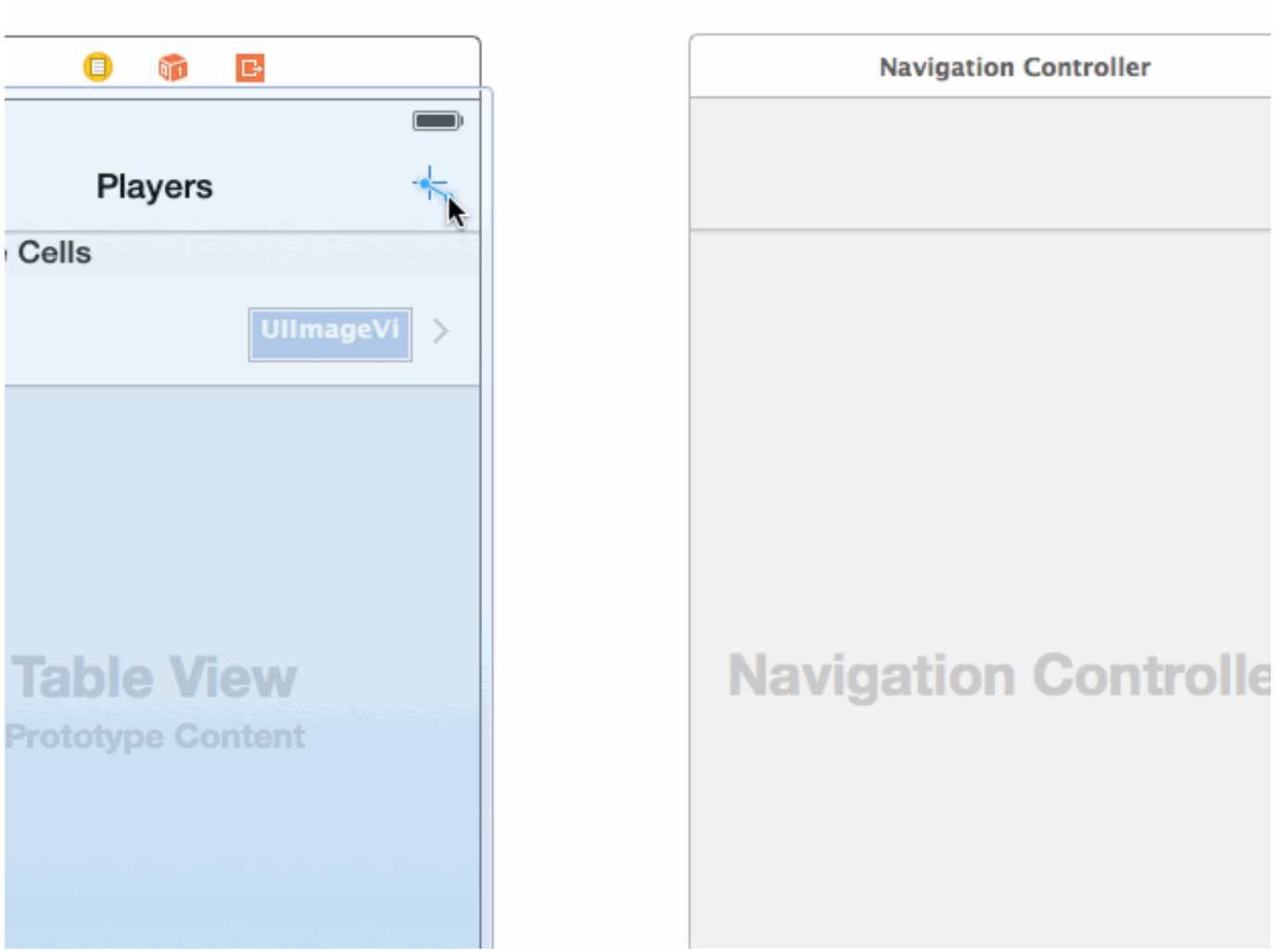
LAB 9

Create the Hello World application and add another View Controller to the storyboard; the view controller should be rendered when a navigation bar button is touched and should render something on the screen.

MULTIPLE VIEWS CONTROLLER AND SEGUES

- An easy way to start to implement the navigation is to embed view controllers into navigation controllers (i.e. Editor > Embed In… > Navigation Controller)
- Then you can add “Segues” from a button using Control-drag
- A segue (pronounce: seg-way) is a type of connection from View Controllers and represents a transition from one screen to another

ADDING A SEGUE – VISUALLY



ADDING A SEGUE – PROGRAMMATICALLY

- The View Controller have to be instantiated accordingly to its identifier
- Using the navigationController it has to be pushed into the view stack

```
self.storyboard?.instantiateViewControllerWithIdentifier("sceene2")
self.navigationController?.pushViewController(view, animated: true)
```

- To come back to the previous segue it’s enough top pop the root View Controller

```
self.navigationController?.popToRootViewControllerAnimated(true)
```

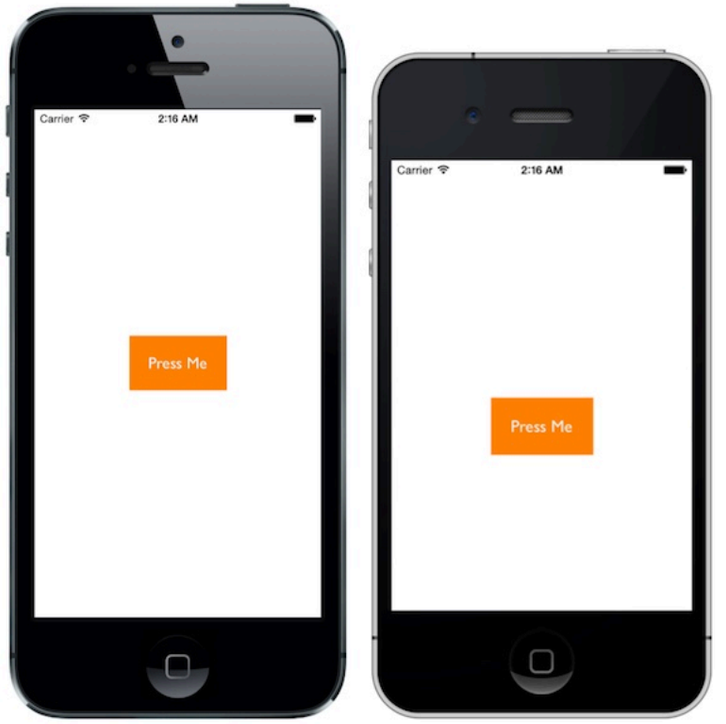
LAB 10

Open again the Hello World app, add one or more View Controllers and implement a visual and a programmatic navigation between them.

AUTO LAYOUT

DIFFERENT PLATFORMS BUT SAME LAYOUT ISSUES

WHAT'S WRONG IN THIS IMAGE?



UI DESIGN, RETINA AND 3X

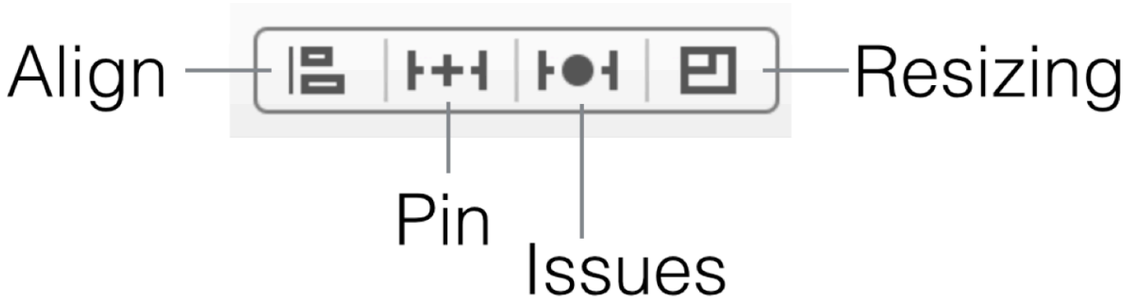
- In the storyboard or in a .xib file the UI element are positioned using a point based coordinate system
- Until retina display a point was the equivalent of a pixel
- With retina displays resolution doubled and a point corresponds to two pixels
- iPhone 6 Plus introduced another complication, a point now corresponds to three pixels

AUTO LAYOUT

- Auto Layout is a constraint-based layout system
- It allows developers to create an adaptive UI that responds appropriately to changes in screen size and device orientation
- In XCODE 6.1 allows to have a live preview in the storyboard itself

DEFINING CONSTRAINTS

- Align, create alignment constraints, such as aligning the left edges of two views
- Pin, create spacing constraints, such as defining the width of a UI control
- Issues, resolve layout issues
- Resizing , specify how resizing affects constraints



LAB 11

Open again the Hello World app and using Auto Layout make the UI elements rendering properly on various Simulators; in addition show an alert when opening the second view controller.

TABLE VIEW

TABLE VIEW APP

- Start from a Single View App
- Need a Table View Controller
- Uses Custom Cell to render
- Need some data
- Etc.

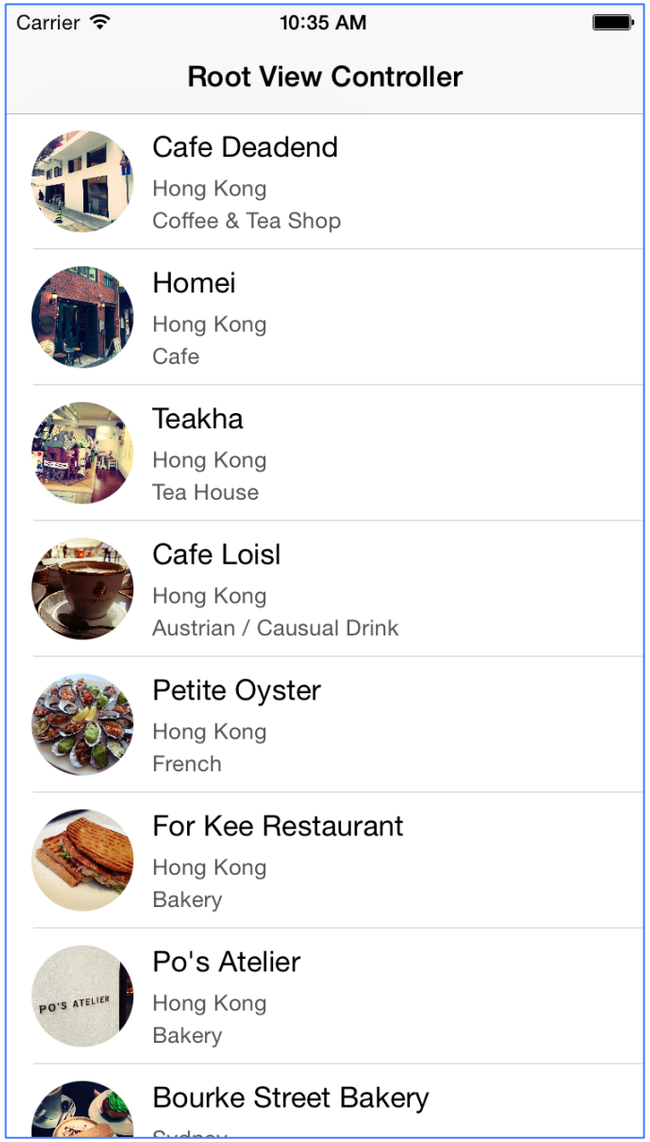
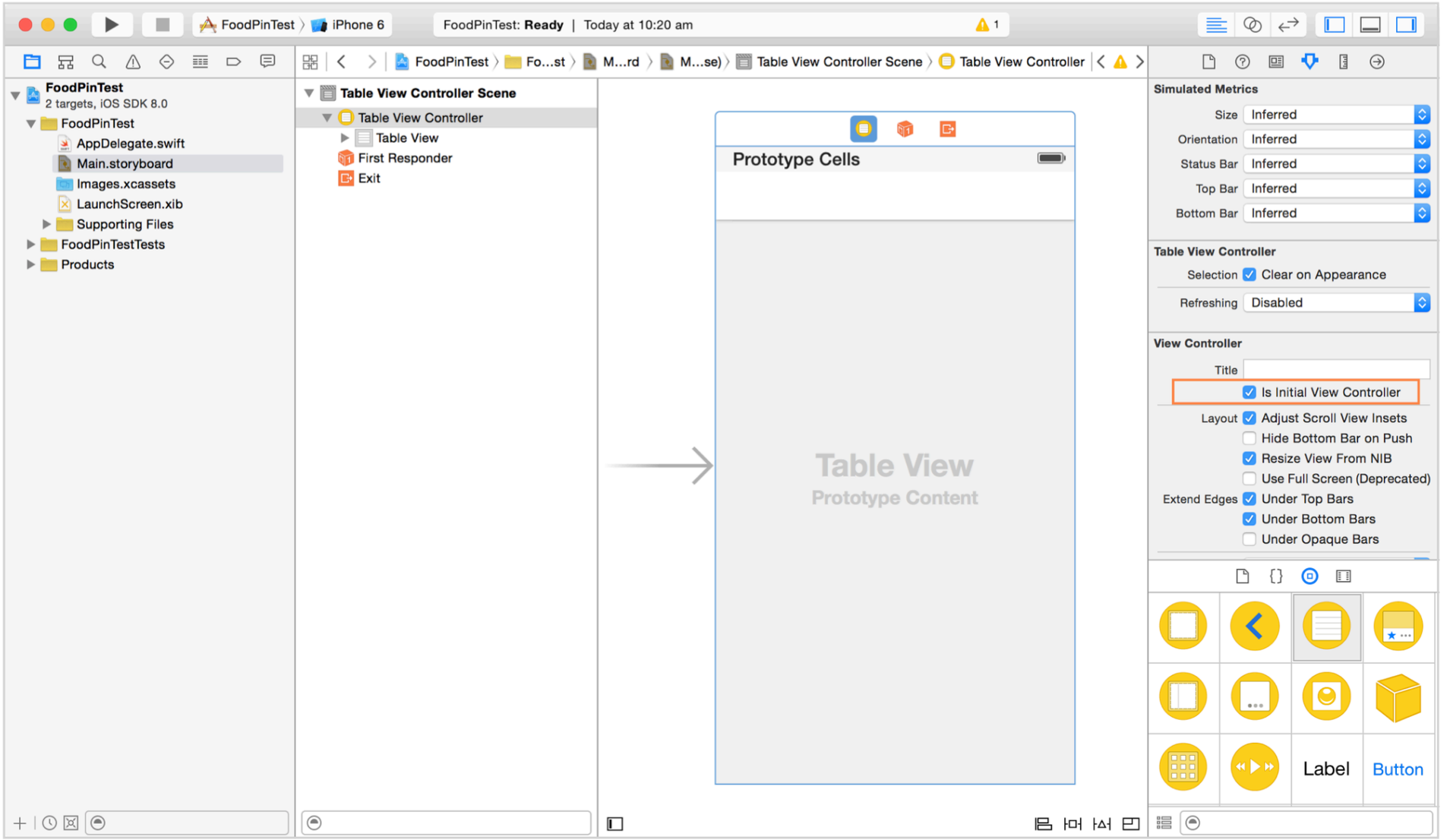
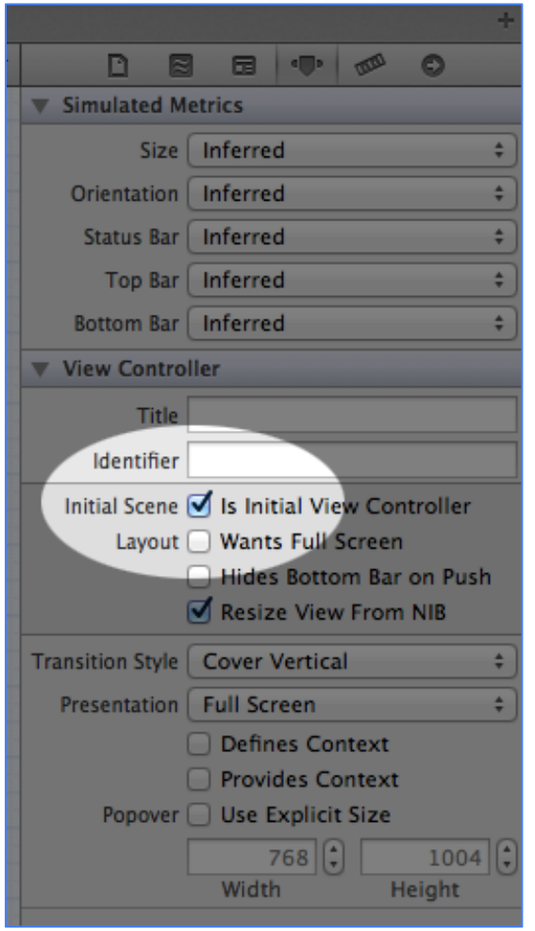


TABLE VIEW STORYBOARD



STEP 1 – PREPARE THE TABLE VIEW CONTROLLER

- Delete the default View Controller from the storyboard
- Add a new Table View Controller
- Set the new View Controller as the initial one



STEP 2 – PREPARE A CUSTOM CELL

- Assign an identifier to the cell
- Assign a custom class to the cell (extending the `UITableViewCell`)
- Add the needed controls (`UIImage`, `Label`, etc.)
- Create the needed outlet

STEP 3 – RENDER DATA

- Override the `tableView` function of the Table View Controller
- Get the cell using the identifier and populate it

```
override func tableView(tableView: UITableView, cellForRowAtIndexPath indexPath: NSIndexPath) ->
UITableViewCell {

        let cellIdentifier = "Cell"
        let cell = tableView.dequeueReusableCellWithIdentifier(cellIdentifier, forIndexPath:
indexPath) as CustomTableViewCell

        // Configure the cell...
        cell.nameLabel.text = restaurantNames[indexPath.row]

        return cell
    }
```

TABLE VIEW APPS

FETCH + PERSIST DATA

REMOTE DATA – JSON

- `NSURL`, represents a URL that can potentially contain the location of a resource on a remote server
- `NSURLSession`, provide an API for downloading content via HTTP
- `NSURLSession.dataTaskWithURL`, creates an HTTP GET request for the specified URL
- `NSJSONSerialization`, convert JSON to Foundation objects and viceversa

XCPSETEXECUTIONSHOULDCONTINUEINDEFINITELY
It forces the playground to keep continuing executing the code after the end of the code block.

LAB 7

Using the `NSURL`, `NSURLSession` and `NSJSONSerialization` APIs load a remote JSON file and display the contents of its properties in multiple labels.

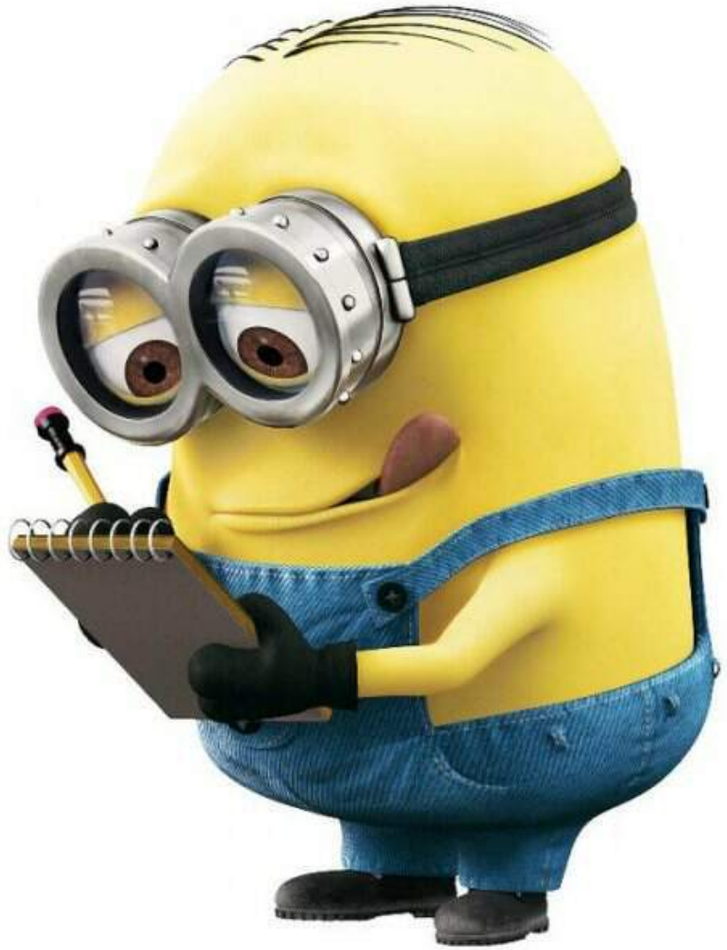
CORE DATA

- Data holding in memory (e.g. array) is volatile
- To save the data permanently a persistent storage like file or database is required
- Core Data is not a database also considering that SQLite database is the default persistent store for Core Data on iOS

CORE DATA – THE STACK

- Managed Object Context, it is a temporary memory area containing objects that interacts with data in persistent store. Its job is to manage objects created and returned using Core Data framework
- Persistent Store Coordinator, SQLite is the default persistent store in iOS
- Managed Object Model, it describes the schema that you use in the app (kinda of database schema)
- Persistent Store, it is the repository that your data is actually stored (a SQLite database or a binary or XML file)

EXPLORING CORE DATA



Q&A

WE HAVE DONE!

THANKS!

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