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CocoaHeads Shanghai 2017-02-23

Profile

Portfolio

Who am I ?

- 张靖元 Jingyuan "Knight" Zhang
- Full Sail University - Mobile Development
- Fudan University Shanghai Institute of Visual Art - Visual Communication Design
- Apple Retail - Creative trainer
- Upwork Platform-approved Freelance Mobile Developer

"Simple techniques that make Xcode Storyboard more intuitive."

What to share tonight ?

- one expectation for intuitive Storyboard
- Strategies for intuitive Storyboard
- How to get started
- Inspiration for the future

Thanks for your support !

Thanks for your support !

Guanshan Liu

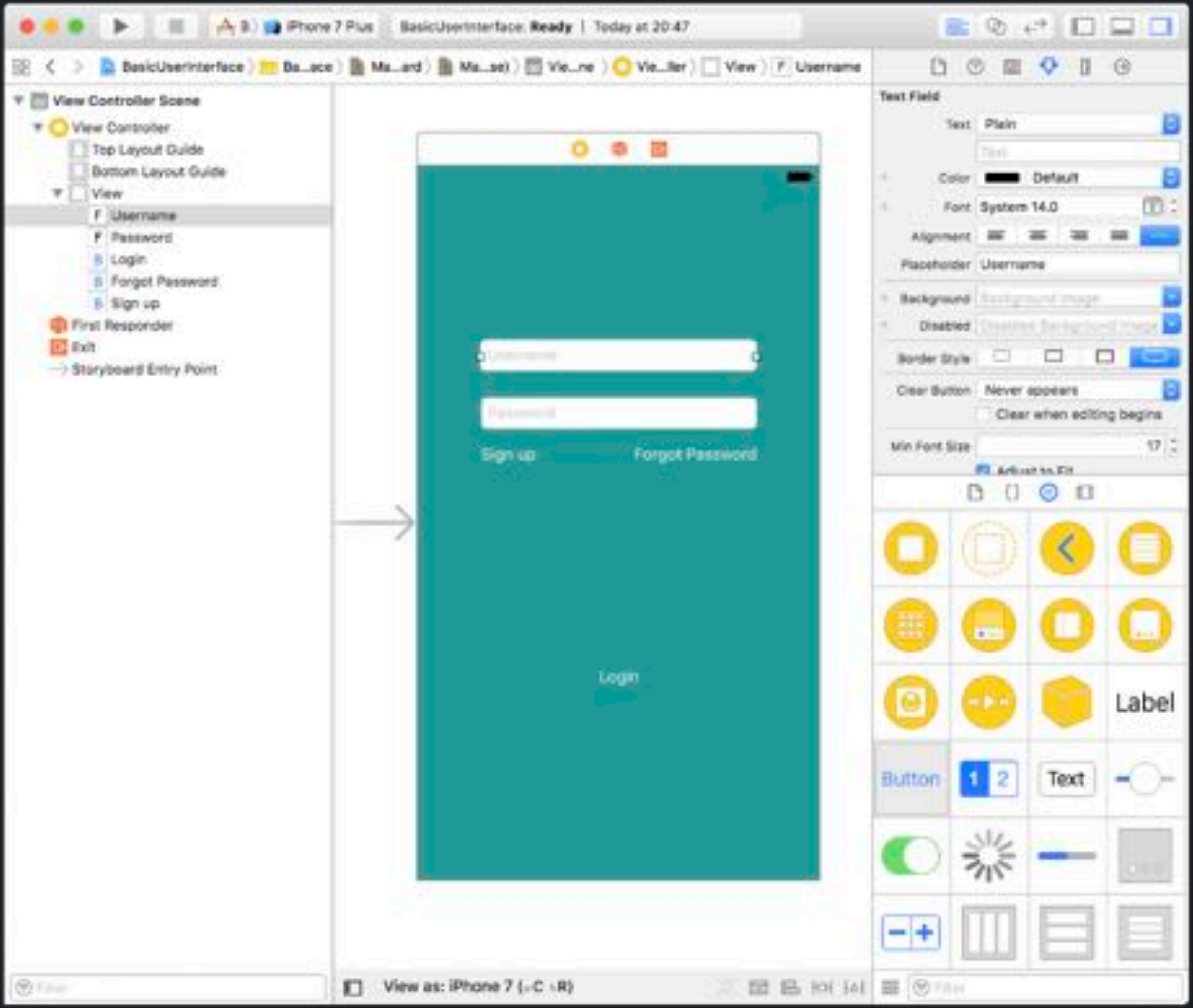
“What do we expect for an intuitive Storyboard ?”

What do we expect for an intuitive Storyboard ?

- “WYSIWYG”
    - “What You See Is What You Get”

What do we expect for an intuitive Storyboard ?

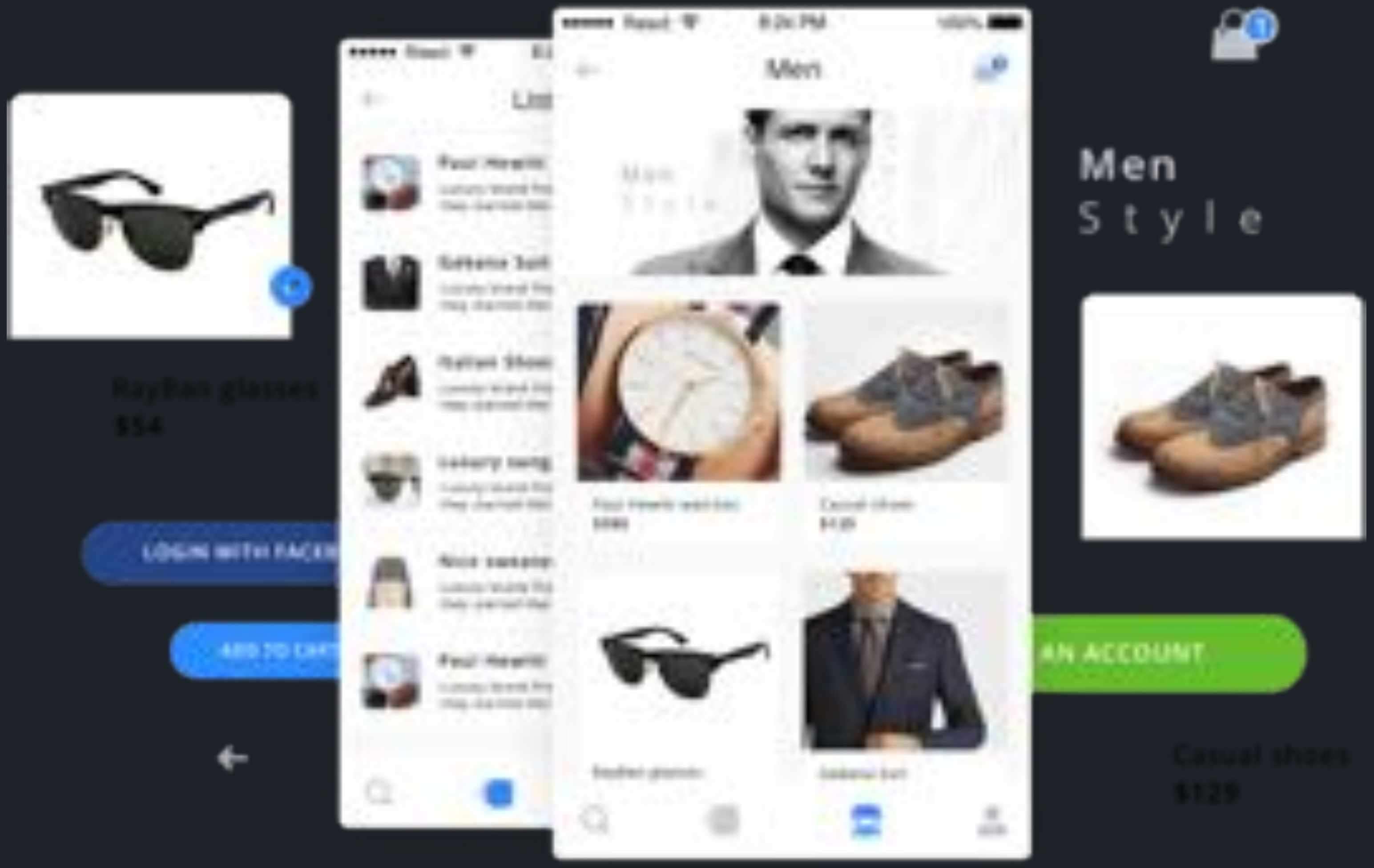
- Apple iOS built-in UIKit Framework



Text: Plain
Color: Default
Font: System 14.0
Placeholder: Username
Clear Button: Never appears
Clear when editing begins
Min Font Size: 17
Adjust to Fit

What do we expect for an intuitive Storyboard ?

- Your own custom user interface elements



http://ui-cloud.com/guacamole-ui-kit/

Extend Xcode project behaviors

like image creation tools

Extend Xcode behaviors

- Use built-in Apple Swift and Xcode features
- Scale limitlessly
- How to get started

What do we use ?

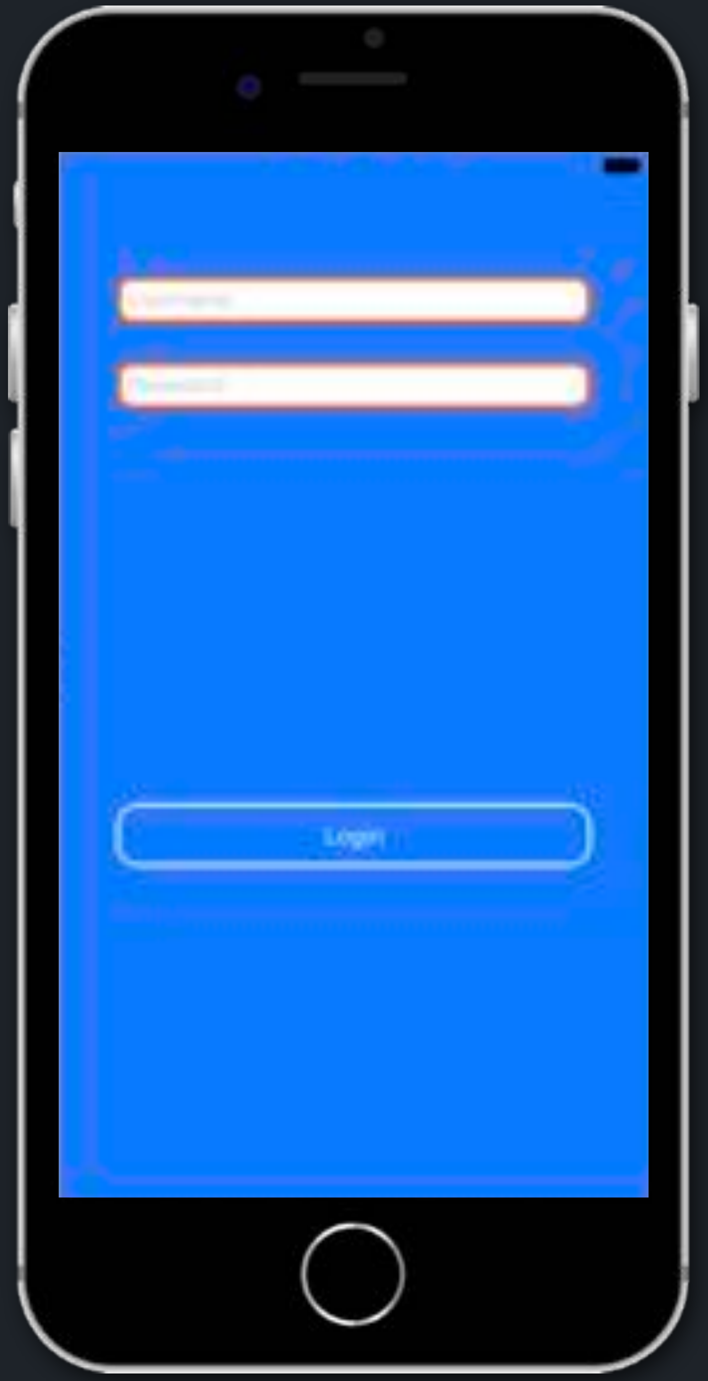
@IBDesignable **@IBInspectable** **Swift Extensions**

“you can use two different attributes, @IBDesignable and @IBInspectable, to enable live, interactive custom view design in Interface Builder.” – Apple

“Extensions add new functionality to an existing class, structure, enumeration, or protocol type…Extensions are similar to categories in Objective-C.” – Apple

A simple challenge

- Generic login view
- 2 text fields
- 1 login button
- rounded corners
- border stroke



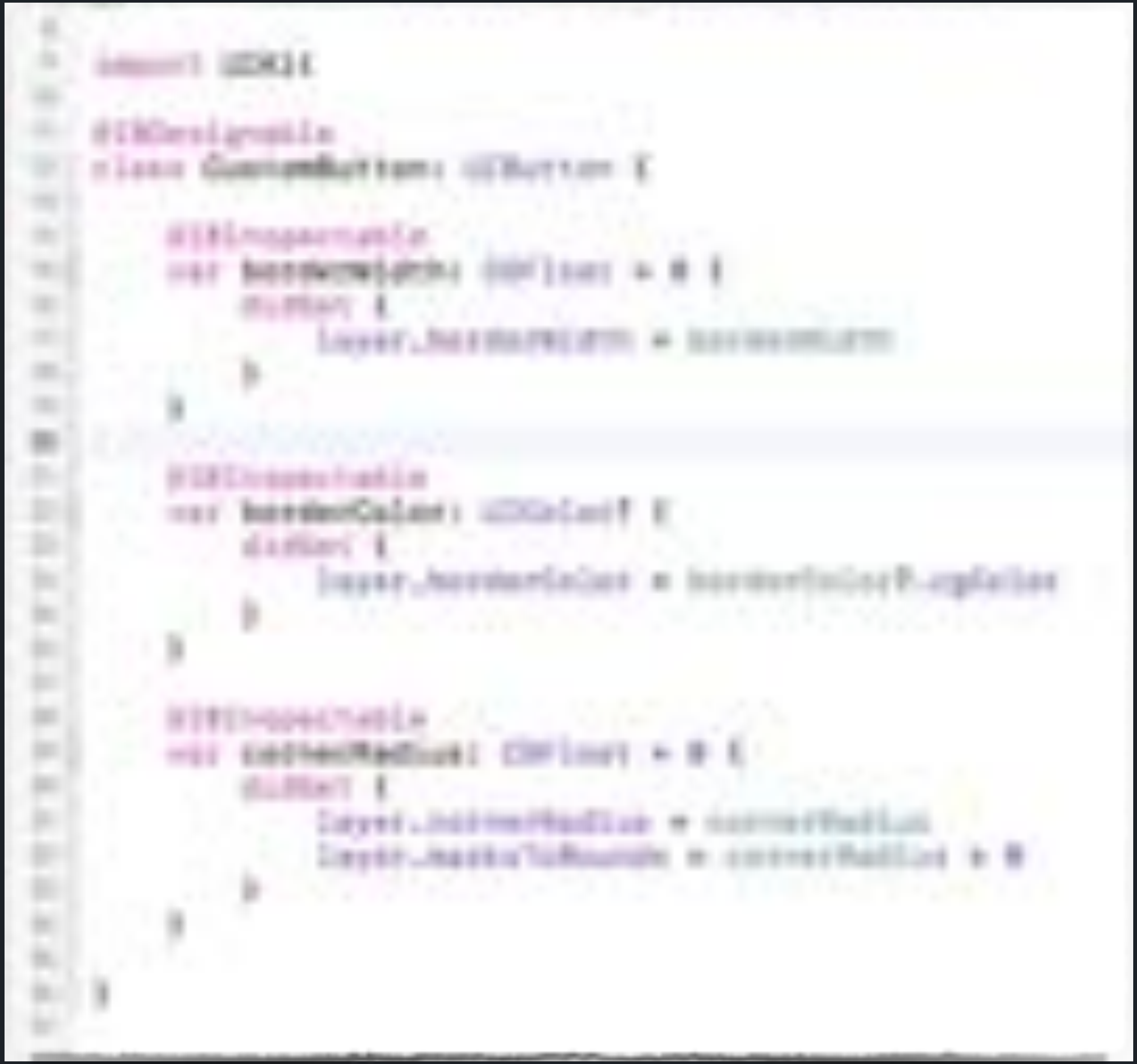
A simple challenge of Generic Login View

- “User-Defined Runtime Attributes”
- “Key-Value Coding”
- @IBInspetable - Adjust properties in Xcode Inspector
- @IBDesignable - Live render in Xcode Storyboard

@IBDesignable, @IBInspectable

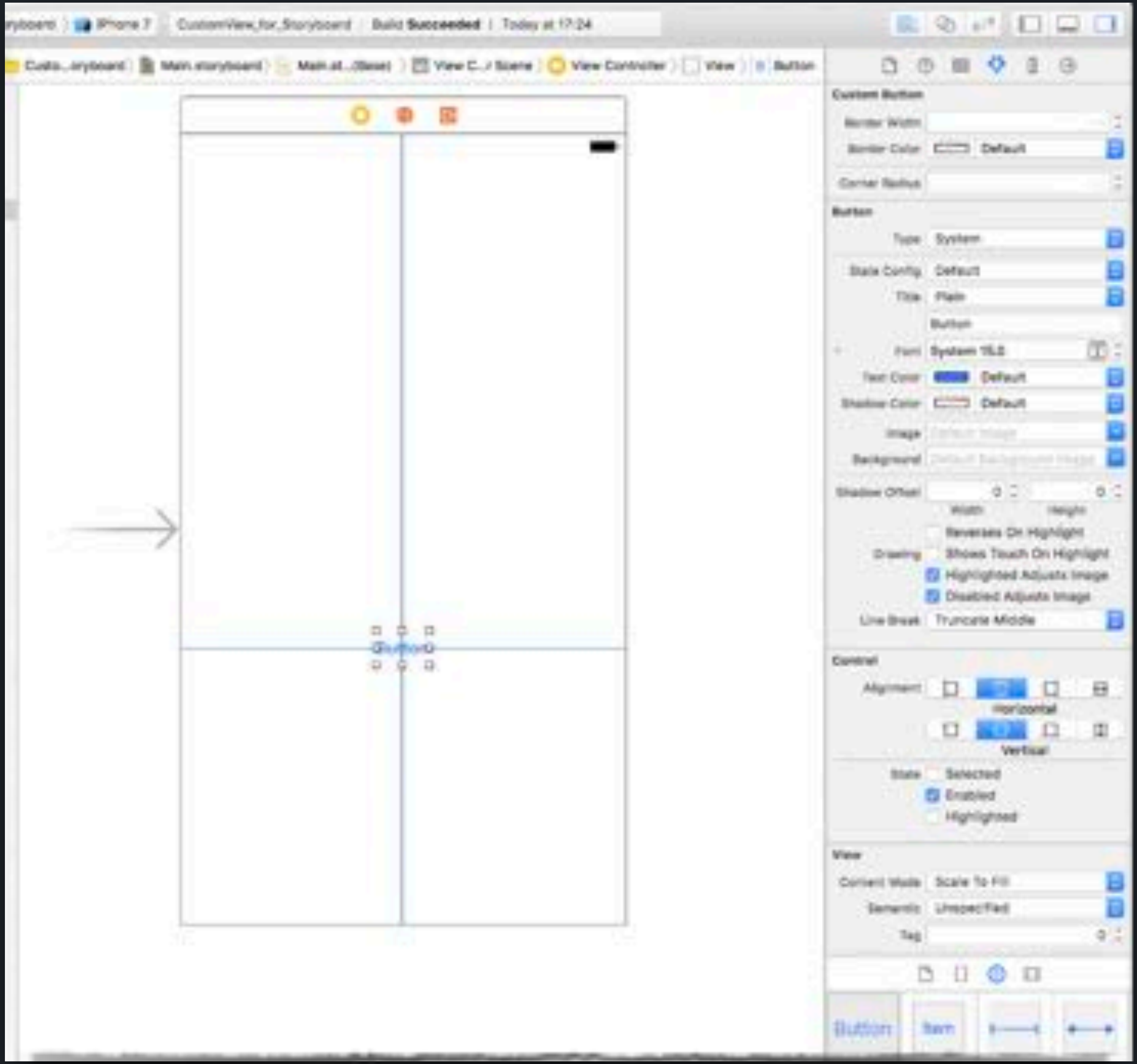
- Custom object types - @IBDesignable
- Custom properties - @IBInspectable

Start with the custom button



```
import UIKit

@IBDesignable
class CustomButton: UIButton {

    @IBInspectable
    var borderWidth: CGFloat = 0 {
        didSet {
            layer.borderWidth = borderWidth
        }
    }

    @IBInspectable
    var borderColor: UIColor? {
        didSet {
            layer.borderColor = borderColor?.cgColor
        }
    }

    @IBInspectable
    var cornerRadius: CGFloat = 0 {
        didSet {
            layer.cornerRadius = cornerRadius
            layer.masksToBounds = cornerRadius > 0
        }
    }

}
```

Place a UIButton to Storyboard


iPhone 7
CustomView_for_Storyboard | Build Succeeded | Today at 17:24
Custo...oryboard > Main.storyboard > Main.st...(Base) > View C...r Scene > View Controller > View > Button
Button

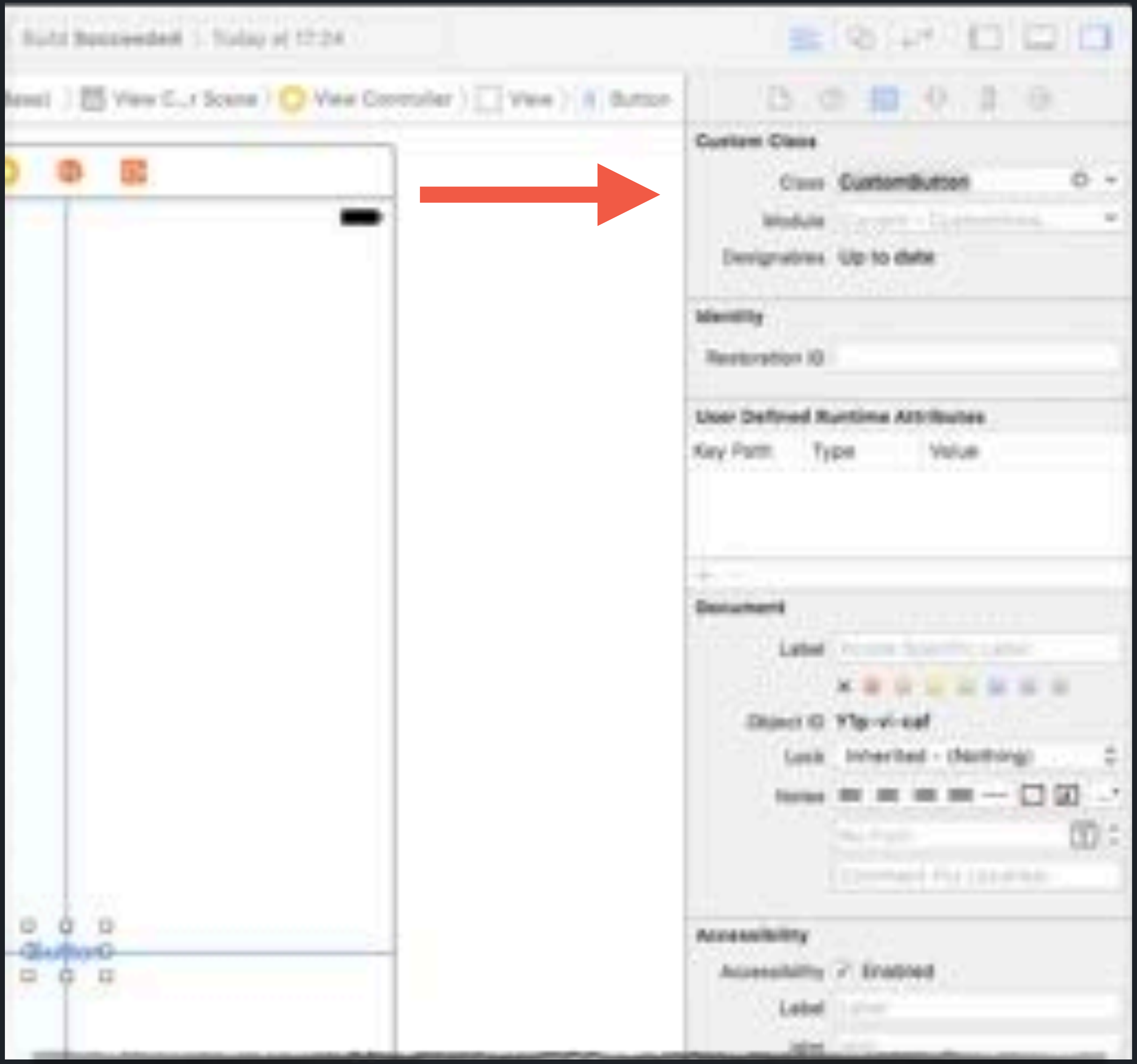
Custom Button
Border Width
Border Color: Default
Corner Radius

Button
Type: System
State Config: Default
Title: Plain
Button
Font: System 15.0
Text Color: Default
Shadow Color: Default
Image: Default Image
Background: Default Background Image
Shadow Offset: 0 (Width) 0 (Height)
Drawing: ☐ Reverses On Highlight ☐ Shows Touch On Highlight ☑ Highlighted Adjusts Image ☑ Disabled Adjusts Image
Line Break: Truncate Middle

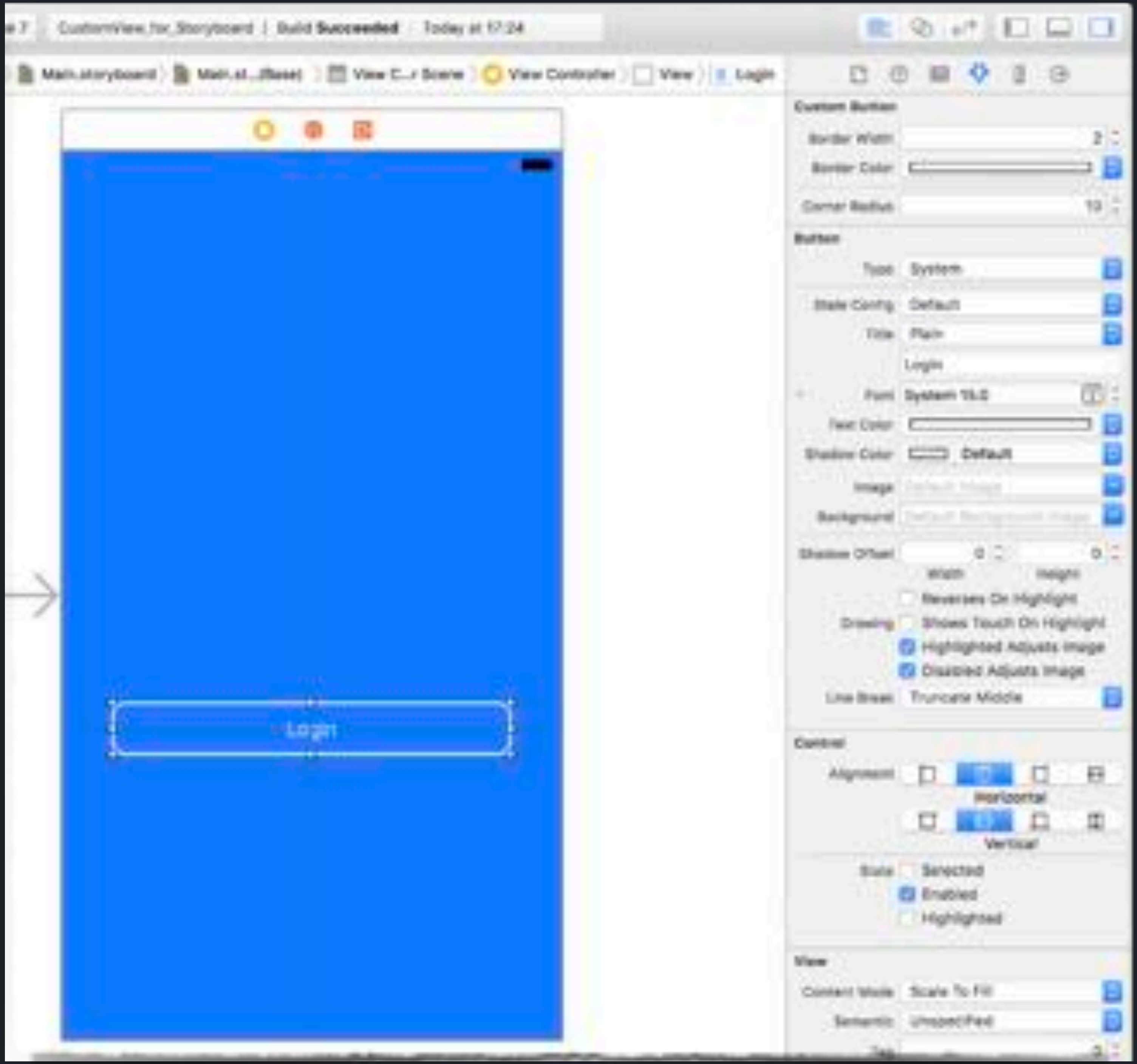
Control
Alignment: Horizontal, Vertical
State: ☐ Selected ☑ Enabled ☐ Highlighted

View
Content Mode: Scale To Fill
Semantic: Unspecified
Tag: 0

Set the Custom Class


Custom Class
Class CustomButton
Module
Designables Up to date
Identity
Restoration ID
User Defined Runtime Attributes
Key Path Type Value
Document
Label
Object ID YTp-vi-saf
Lock Inherited - (Nothing)
Notes
Accessibility
Accessibility Enabled
Label

Play in "Attribute" Inspector


CustomView_for_Storyboard | Build Succeeded | Today at 17:24
Main.storyboard > Main.st...(Base) > View C...r Scene > View Controller > View > Login
Login

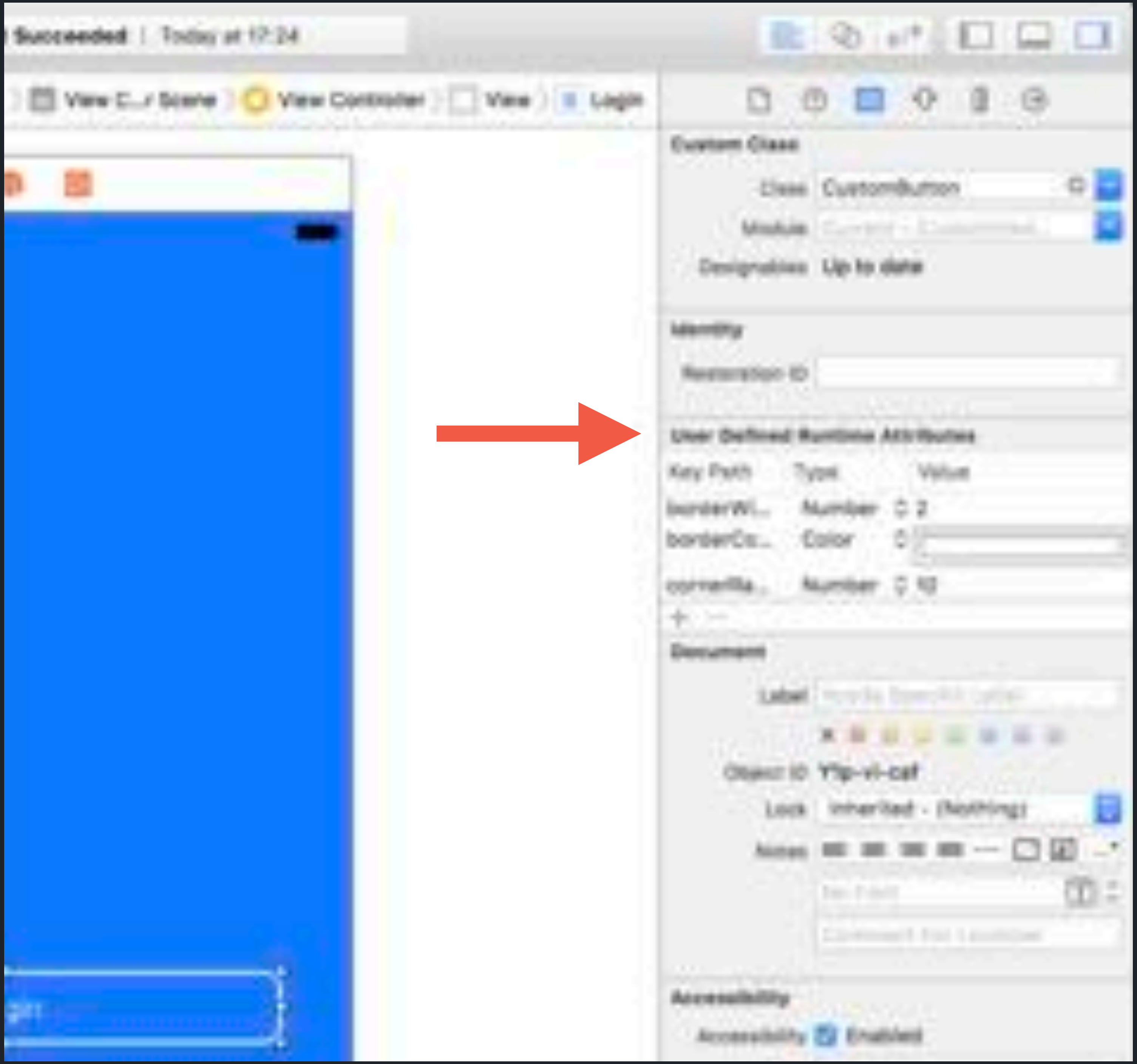
Custom Button
Border Width 2
Border Color
Corner Radius 10

Button
Type System
State Config Default
Title Plain
Login
Font System 15.0
Text Color
Shadow Color Default
Image Default Image
Background Default Background Image
Shadow Offset 0 Width 0 Height
Drawing
☐ Reverses On Highlight
☐ Shows Touch On Highlight
☑ Highlighted Adjusts Image
☑ Disabled Adjusts Image
Line Break Truncate Middle

Control
Alignment Horizontal
Vertical
State
☐ Selected
☑ Enabled
☐ Highlighted

View
Content Mode Scale To Fill
Semantic Unspecified
Tag 0

“User-Defined Runtime Attributes”


Succeeded | Today at 17:24

View C...r Scene > View Controller > View > Login

Custom Class

Class: CustomButton

Module: Current - CustomView

Designables: Up to date

Identity

Restoration ID

User Defined Runtime Attributes

Key Path	Type	Value
borderWi...	Number	2
borderCo...	Color	
cornerRa...	Number	10

Document

Label

Object ID: Y1p-vi-caf

Lock: Inherited - (Nothing)

Notes

Accessibility

Accessibility: Enabled

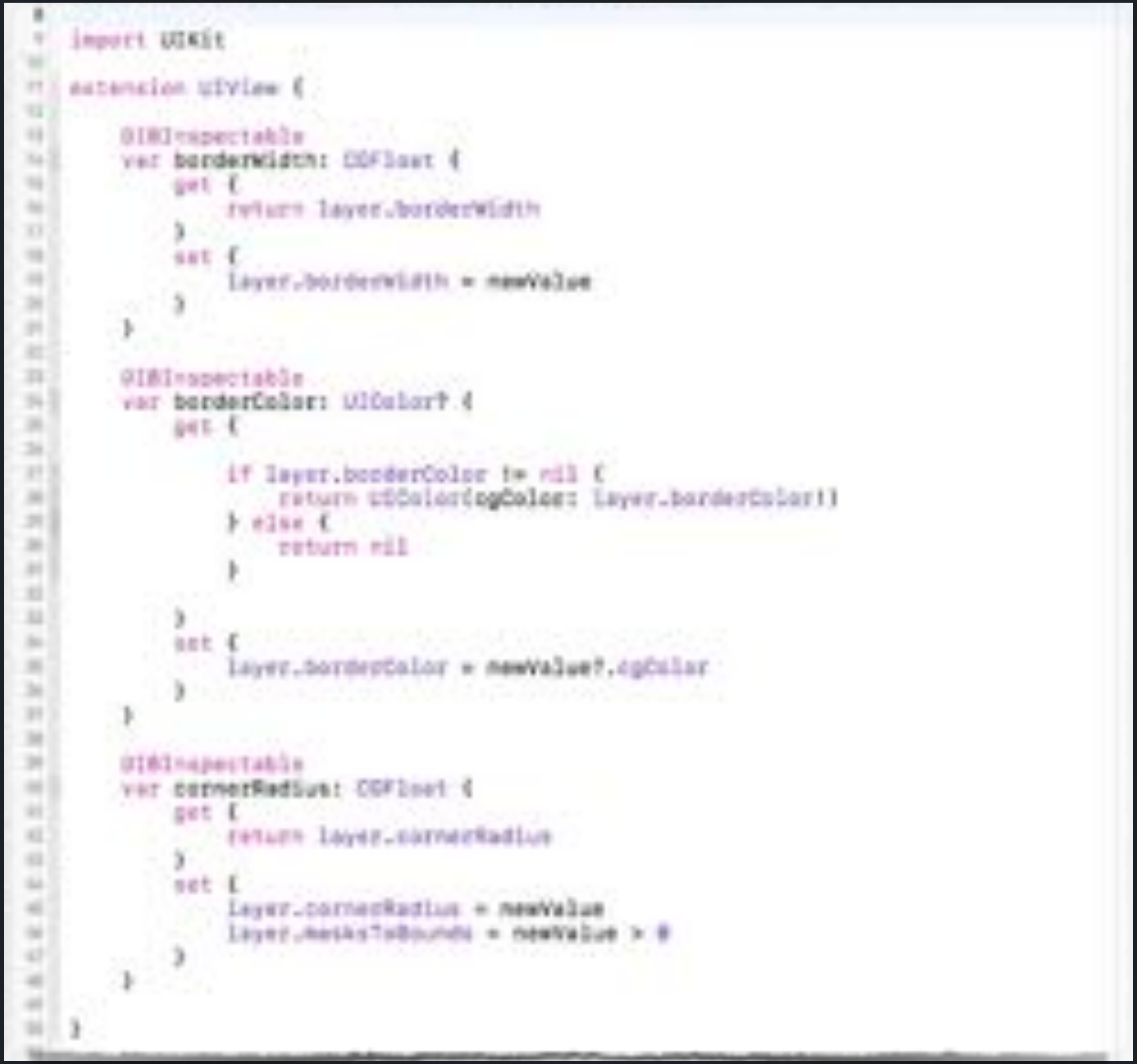
What about the text fields ?

- Swift Extensions
- UIView
- Generic approach

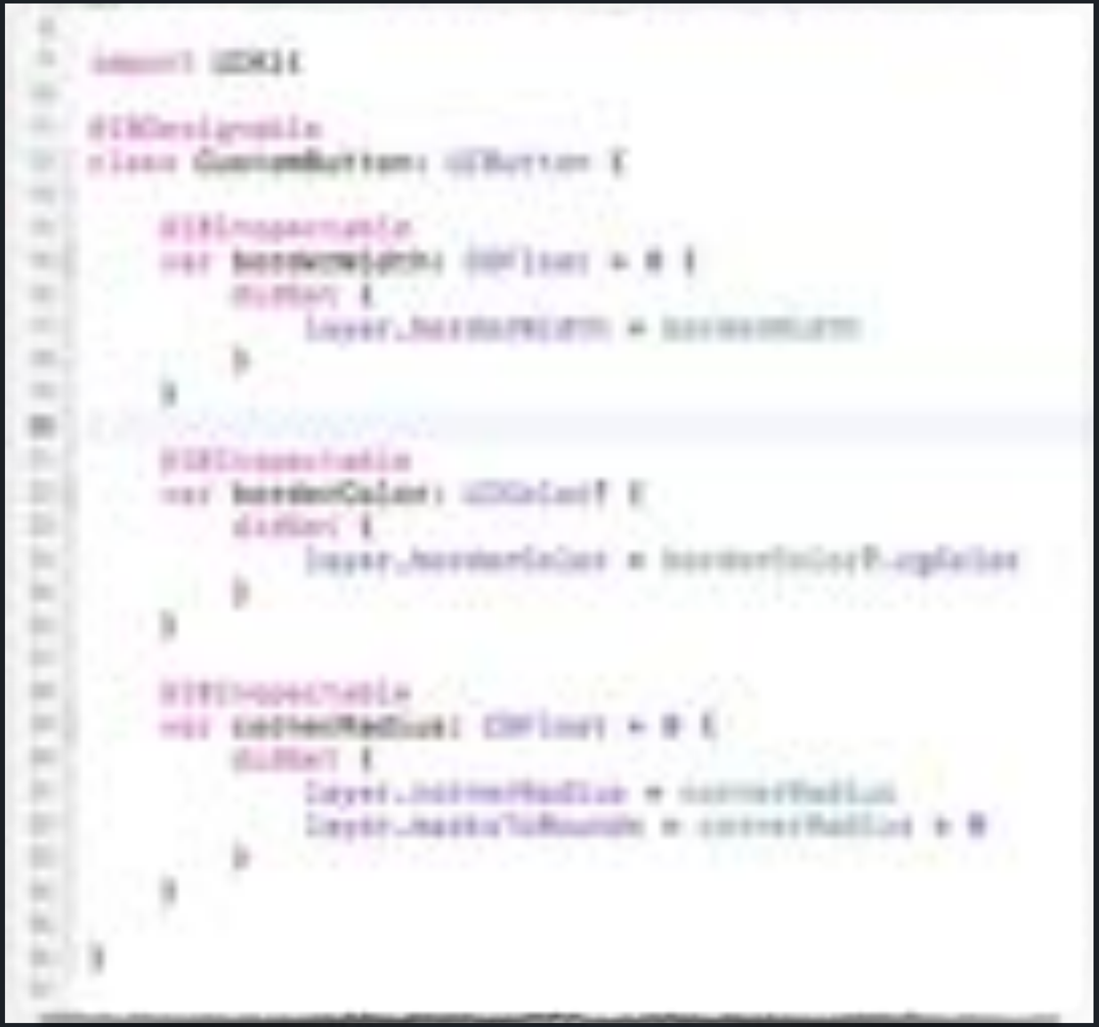
The generic approach

- Extend UIView via Swift Extensions
- Custom properties - @IBInspectable
- Inherit custom object types from built-in counterparts
- Custom object types - @IBDesignable

Extend UIView



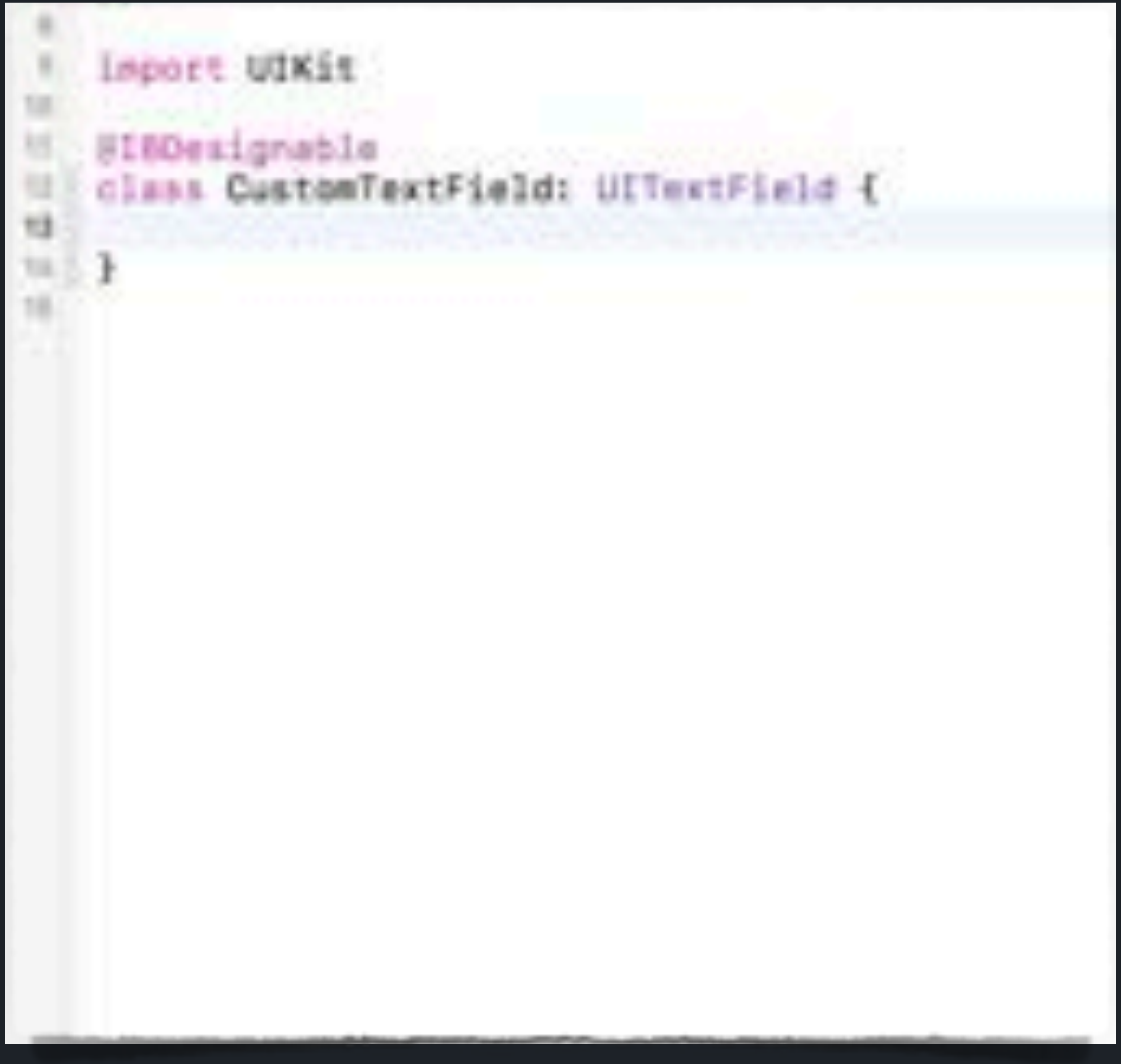
```swift
import UIKit

extension UIView {

    @IBInspectable
    var borderWidth: CGFloat {
        get {
            return layer.borderWidth
        }
        set {
            layer.borderWidth = newValue
        }
    }

    @IBInspectable
    var borderColor: UIColor? {
        get {

            if layer.borderColor != nil {
                return UIColor(cgColor: layer.borderColor!)
            } else {
                return nil
            }

        }
        set {
            layer.borderColor = newValue?.cgColor
        }
    }

    @IBInspectable
    var cornerRadius: CGFloat {
        get {
            return layer.cornerRadius
        }
        set {
            layer.cornerRadius = newValue
            layer.masksToBounds = newValue > 0
        }
    }

}
```



```swift
import UIKit

@IBDesignable
class CustomButton: UIButton {

    @IBInspectable
    var borderWidth: CGFloat = 0 {
        didSet {
            layer.borderWidth = borderWidth
        }
    }

    @IBInspectable
    var borderColor: UIColor? {
        didSet {
            layer.borderColor = borderColor?.cgColor
        }
    }

    @IBInspectable
    var cornerRadius: CGFloat = 0 {
        didSet {
            layer.cornerRadius = cornerRadius
            layer.masksToBounds = cornerRadius > 0
        }
    }

}
```

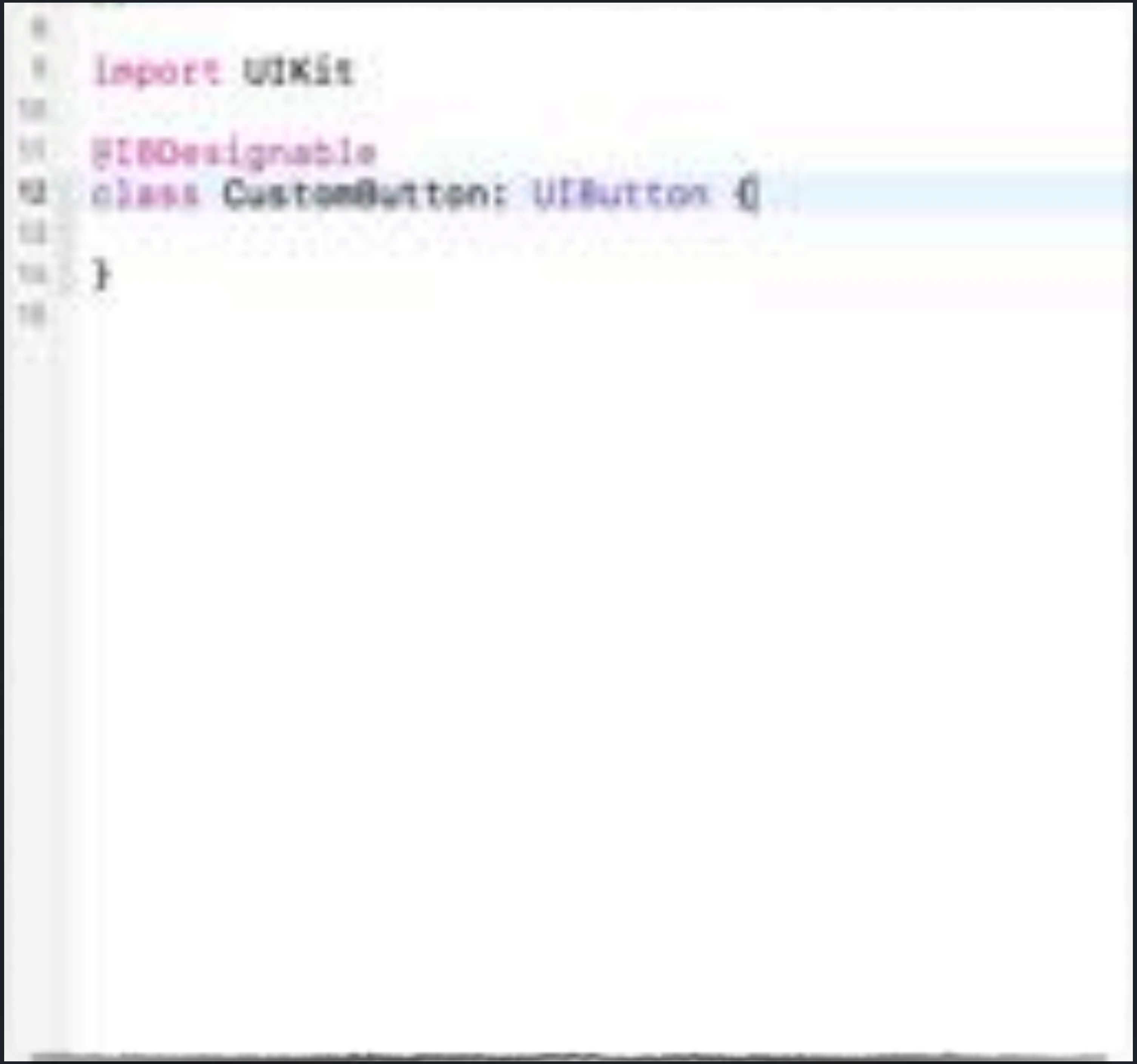
Compare to
what we had done previously
for CustomButton Class

Inherit from built-in counterparts



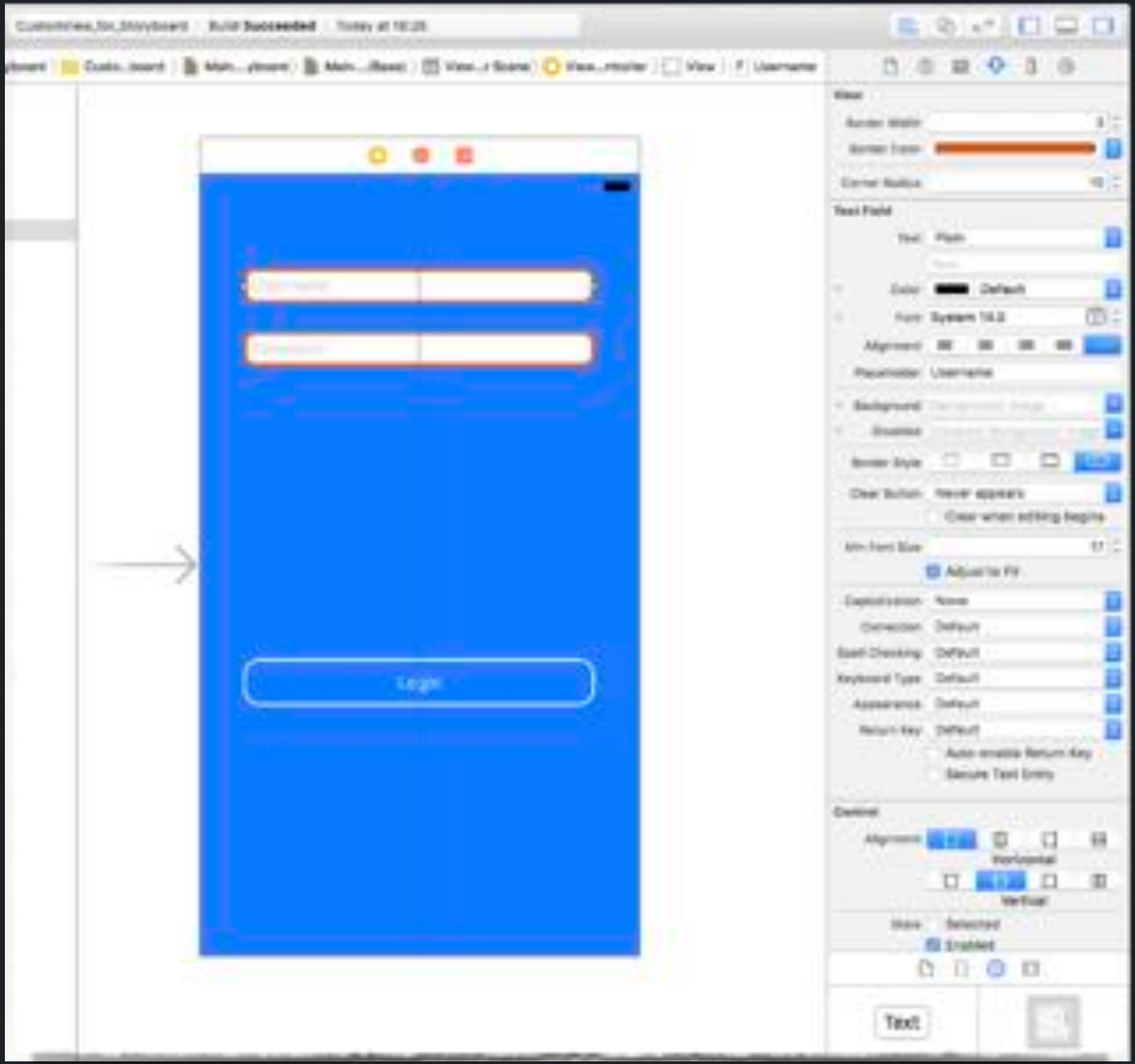
```
import UIKit

@IBDesignable
class CustomTextField: UITextField {

}
```

Clean CustomButton



```swift
import UIKit

@IBDesignable
class CustomButton: UIButton {

}
```

Play with CustomTextFiled as before



View
Border Width 1
Border Color
Corner Radius 10

Text Field
Text Plain
Color Default
Font System 14.0
Placeholder Username
Border Style
Clear Button Never appears
Clear when editing begins
Min Font Size 17
Adjust to Fit
Capitalization None
Correction Default
Spell Checking Default
Keyboard Type Default
Appearance Default
Return Key Default
Auto-enable Return Key
Secure Text Entry

Control
Alignment Horizontal
Vertical
State Selected
Enabled

Summary

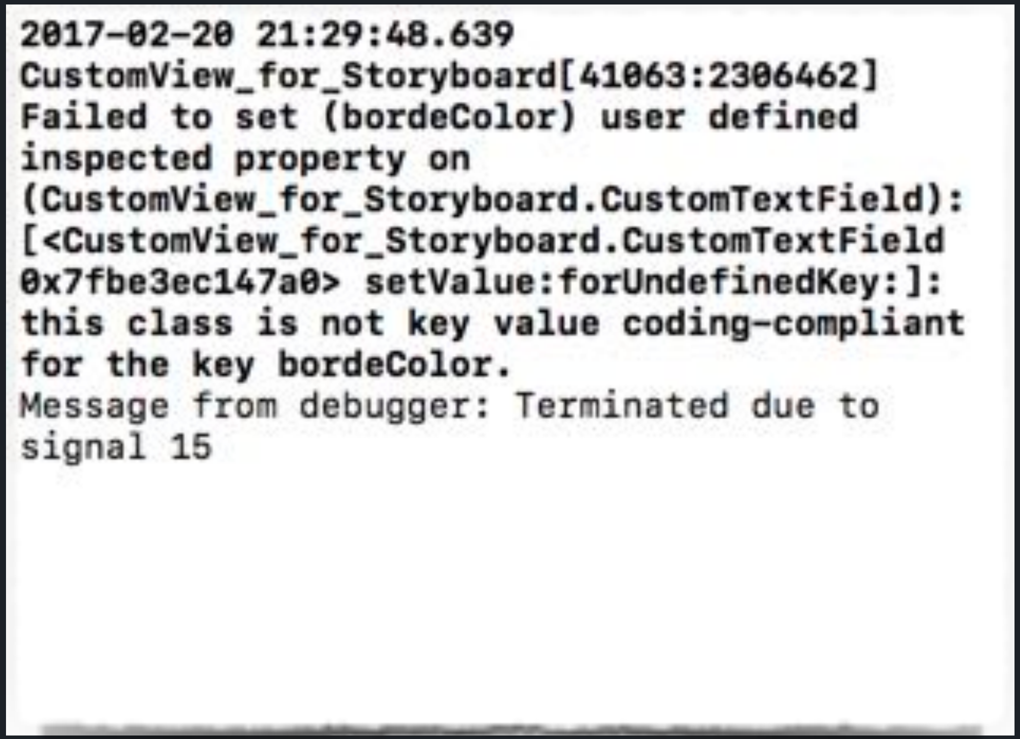
- @IBInspectable – Expose Custom Properties to Inspector
- @IBDesignable – Live render Custom Objects in Storyboard
- Swift Extensions – Enhance efficiency creatively

“Simple techniques that make Xcode Storyboard more intuitive.”

Important notes !

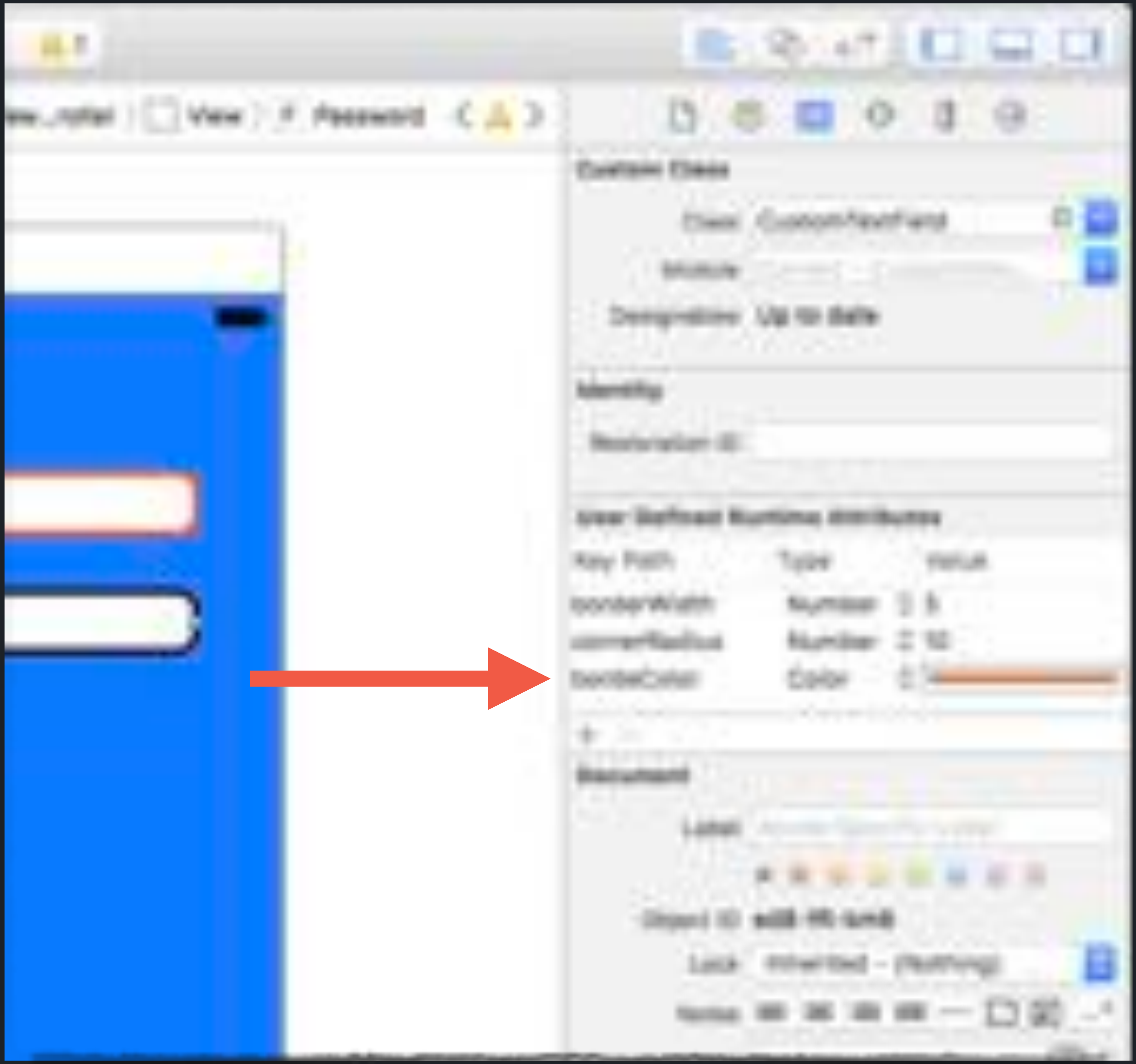
- Crashes
- Unexpected exceptions
- Possible issues
- Quick fix tips

Check "User-Defined Runtime Attributes"

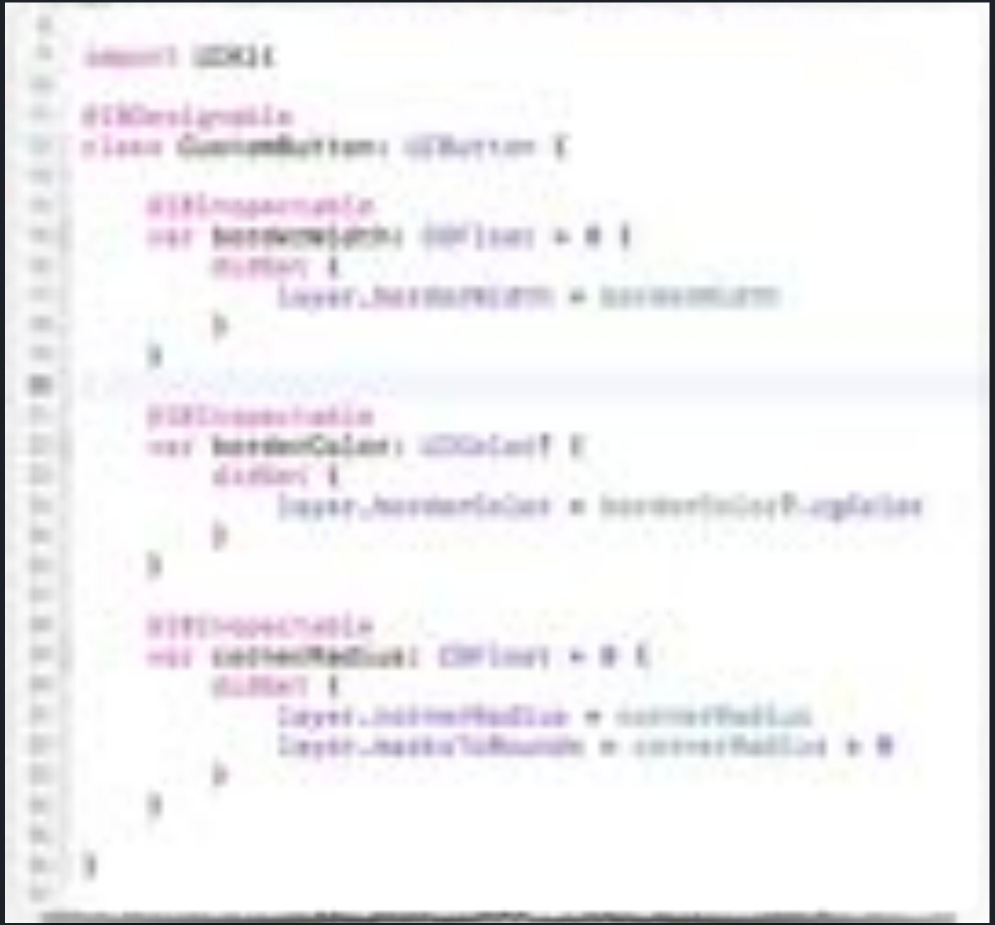


```
2017-02-20 21:29:48.639
CustomView_for_Storyboard[41063:2306462]
Failed to set (bordeColor) user defined
inspected property on
(CustomView_for_Storyboard.CustomTextField):
[<CustomView_for_Storyboard.CustomTextField
0x7fbe3ec147a0> setValue:forUndefinedKey:]:
this class is not key value coding-compliant
for the key bordeColor.
Message from debugger: Terminated due to
signal 15
```

Error message
that contains "Key-Value Coding"
in the console



Check types of properties



```swift
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    @IBInspectable
    var borderWidth: CGFloat = 0 {
        didSet {
            layer.borderWidth = borderWidth
        }
    }

    @IBInspectable
    var borderColor: UIColor? {
        didSet {
            layer.borderColor = borderColor?.cgColor
        }
    }

    @IBInspectable
    var cornerRadius: CGFloat = 0 {
        didSet {
            layer.cornerRadius = cornerRadius
            layer.masksToBounds = cornerRadius > 0
        }
    }

}
```

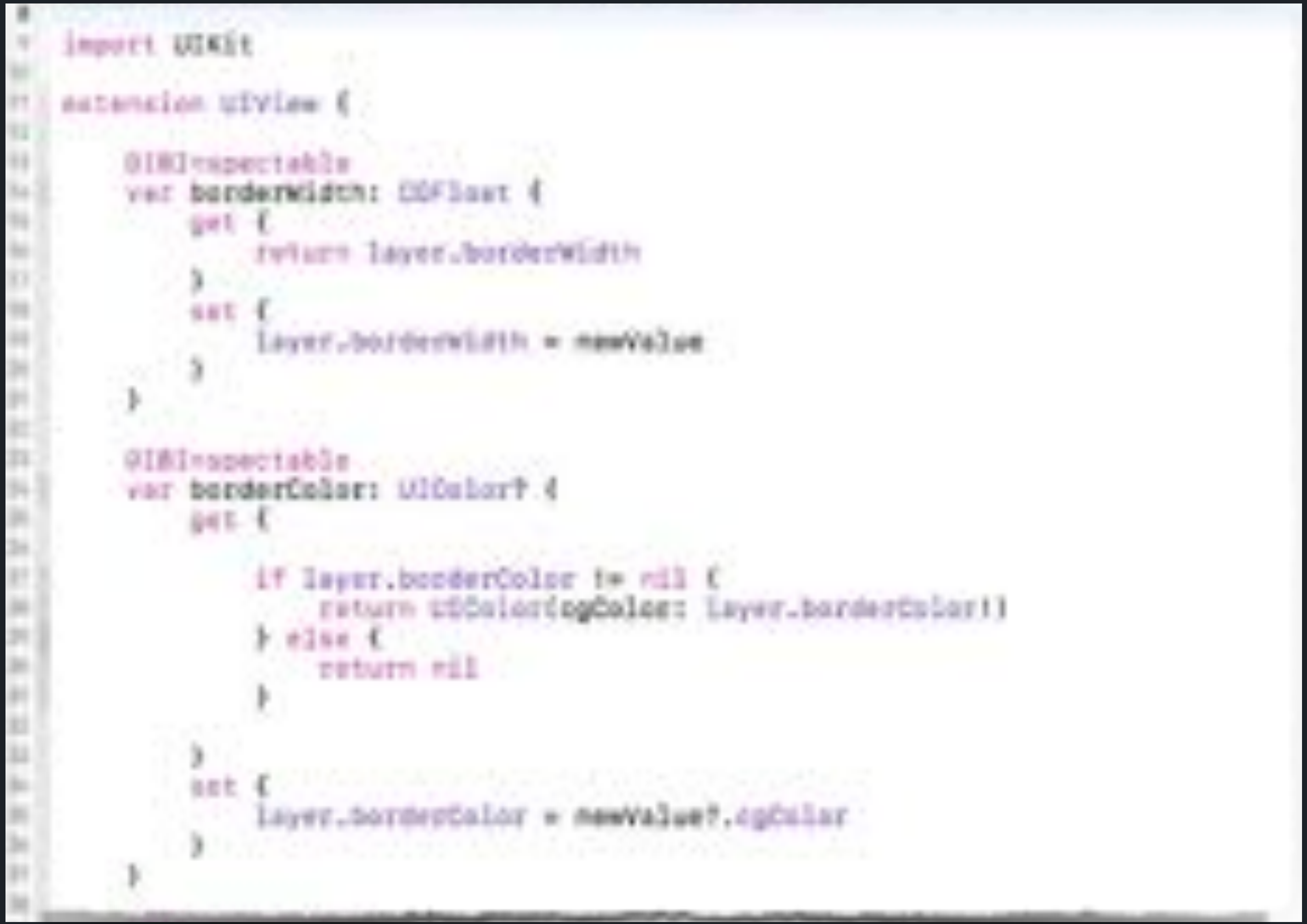

```swift
import UIKit

extension UIView {

    @IBInspectable
    var borderWidth: CGFloat {
        get {
            return layer.borderWidth
        }
        set {
            layer.borderWidth = newValue
        }
    }

    @IBInspectable
    var borderColor: UIColor? {
        get {

            if layer.borderColor != nil {
                return UIColor(cgColor: layer.borderColor!)
            } else {
                return nil
            }

        }
        set {
            layer.borderColor = newValue?.cgColor
        }
    }
```

- Custom Class
- Stored property
- Set default value
- Observer “didSet”

- Swift Extensions
- Computed property
- Default value not needed
- Setter and Getter

Customize Your Intuitive Storyboard with Creativity

Thank You

Useful Resources

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