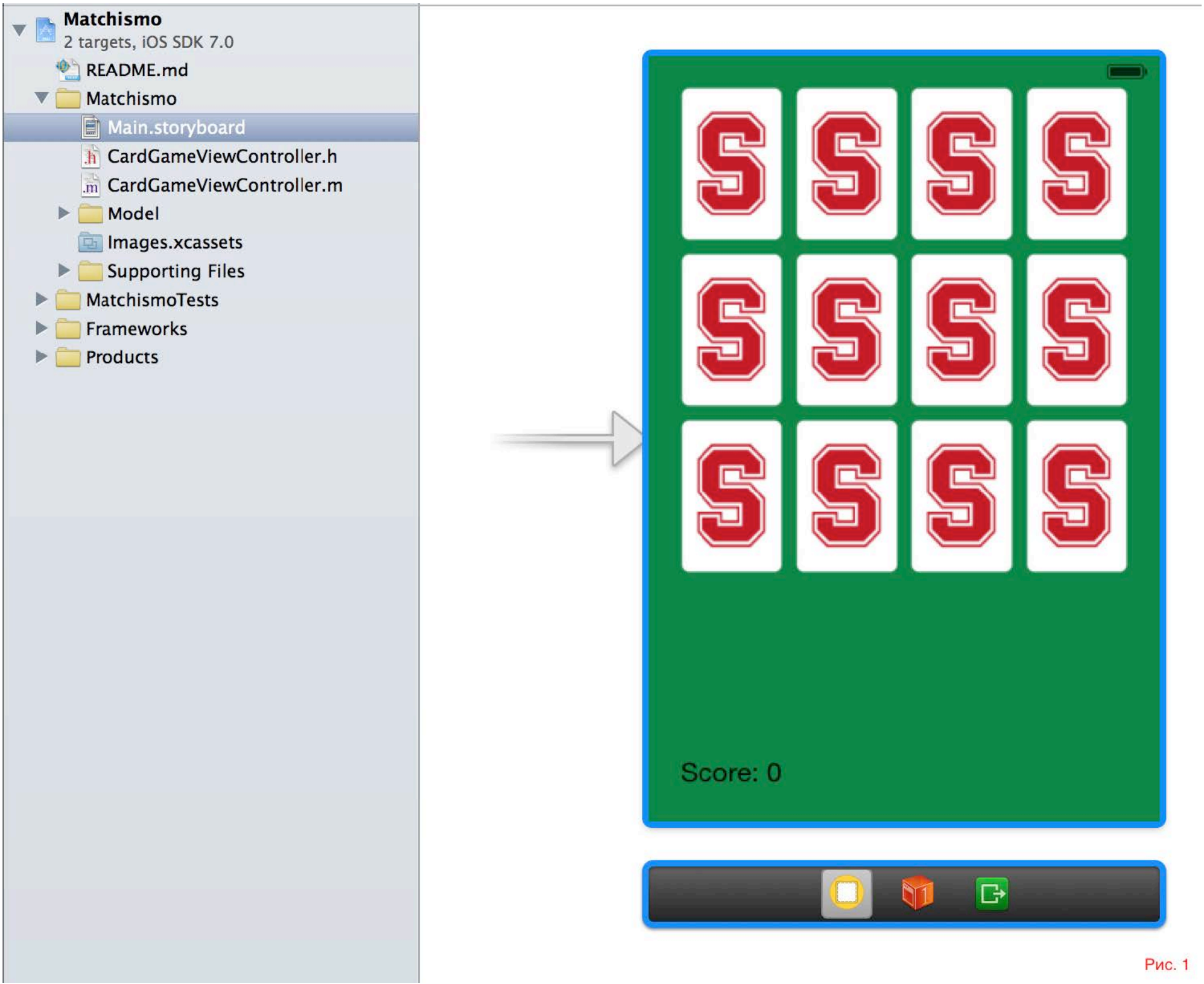

Matchismo
2 targets, iOS SDK 7.0
README.md
Matchismo
Main.storyboard
CardGameViewController.h
CardGameViewController.m
Model
Images.xcassets
Supporting Files
MatchismoTests
Frameworks
Products
Score: 0

Рис. 1

Matchismo 2 targets, iOS SDK 7.0
- README.md
- Matchismo
  - Main.storyboard
  - CardGameViewController.h
  - CardGameViewController.m
  - Model
  - Images.xcassets
  - Supporting Files
- MatchismoTests
- Frameworks
- Products

Matchismo > Matchismo > CardGameViewController.m > No Selection

```
#import "CardGameViewController.h"
#import "Deck.h"
#import "PlayingCardDeck.h"
#import "CardMatchingGame.h"

@interface CardGameViewController ()

@property (nonatomic, strong) CardMatchingGame *game;
@property (strong, nonatomic) IBOutletCollection(UIButton) NSArray *cardButtons;
@property (weak, nonatomic) IBOutlet UILabel *scoreLabel;

@end

@implementation CardGameViewController

- (CardMatchingGame *)game
{
    if (!_game) {
        _game = [[CardMatchingGame alloc] initWithCardCount:[self.cardButtons count]
                                                   usingDeck:[self createDeck]];
    }
    return _game;
}

- (Deck *)createDeck
{
    return [[PlayingCardDeck alloc] init];
}
```

Рис. 2

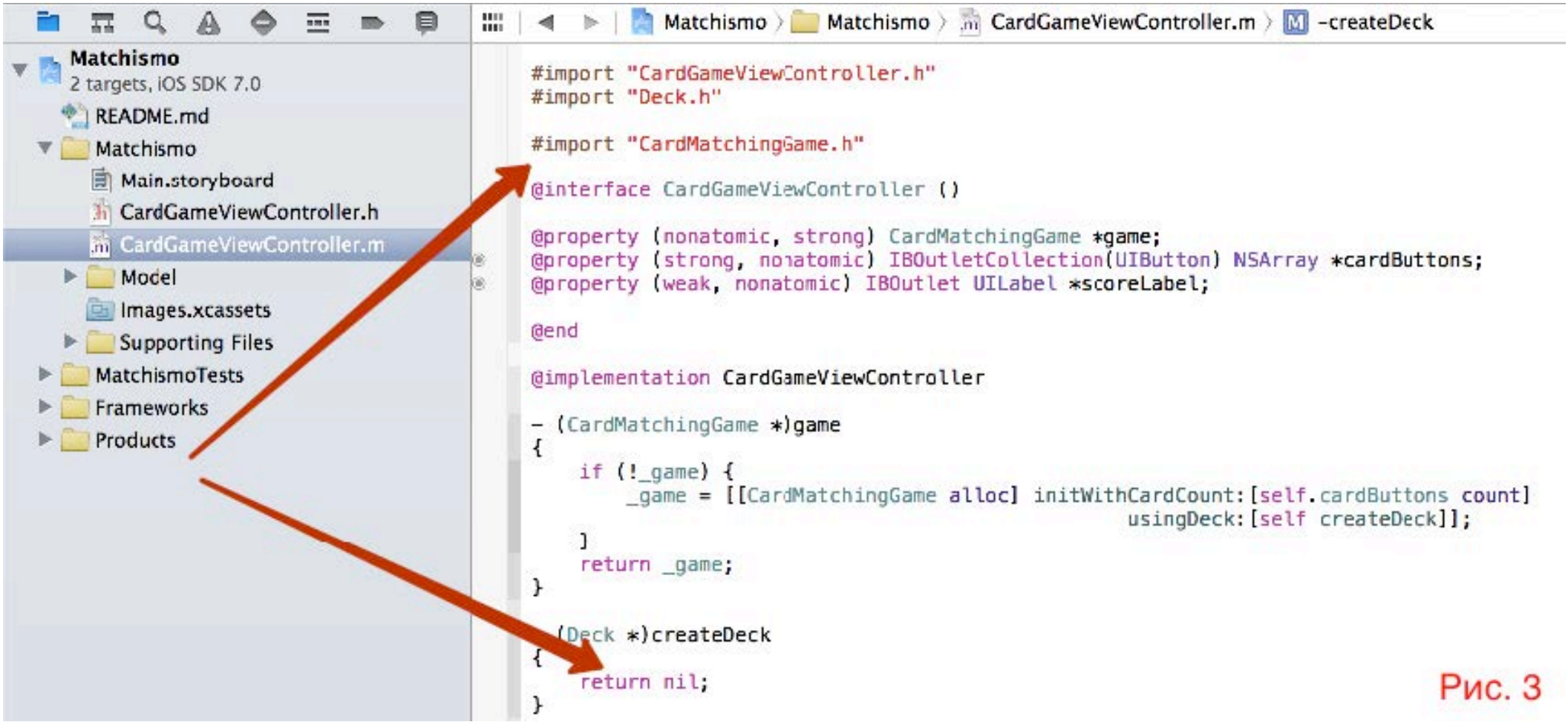

Matchismo
2 targets, iOS SDK 7.0
README.md
Matchismo
Main.storyboard
CardGameViewController.h
CardGameViewController.m
Model
Images.xcassets
Supporting Files
MatchismoTests
Frameworks
Products
Matchismo 〉 Matchismo 〉 CardGameViewController.m 〉 -createDeck
#import "CardGameViewController.h"
#import "Deck.h"
#import "CardMatchingGame.h"
@interface CardGameViewController ()
@property (nonatomic, strong) CardMatchingGame *game;
@property (strong, nonatomic) IBOutletCollection(UIButton) NSArray *cardButtons;
@property (weak, nonatomic) IBOutlet UILabel *scoreLabel;
@end
@implementation CardGameViewController
- (CardMatchingGame *)game
{
if (!_game) {
_game = [[CardMatchingGame alloc] initWithCardCount:[self.cardButtons count]
usingDeck:[self createDeck]];
}
return _game;
}
(Deck *)createDeck
{
return nil;
}

Рис. 3

```
@implementation CardGameViewController

- (CardMatchingGame *)game
{
    if (!_game) {
        _game = [[CardMatchingGame alloc] initWithCardCount:[self.cardButtons count]
                                                   usingDeck:[self createDeck]];
    }
    return _game;
}

- (Deck *)createDeck
{
    return nil;    //abstract
}
```

Рис. 4

```
//
//  abstract class. Must implement methods as described below.

#import <UIKit/UIKit.h>
#import "Deck.h"
@interface CardGameViewController : UIViewController



// protected
// for subclasses

- (Deck *)createDeck; //abstract

@end
```

Рис. 5

```
//
//  PlayingCardGameViewController.h
//  Matchismo
//
//  Created by Tatiana Kornilova on 3/2/14.
//  Copyright (c) 2014 m2m server software gmbh. All rights reserved.
//

#import "CardGameViewController.h"

@interface PlayingCardGameViewController : CardGameViewController

@end
```

Рис. 6

```
//
//  PlayingCardGameViewController.m
//  Matchismo
//
//  Created by Tatiana Kornilova on 3/2/14.
//  Copyright (c) 2014 m2m server software gmbh. All rights reserved.
//

#import "PlayingCardGameViewController.h"
#import "PlayingCardDeck.h"

@interface PlayingCardGameViewCon  oller ()

@end

@implementation PlayingCardGameViewControlle
 -(Deck *)createDeck
{
    return [[PlayingCardDeck alloc] init];
}

@end
```

Рис. 7

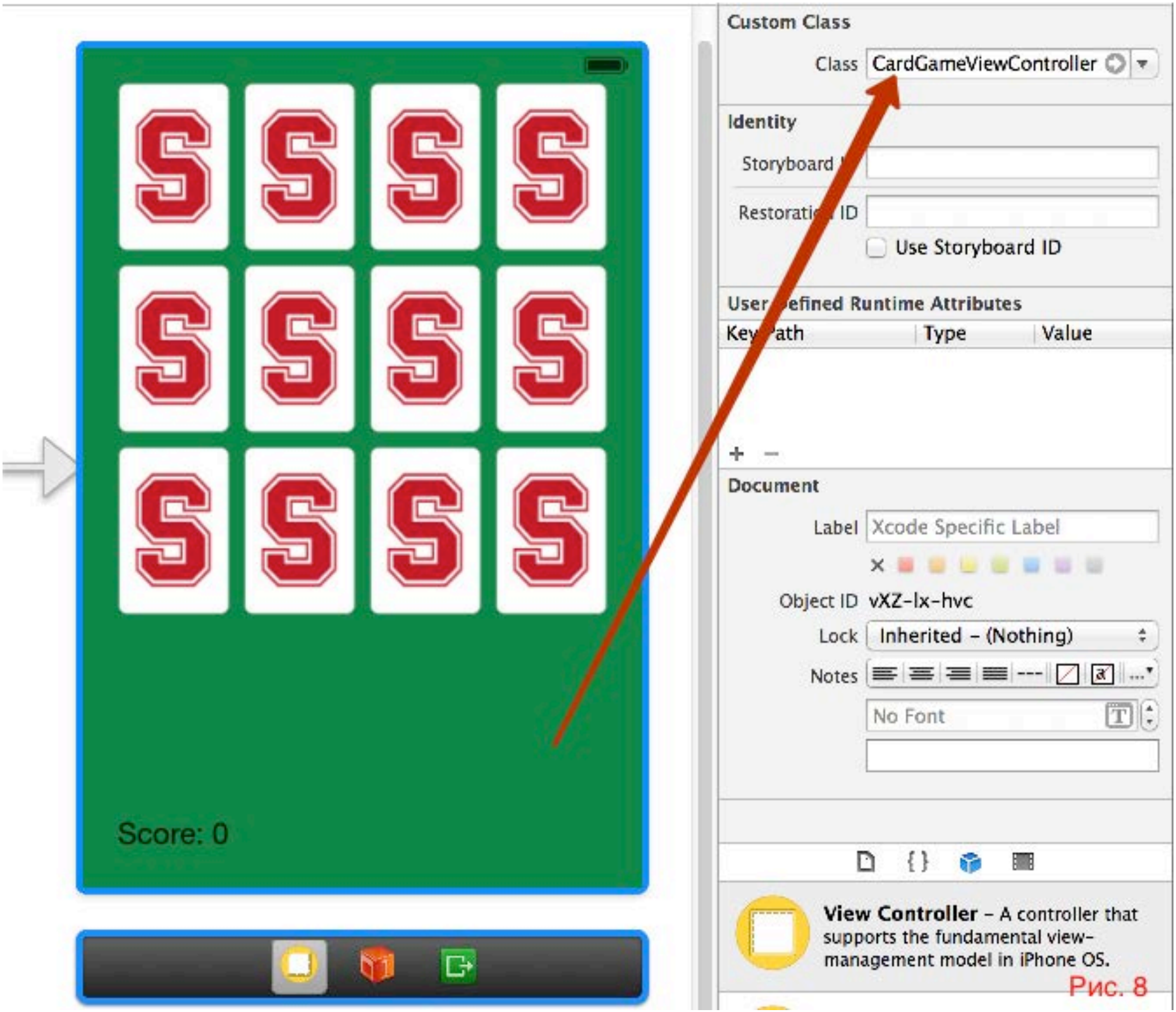

Score: 0
Custom Class
Class
CardGameViewController
Identity
Storyboard
Restoration ID
Use Storyboard ID
User Defined Runtime Attributes
Key Path
Type
Value
Document
Label
Xcode Specific Label
Object ID
vXZ-lx-hvc
Lock
Inherited - (Nothing)
Notes
No Font
View Controller – A controller that supports the fundamental view-management model in iPhone OS.

Рис. 8

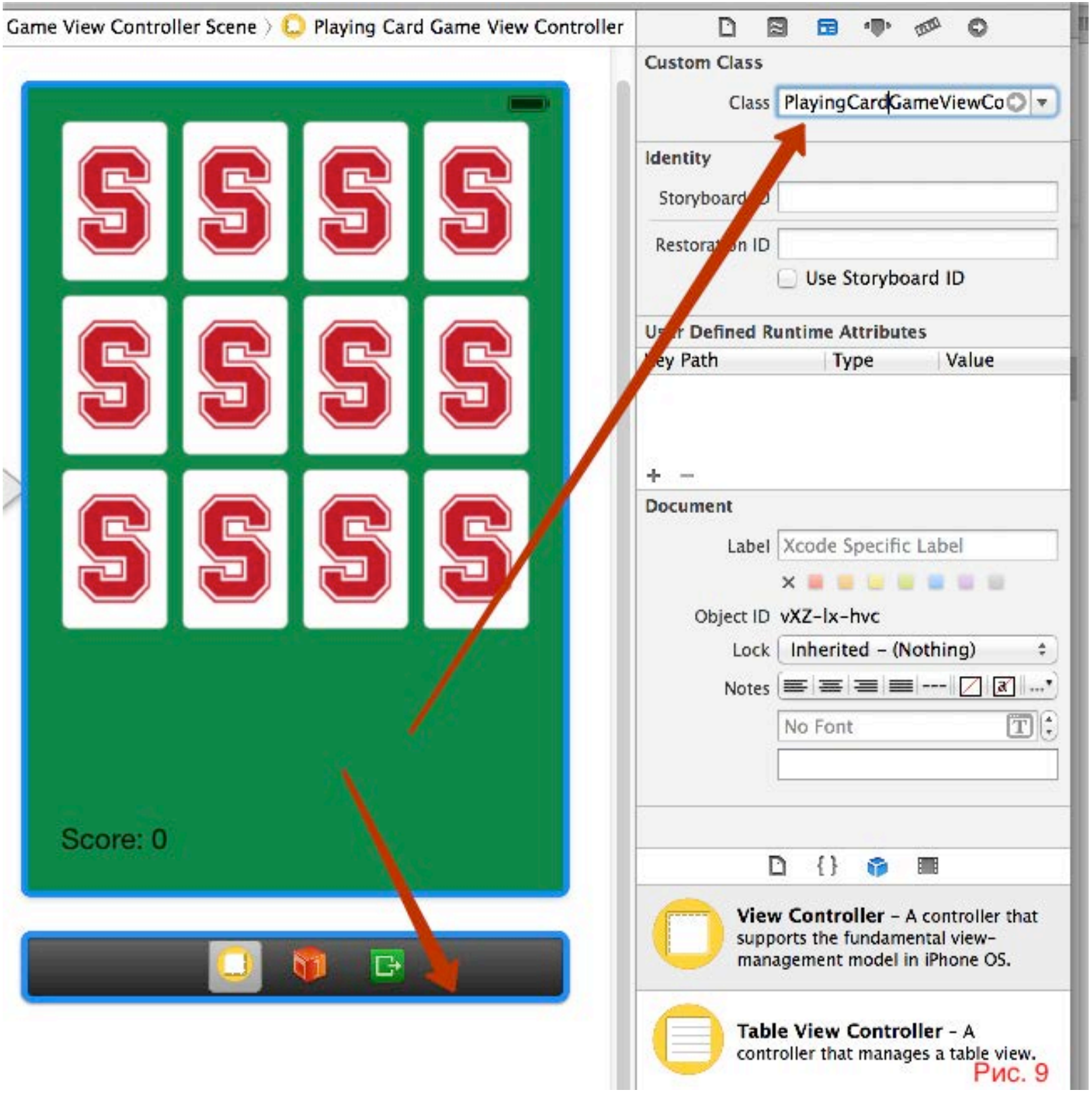

Game View Controller Scene
Playing Card Game View Controller
Score: 0
Custom Class
Class
PlayingCardGameViewCo
Identity
Storyboard ID
Restoration ID
Use Storyboard ID
User Defined Runtime Attributes
Key Path
Type
Value
Document
Label
Xcode Specific Label
Object ID
vXZ-lx-hvc
Lock
Inherited – (Nothing)
Notes
No Font
View Controller – A controller that supports the fundamental view-management model in iPhone OS.
Table View Controller – A controller that manages a table view.

Рис. 9

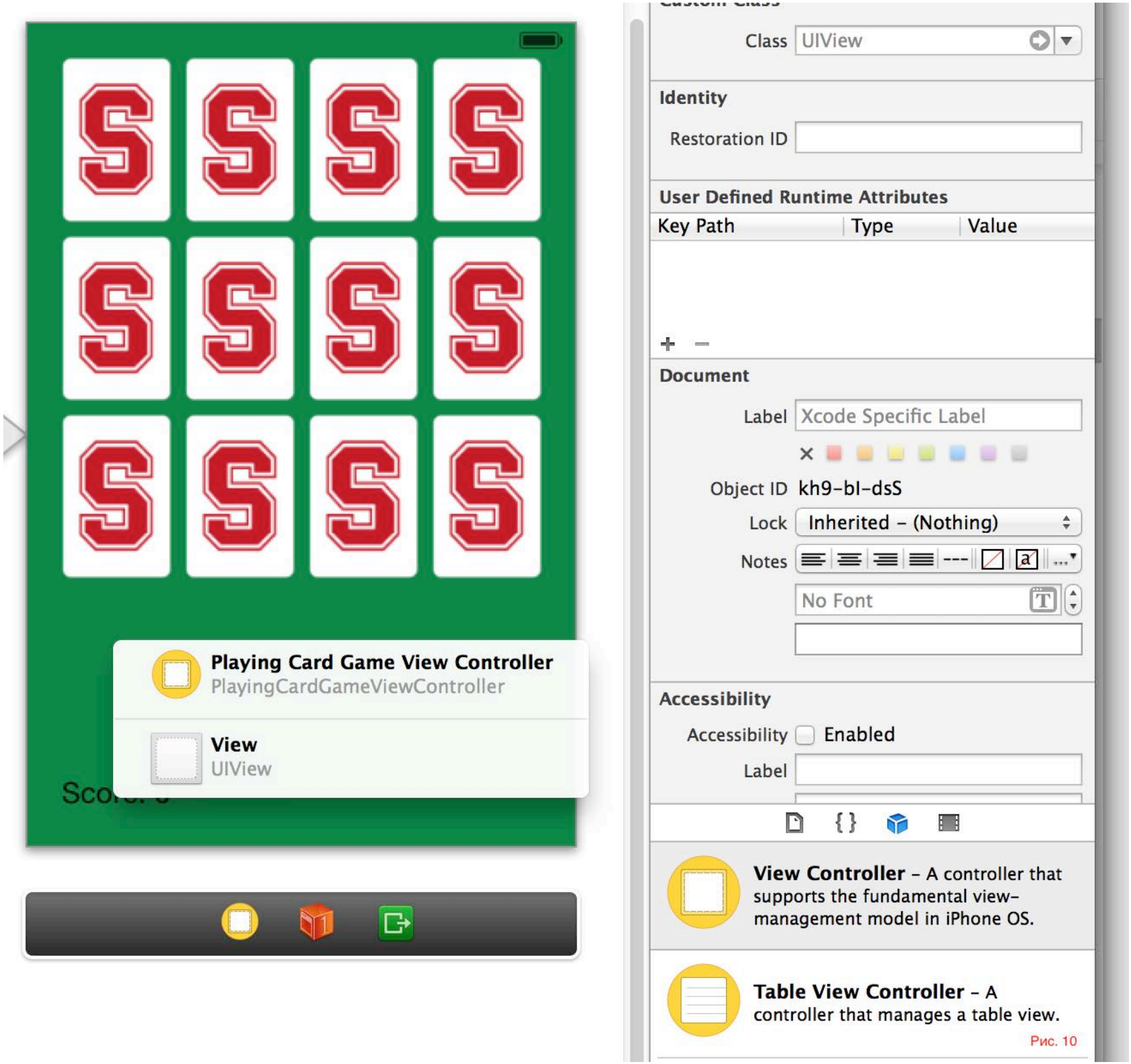

Playing Card Game View Controller
PlayingCardGameViewController
View
UIView
Class
UIView
Identity
Restoration ID
User Defined Runtime Attributes
Key Path
Type
Value
Document
Label
Xcode Specific Label
Object ID
kh9-bI-dsS
Lock
Inherited - (Nothing)
Notes
No Font
Accessibility
Accessibility
Enabled
Label
View Controller - A controller that supports the fundamental view-management model in iPhone OS.
Table View Controller - A controller that manages a table view.

Рис. 10

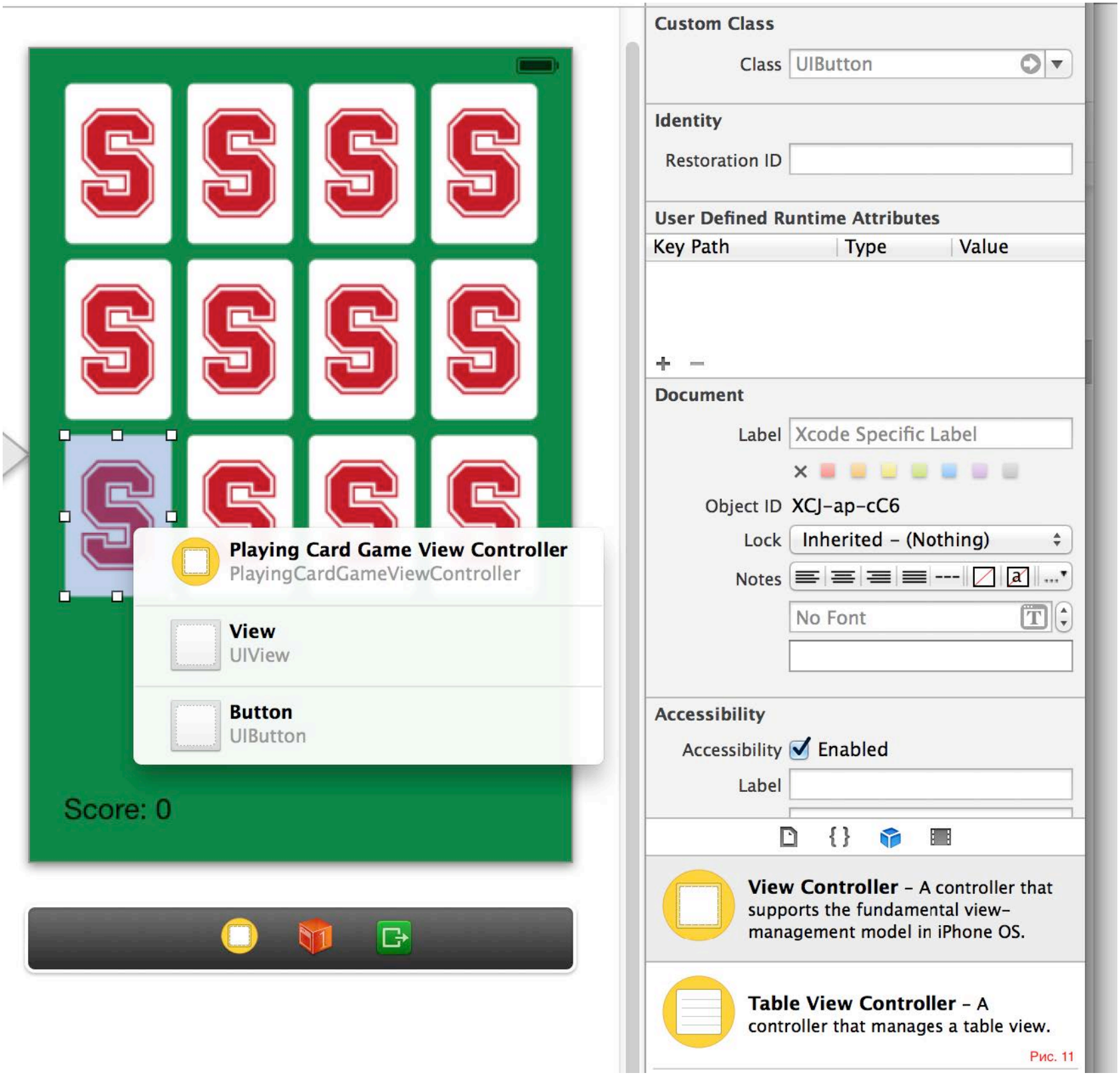
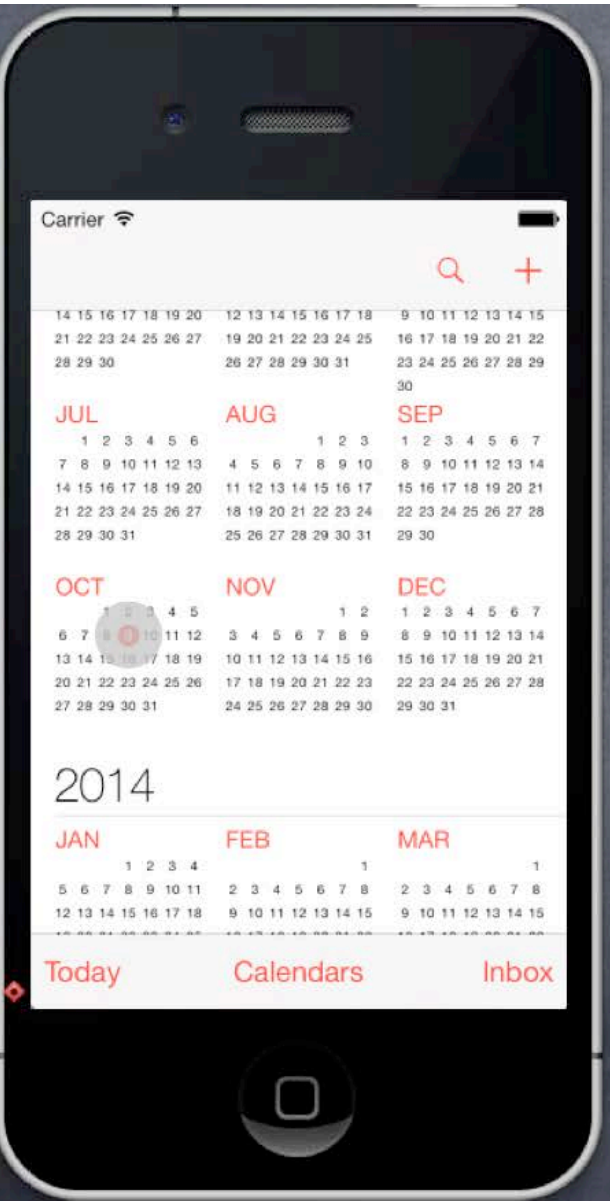

Playing Card Game View Controller
PlayingCardGameViewController
View
UIView
Button
UIButton
Score: 0
Custom Class
Class
UIButton
Identity
Restoration ID
User Defined Runtime Attributes
Key Path
Type
Value
Document
Label
Xcode Specific Label
Object ID
XCJ-ap-cC6
Lock
Inherited - (Nothing)
Notes
No Font
Accessibility
Accessibility
Enabled
Label
View Controller - A controller that supports the fundamental view-management model in iPhone OS.
Table View Controller - A controller that manages a table view.

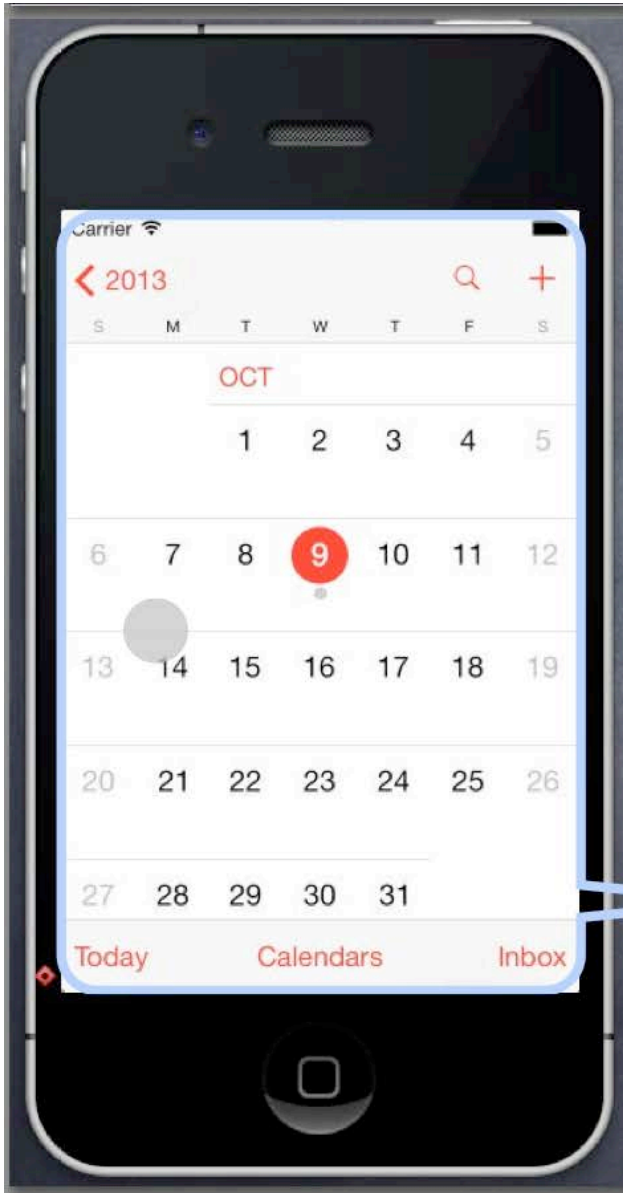
Рис. 11



UINavigationController

- When to use it?
  When the user wants to "dive down" into more detail.

Рис. 12



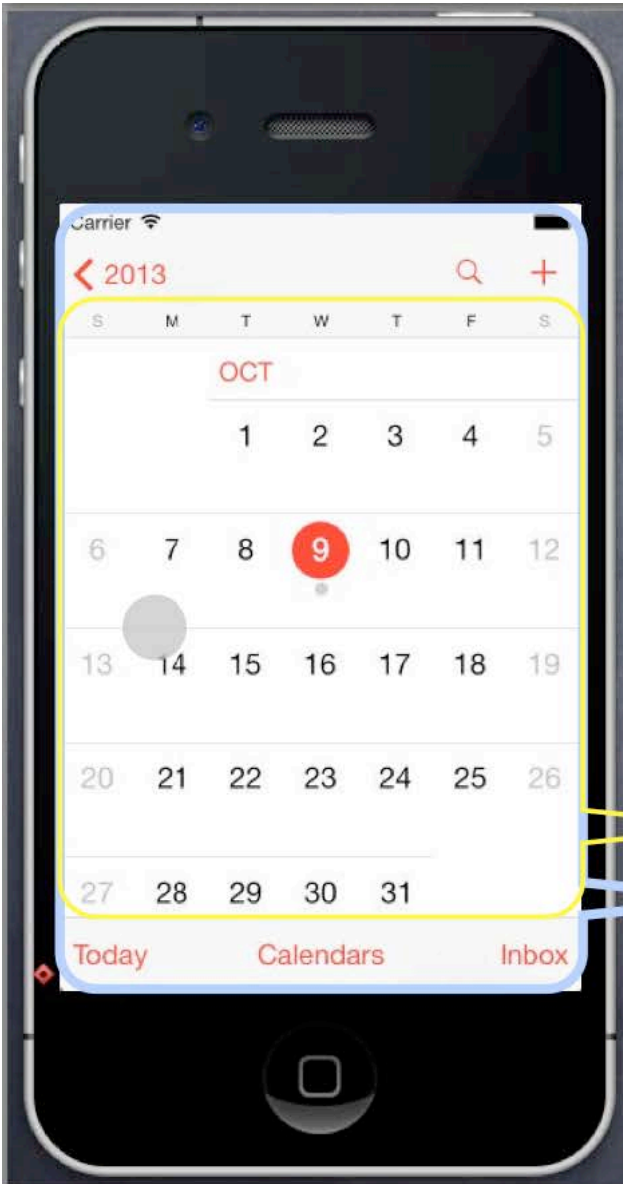
UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.

This is the UINavigationController's View.

Рис. 13

UINavigationController



- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.

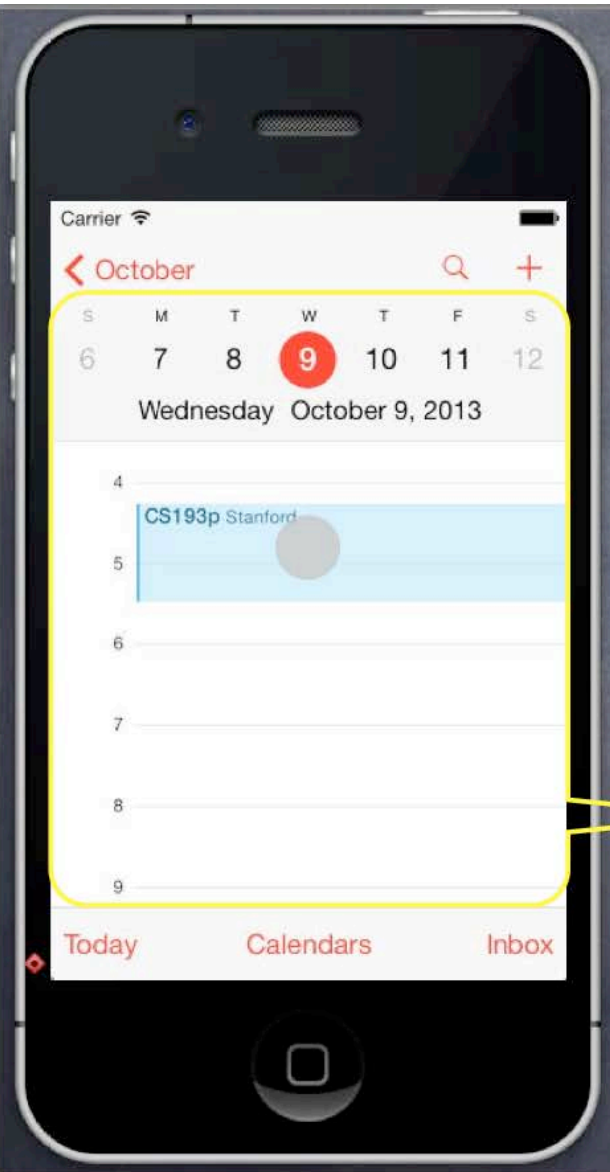
This is a Month MVC's View.

This is the UINavigationController's View.

Рис. 14

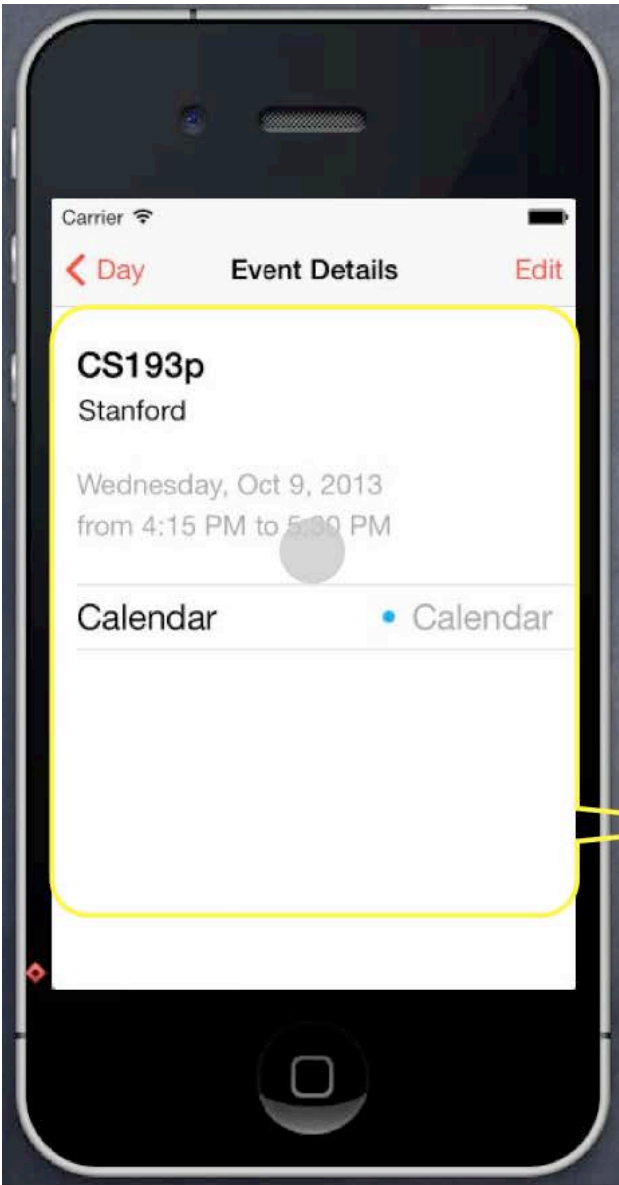
UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.



This is a Day MVC's View.

Рис. 15

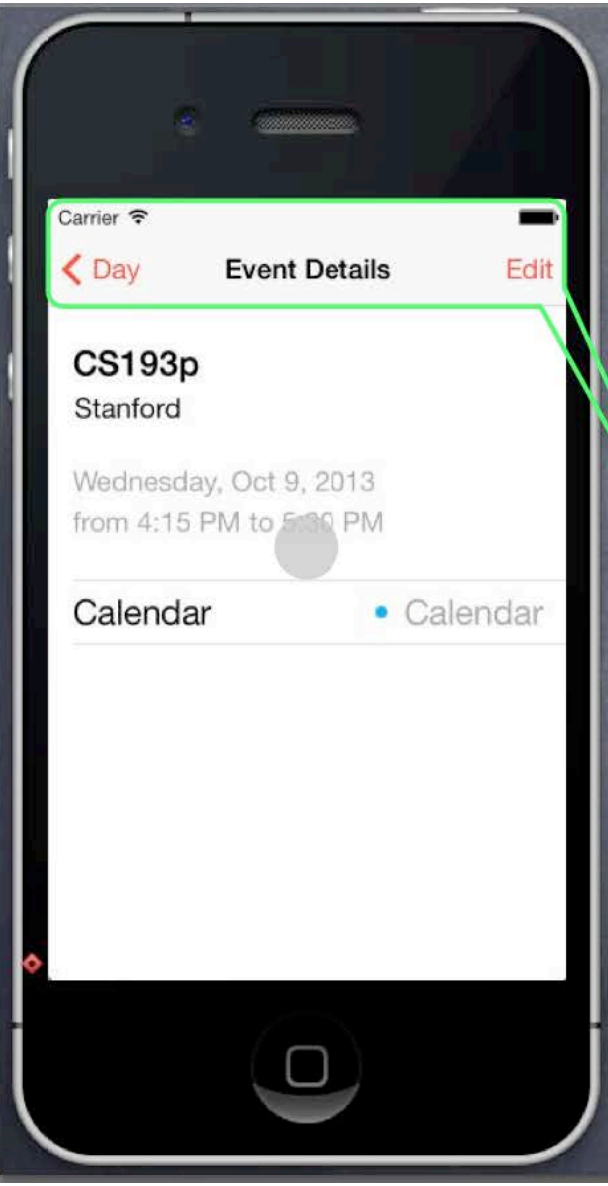


UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.

This is a Calendar Event MVC's View.

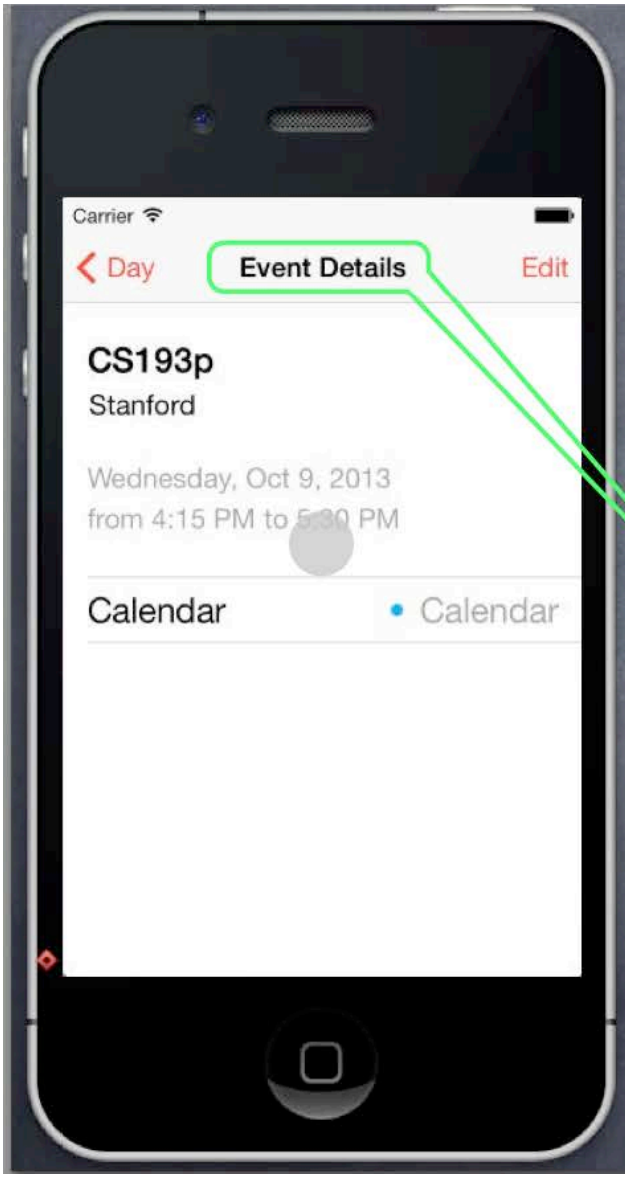
Рис. 16



UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.
- **Components of a UINavigationController**
  Navigation Bar (contents determined by embedded MVC's `navigationItem`).

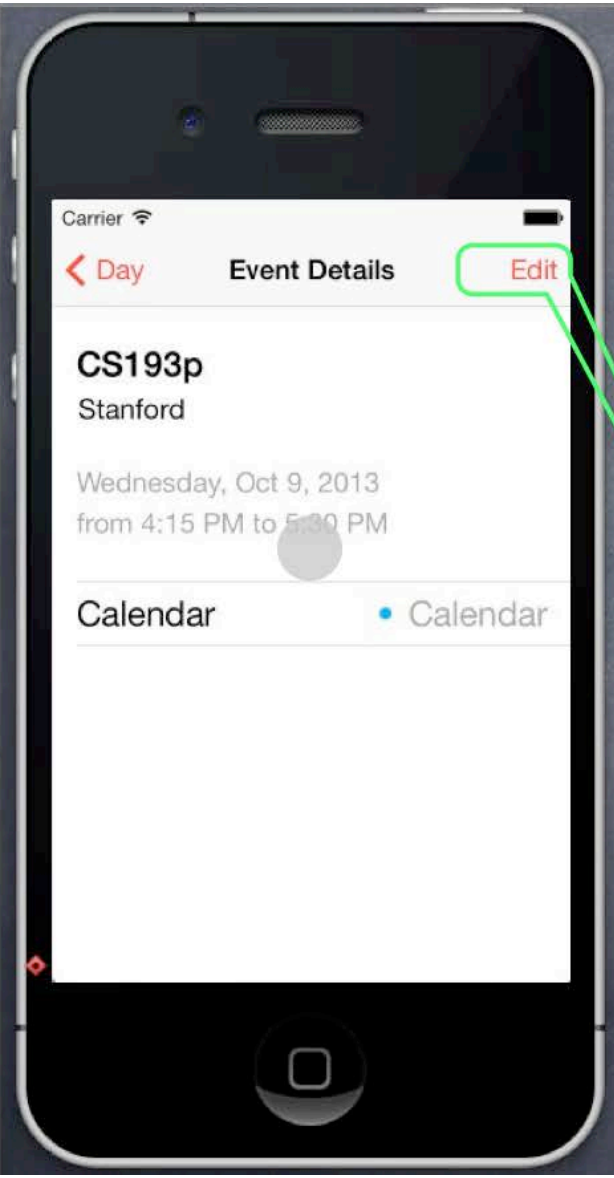
Рис. 17



UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.
- **Components of a UINavigationController**
  Navigation Bar (contents determined by embedded MVC's `navigationItem`).
  Title (by default is `title` property of the embedded MVC)

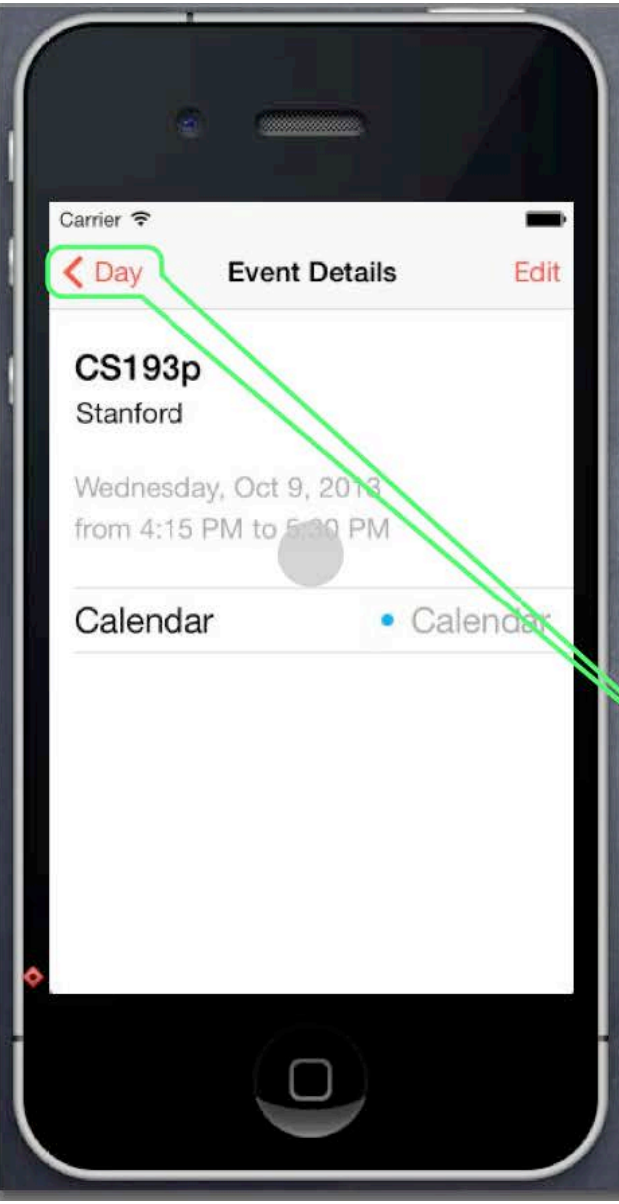
Рис. 18



UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.
- **Components of a UINavigationController**
  Navigation Bar (contents determined by embedded MVC's `navigationItem`).
  - Title (by default is `title` property of the embedded MVC)
  - Embedded MVC's `navigationItem.rightBarButtonItems`
    (an NSArray of UIBarButtonItems)

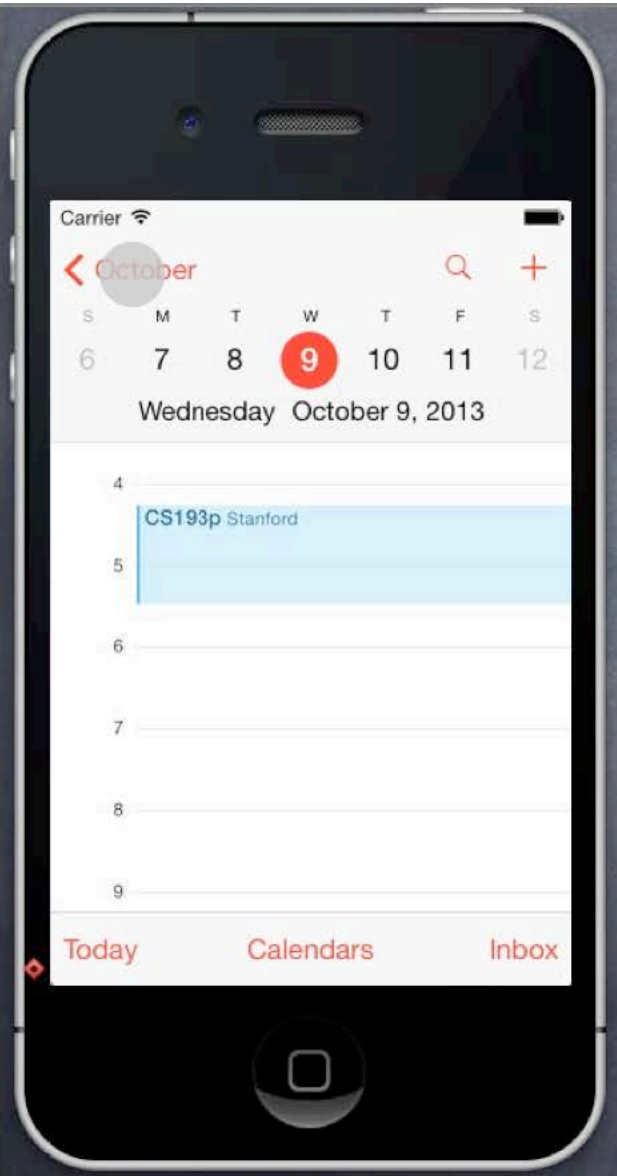
Рис. 19



UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.
- **Components of a UINavigationController**
  Navigation Bar (contents determined by embedded MVC's `navigationItem`).
  - Title (by default is `title` property of the embedded MVC)
  - Embedded MVC's `navigationItem.rightBarButtonItems`
    (an NSArray of UIBarButtonItems)
  - Back Button (automatic)

Рис. 20



UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.
- **Components of a UINavigationController**
  Navigation Bar (contents determined by embedded MVC's `navigationItem`).
  - Title (by default is `title` property of the embedded MVC)
  - Embedded MVC's `navigationItem.rightBarButtonItems`
    (an NSArray of UIBarButtonItems)
  - Back Button (automatic)

Рис. 21

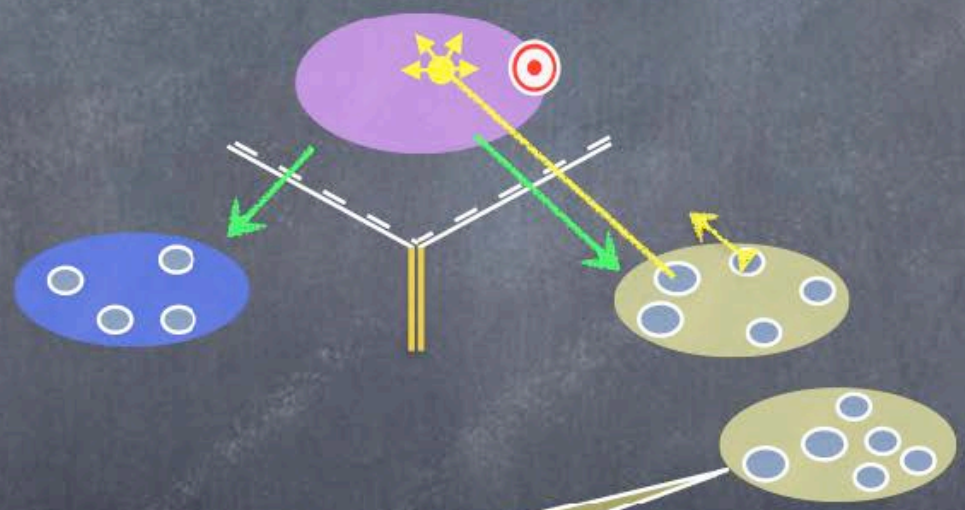
UINavigationController

- **When to use it?**
  When the user wants to "dive down" into more detail.
- **How does it work?**
  Encloses other MVCs (like the Year MVC and the Month MVC).
  Touches in one MVC "segue" to the other MVCs.
- **Components of a UINavigationController**
  Navigation Bar (contents determined by embedded MVC's `navigationItem`).
  - Title (by default is `title` property of the embedded MVC)
  - Embedded MVC's `navigationItem.rightBarButtonItems`
    (an NSArray of UIBarButtonItems)
  - Back Button (automatic)

  Embedded MVC's `toolbarItems` property
  (also an NSArray of UIBarButtonItems)

Рис. 22

MVCs working together



I want more features, but it doesn't make sense to put them all in one MVC!

Рис. 23

MVCs working together

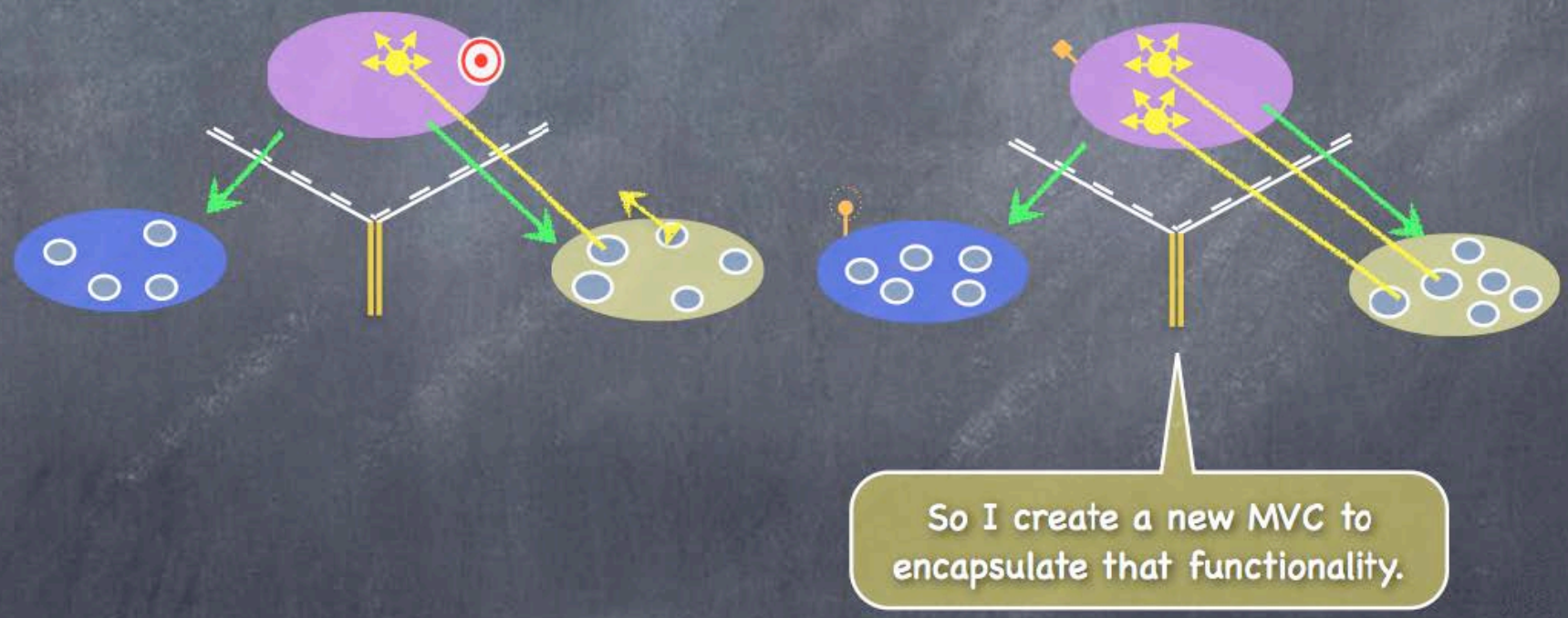


Рис. 24

MVCs working together

If the relationship between these two MVCs is "more detail," we use a UINavigationController to let them share the screen.

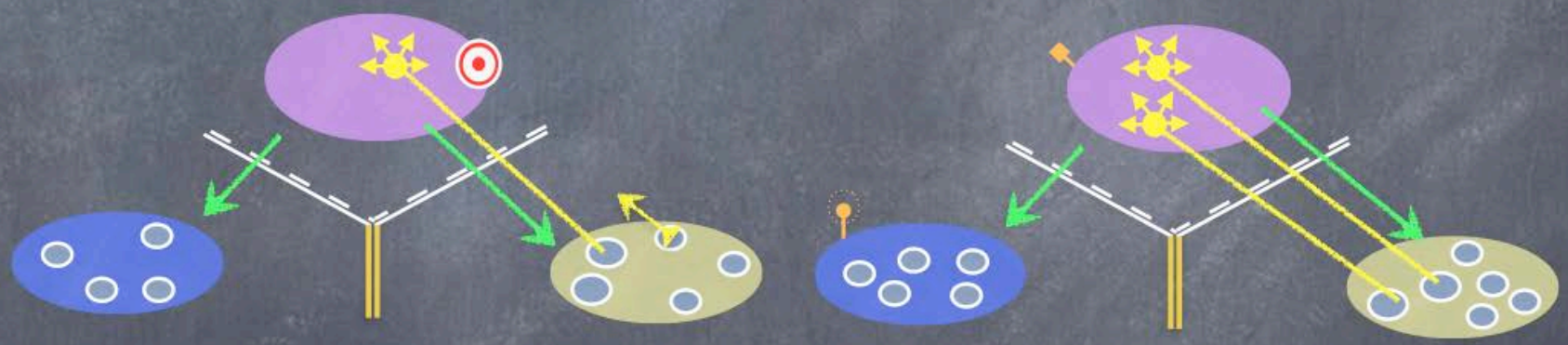


Рис. 25

MVCs working together

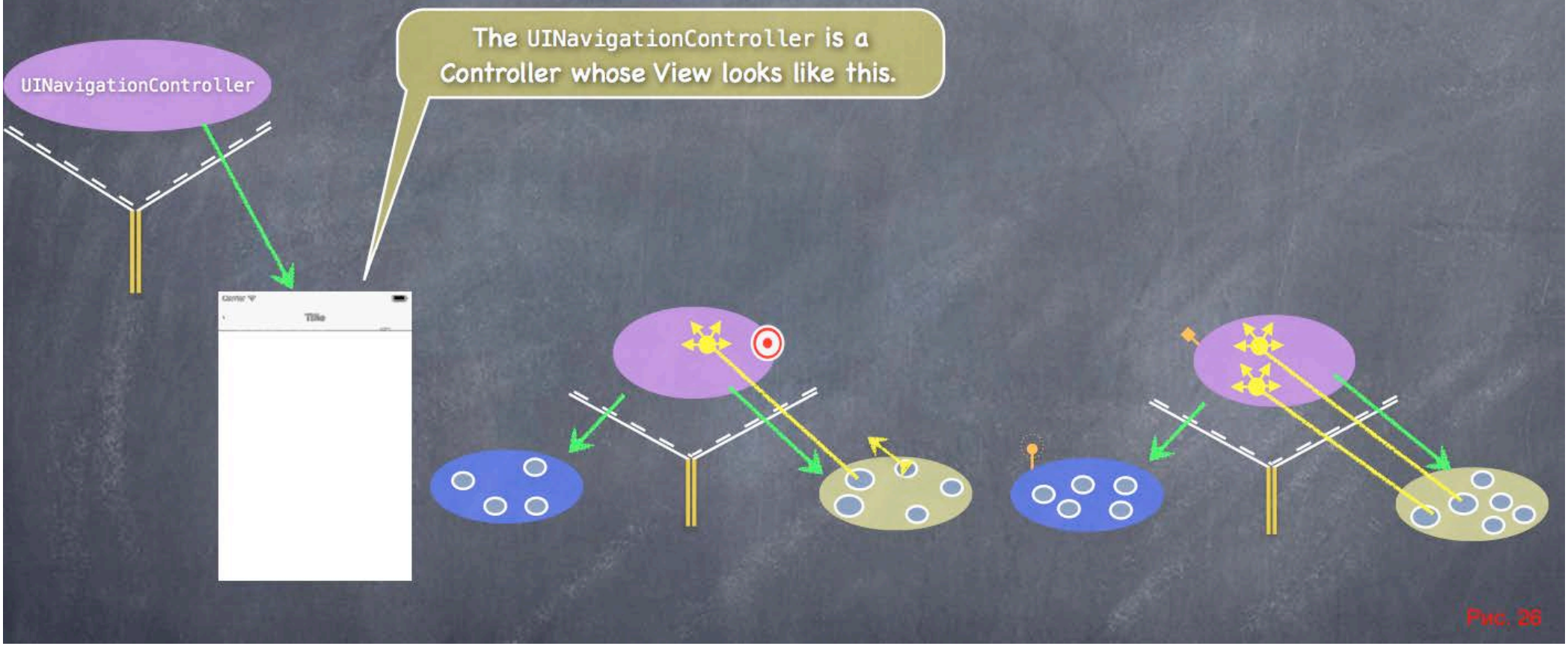


Рис. 26

MVCs working together

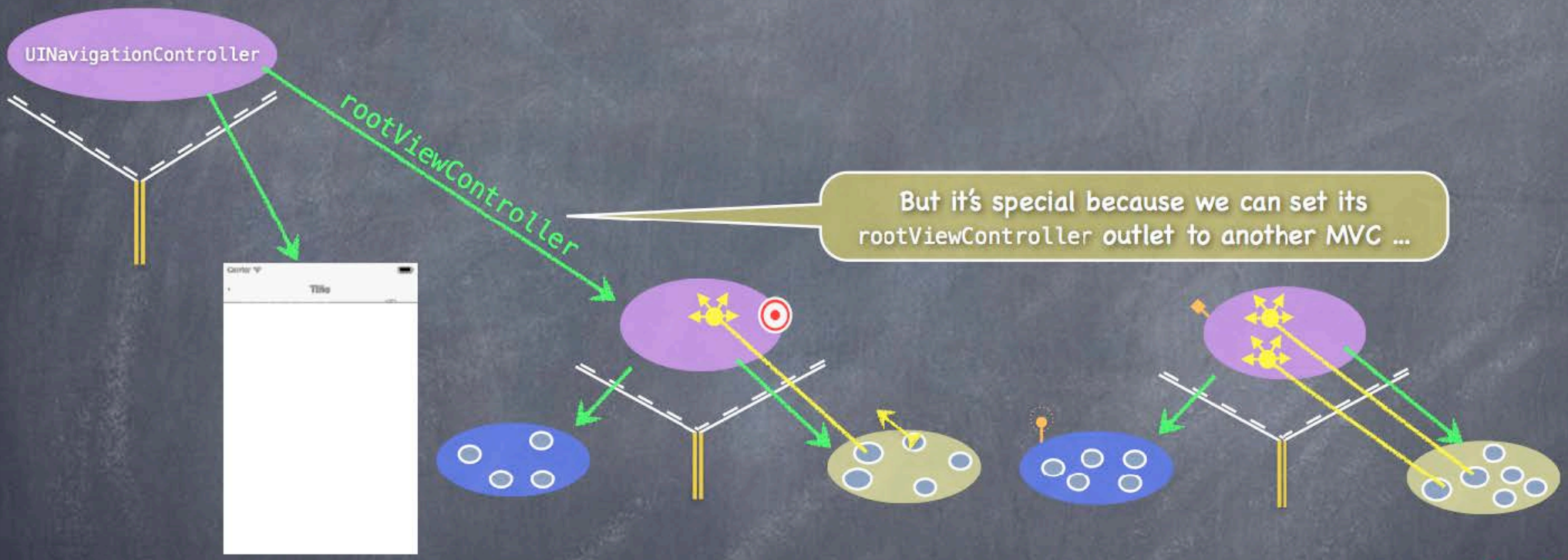


Рис. 27

MVCs working together

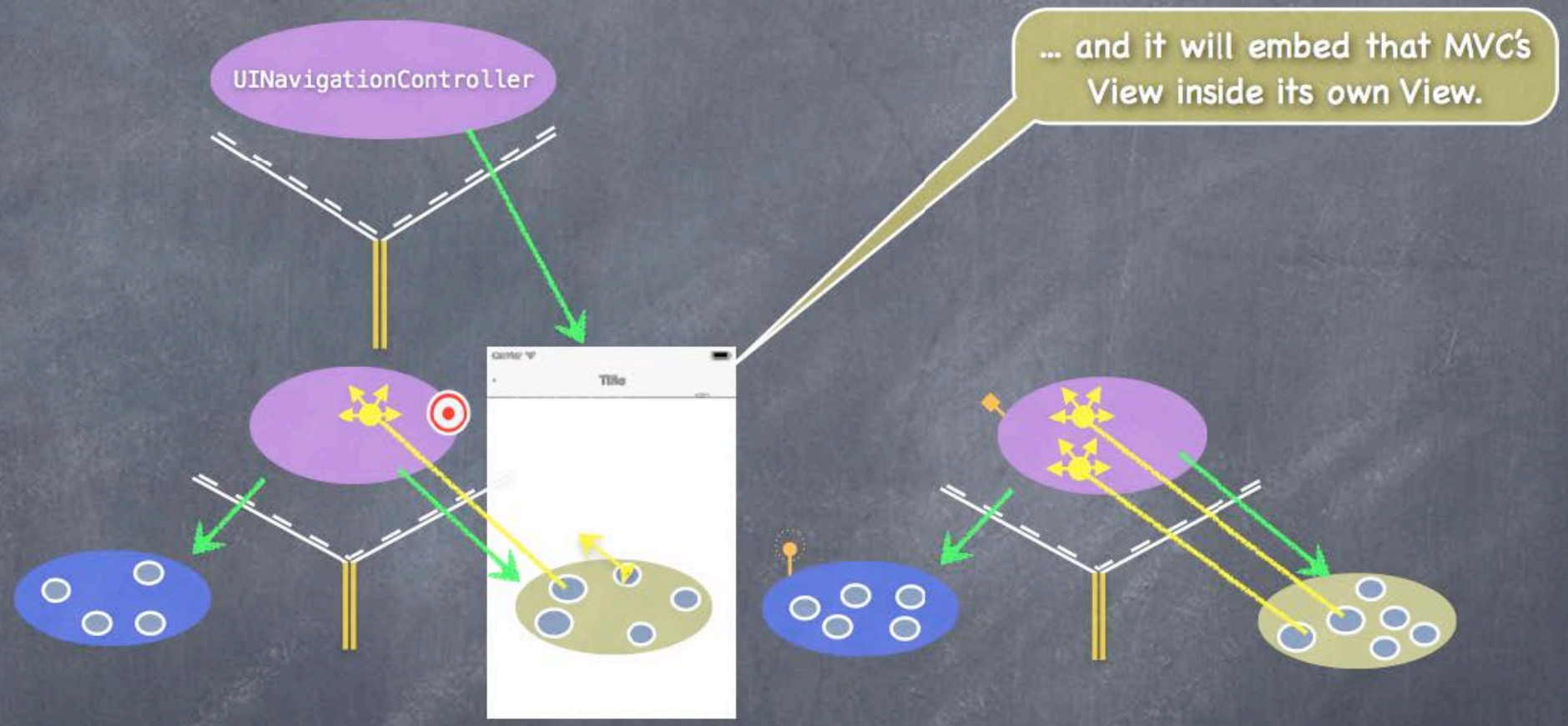
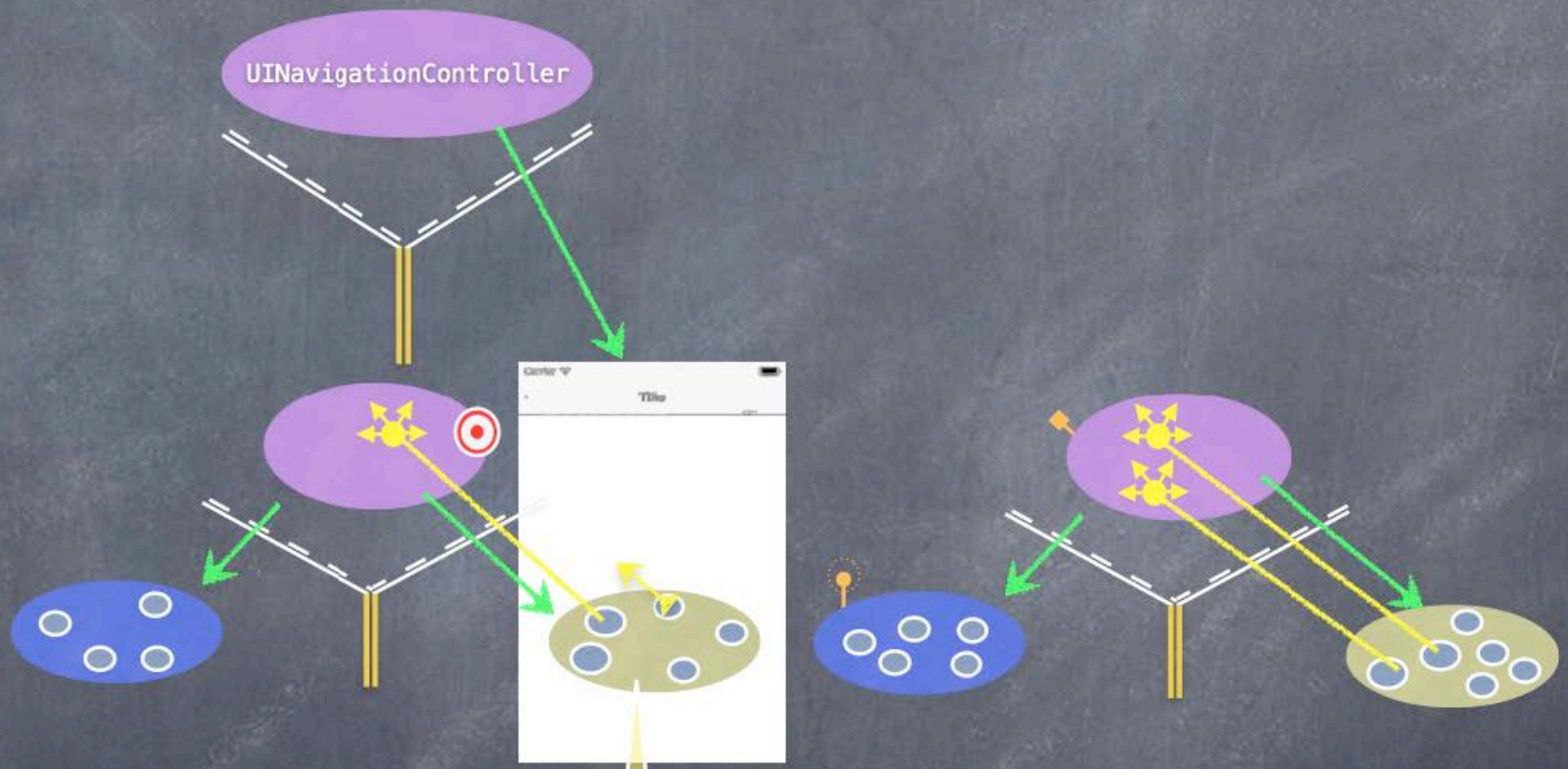


Рис. 28

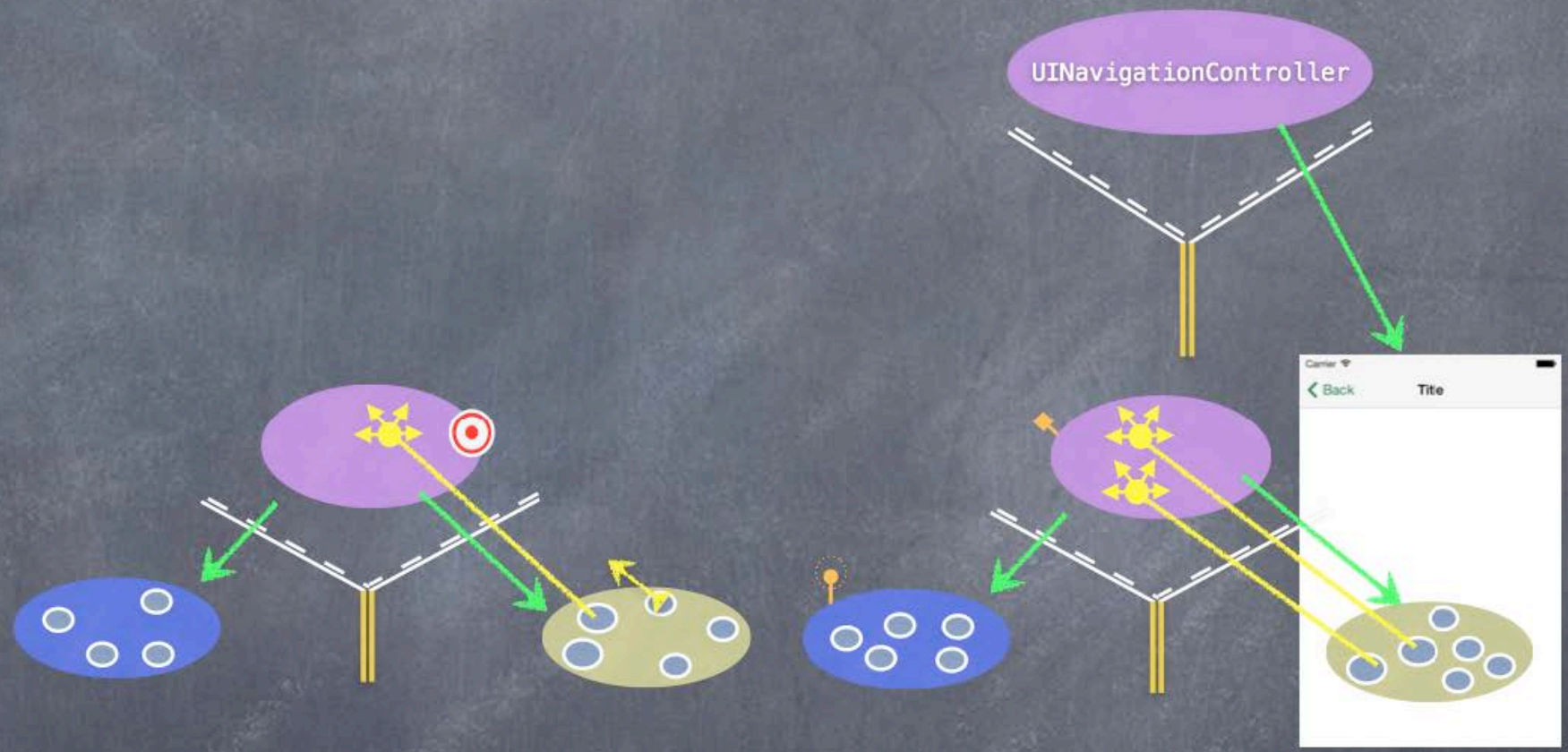
MVCs working together



Then a UI element in this View (e.g. a UIButton) can segue to the other MVC and its View will now appear in the UINavigationController instead.

Рис. 29

MVCs working together



We call this kind of segue a "push segue".

Рис. 30

MVCs working together

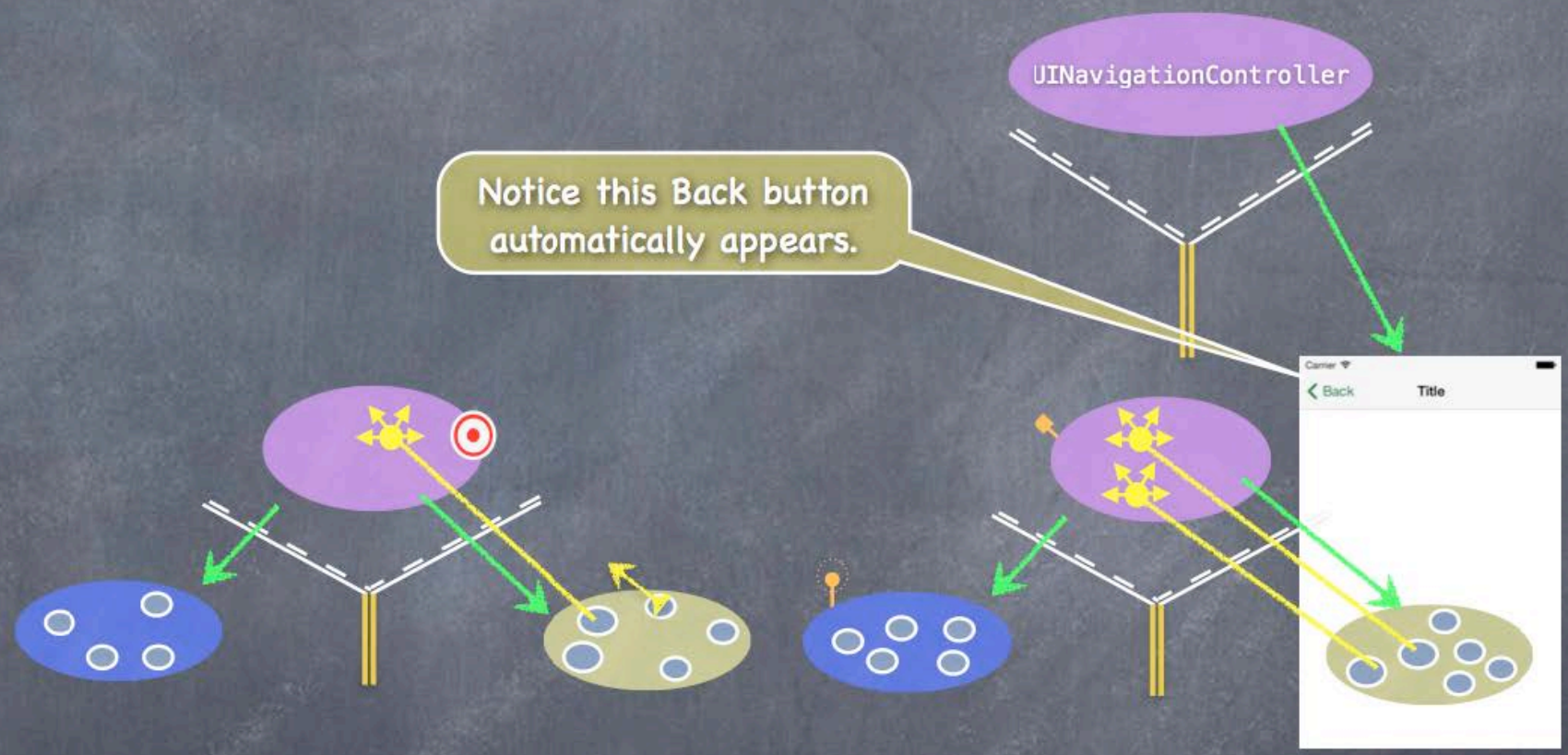


Рис. 31

MVCs working together

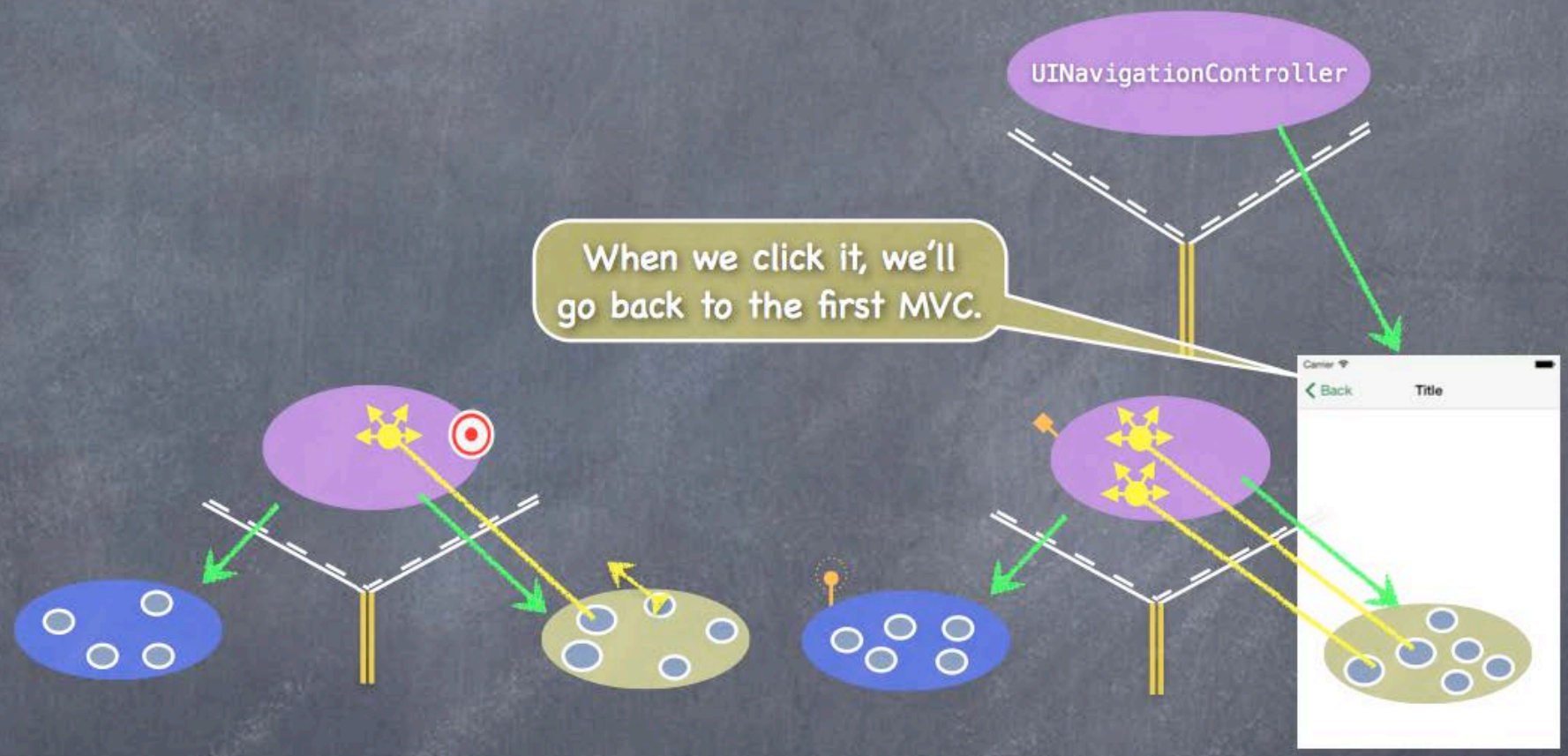


Рис. 32

MVCs working together

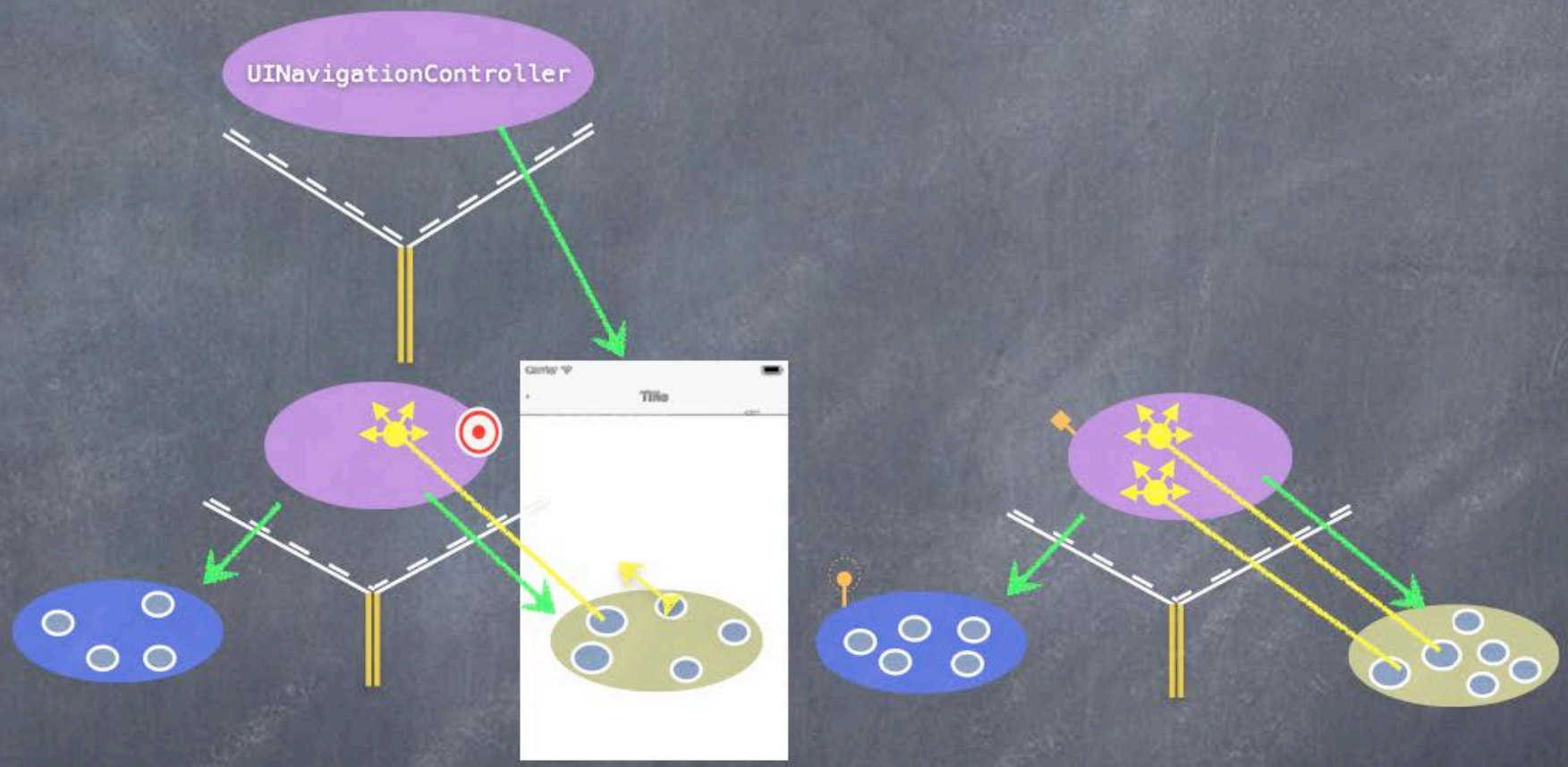


Рис. 33

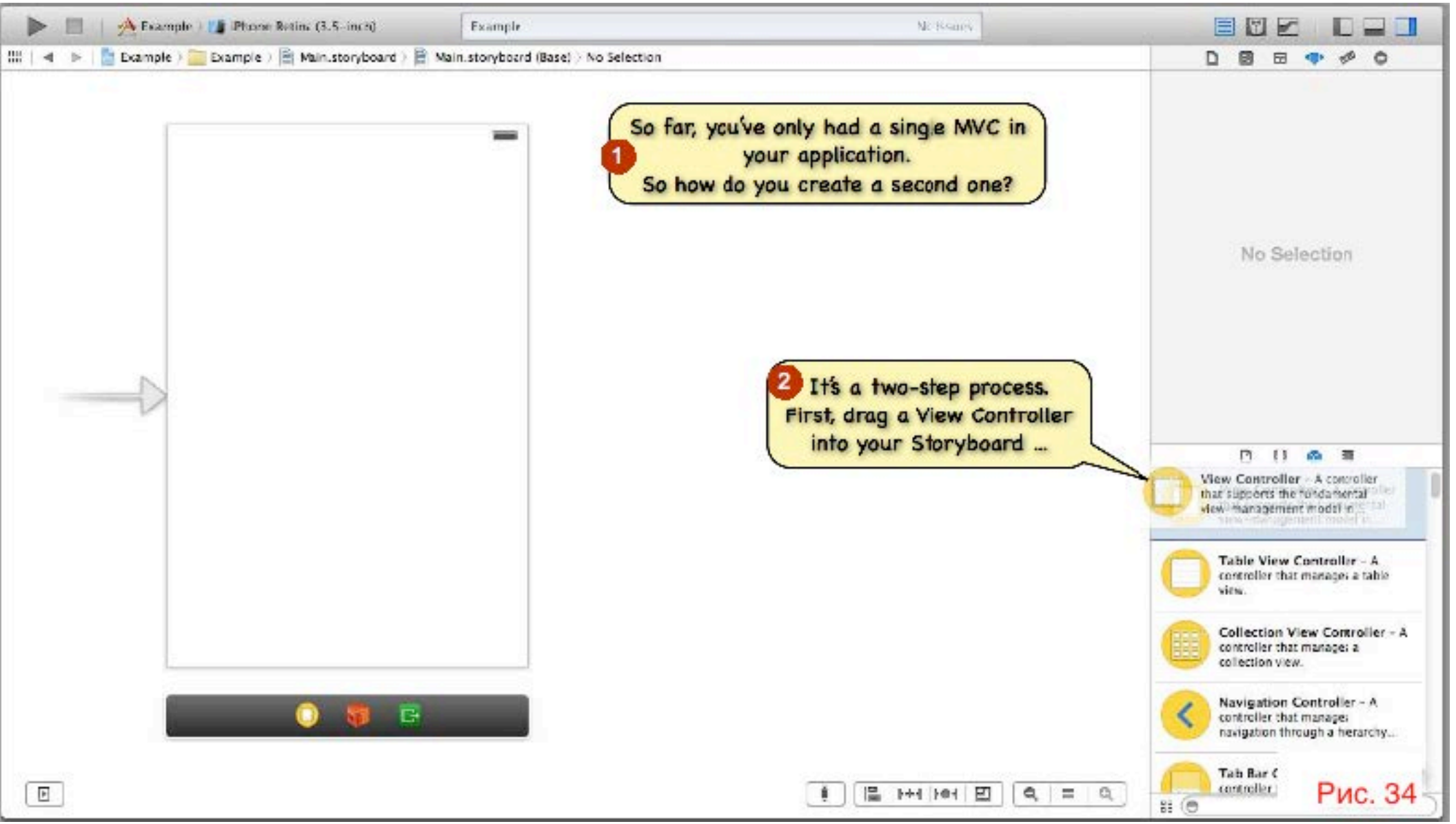

Example
Example
Main.storyboard
Main.storyboard (Base)
No Selection
1 So far, you've only had a single MVC in your application.
So how do you create a second one?
2 It's a two-step process.
First, drag a View Controller into your Storyboard ...
No Selection
View Controller – A controller that supports the fundamental view-management model in
Table View Controller – A controller that manages a table view.
Collection View Controller – A controller that manages a collection view.
Navigation Controller – A controller that manages navigation through a hierarchy...

Рис. 34

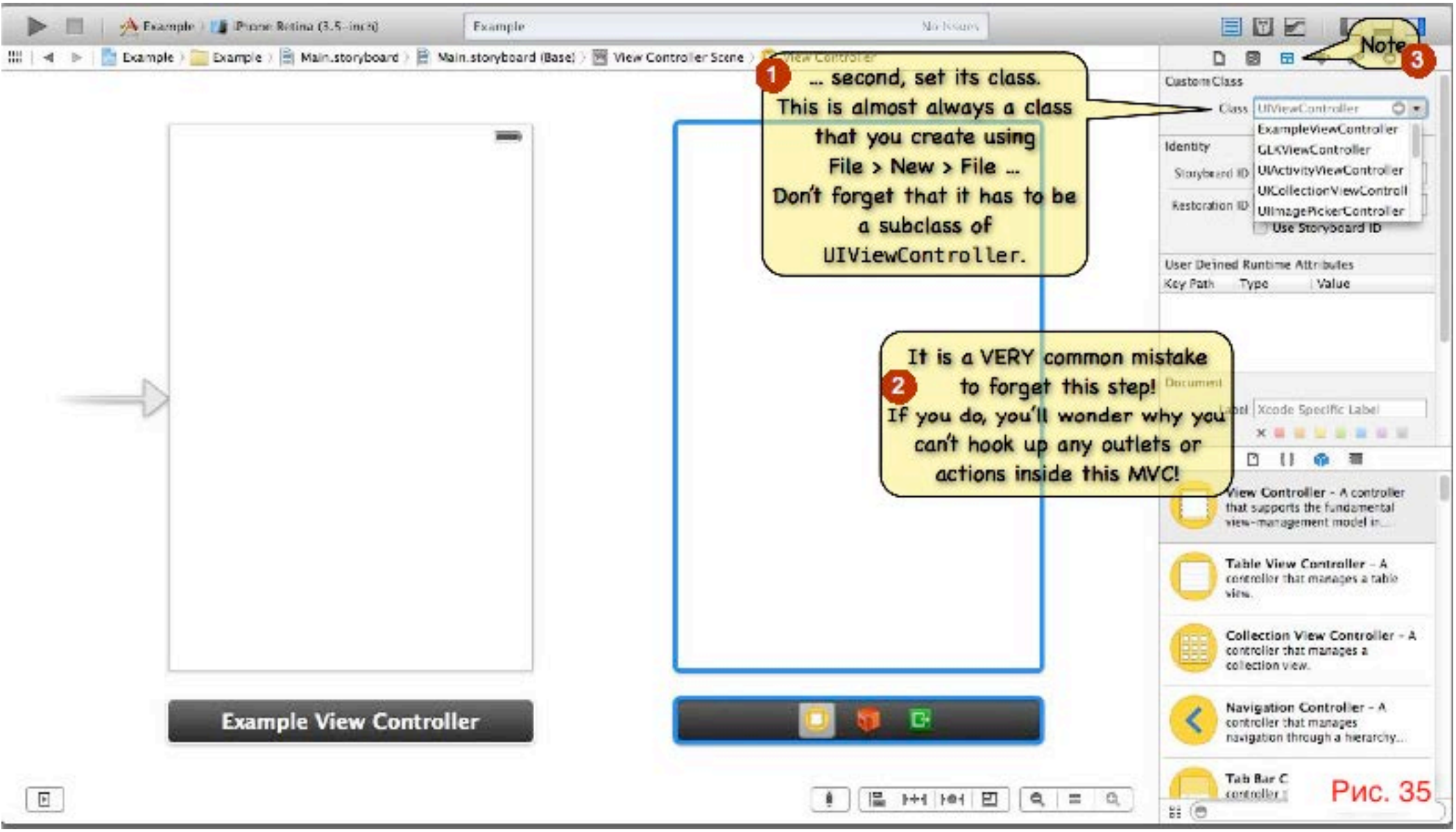

Example
Example View Controller
1 ... second, set its class.
This is almost always a class
that you create using
File > New > File ...
Don't forget that it has to be
a subclass of
UIViewController.
2 It is a VERY common mistake
to forget this step!
If you do, you'll wonder why you
can't hook up any outlets or
actions inside this MVC!
Note
3
Custom Class
Class
UIViewController
ExampleViewController
GLKViewController
UIActivityViewController
UICollectionViewControll
UIImagePickerController
Identity
Storyboard ID
Restoration ID
Use Storyboard ID
User Defined Runtime Attributes
Key Path
Type
Value
Document
Label
Xcode Specific Label
View Controller - A controller that supports the fundamental view-management model in...
Table View Controller - A controller that manages a table view.
Collection View Controller - A controller that manages a collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...

Рис. 35

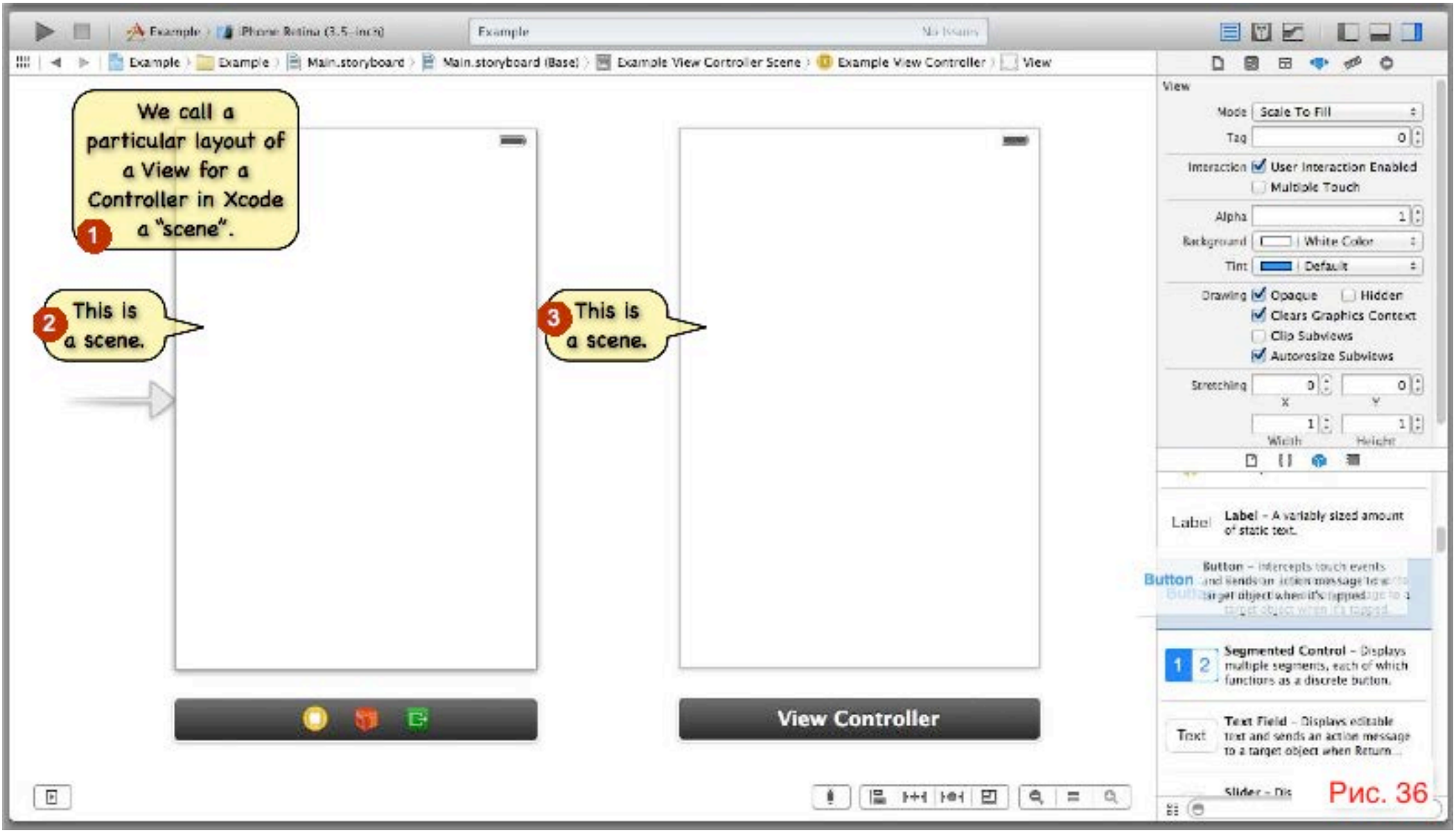

We call a particular layout of a View for a Controller in Xcode a "scene".
1
2
This is a scene.
3
This is a scene.
View Controller
Example
Main.storyboard
Main.storyboard (Base)
Example View Controller Scene
Example View Controller
View
Mode
Scale To Fill
Tag
Interaction
User Interaction Enabled
Multiple Touch
Alpha
Background
White Color
Tint
Default
Drawing
Opaque
Hidden
Clears Graphics Context
Clip Subviews
Autoresize Subviews
Stretching
Label
Button
Text

Рис. 36

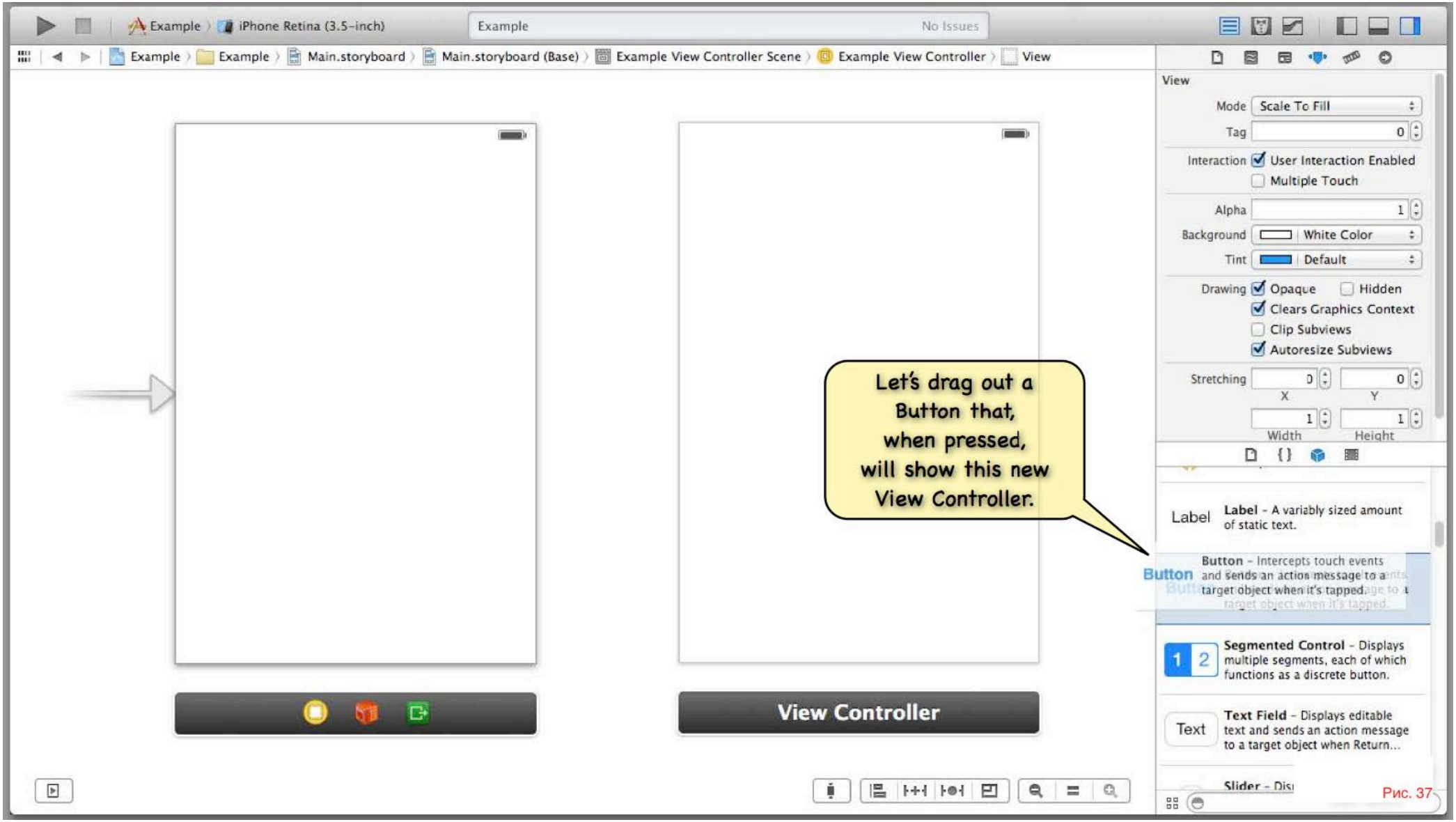

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Example View Controller Scene
Example View Controller
View
View
Mode
Scale To Fill
Tag
0
Interaction
User Interaction Enabled
Multiple Touch
Alpha
1
Background
White Color
Tint
Default
Drawing
Opaque
Hidden
Clears Graphics Context
Clip Subviews
Autoresize Subviews
Stretching
0
0
X
Y
1
1
Width
Height
Let's drag out a Button that, when pressed, will show this new View Controller.
Label
Label - A variably sized amount of static text.
Button
Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text
Text Field - Displays editable text and sends an action message to a target object when Return...
View Controller

Рис. 37

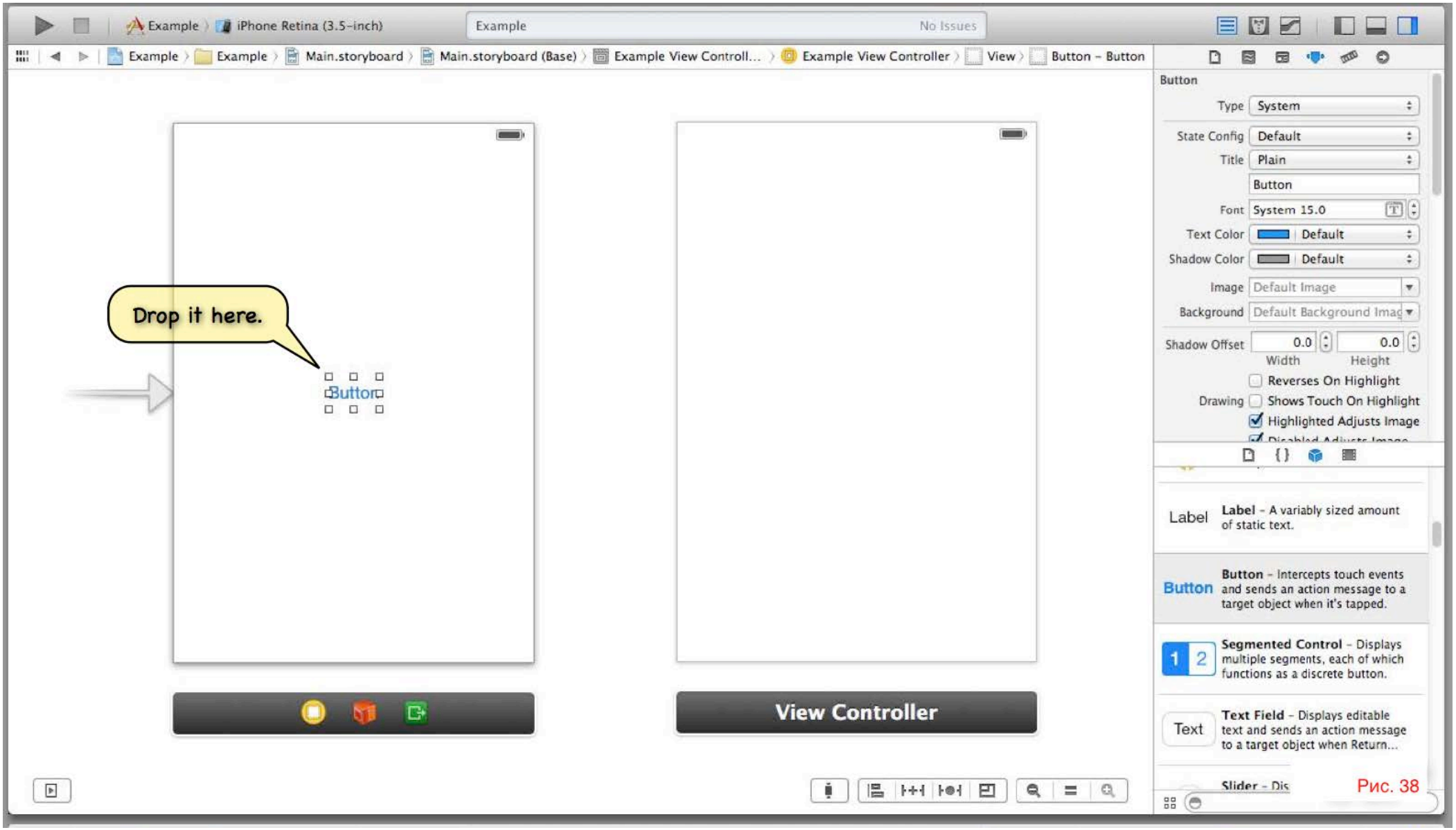

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Example View Controll...
Example View Controller
View
Button – Button
Drop it here.
Button
View Controller
Button
Type
System
State Config
Default
Title
Plain
Button
Font
System 15.0
Text Color
Default
Shadow Color
Default
Image
Default Image
Background
Default Background Imag
Shadow Offset
0.0
0.0
Width
Height
Reverses On Highlight
Drawing
Shows Touch On Highlight
Highlighted Adjusts Image
Label
Label – A variably sized amount of static text.
Button
Button – Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control – Displays multiple segments, each of which functions as a discrete button.
Text
Text Field – Displays editable text and sends an action message to a target object when Return...
Slider – Dis

Рис. 38

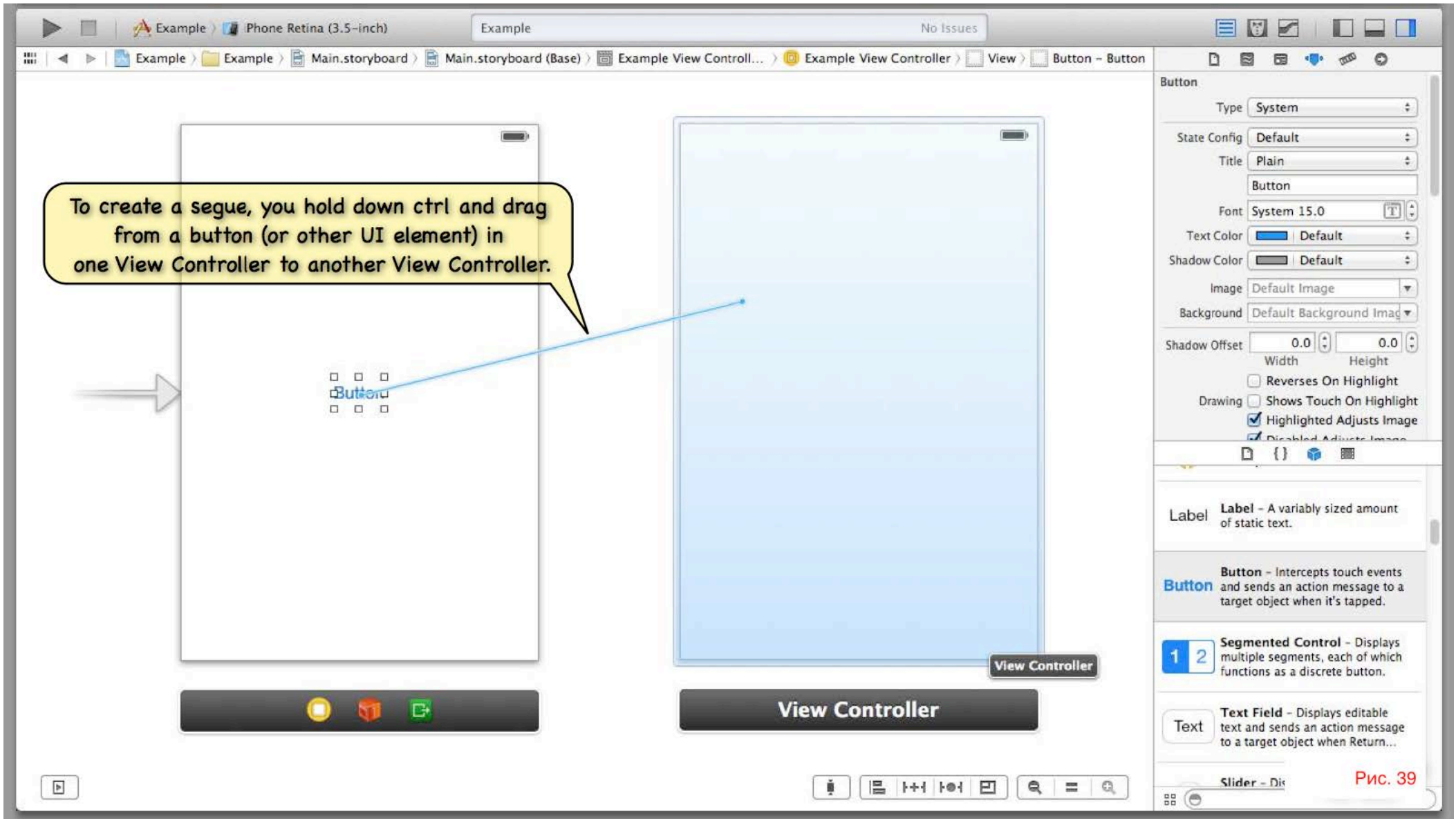

Example
Phone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Example View Controll...
Example View Controller
View
Button – Button
To create a segue, you hold down ctrl and drag from a button (or other UI element) in one View Controller to another View Controller.
Button
View Controller
View Controller
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 Imag
Shadow Offset
0.0
0.0
Width
Height
Reverses On Highlight
Drawing
Shows Touch On Highlight
Highlighted Adjusts Image
Label
Label – A variably sized amount of static text.
Button
Button – Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control – Displays multiple segments, each of which functions as a discrete button.
Text
Text Field – Displays editable text and sends an action message to a target object when Return...

Рис. 39

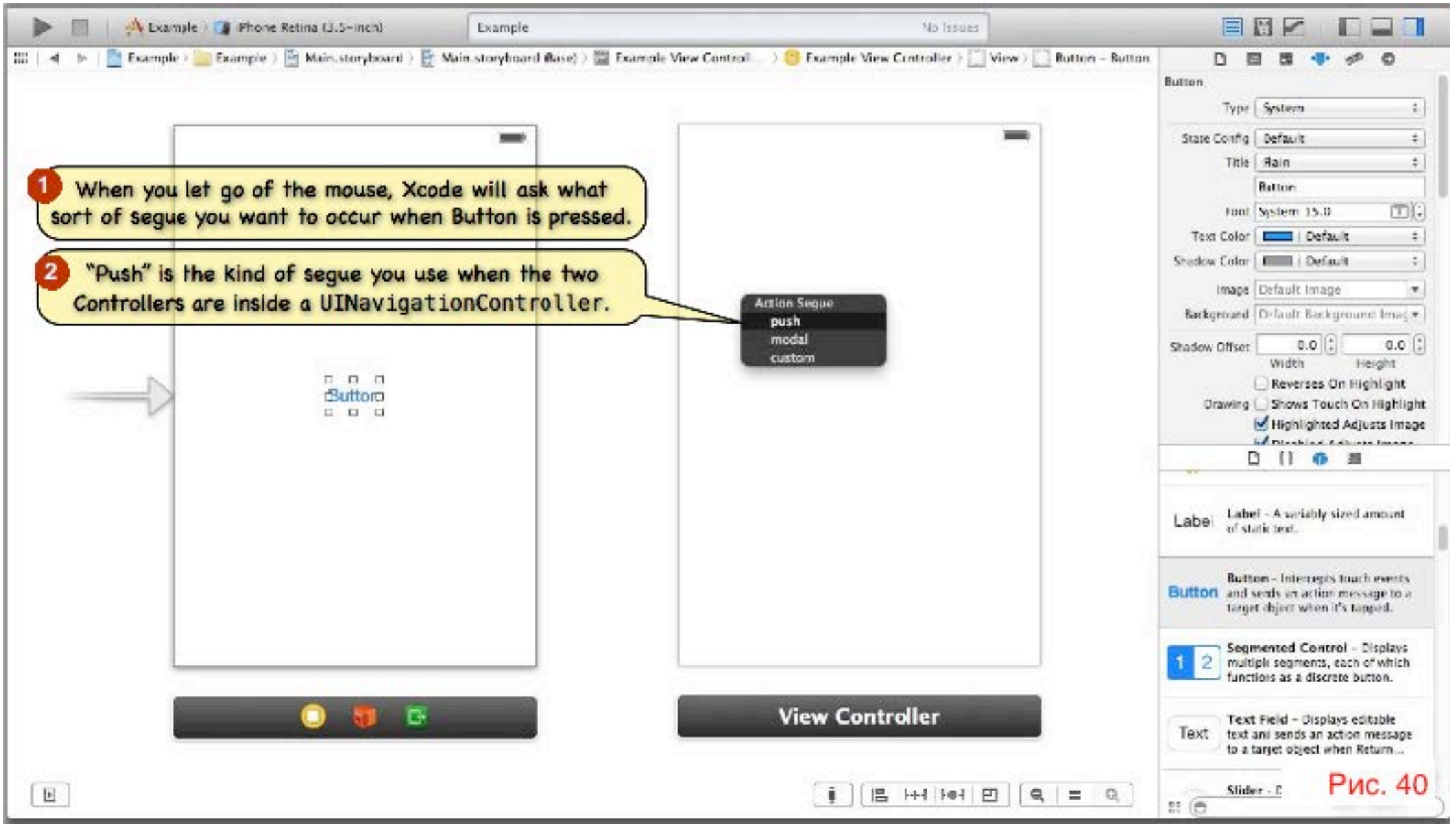

1 When you let go of the mouse, Xcode will ask what sort of segue you want to occur when Button is pressed.
2 "Push" is the kind of segue you use when the two Controllers are inside a UINavigationController.
Action Segue
push
modal
custom
Button
View Controller

Рис. 40

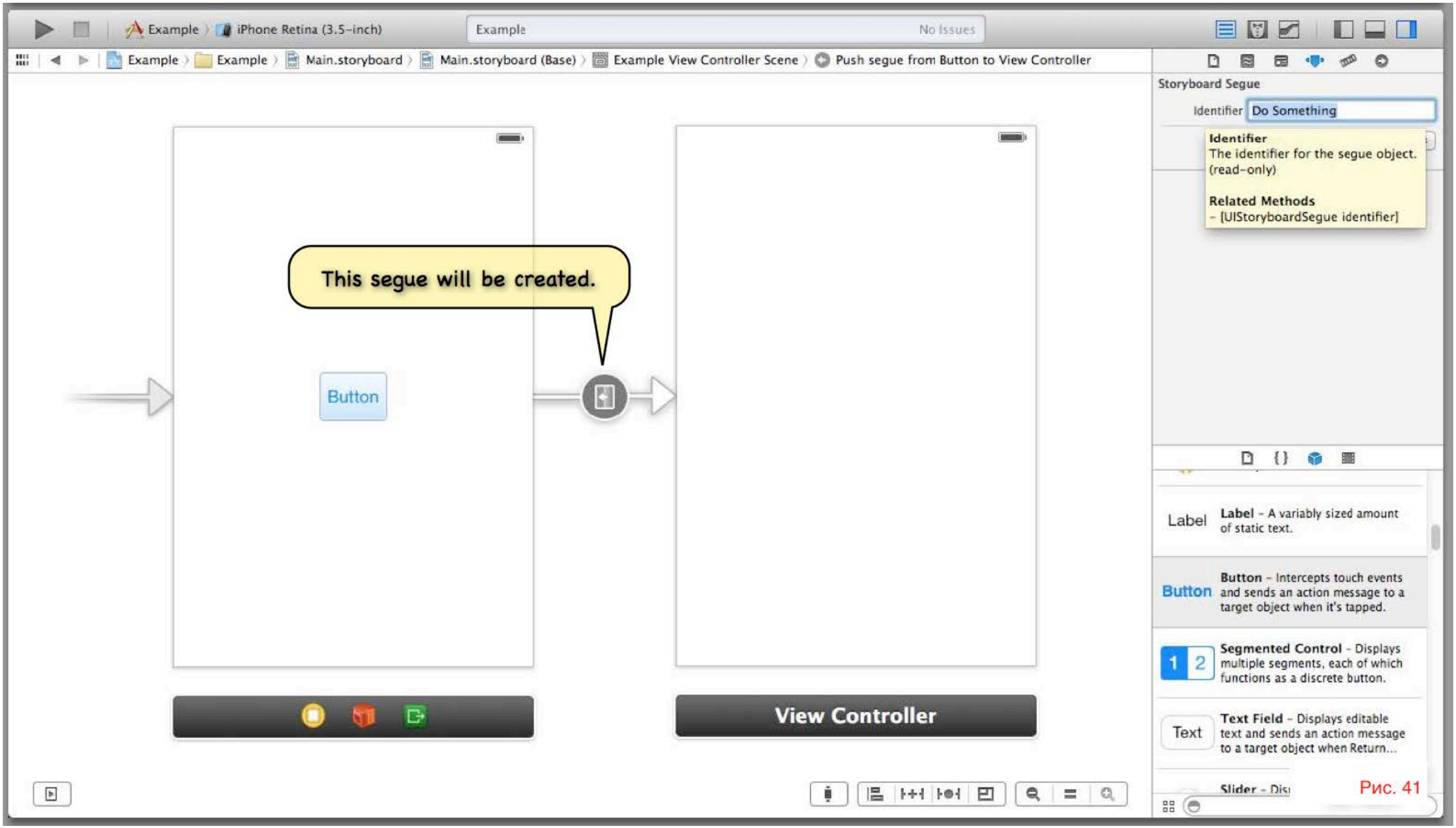

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Example View Controller Scene
Push segue from Button to View Controller
Storyboard Segue
Identifier
Do Something
Identifier
The identifier for the segue object. (read-only)
Related Methods
- [UIStoryboardSegue identifier]
This segue will be created.
Button
View Controller
Label
Label - A variably sized amount of static text.
Button
Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text
Text Field - Displays editable text and sends an action message to a target object when Return...

Рис. 41

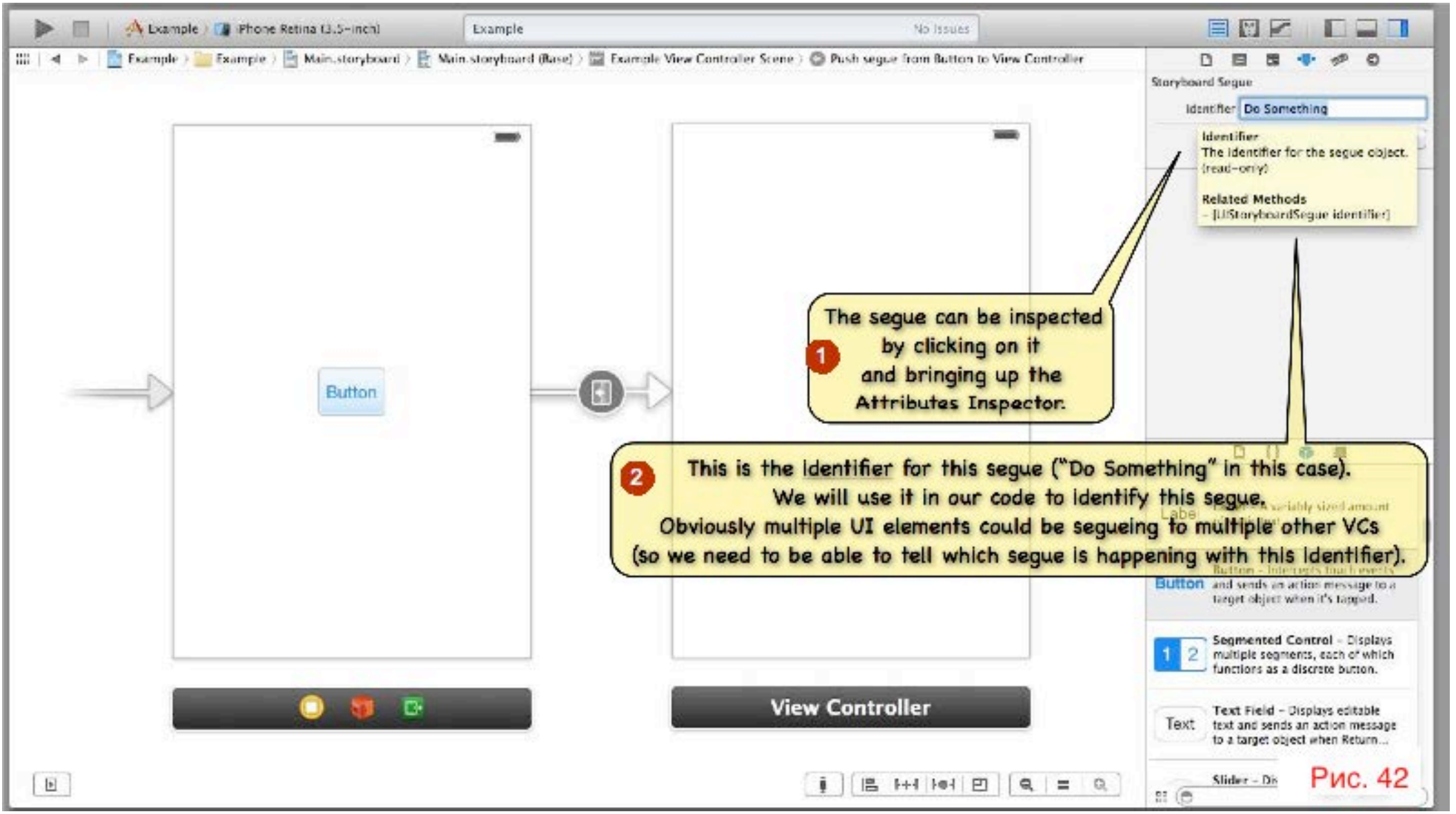

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Example View Controller Scene
Push segue from Button to View Controller
Storyboard Segue
Identifier
Do Something
Identifier
The identifier for the segue object.
(read-only)
Related Methods
- [UIStoryboardSegue identifier]
Button
View Controller
1
The segue can be inspected
by clicking on it
and bringing up the
Attributes Inspector.
2
This is the identifier for this segue ("Do Something" in this case).
We will use it in our code to identify this segue.
Obviously multiple UI elements could be segueing to multiple other VCs
(so we need to be able to tell which segue is happening with this identifier).
Button
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text
Text Field - Displays editable text and sends an action message to a target object when Return...

Рис. 42

Example › iPhone Retina (3.5-inch) | Example | No Issues

Example › Example › Main.storyboard › Main.storyboard (Base) › Example View Controller Scene › Push segue from Button to View Controller

Button

But there's a problem here.
These View Controllers are not inside a UINavigationController.
Push will do nothing.

View Controller

Storyboard Segue

Identifier: Do Something

Identifier
The identifier for the segue object. (read-only)

Related Methods
- [UIStoryboardSegue identifier]

Label — **Label** - A variably sized amount of static text.

Button — **Button** - Intercepts touch events and sends an action message to a target object when it's tapped.

1 2 — **Segmented Control** - Displays multiple segments, each of which functions as a discrete button.

Text — **Text Field** - Displays editable text and sends an action message to a target object when Return...

Slider - Dis

Рис. 43

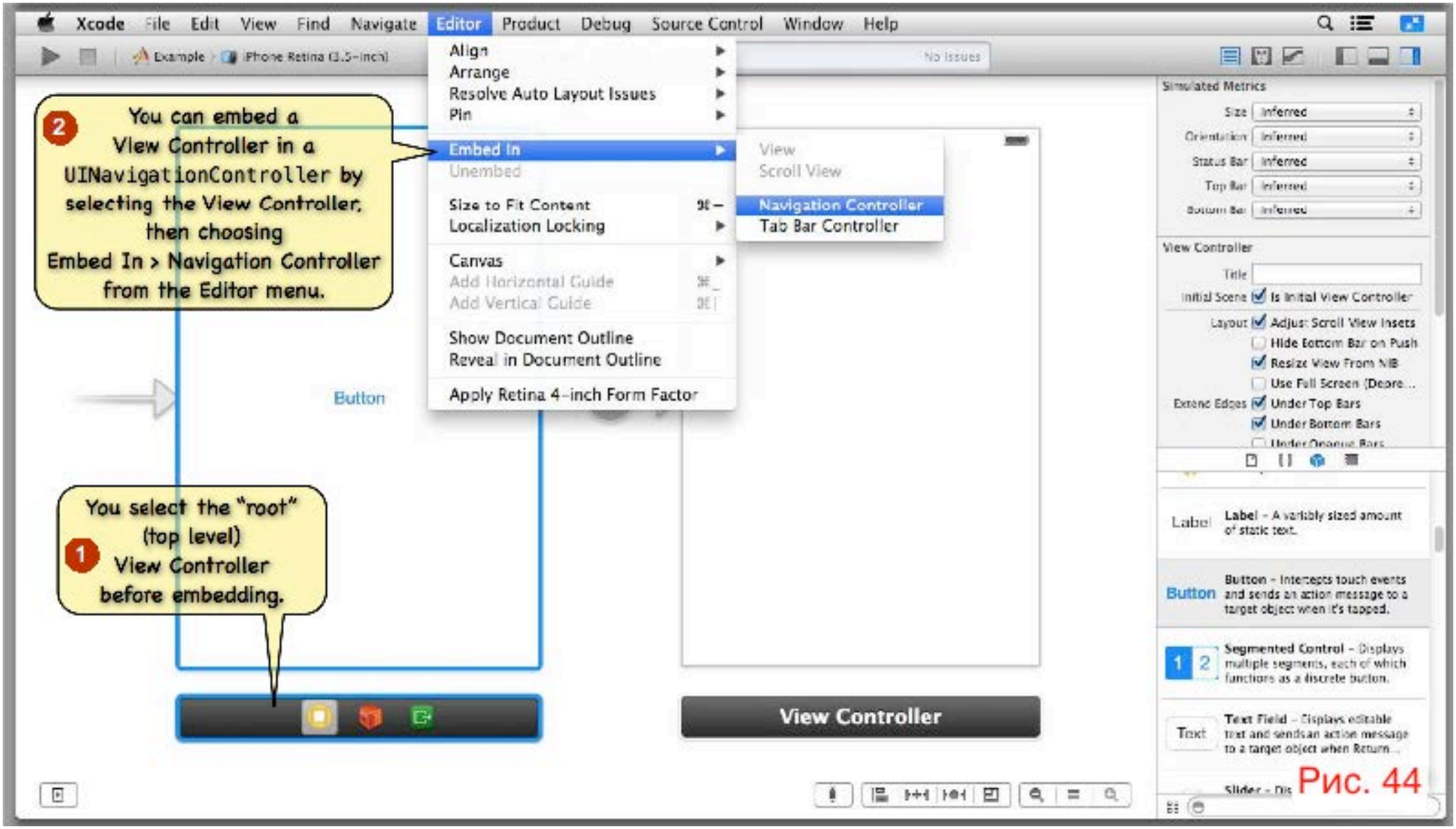

Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help
Example iPhone Retina (3.5-inch)
No Issues
Align
Arrange
Resolve Auto Layout Issues
Pin
Embed In
Unembed
Size to Fit Content
Localization Locking
Canvas
Add Horizontal Guide
Add Vertical Guide
Show Document Outline
Reveal in Document Outline
Apply Retina 4-inch Form Factor
View
Scroll View
Navigation Controller
Tab Bar Controller
2 You can embed a View Controller in a UINavigationController by selecting the View Controller, then choosing Embed In > Navigation Controller from the Editor menu.
1 You select the "root" (top level) View Controller before embedding.
Button
View Controller
Simulated Metrics
Size Inferred
Orientation Inferred
Status Bar Inferred
Top Bar Inferred
Bottom Bar Inferred
View Controller
Title
Initial Scene Is Initial View Controller
Layout Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Extend Edges Under Top Bars
Under Bottom Bars
Label
Button
Text

Рис. 44

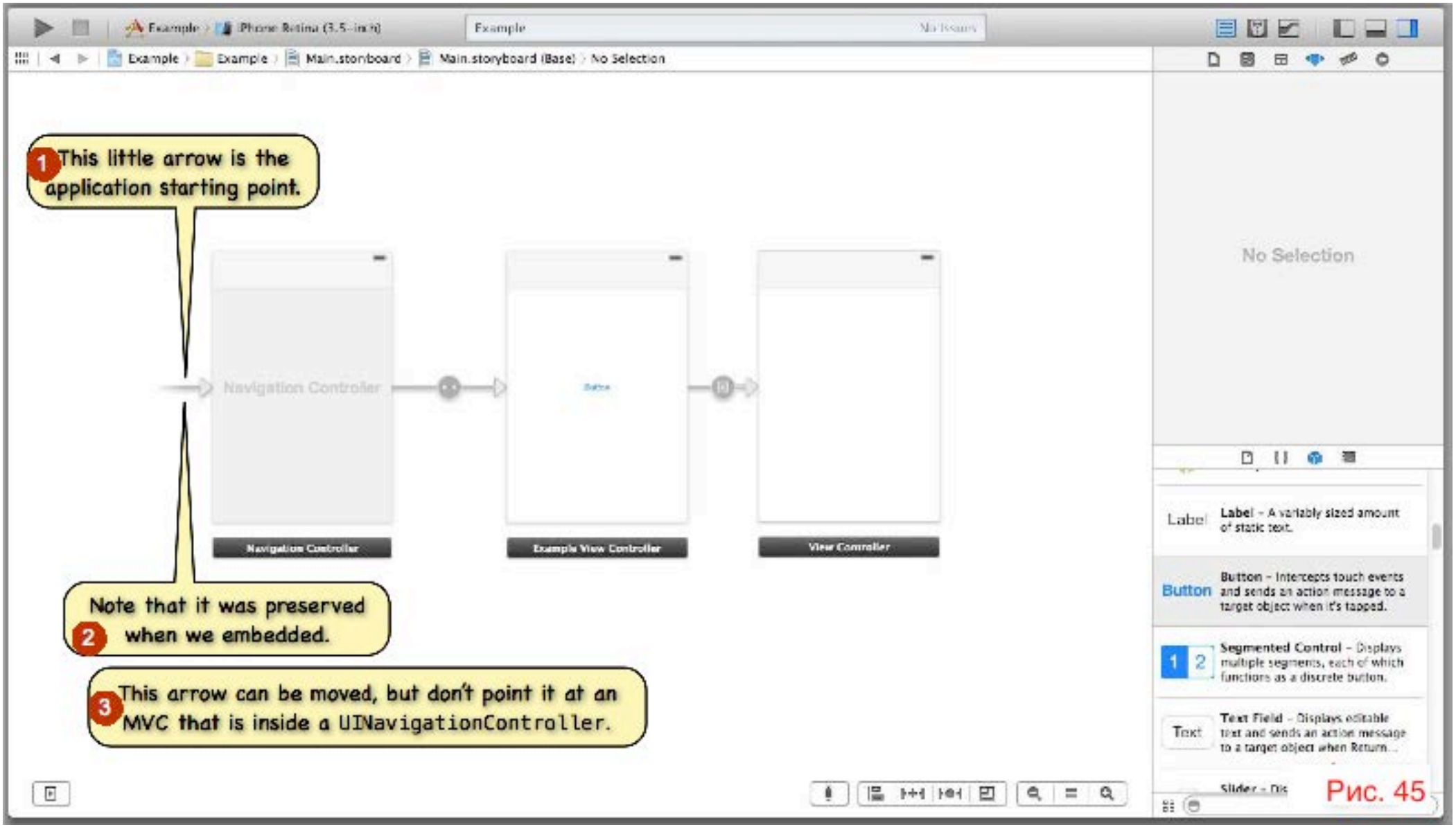

Example
Example
Main.storyboard
Main.storyboard (Base)
No Selection
1 This little arrow is the application starting point.
Navigation Controller
Navigation Controller
Example View Controller
View Controller
Note that it was preserved
2 when we embedded.
3 This arrow can be moved, but don't point it at an MVC that is inside a UINavigationController.
No Selection
Label
Label - A variably sized amount of static text.
Button
Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text
Text Field - Displays editable text and sends an action message to a target object when Return...

Рис. 45

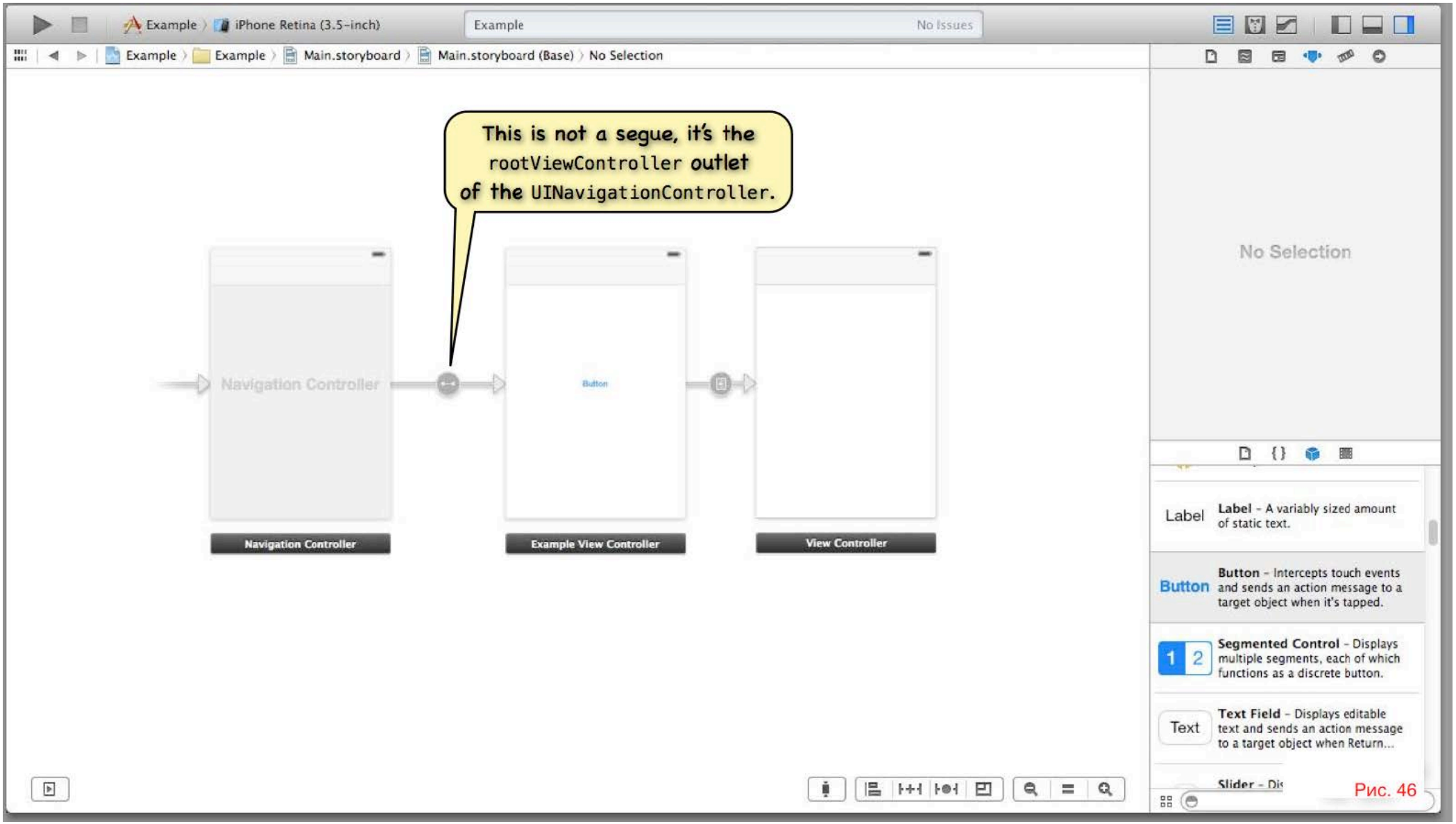

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
No Selection
This is not a segue, it's the rootViewController outlet of the UINavigationController.
Navigation Controller
Button
Navigation Controller
Example View Controller
View Controller
No Selection
Label
Label - A variably sized amount of static text.
Button
Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text
Text Field - Displays editable text and sends an action message to a target object when Return...

Рис. 46

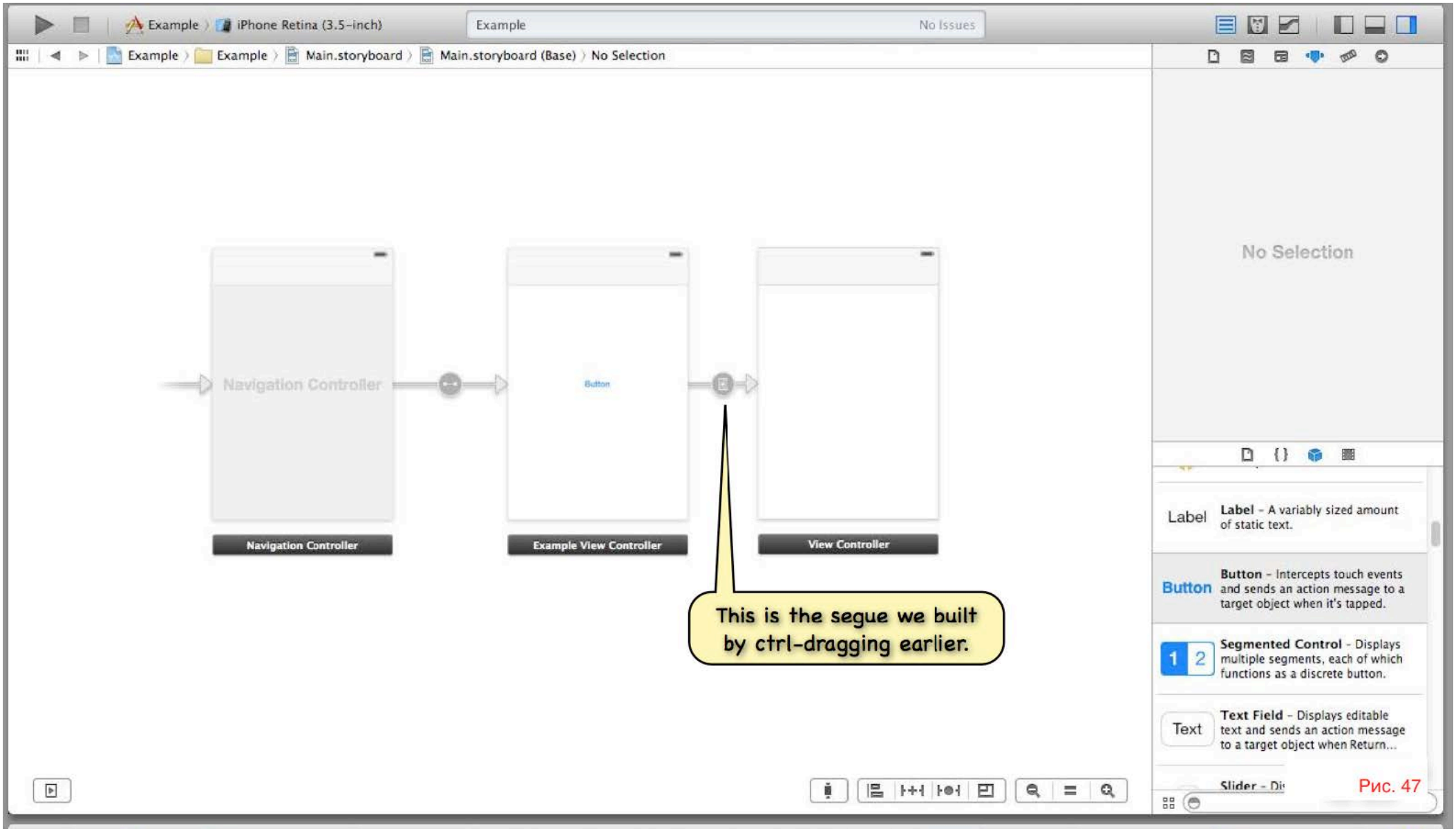

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
No Selection
Navigation Controller
Button
Navigation Controller
Example View Controller
View Controller
This is the segue we built by ctrl-dragging earlier.
No Selection
Label
Label - A variably sized amount of static text.
Button
Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text
Text Field - Displays editable text and sends an action message to a target object when Return...

Рис. 47

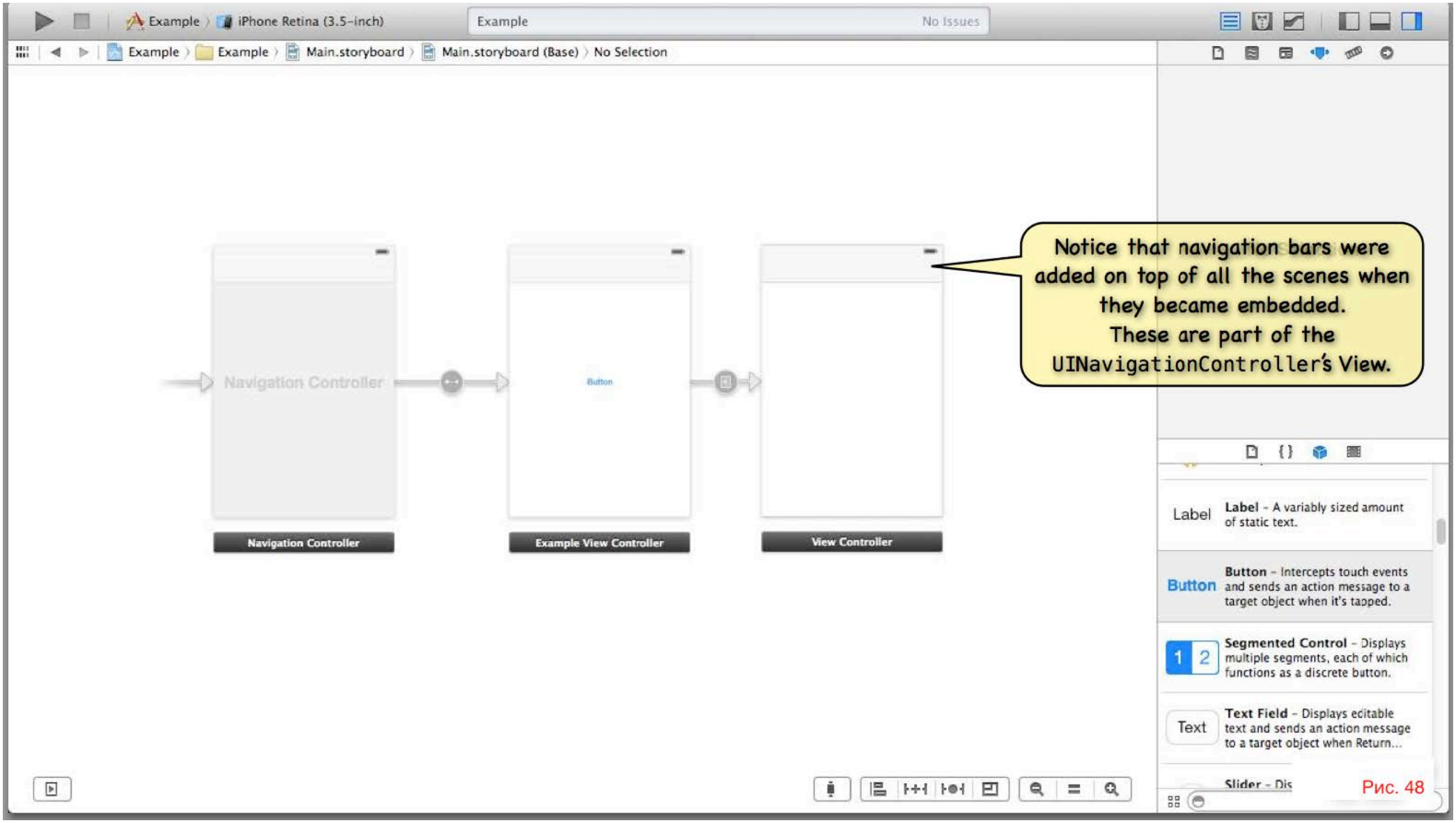

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
No Selection
Navigation Controller
Button
Navigation Controller
Example View Controller
View Controller
Notice that navigation bars were added on top of all the scenes when they became embedded.
These are part of the UINavigationController's View.
Label
Label - A variably sized amount of static text.
Button
Button - Intercepts touch events and sends an action message to a target object when it's tapped.
Segmented Control - Displays multiple segments, each of which functions as a discrete button.
Text
Text Field - Displays editable text and sends an action message to a target object when Return...

Рис. 48

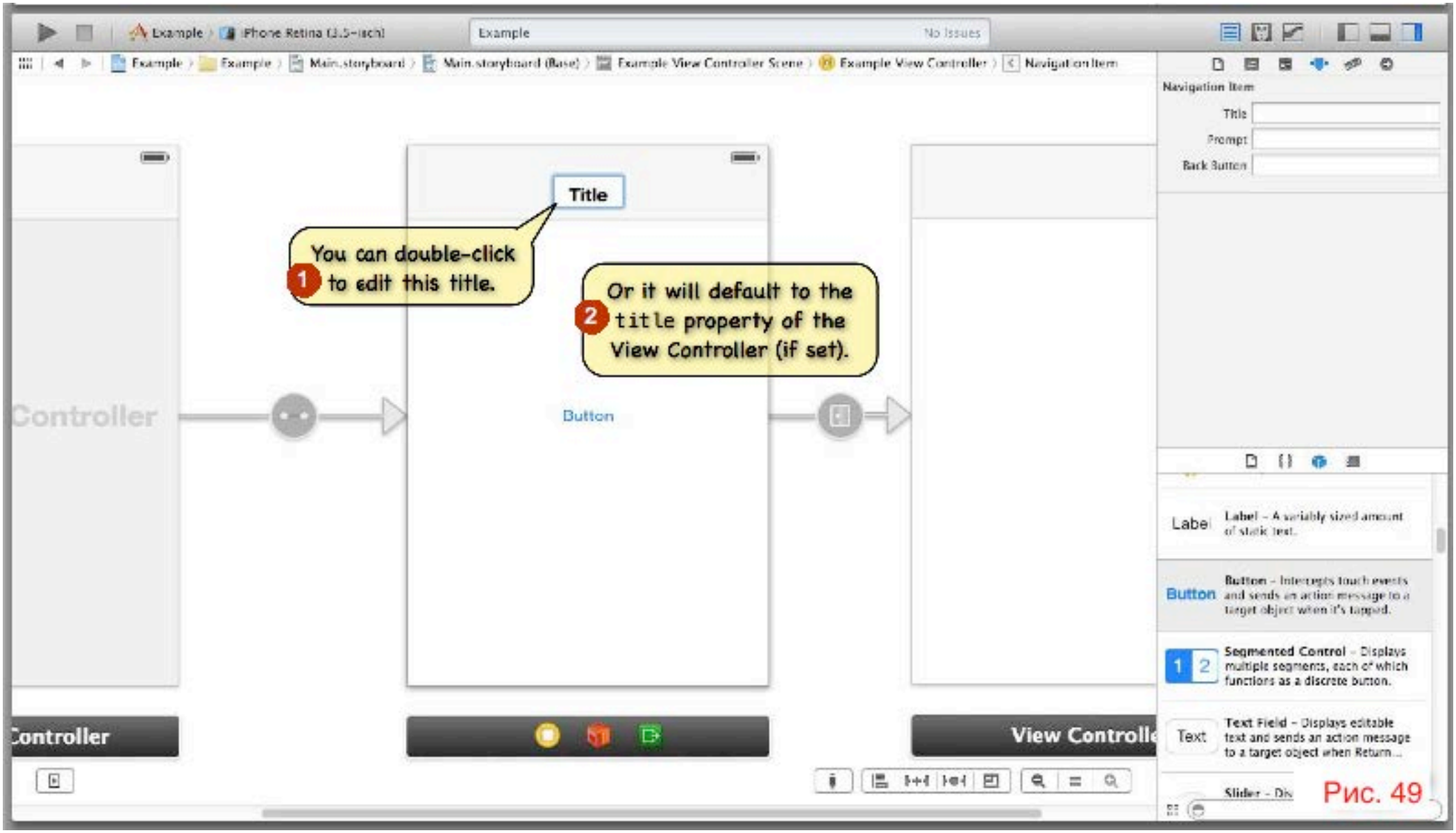

Example
iPhone Retina (3.5-inch)
No Issues
Example > Example > Main.storyboard > Main.storyboard (Base) > Example View Controller Scene > Example View Controller > Navigation Item
Title
You can double-click to edit this title.
Or it will default to the title property of the View Controller (if set).
Button
Controller
View Controller
Navigation Item
Title
Prompt
Back Button
Label
Button
Text

Рис. 49

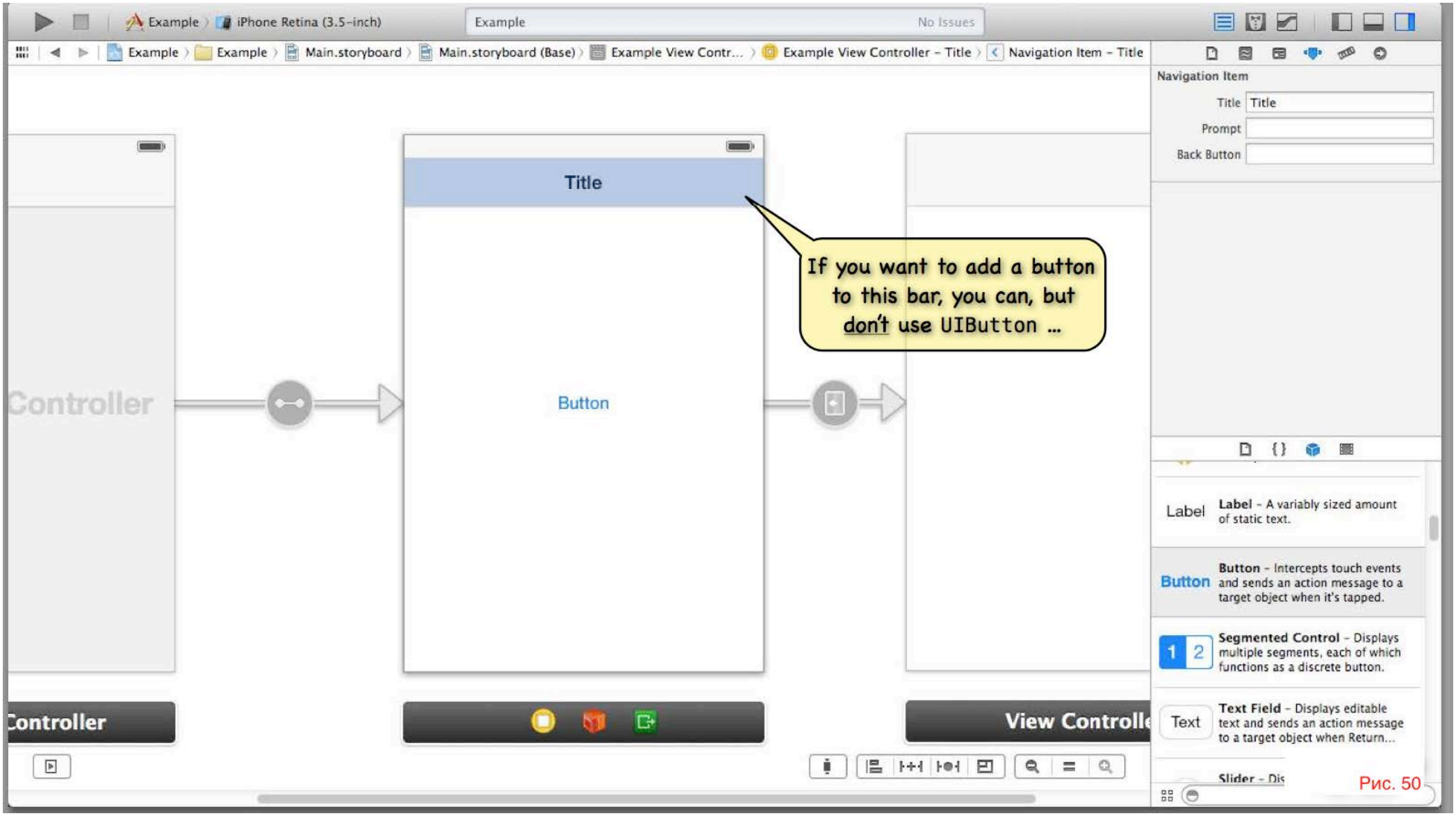

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Example View Contr...
Example View Controller – Title
Navigation Item – Title
Navigation Item
Title
Title
Prompt
Back Button
Title
Button
If you want to add a button to this bar, you can, but don't use UIButton ...
Controller
Controller
View Controlle
Label
Label – A variably sized amount of static text.
Button
Button – Intercepts touch events and sends an action message to a target object when it's tapped.
1 2
Segmented Control – Displays multiple segments, each of which functions as a discrete button.
Text
Text Field – Displays editable text and sends an action message to a target object when Return...

Рис. 50

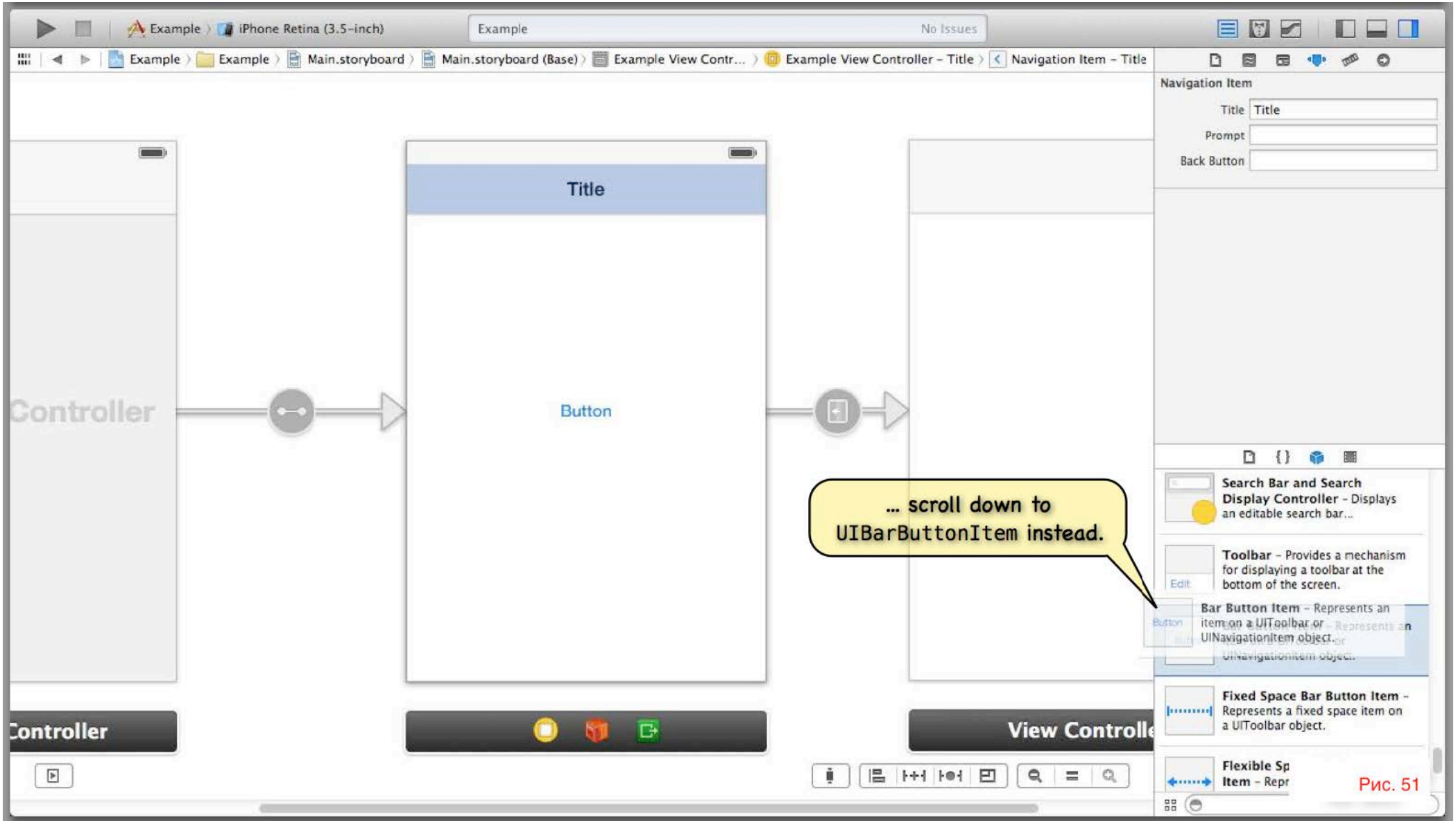

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Example View Contr...
Example View Controller - Title
Navigation Item - Title
Navigation Item
Title
Title
Prompt
Back Button
Controller
Title
Button
... scroll down to
UIBarButtonItem instead.
Search Bar and Search Display Controller - Displays an editable search bar...
Toolbar - Provides a mechanism for displaying a toolbar at the bottom of the screen.
Bar Button Item - Represents an item on a UIToolbar or UINavigationItem object.
Fixed Space Bar Button Item - Represents a fixed space item on a UIToolbar object.
Flexible Sp
Item - Repr
Controller
View Controlle

Рис. 51

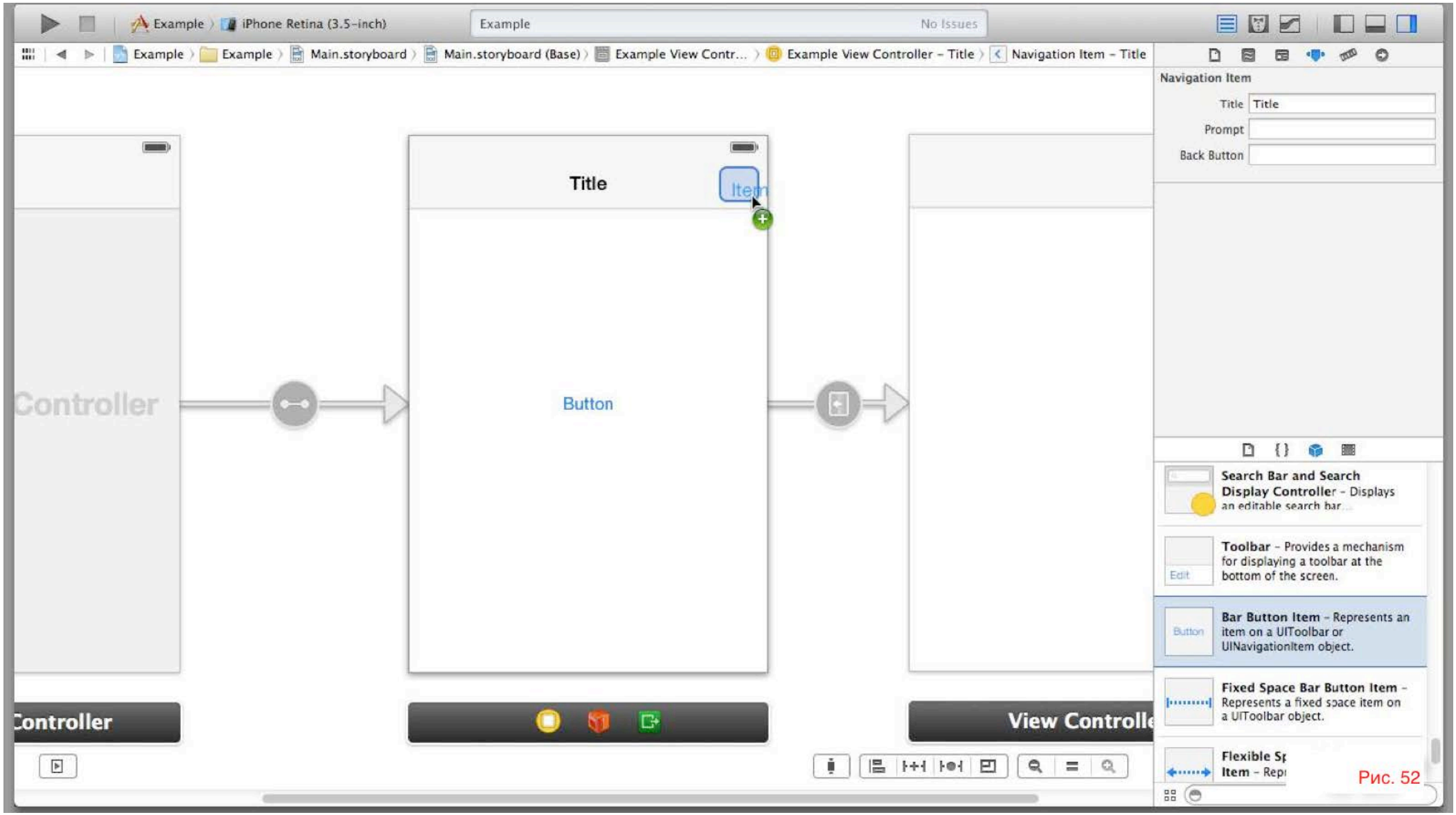

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Example View Contr...
Example View Controller - Title
Navigation Item - Title
Navigation Item
Title
Title
Prompt
Back Button
Title
Item
Button
Controller
Controller
View Controlle
Search Bar and Search Display Controller - Displays an editable search bar...
Toolbar - Provides a mechanism for displaying a toolbar at the bottom of the screen.
Edit
Bar Button Item - Represents an item on a UIToolbar or UINavigationItem object.
Button
Fixed Space Bar Button Item - Represents a fixed space item on a UIToolbar object.
Flexible Sp
Item - Rep

Рис. 52

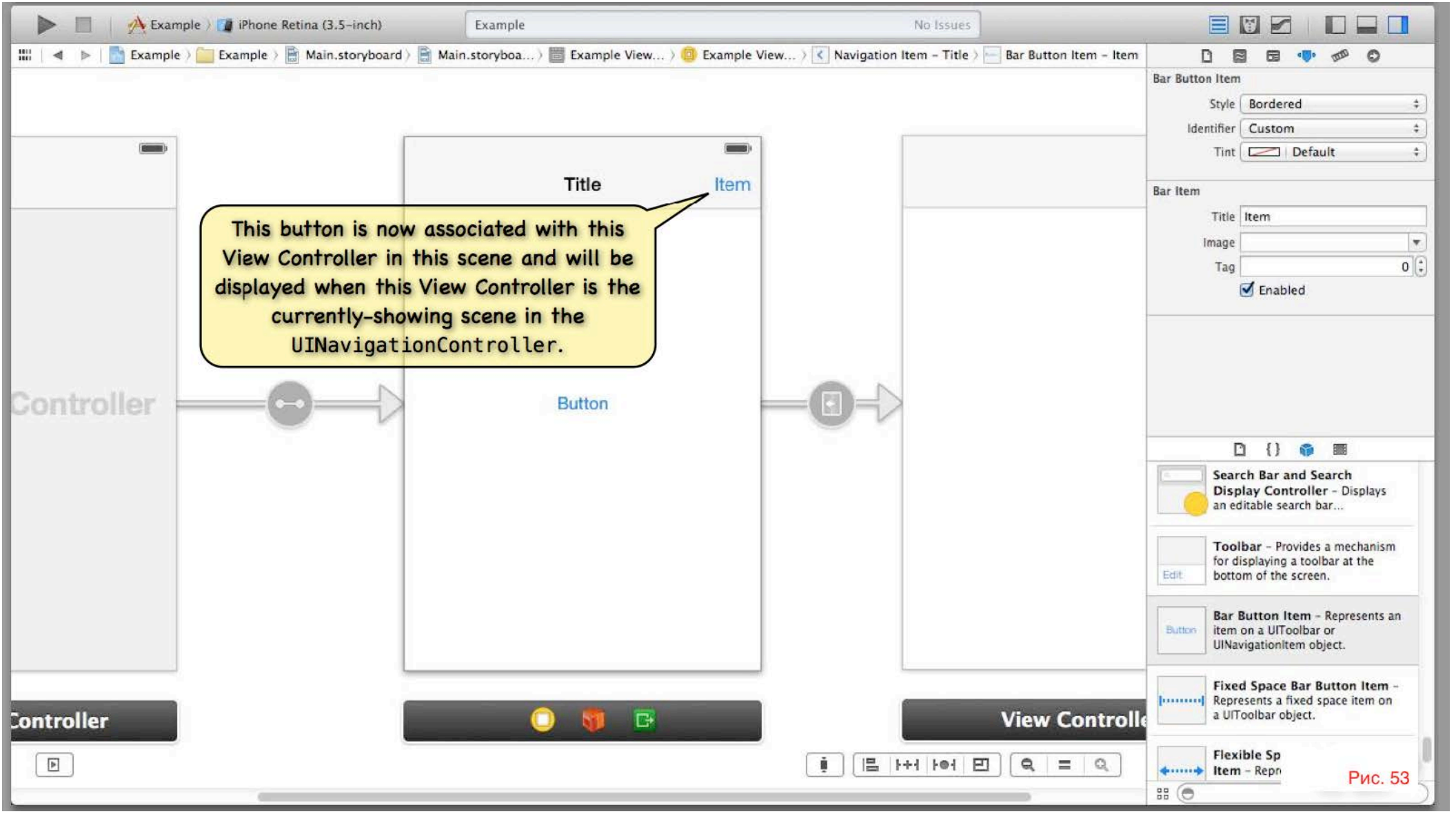

Example
iPhone Retina (3.5-inch)
Example
No Issues
Example
Example
Main.storyboard
Main.storyboa...
Example View...
Example View...
Navigation Item - Title
Bar Button Item - Item
Title
Item
This button is now associated with this View Controller in this scene and will be displayed when this View Controller is the currently-showing scene in the UINavigationController.
Controller
Button
Controller
View Controll
Bar Button Item
Style
Bordered
Identifier
Custom
Tint
Default
Bar Item
Title
Item
Image
Tag
0
Enabled
Search Bar and Search Display Controller - Displays an editable search bar...
Toolbar - Provides a mechanism for displaying a toolbar at the bottom of the screen.
Bar Button Item - Represents an item on a UIToolbar or UINavigationItem object.
Fixed Space Bar Button Item - Represents a fixed space item on a UIToolbar object.
Flexible Sp
Item - Repr

Рис. 53

UINavigationController

- **When does a pushed MVC pop off?**
  Usually because the user presses the "back" button (shown on the previous slide).
  But it can happen programmatically as well with this UINavigationController instance method
  `- (void)popViewControllerAnimated:(BOOL)animated;`
  This does the same thing as clicking the back button.
  Somewhat rare to call this method. Usually we want the user in control of navigating the stack.
  But you might do it if some action the user takes in a view makes it irrelevant to be on screen.
- **Example**
  Let's say we push an MVC which displays a database record and has a delete button w/this action:

```
- (IBAction)deleteCurrentRecord:(UIButton *)sender
{
    // delete the record we are displaying
    // we just deleted the record we are displaying!
    // so it does not make sense to be on screen anymore, so pop
    [self.navigationController popViewControllerAnimated:YES];
}
```

Notice that all UIViewControllers know the UINavigationController they are in. This is nil if they are not in one.

Рис. 54

View Controller

- Other kinds of segues besides Push
  Replace - Replaces the right-hand side of a `UISplitViewController` (iPad only)
  Popover - Puts the view controller on the screen in a popover (iPad only)
  Modal - Puts the view controller up in a way that blocks the app until it is dismissed
  Custom - You can create your own subclasses of `UIStoryboardSegue`
- We'll talk about iPad-related segues in future lectures
  Replace & Popover
- We'll talk about Modal segues later in the quarter too
  People often use Modal UIs as a crutch, so we don't want to go to that too early.

Segues

- When a segue happens, what goes on in my code?

The segue offers the source VC the opportunity to "prepare" the new VC to come on screen.
This method is sent to the VC that contains the button that initiated the segue:

```
- (void)prepareForSegue:(UIStoryboardSegue *)segue sender:(id)sender
{
    if ([segue.identifier isEqualToString:@"DoSomething"]) {
        if ([segue.destinationViewController isKindOfClass:[DoSomethingVC class]]) {
            DoSomethingVC *doVC = (DoSomethingVC *)segue.destinationViewController;
            doVC.neededInfo = …;
        }
    }
}
```

You should pass data the new VC needs here and "let it run."
Think of the new VC as part of the View of the Controller that initiates the segue.
It must play by the same rules as a View.
For example, it should not talk back to you (except through blind communication like delegation).

Рис. 56

Segues

- You can prevent a segue from happening

  Your Controller usually just always segues.

  But if you respond NO to this method, it would prevent the identified segue from happening.

```
- (BOOL)shouldPerformSegueWithIdentifier:(NSString *)identifier sender:(id)sender
{
    if ([segue.identifier isEqualToString:@"DoAParticularThing"]) {
        return [self canDoAParticularThing] ? YES : NO;
    }
}
```

  Do not create "dead UI" with this (e.g. buttons that do nothing).

  This is a very rare method to ever implement.

Unwinding

- There are also ways to unwind from a series of segues
  Some people think of this as "reverse segueing".
  Used if you want to dismiss the VC you are in and go back to a previous VC that segued to you.
  For example, what if you wanted to pop back multiple levels in a navigation controller?
  (if you were only going back one level, you could just use `popViewControllerAnimated:`).
  The little green button in the black bar at the bottom of a scene can be used to wire that up.
  We will probably cover this when we talk about the Modal segue type (i.e. later).
  You need to master segueing forward before you start thinking about going backward!

View Controller

- Firing off a segue from code

  Sometimes it makes sense to segue directly when a button is touched, but not always.

  For example, what if you want to conditionally segue?

  You can programmatically invoke segues using this method in UIViewController:

```
- (void)performSegueWithIdentifier:(NSString *)segueId sender:(id)sender;
```

  The segueId is set in the attributes inspector in Xcode (seen on previous slide).

  The sender is the initiator of the segue (a UIButton or yourself (UIViewController) usually).

```
- (IBAction)rentEquipment
{
    if (self.snowTraversingTalent == Skiing) {
        [self performSegueWithIdentifier:@"AskAboutSkis" sender:self];
    } else {
        [self performSegueWithIdentifier:@"AskAboutSnowboard" sender:self];
    }
}
```

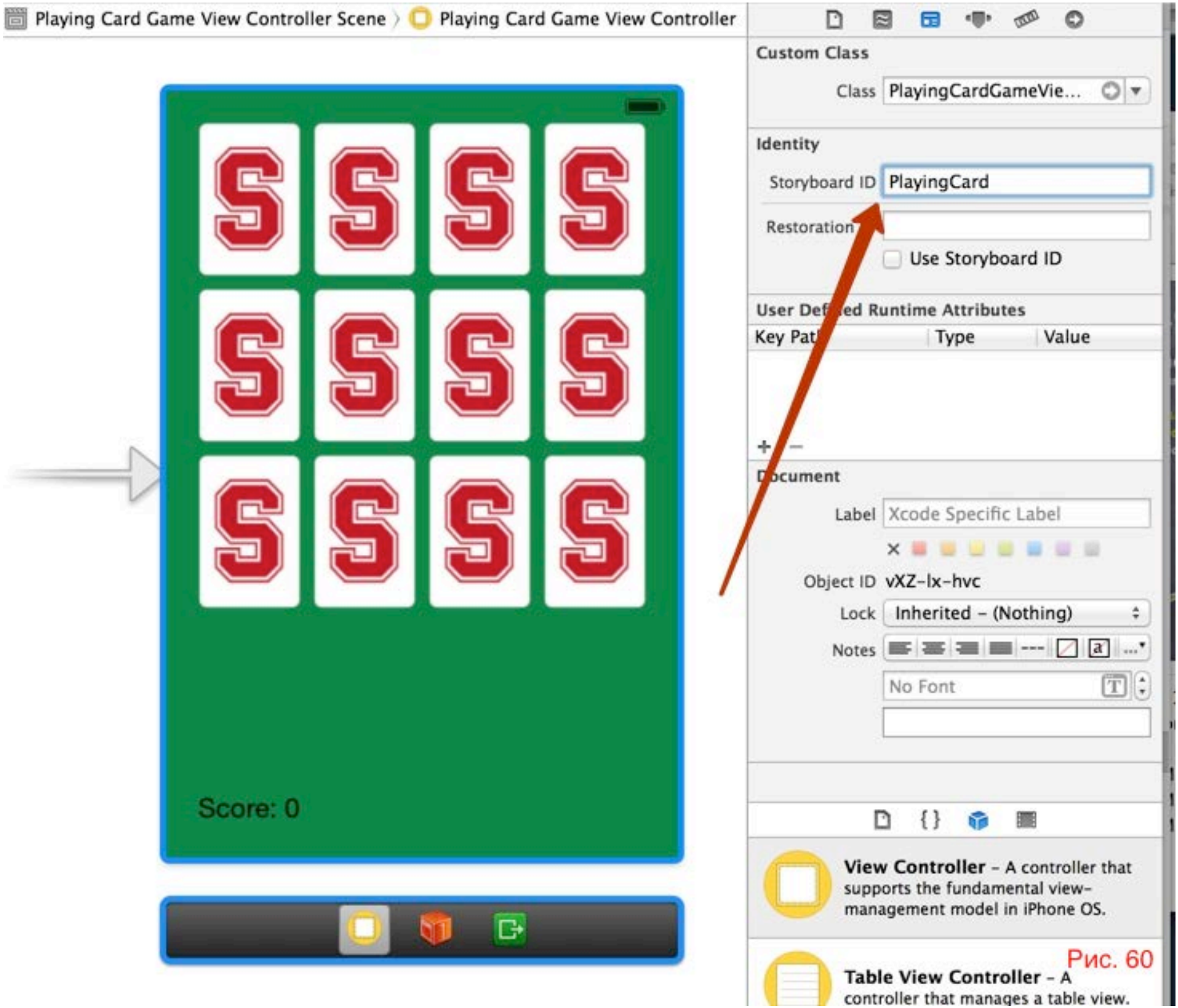

Playing Card Game View Controller Scene
Playing Card Game View Controller
Score: 0
Custom Class
Class PlayingCardGameVie...
Identity
Storyboard ID PlayingCard
Restoration
Use Storyboard ID
User Defined Runtime Attributes
Key Path
Type
Value
Document
Label Xcode Specific Label
Object ID vXZ-lx-hvc
Lock Inherited - (Nothing)
Notes
No Font
View Controller - A controller that supports the fundamental view-management model in iPhone OS.
Table View Controller - A controller that manages a table view.

Рис. 60

View Controller

- **Instantiating a UIViewController by name from a storyboard**

  Sometimes (very rarely) you might want to put a VC on screen yourself (i.e., not use a segue).

```
NSString *vcid = @"something";
UIViewController *controller = [storyboard instantiateViewControllerWithIdentifier:vcid];
```

  Usually you get the storyboard above from `self.storyboard` in an existing UIViewController.
  The identifier `vcid` must match a string you set in Xcode to identify a UIViewController there.

- **Example: creating a UIViewController in a target/action method**

  Lay out the View for a DoitViewController in your storyboard and name it "doit1".

```
- (IBAction)doit
{
    DoitViewController *doit =
        [self.storyboard instantiateViewControllerWithIdentifier:@"doit1"];
    doit.infoDoitNeeds = self.info;
    [self.navigationController pushViewController:doit animated:YES];
}
```

Note use of `self.navigationController` again.

Рис. 61

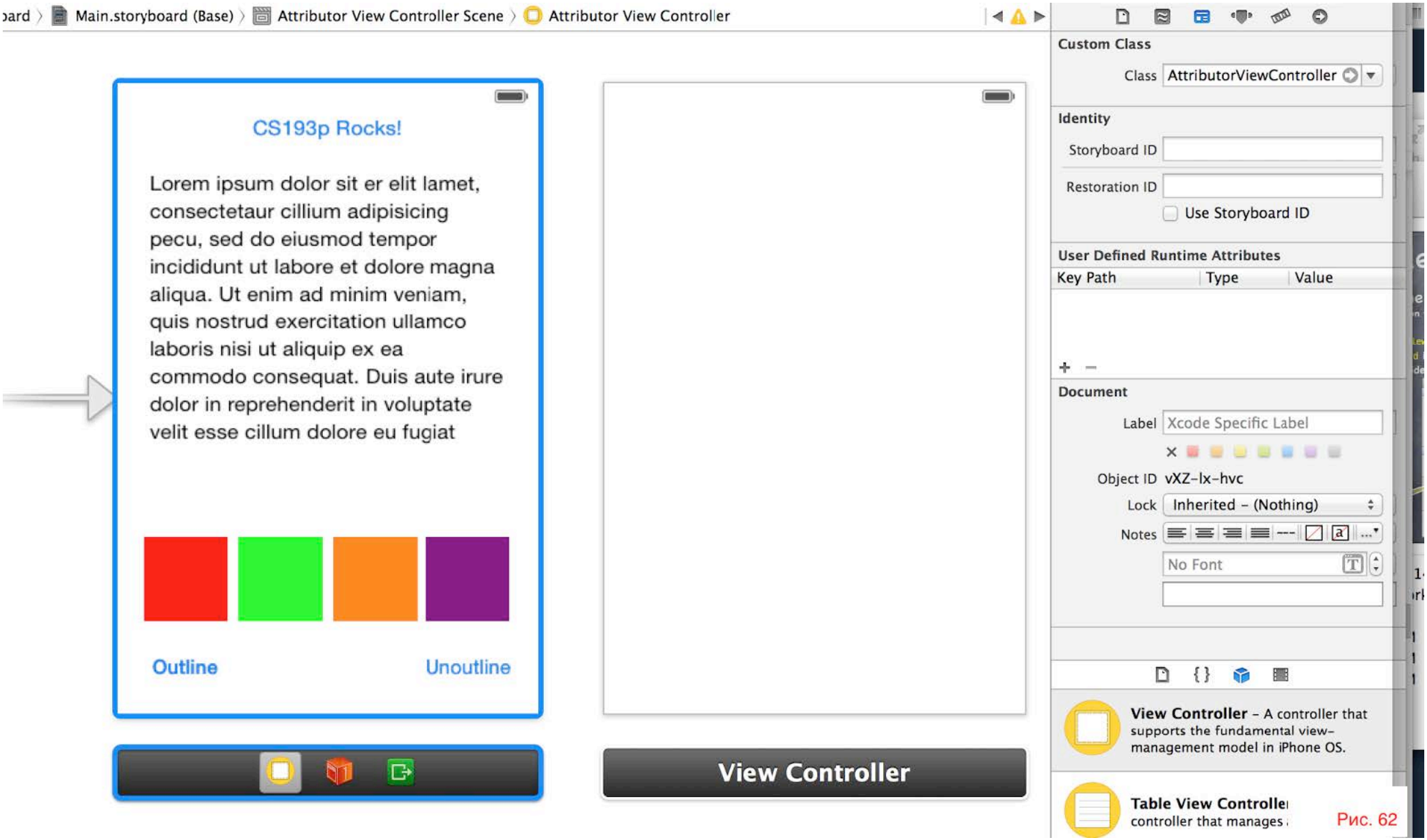

Main.storyboard (Base)
Attributor View Controller Scene
Attributor View Controller
CS193p Rocks!
Lorem ipsum dolor sit er elit lamet, consectetaur cillium adipisicing pecu, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat
Outline
Unoutline
View Controller
Custom Class
Class AttributorViewController
Identity
Storyboard ID
Restoration ID
Use Storyboard ID
User Defined Runtime Attributes
Key Path
Type
Value
Document
Label Xcode Specific Label
Object ID vXZ-lx-hvc
Lock Inherited - (Nothing)
Notes
No Font
View Controller - A controller that supports the fundamental view-management model in iPhone OS.
Table View Controller
controller that manages

Рис. 62

Attributor
2 targets, iOS SDK 7.1
Attributor
Main.storyboard
TextStatsViewController.h
TextStatsViewController.m
AttributorViewController.h
AttributorViewController.m
Images.xcassets
Supporting Files
AttributorTests
Frameworks
Products

Attributor 〉 Attributor 〉 TextStatsViewController.m 〉 @impl

```
//
//  TextStatsViewController.m
//  Attributor
//
//  Created by Tatiana Kornilova on 3/11/14.
//  Copyright (c) 2014 Tatiana Kornilova. All rights reserved.
//

#import "TextStatsViewController.h"

@interface TextStatsViewController ()

@end

@implementation TextStatsViewController

@end
```

Рис. 63

Attributor — TextStatsViewController.h —

Attributor 〉 iPhone Retina (4-inch 64-bit)

Build Attributor: **Succeeded** | 2/28/14 at 10:05 PM

Attributor 〉 Attributor 〉 TextStatsViewController.h 〉 textToAnalyze

- **Attributor** — 2 targets, iOS SDK 7.1 (M)
  - Attributor
    - Main.storyboard (M)
    - TextStatsViewController.h (A)
    - TextStatsViewController.m (A)
    - AttributorViewController.h
    - AttributorViewController.m (M)
    - Images.xcassets
    - Supporting Files
  - AttributorTests
  - Frameworks
  - Products

```
//
//  TextStatsViewController.h
//  Attributor
//
//  Created by Tatiana Kornilova on 3/11/14.
//  Copyright (c) 2014 Tatiana Kornilova. All rights reserved.
//

#import <UIKit/UIKit.h>

@interface TextStatsViewController : UIViewController

@property (nonatomic, strong) NSAttributedString *textToAnalyze;

@end
```

Рис. 64

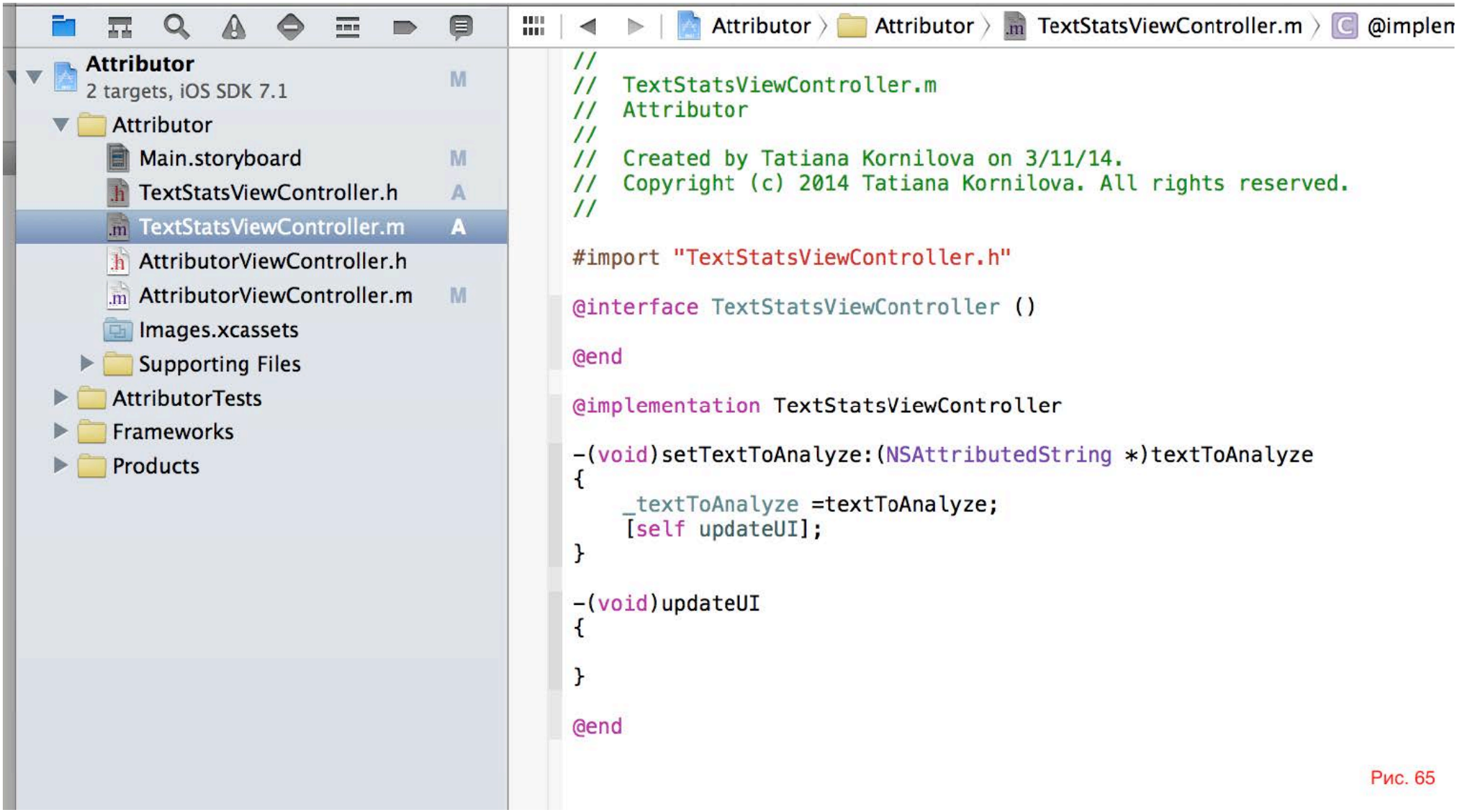

Attributor
2 targets, iOS SDK 7.1
Attributor
Main.storyboard
TextStatsViewController.h
TextStatsViewController.m
AttributorViewController.h
AttributorViewController.m
Images.xcassets
Supporting Files
AttributorTests
Frameworks
Products
Attributor
Attributor
TextStatsViewController.m
@implem
//
// TextStatsViewController.m
// Attributor
//
// Created by Tatiana Kornilova on 3/11/14.
// Copyright (c) 2014 Tatiana Kornilova. All rights reserved.
//
#import "TextStatsViewController.h"
@interface TextStatsViewController ()
@end
@implementation TextStatsViewController
-(void)setTextToAnalyze:(NSAttributedString *)textToAnalyze
{
_textToAnalyze =textToAnalyze;
[self updateUI];
}
-(void)updateUI
{
}
@end

Рис. 65

Attributor 〉 Attributor 〉 TextStatsViewController.m 〉 @implementation TextStatsView

```
//
//  TextStatsViewController.m
//  Attributor
//
//  Created by Tatiana Kornilova on 3/11/14.
//  Copyright (c) 2014 Tatiana Kornilova. All rights reserved.
//

#import "TextStatsViewController.h"

@interface TextStatsViewController ()

@end

@implementation TextStatsViewController

-(void)setTextToAnalyze:(NSAttributedString *)textToAnalyze
{
    _textToAnalyze =textToAnalyze;
    [self updateUI];
}

-(void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];
    [self updateUI];
}

-(void)updateUI
{

}

@end
```

Рис. 66

Attributor 〉 Attributor 〉 TextStatsViewController.m 〉 -setTextToAnaly

```
//
//  TextStatsViewController.m
//  Attributor
//
//  Created by Tatiana Kornilova on 3/11/14.
//  Copyright (c) 2014 Tatiana Kornilova. All rights reserved.
//

#import "TextStatsViewController.h"

@interface TextStatsViewController ()

@end

@implementation TextStatsViewController

-(void)setTextToAnalyze:(NSAttributedString *)textToAnalyze
{
    _textToAnalyze =textToAnalyze;
    if (self.view.window)  [self updateUI];
}

-(void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];
    [self updateUI];
}

-(void)updateUI
{

}

@end
```

Рис. 67

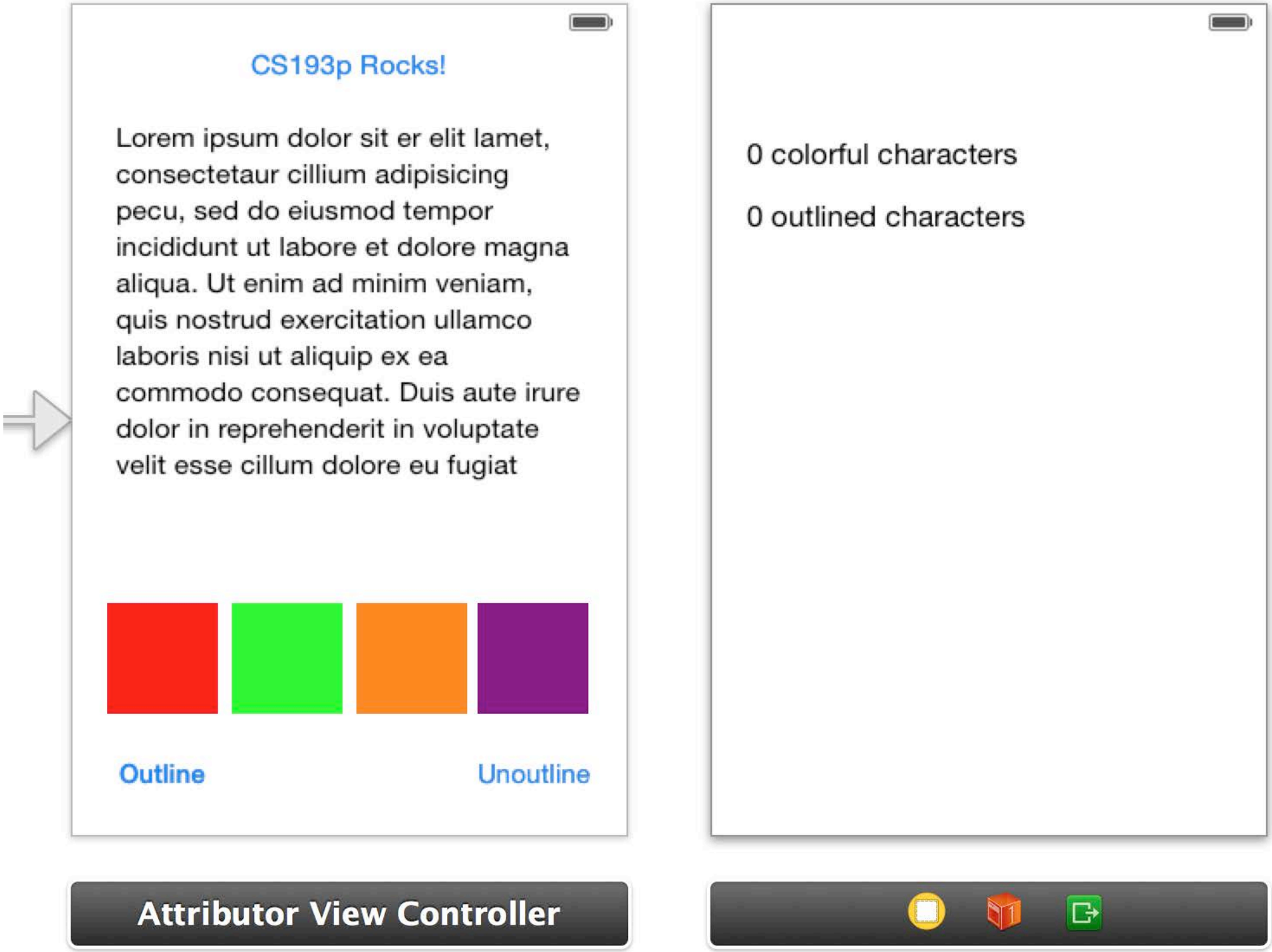

CS193p Rocks!
Lorem ipsum dolor sit er elit lamet, consectetaur cillium adipisicing pecu, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat
Outline
Unoutline
0 colorful characters
0 outlined characters
Attributor View Controller

Рис. 68

```
-(NSAttributedString *)charactersWithAttribute:(NSString *)attributeName
{
    NSMutableAttributedString *characters =[[NSMutableAttributedString alloc] init];
    NSInteger index =0;
    while (index< [self.textToAnalyze length]) {
        NSRange range;
        id value =[self.textToAnalyze attribute:attributeName atIndex:index effectiveRange:&range];
        if (value) {
            [characters appendAttributedString:[self.textToAnalyze attributedSubstringFromRange:range]];
            index =range.location + range.length;
        }else{
            index++;
        }
    }
    return characters;
}
```

Рис. 69

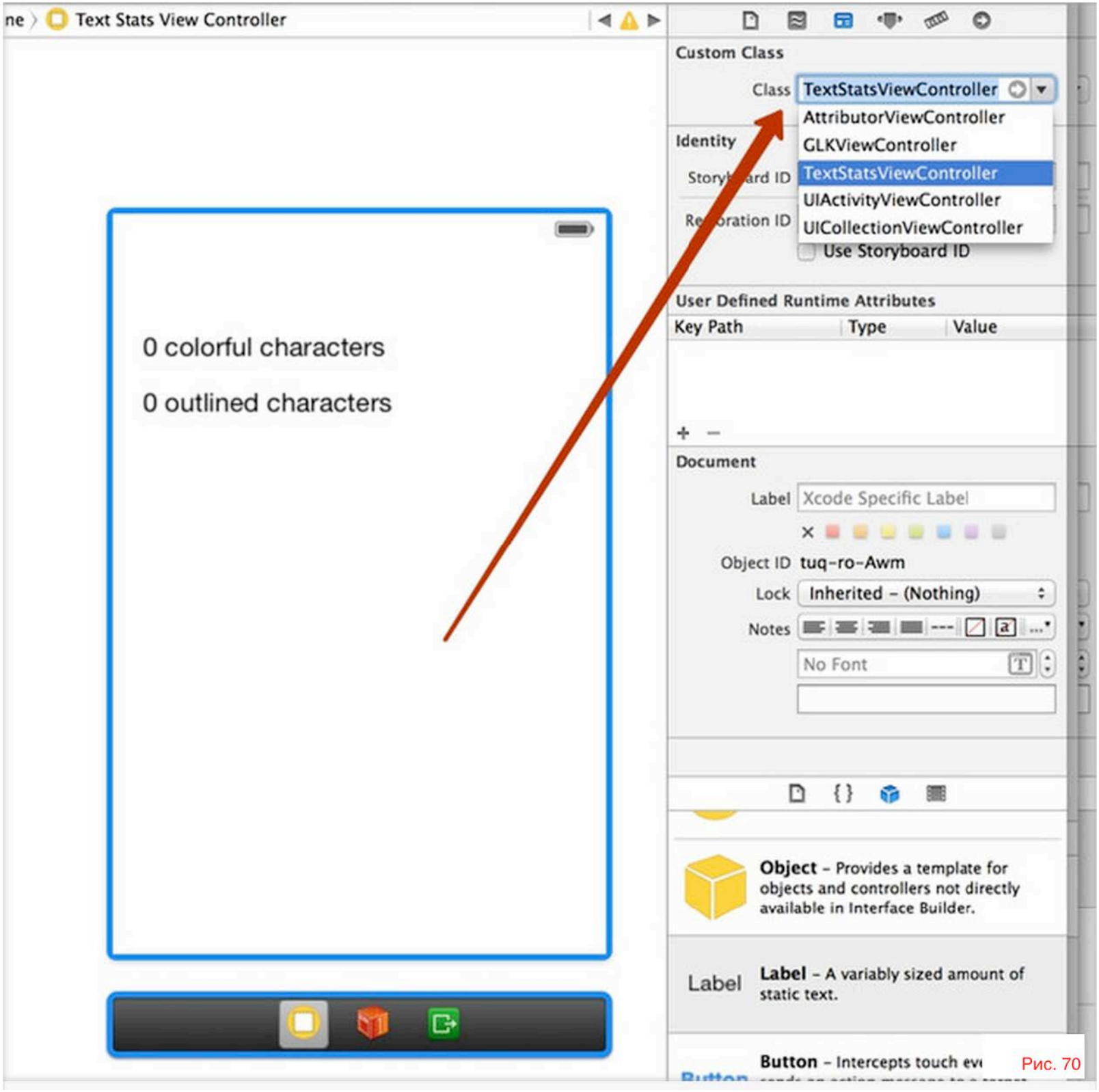
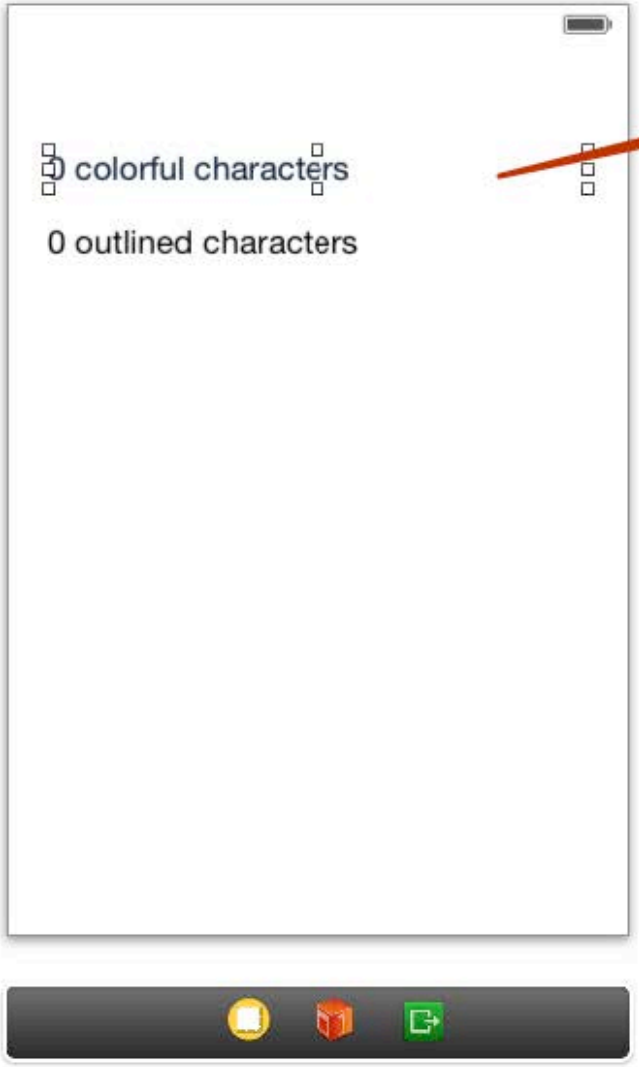
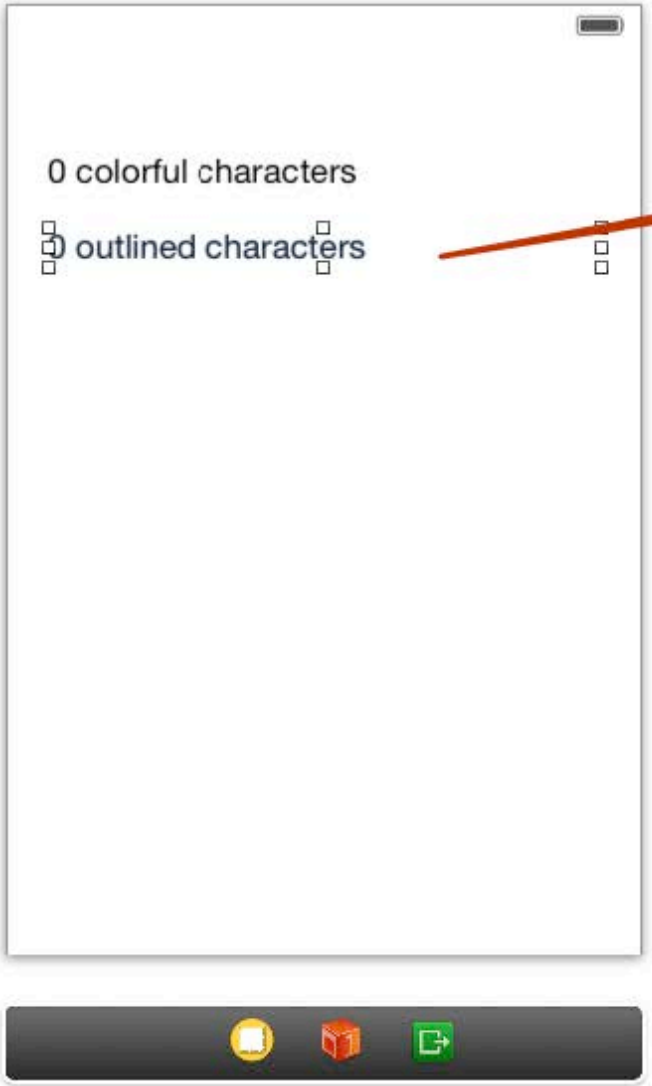

Text Stats View Controller
0 colorful characters
0 outlined characters
Custom Class
Class
TextStatsViewController
AttributorViewController
GLKViewController
TextStatsViewController
UIActivityViewController
UICollectionViewController
Identity
Use Storyboard ID
User Defined Runtime Attributes
Key Path
Type
Value
Document
Label
Xcode Specific Label
Object ID
tuq-ro-Awm
Lock
Inherited - (Nothing)
Notes
No Font
Object - Provides a template for objects and controllers not directly available in Interface Builder.
Label
Label - A variably sized amount of static text.
Button - Intercepts touch ev

Рис. 70




```
#import "TextStatsViewController.h"

@interface TextStatsViewController ()
@property (weak, nonatomic) IBOutlet UILabel *colorfulCharactersLabel;

@property (weak, nonatomic) IBOutlet UILabel *outlinedCharactersLabel;
@end

@implementation TextStatsViewController

-(void)setTextToAnalyze:(NSAttributedString *)textToAnalyze
{
    _textToAnalyze =textToAnalyze;
    if (self.view.window)  [self updateUI];
}

-(void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];
    [self updateUI];
}

-(void)updateUI
{

}

-(NSAttributedString *)charactersWithAttribute:(NSString *)attributeName
{
    NSMutableAttributedString *characters =[[NSMutableAttributedString alloc] init];
    NSInteger index =0;
    while (index< [self.textToAnalyze length]) {
        NSRange range;
        id value =[self.textToAnalyze attribute:attributeName atIndex:index effectiveRange:&range
            ];
        if (value) {
            [characters appendAttributedString:[self.textToAnalyze attributedSubstringFromRange:
                range]];
            index =range.location + range.length;
        }else{
            index++;
        }
    }
```

Рис. 71




```
#import "TextStatsViewController.h"

@interface TextStatsViewController ()

@property (weak, nonatomic) IBOutlet UILabel *colorfulCharactersLabel;
@property (weak, nonatomic) IBOutlet UILabel *outlinedCharactersLabel;

@end

@implementation TextStatsViewController

-(void)setTextToAnalyze:(NSAttributedString *)textToAnalyze
{
    _textToAnalyze =textToAnalyze;
    if (self.view.window)  [self updateUI];
}

-(void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];
    [self updateUI];
}

-(void)updateUI
{

}

-(NSAttributedString *)charactersWithAttribute:(NSString *)attributeName
{
    NSMutableAttributedString *characters =[[NSMutableAttributedString alloc] init];
    NSInteger index =0;
    while (index< [self.textToAnalyze length]) {
        NSRange range;
        id value =[self.textToAnalyze attribute:attributeName atIndex:index effectiveRange:&range
            ];
        if (value) {
            [characters appendAttributedString:[self.textToAnalyze attributedSubstringFromRange:
                range]];
            index =range.location + range.length;
        }else{
            index++;
        }
```

Рис. 72

```
-(void)updateUI
{
    self.colorfulCharactersLabel.text = [NSString stringWithFormat:@"%lu colorful characters",
                                (unsigned long)[[self charactersWithAttribute:NSForegroundColorAttributeName] length]];
    self.outlinedCharactersLabel.text = [NSString stringWithFormat:@"%lu outlined characters",
                                (unsigned long)[[self charactersWithAttribute:NSStrokeWidthAttributeName] length]];
}
```

Рис. 72.1

```
-(void)viewDidLoad
{
    [super viewDidLoad];
    self.textToAnalyze = [[NSAttributedString alloc] initWithString:@"test" attributes:
                          @{NSForegroundColorAttributeName: [UIColor greenColor],
                            NSStrokeWidthAttributeName: @3}];
}
```

Рис. 72.2

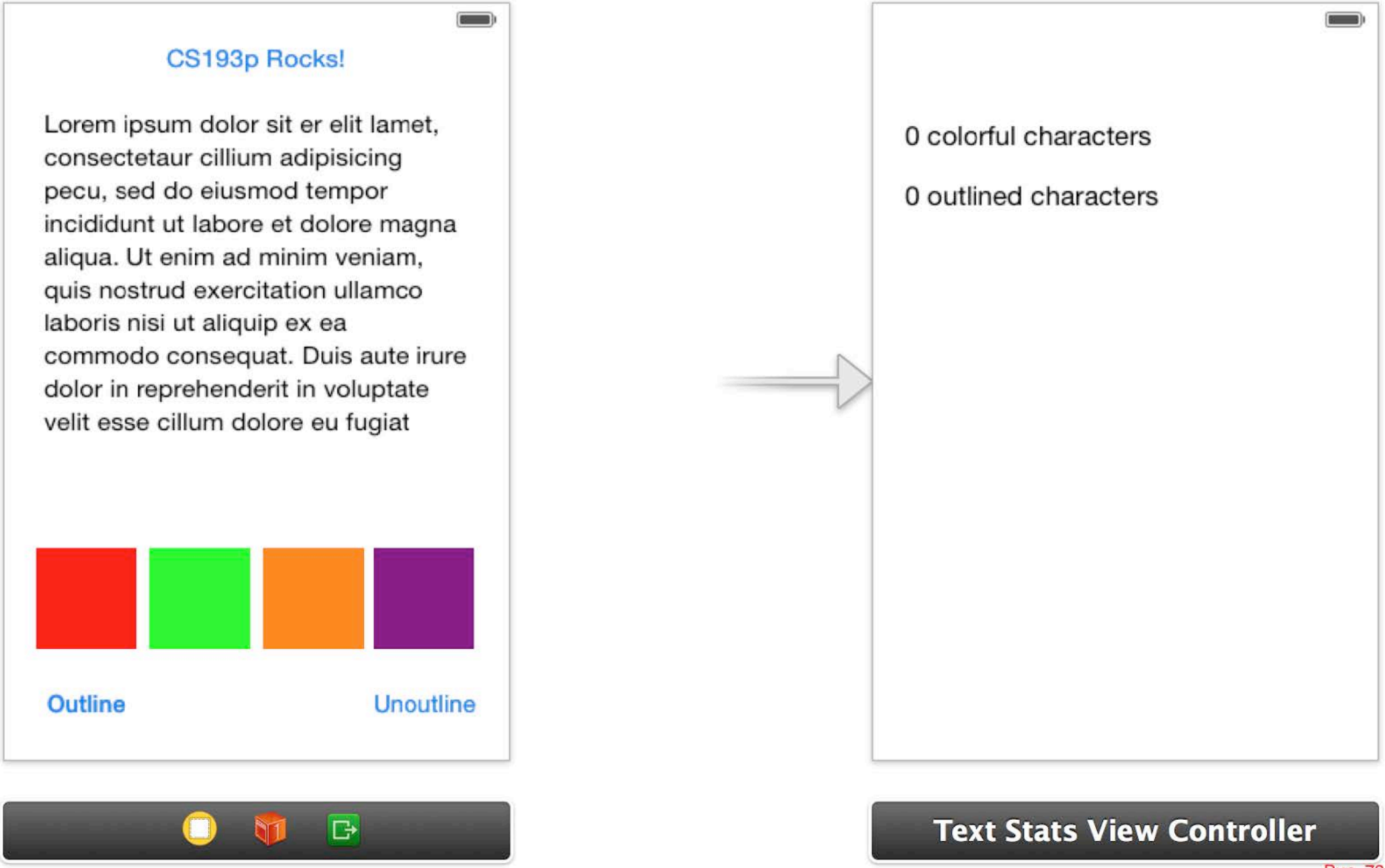

CS193p Rocks!
Lorem ipsum dolor sit er elit lamet, consectetaur cillium adipisicing pecu, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat
Outline
Unoutline
0 colorful characters
0 outlined characters
Text Stats View Controller

Рис. 73

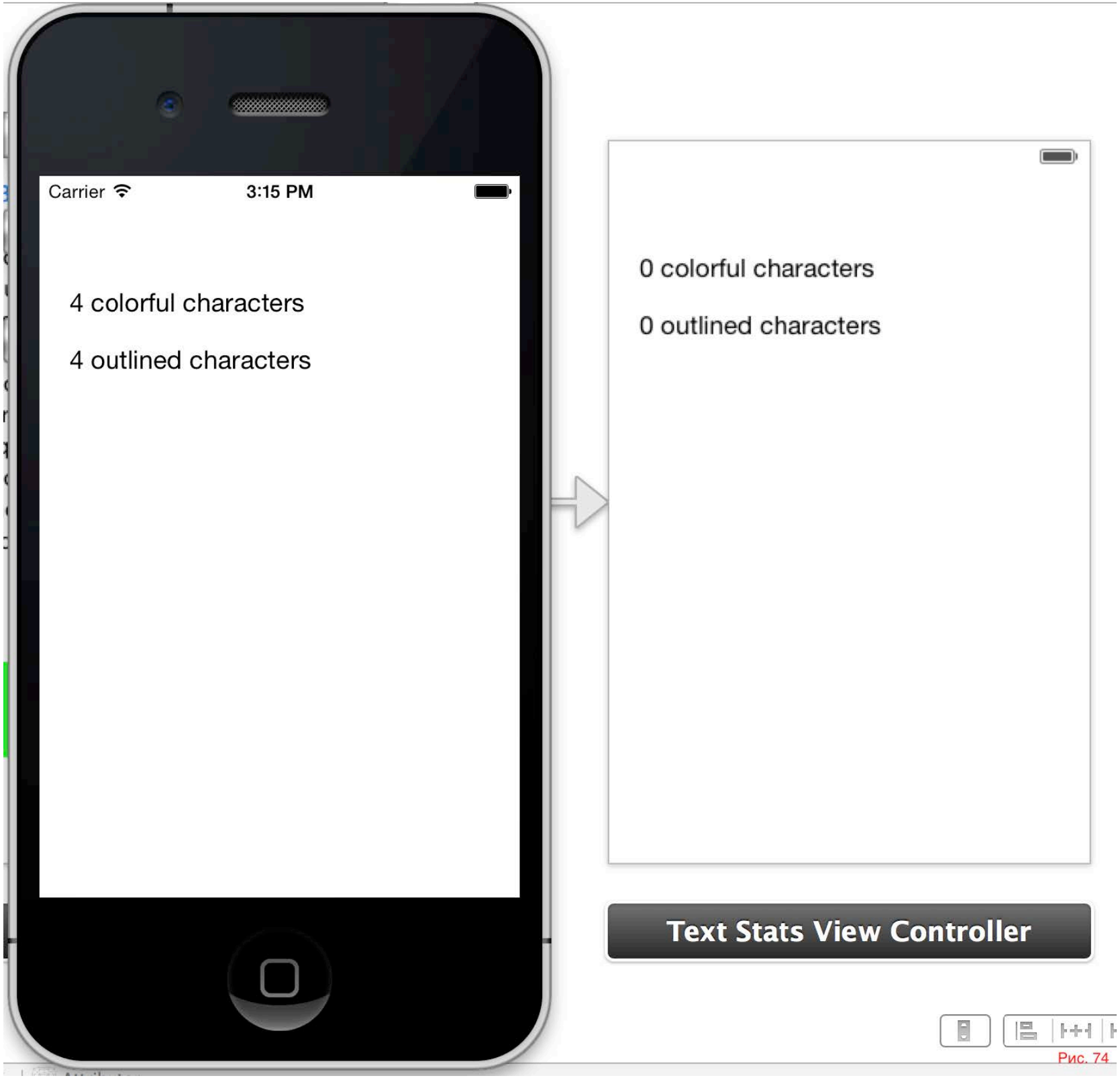

Carrier
3:15 PM
4 colorful characters
4 outlined characters
0 colorful characters
0 outlined characters
Text Stats View Controller

Рис. 74

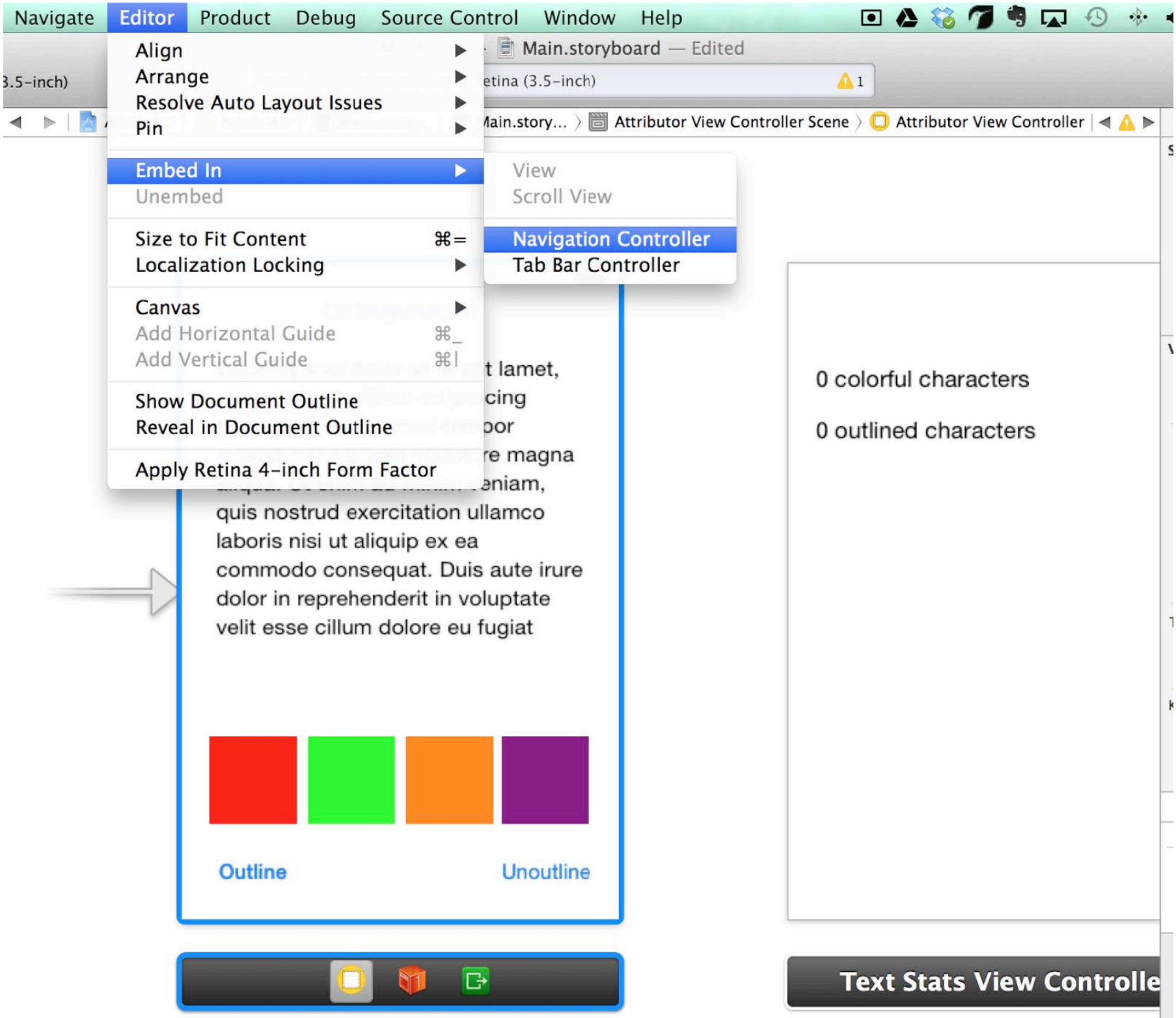

Navigate
Editor
Product
Debug
Source Control
Window
Help
Main.storyboard — Edited
Align
Arrange
Resolve Auto Layout Issues
Pin
Embed In
Unembed
Size to Fit Content ⌘=
Localization Locking
Canvas
Add Horizontal Guide ⌘_
Add Vertical Guide ⌘|
Show Document Outline
Reveal in Document Outline
Apply Retina 4-inch Form Factor
View
Scroll View
Navigation Controller
Tab Bar Controller
Attributor View Controller Scene
Attributor View Controller
quis nostrud exercitation ullamco
laboris nisi ut aliquip ex ea
commodo consequat. Duis aute irure
dolor in reprehenderit in voluptate
velit esse cillum dolore eu fugiat
Outline
Unoutline
0 colorful characters
0 outlined characters
Text Stats View Controlle

Рис. 75

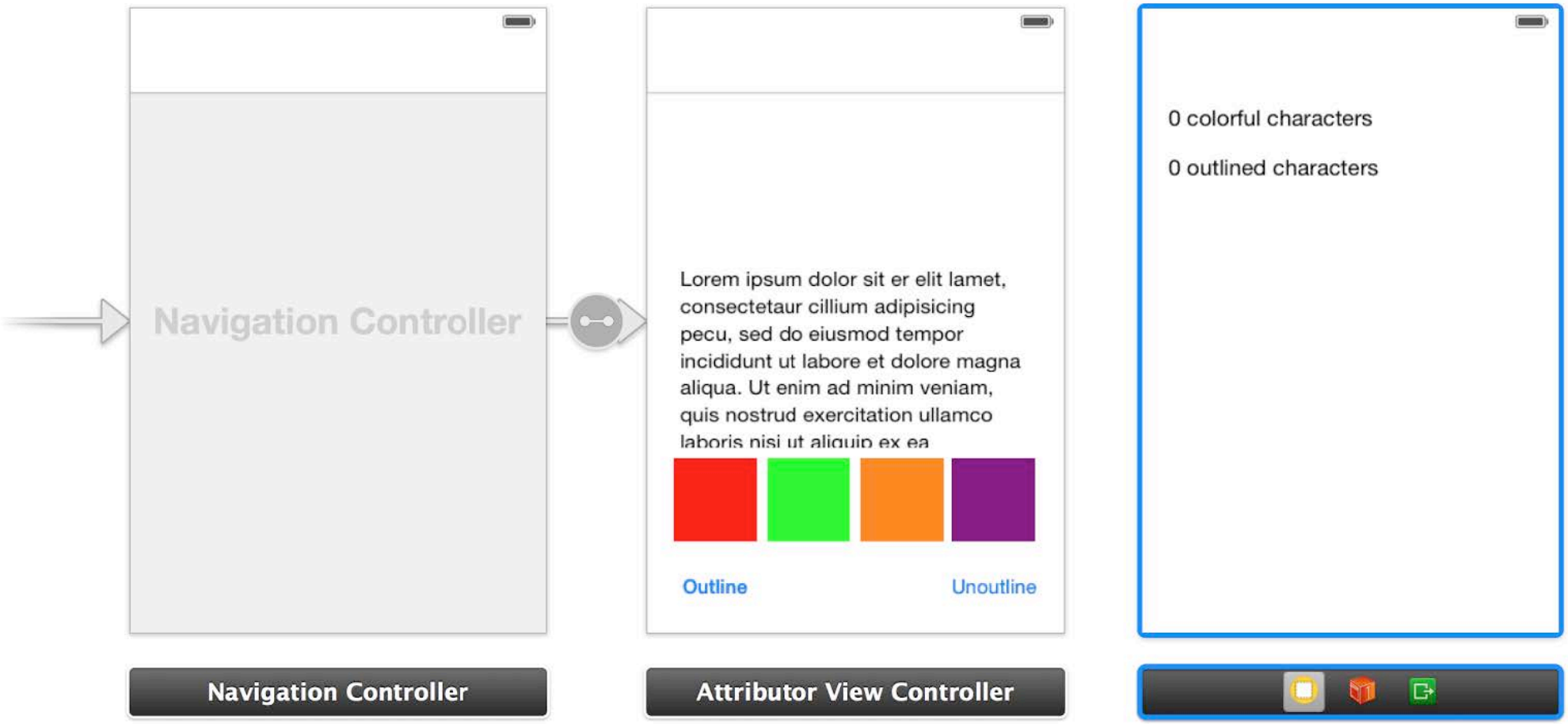

Navigation Controller
Lorem ipsum dolor sit er elit lamet, consectetaur cillium adipisicing pecu, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco
Outline
Unoutline
0 colorful characters
0 outlined characters
Navigation Controller
Attributor View Controller

Рис. 76

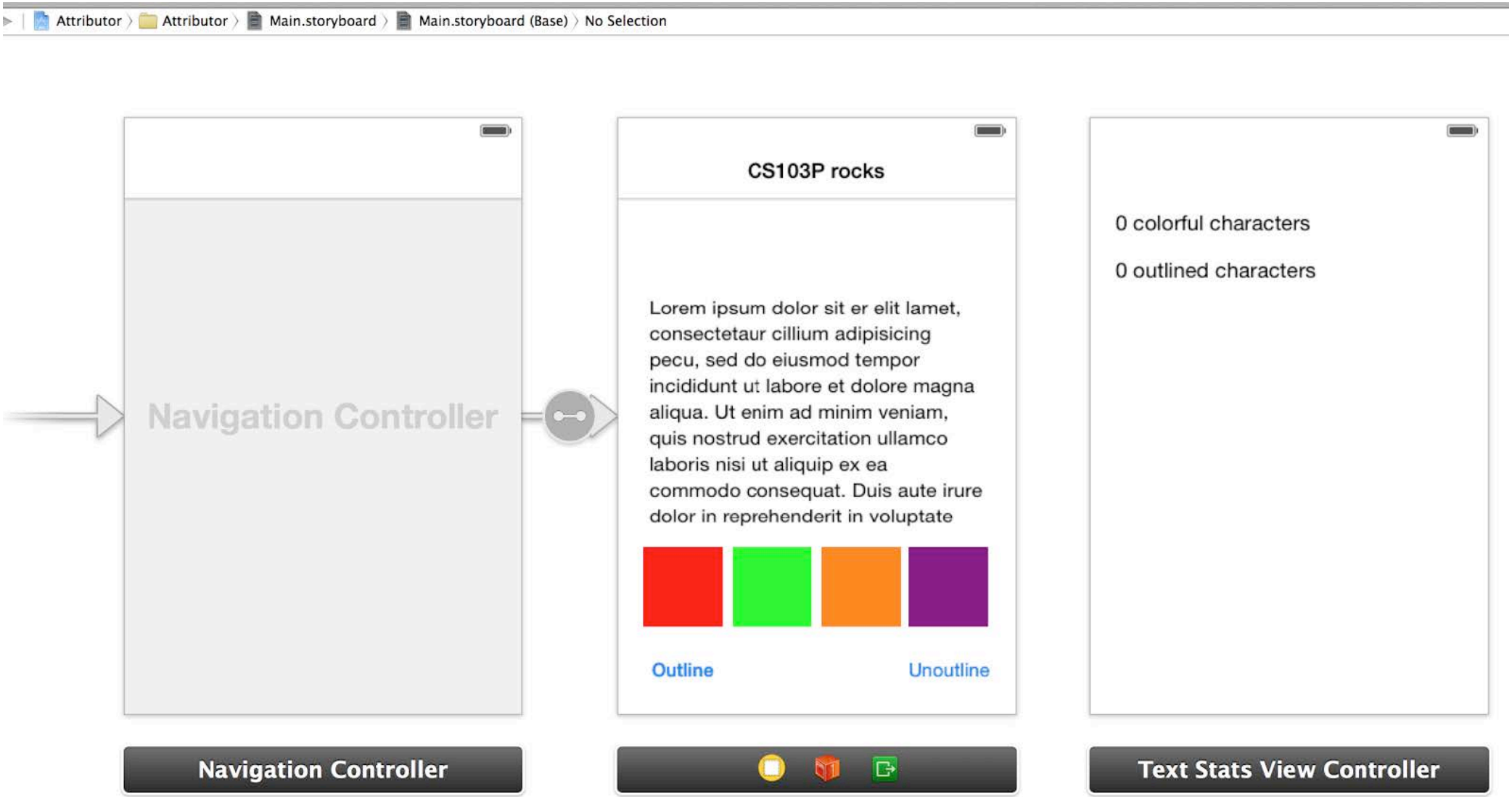

Attributor
Attributor
Main.storyboard
Main.storyboard (Base)
No Selection
Navigation Controller
CS103P rocks
Lorem ipsum dolor sit er elit lamet, consectetaur cillium adipisicing pecu, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate
Outline
Unoutline
0 colorful characters
0 outlined characters
Navigation Controller
Text Stats View Controller

Рис. 77

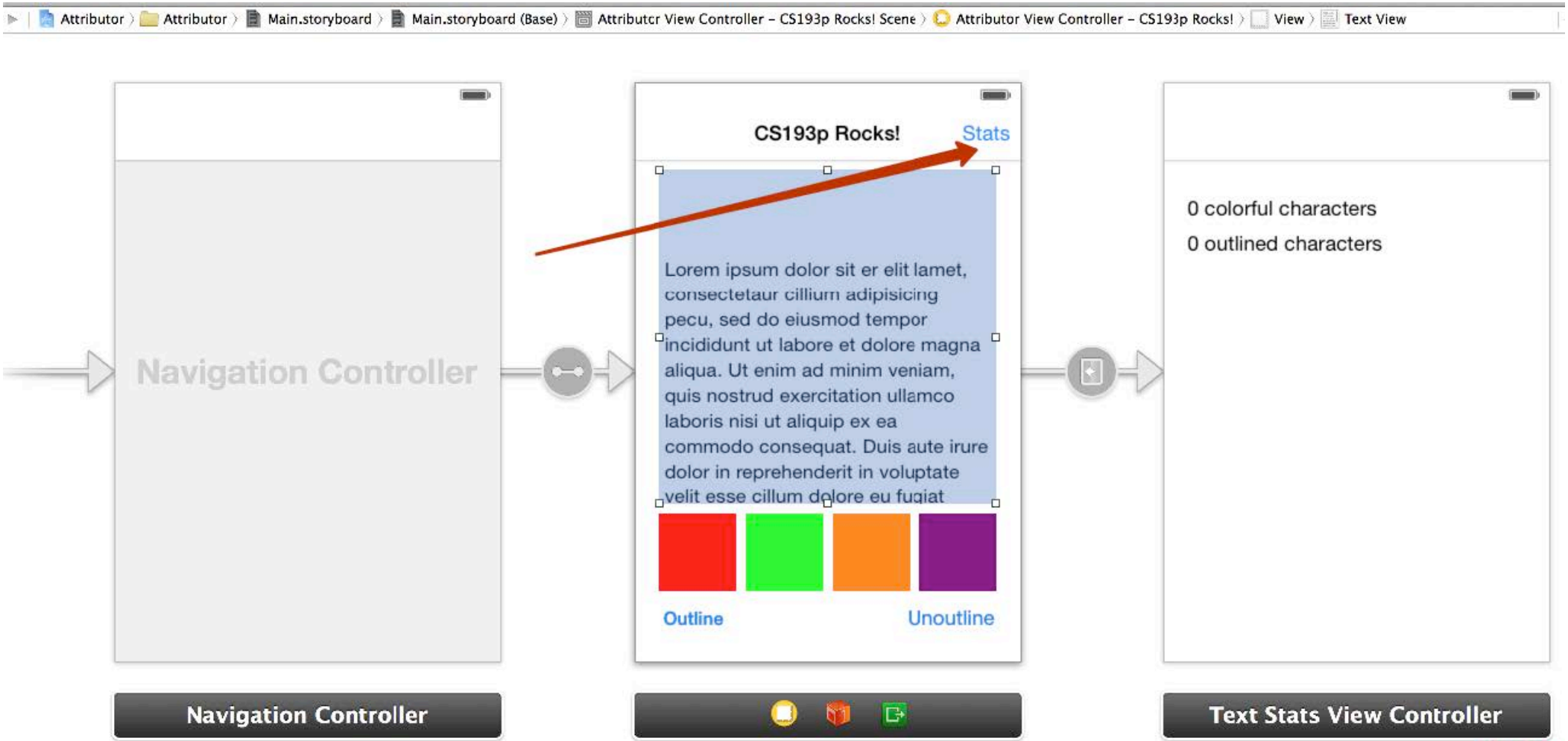

Attributor
Attributor
Main.storyboard
Main.storyboard (Base)
Attributor View Controller – CS193p Rocks! Scene
Attributor View Controller – CS193p Rocks!
View
Text View
Navigation Controller
CS193p Rocks!
Stats
Lorem ipsum dolor sit er elit lamet, consectetaur cillium adipisicing pecu, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat
Outline
Unoutline
0 colorful characters
0 outlined characters
Navigation Controller
Text Stats View Controller

Рис. 78

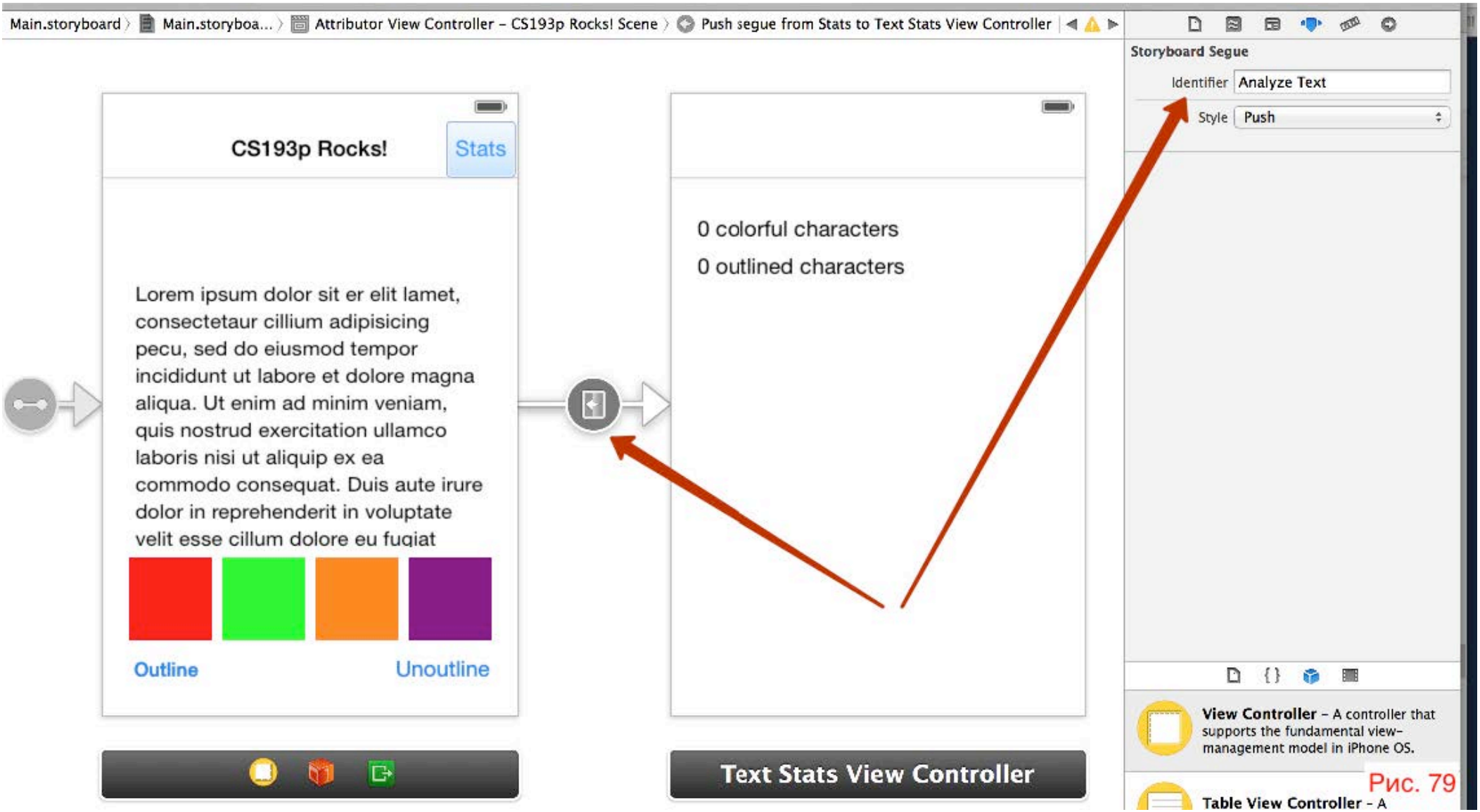

Main.storyboard
Main.storyboa...
Attributor View Controller – CS193p Rocks! Scene
Push segue from Stats to Text Stats View Controller
CS193p Rocks!
Stats
Lorem ipsum dolor sit er elit lamet, consectetaur cillium adipisicing pecu, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat
Outline
Unoutline
0 colorful characters
0 outlined characters
Text Stats View Controller
Storyboard Segue
Identifier
Analyze Text
Style
Push
View Controller – A controller that supports the fundamental view-management model in iPhone OS.
Table View Controller – A

Рис. 79

Attributor 〉 Attributor 〉 AttributorViewController.m 〉 -prepareForSegue:sender:

```
//
//  AttributorViewController.m
//  Attributor
//
//  Created by CS193p Instructor.
//  Copyright (c) 2013 Stanford University. All rights reserved.
//

#import "AttributorViewController.h"
#import "TextStatsViewController.h"

@interface AttributorViewController ()
@property (weak, nonatomic) IBOutlet UITextView *body;
@property (weak, nonatomic) IBOutlet UILabel *headline;
@property (weak, nonatomic) IBOutlet UIButton *outlineButton;
@end

@implementation AttributorViewController

- (void)prepareForSegue:(UIStoryboardSegue *)segue sender:(id)sender
{
    if ([segue.identifier isEqualToString:@"Analyze Text"]) {
        if ([segue.destinationViewController isKindOfClass:[TextStatsViewController class]]) {
            TextStatsViewController *tsvc = (TextStatsViewController *)segue.destinationViewController;
            tsvc.textToAnalyze = self.body.textStorage;
        }
    }
}

- (void)viewDidLoad
{
    [super viewDidLoad];
    [self setupOutlineButton];
}

- (void)setupOutlineButton
{
    if (self.outlineButton.currentTitle) {
        NSMutableAttributedString *title =
        [[NSMutableAttributedString alloc] initWithString:self.outlineButton.currentTitle];
        [title setAttributes:@{ NSStrokeWidthAttributeName : @3,
                                NSStrokeColorAttributeName : self.outlineButton.tintColor }
                       range:NSMakeRange(0, [title length])];
        [self.outlineButton setAttributedTitle:title forState:UIControlStateNormal];
    }
}

- (void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];
    [self usePreferredFonts];
    [[NSNotificationCenter defaultCenter] addObserver:self
                                              selector:@selector(preferredFontsChanged:)
                                                  name:UIContentSizeCategoryDidChangeNotification
```

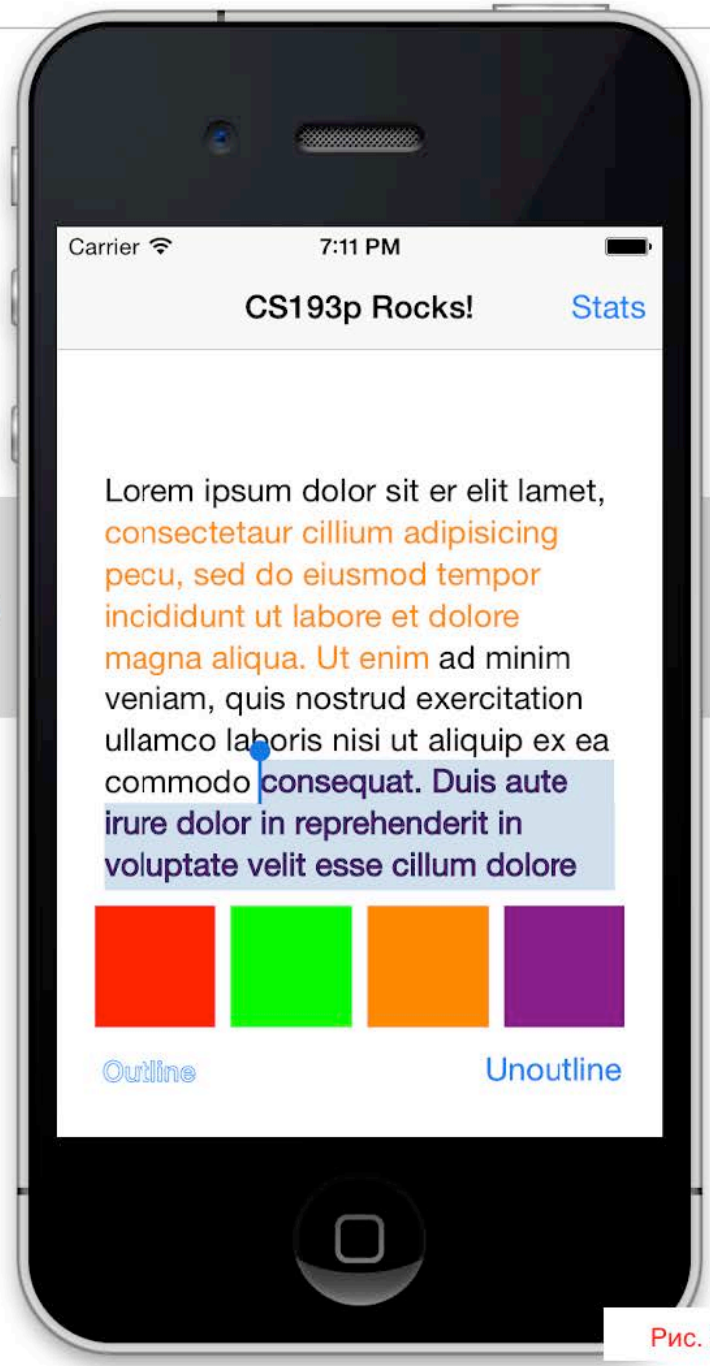


Рис. 80

Attributor › Attributor › AttributorViewController.m › -prepareForSegue:sender:

```
//
//  AttributorViewController.m
//  Attributor
//
//  Created by CS193p Instructor.
//  Copyright (c) 2013 Stanford University. All rights reserved.
//

#import "AttributorViewController.h"
#import "TextStatsViewController.h"

@interface AttributorViewController ()
@property (weak, nonatomic) IBOutlet UITextView *body;
@property (weak, nonatomic) IBOutlet UILabel *headline;
@property (weak, nonatomic) IBOutlet UIButton *outlineButton;
@end

@implementation AttributorViewController

- (void)prepareForSegue:(UIStoryboardSegue *)segue sender:(id)sender
{
    if ([segue.identifier isEqualToString:@"Analyze Text"]) {
        if ([segue.destinationViewController isKindOfClass:[TextStatsViewController class]]) {
            TextStatsViewController *tsvc = (TextStatsViewController *)segue.destinationViewController;
            tsvc.textToAnalyze = self.body.textStorage;
        }
    }
}

- (void)viewDidLoad
{
    [super viewDidLoad];
    [self setupOutlineButton];
}

- (void)setupOutlineButton
{
    if (self.outlineButton.currentTitle) {
        NSMutableAttributedString *title =
        [[NSMutableAttributedString alloc] initWithString:self.outlineButton.currentTitle];
        [title setAttributes:@{ NSStrokeWidthAttributeName : @3,
                                NSStrokeColorAttributeName : self.outlineButton.tintColor }
                     range:NSMakeRange(0, [title length])];
        [self.outlineButton setAttributedTitle:title forState:UIControlStateNormal];
    }
}

- (void)viewWillAppear:(BOOL)animated
{
    [super viewWillAppear:animated];
    [self usePreferredFonts];
    [[NSNotificationCenter defaultCenter] addObserver:self
                                              selector:@selector(preferredFontsChanged:)
                                                  name:UIContentSizeCategoryDidChangeNotification
```

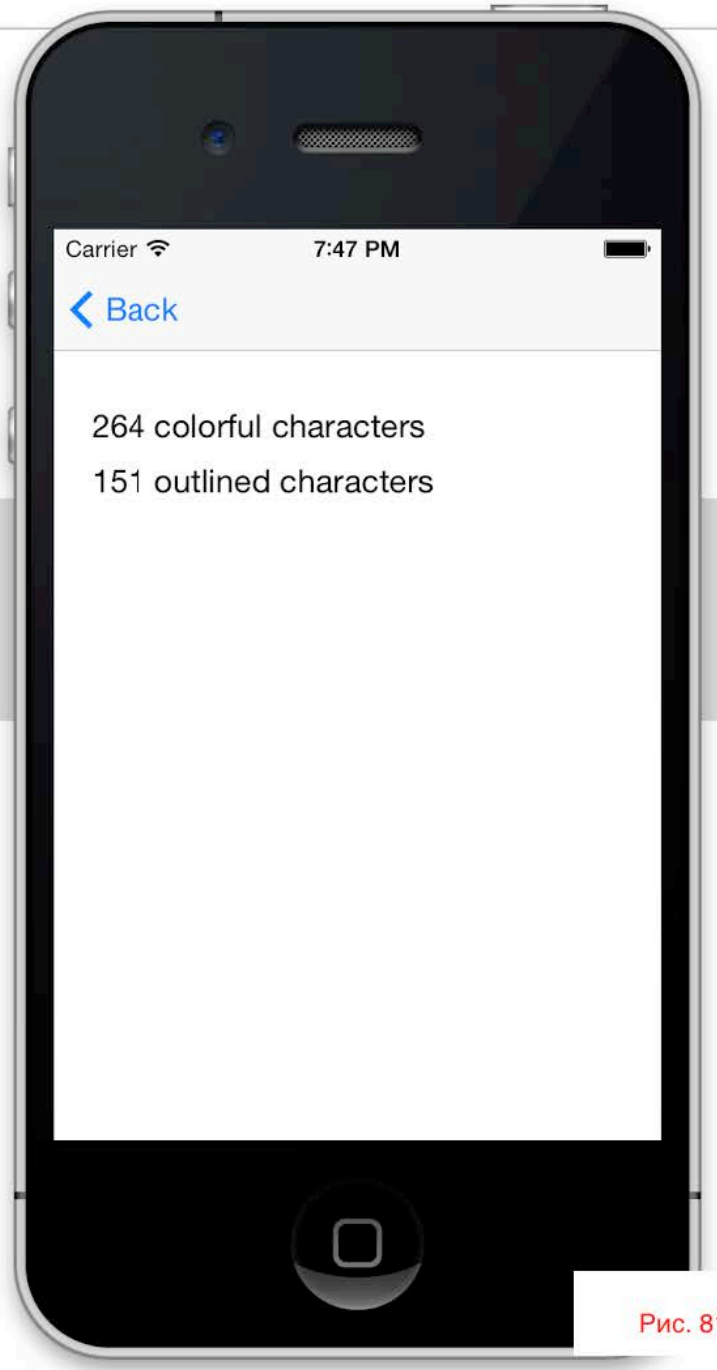


Рис. 81

UITabBarController

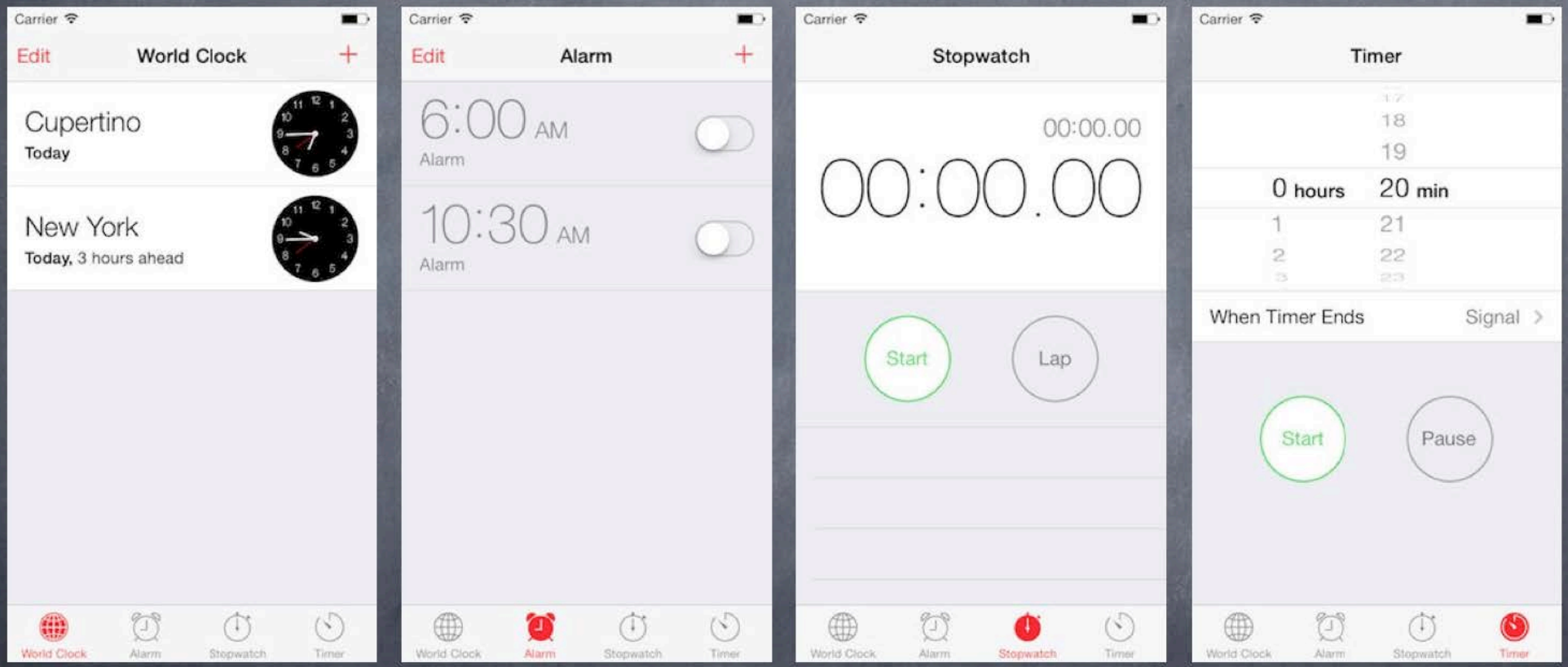
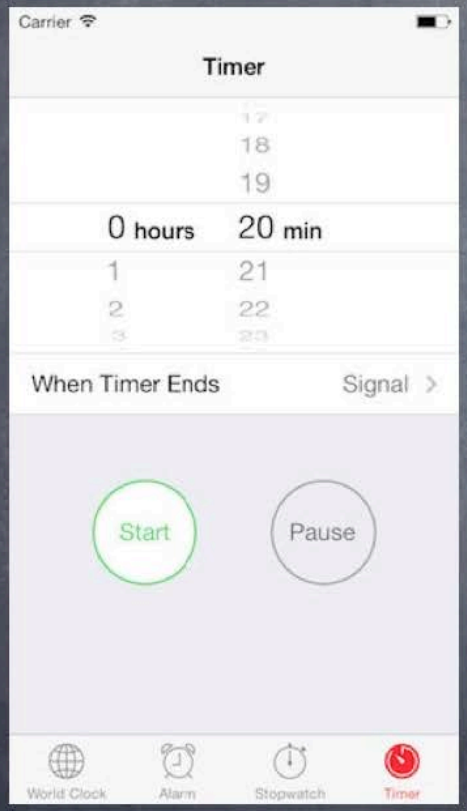


Рис. 82

UITabBarController



You control drag to create these connections in Xcode.

Doing so is setting
`@property (nonatomic, strong) NSArray *viewControllers;`
inside your UITabBarController.

Рис. 83

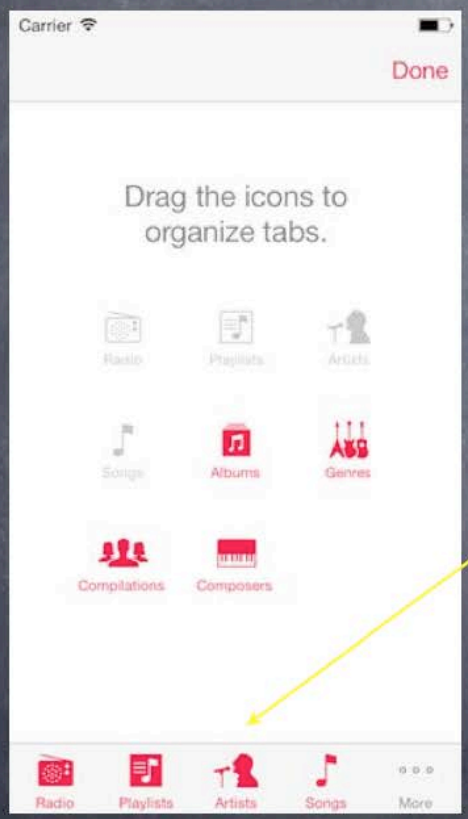
UITabBarController

1 By default this is the `UIViewController`'s `title` property (and no image)

2 But usually you set both of these in your storyboard in Xcode.

Рис. 84

UITabBarController



What if there are more than 4 View Controllers?

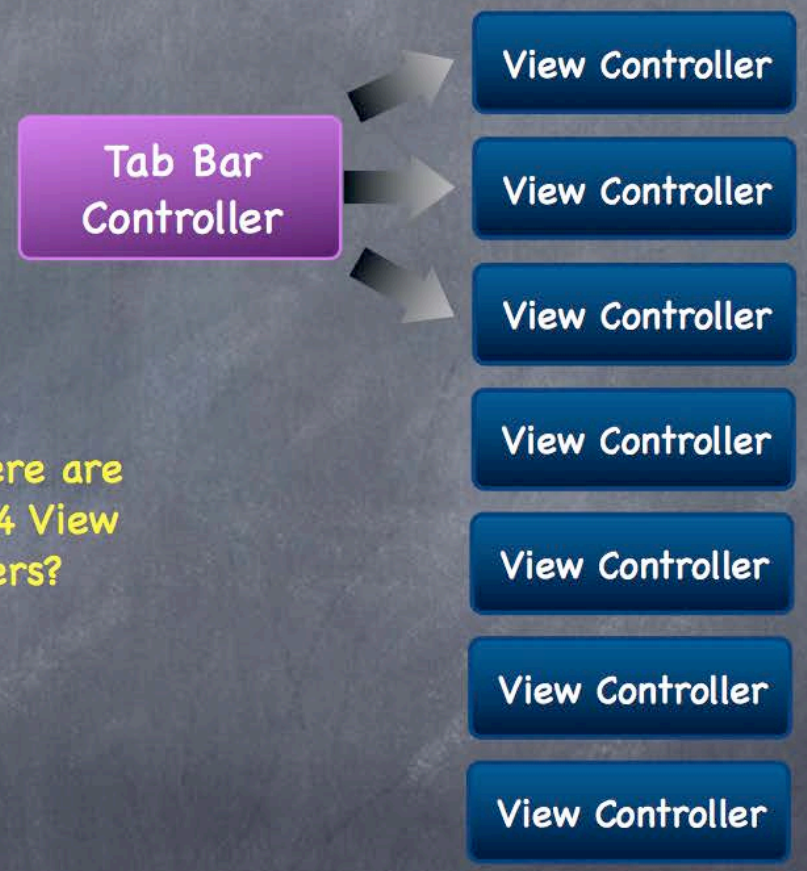
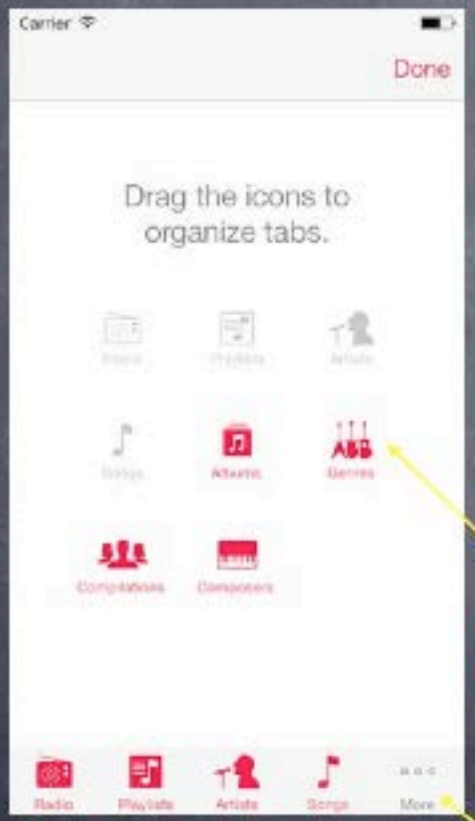


Рис. 85

UITabBarController



1 More button brings up a UI to let the user edit which buttons appear on bottom row

2 A More button appears.

Tab Bar Controller

View Controller

View Controller

View Controller

View Controller

View Controller

View Controller

View Controller

Рис. 86

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
No Selection
Navigation Controller
Title
Button
Navigation Controller
Example View Controller - Title
No Selection
collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.
You create a Tab Bar Controller by dragging it from the object palette.

Рис. 87

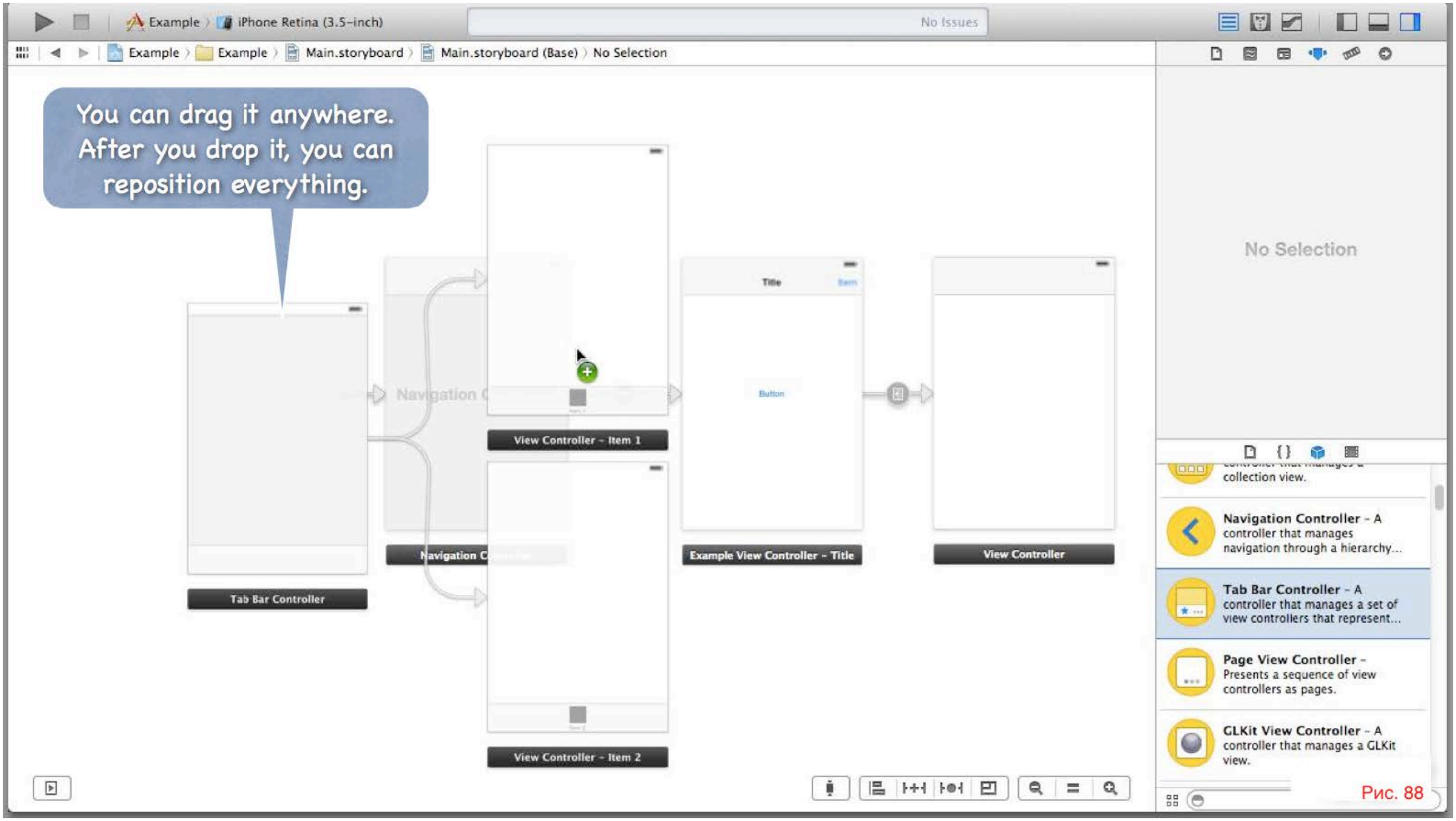

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
No Selection
You can drag it anywhere. After you drop it, you can reposition everything.
Tab Bar Controller
Navigation Controller
View Controller - Item 1
View Controller - Item 2
Title
Item
Button
Example View Controller - Title
View Controller
No Selection
collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 88

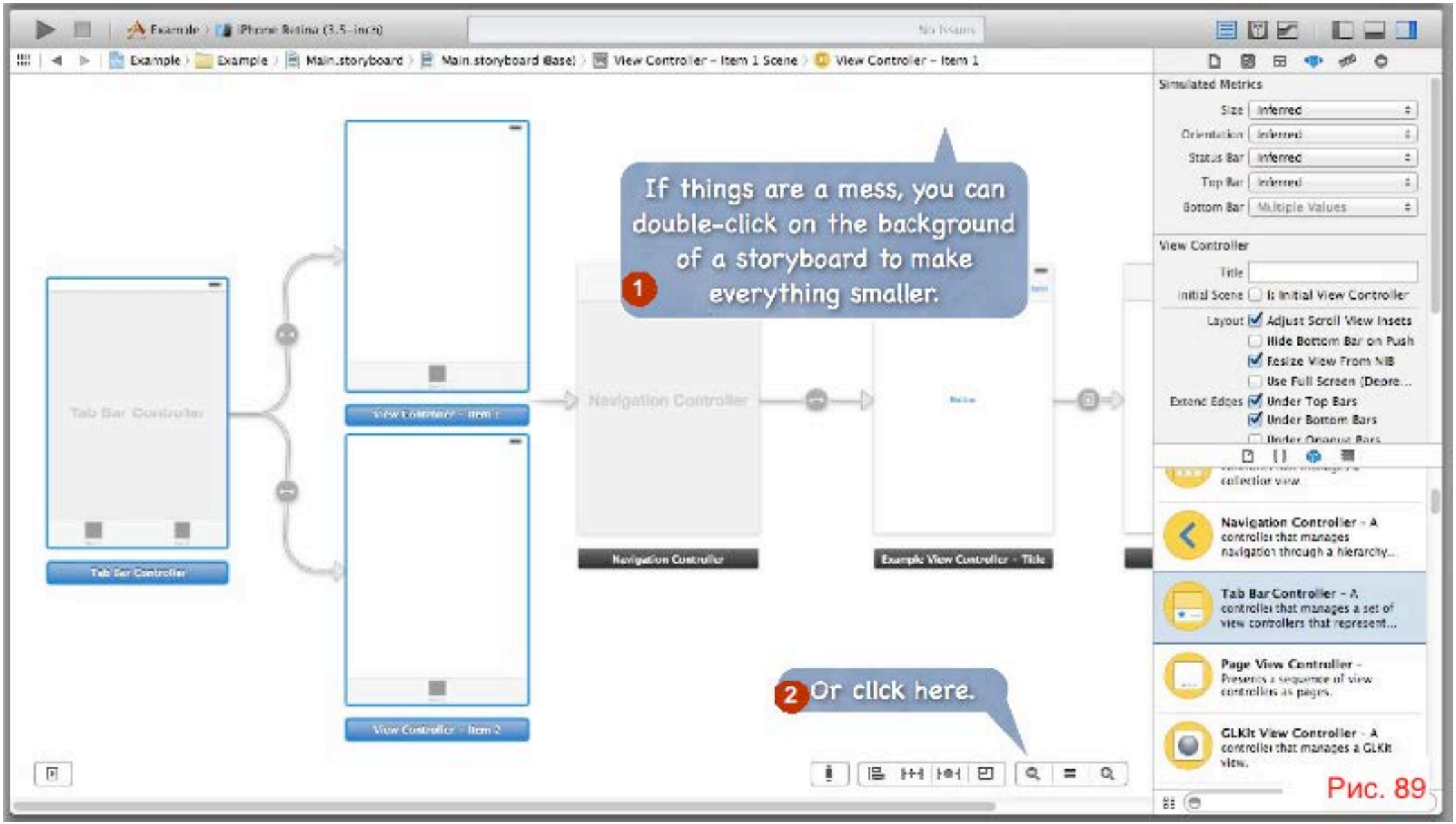

Example
Example
Main.storyboard
Main.storyboard (Base)
View Controller – Item 1 Scene
View Controller – Item 1
Simulated Metrics
Size
Inferred
Orientation
Inferred
Status Bar
Inferred
Top Bar
Inferred
Bottom Bar
Multiple Values
View Controller
Title
Initial Scene
Is Initial View Controller
Layout
Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges
Under Top Bars
Under Bottom Bars
Tab Bar Controller
View Controller – Item 1
View Controller – Item 2
Navigation Controller
Navigation Controller
Example View Controller – Title
1 If things are a mess, you can double-click on the background of a storyboard to make everything smaller.
2 Or click here.
Navigation Controller – A controller that manages navigation through a hierarchy...
Tab Bar Controller – A controller that manages a set of view controllers that represent...
Page View Controller – Presents a sequence of view controllers as pages.
GLKit View Controller – A controller that manages a GLKit view.

Рис. 89

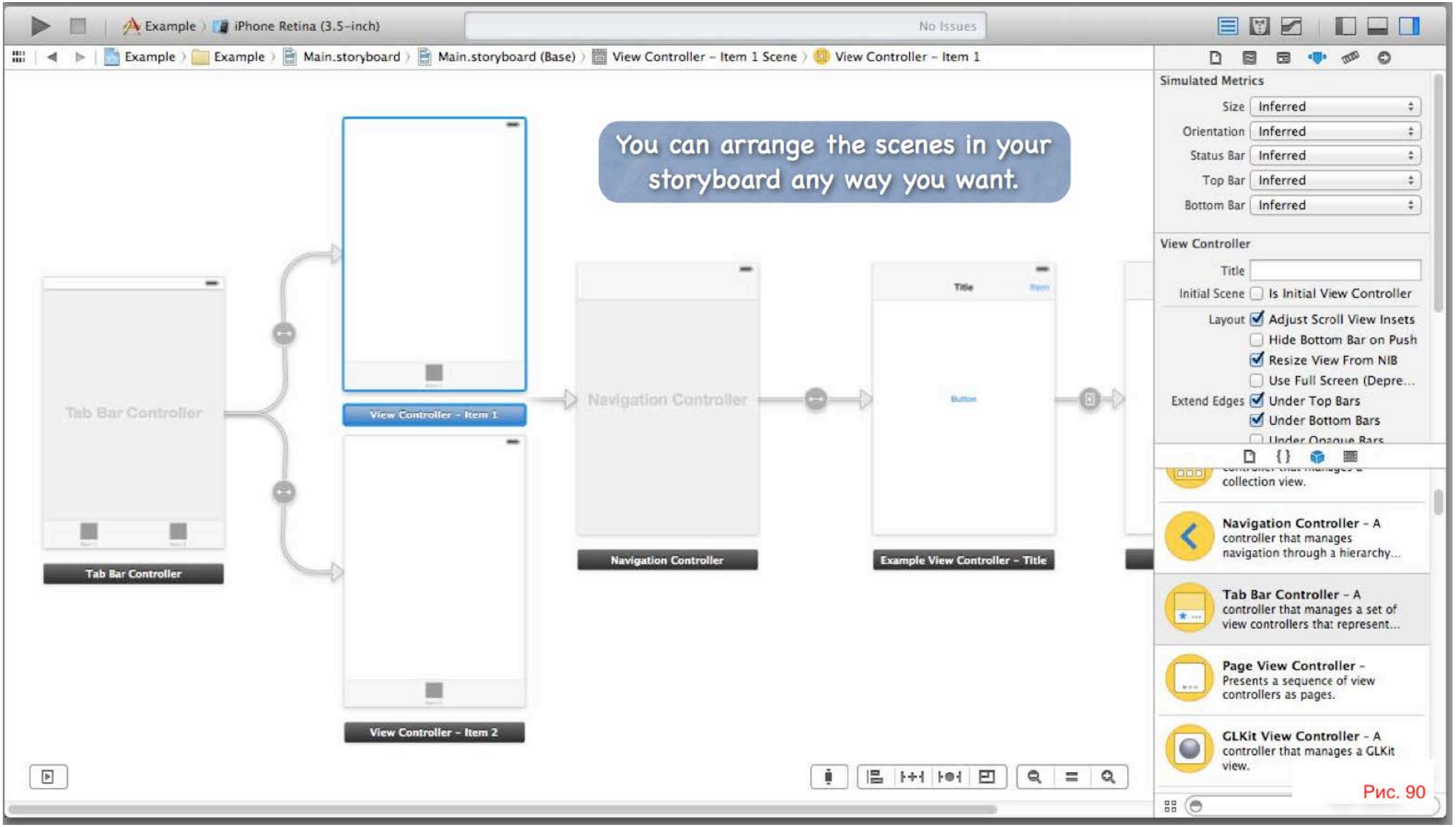

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
View Controller – Item 1 Scene
View Controller – Item 1
You can arrange the scenes in your storyboard any way you want.
Tab Bar Controller
Tab Bar Controller
View Controller – Item 1
View Controller – Item 2
Navigation Controller
Navigation Controller
Title
Button
Example View Controller – Title
Simulated Metrics
Size Inferred
Orientation Inferred
Status Bar Inferred
Top Bar Inferred
Bottom Bar Inferred
View Controller
Title
Initial Scene Is Initial View Controller
Layout Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges Under Top Bars
Under Bottom Bars
collection view.
Navigation Controller – A controller that manages navigation through a hierarchy...
Tab Bar Controller – A controller that manages a set of view controllers that represent...
Page View Controller – Presents a sequence of view controllers as pages.
GLKit View Controller – A controller that manages a GLKit view.

Рис. 90

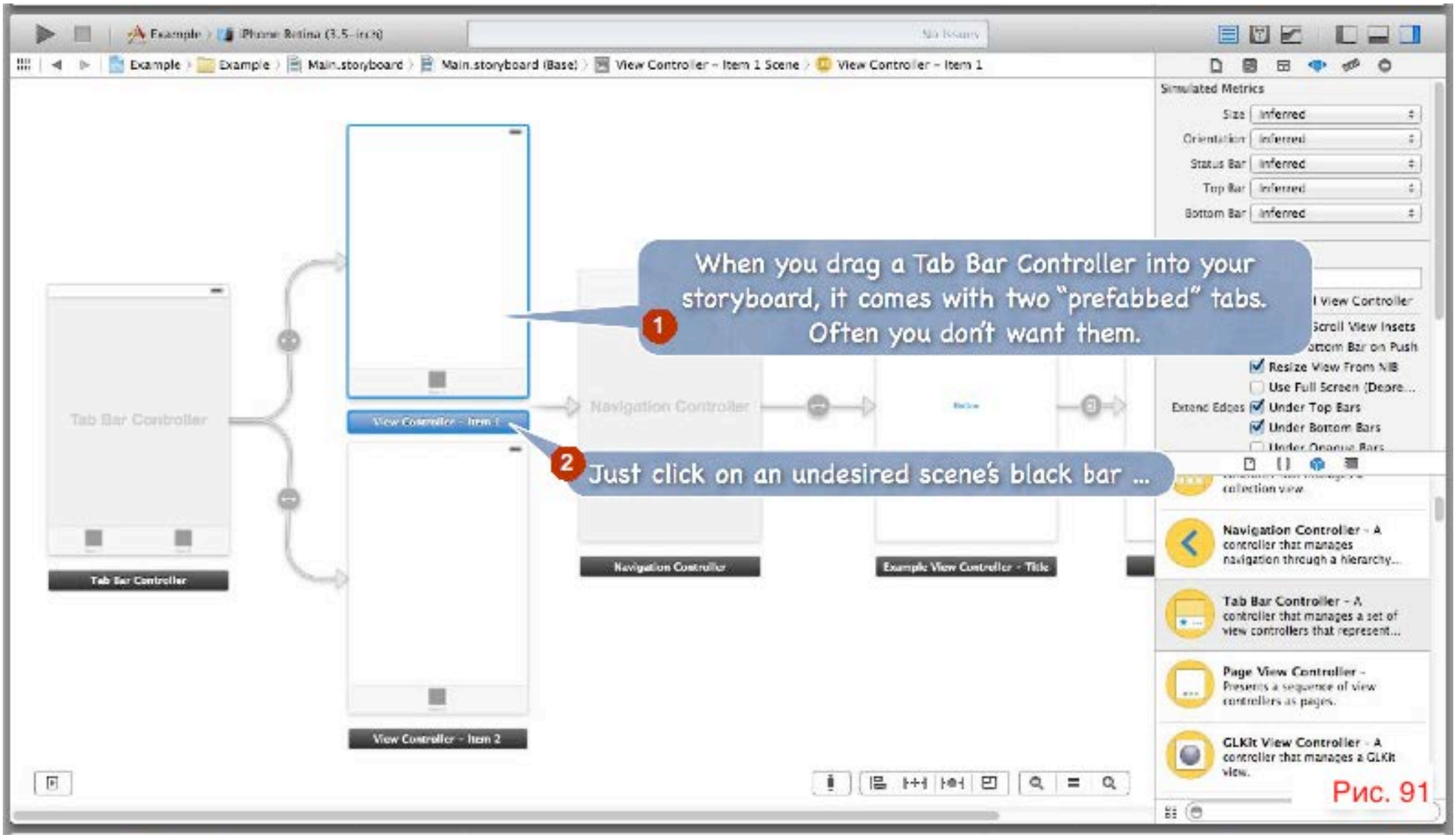

Example
Example
Main.storyboard
Main.storyboard (Base)
View Controller – Item 1 Scene
View Controller – Item 1
Simulated Metrics
Size
Inferred
Orientation
Status Bar
Top Bar
Bottom Bar
Resize View From NIB
Use Full Screen (Deprec...
Extend Edges
Under Top Bars
Under Bottom Bars
Tab Bar Controller
Navigation Controller
Example View Controller – Title
View Controller – Item 1
View Controller – Item 2
1
When you drag a Tab Bar Controller into your storyboard, it comes with two "prefabbed" tabs. Often you don't want them.
2
Just click on an undesired scene's black bar ...
Navigation Controller – A controller that manages navigation through a hierarchy...
Tab Bar Controller – A controller that manages a set of view controllers that represent...
Page View Controller – Presents a sequence of view controllers as pages.
GLKit View Controller – A controller that manages a GLKit view.

Рис. 91

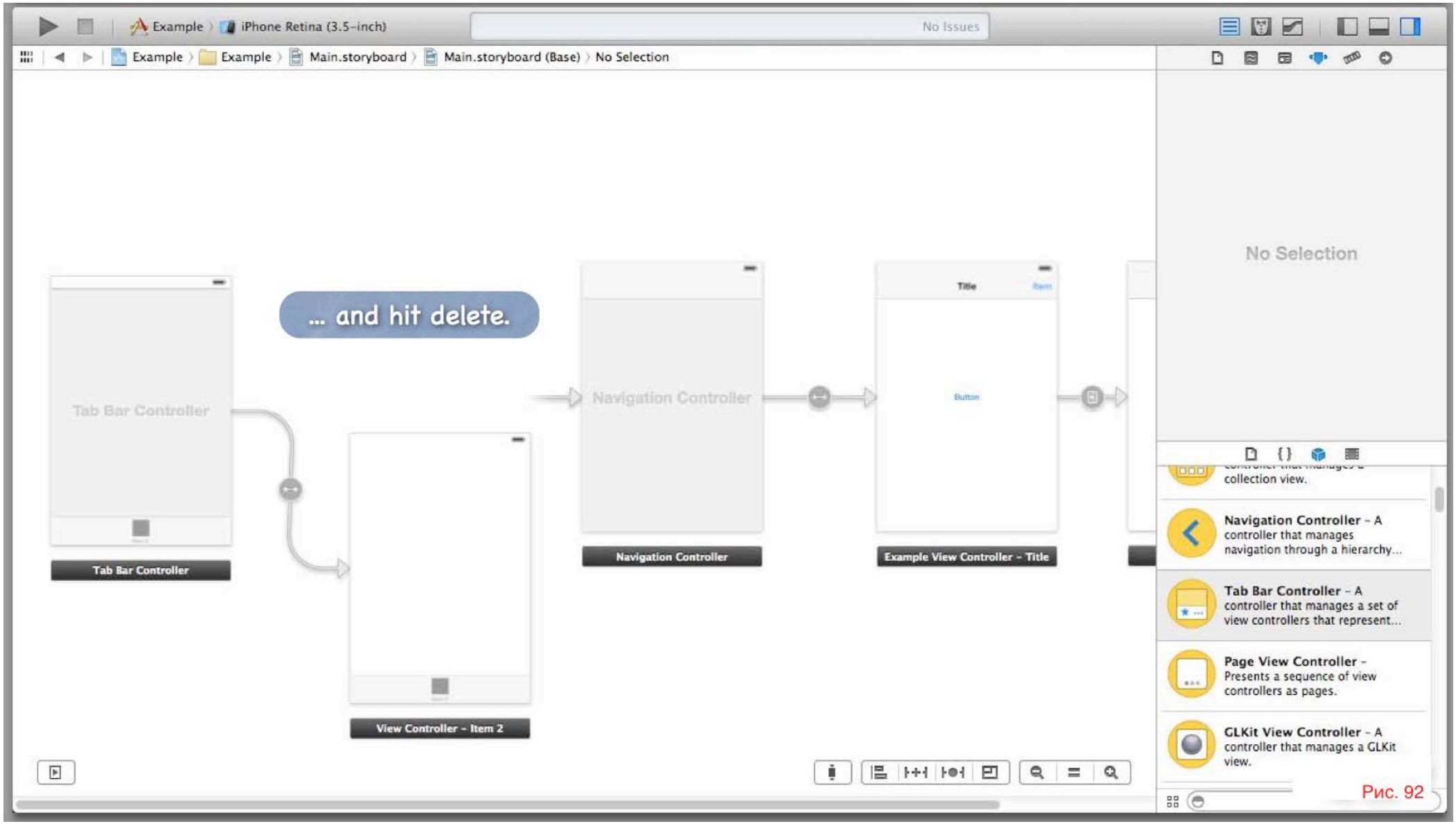

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
No Selection
... and hit delete.
Tab Bar Controller
Tab Bar Controller
View Controller - Item 2
Navigation Controller
Navigation Controller
Title
Button
Example View Controller - Title
No Selection
collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 92

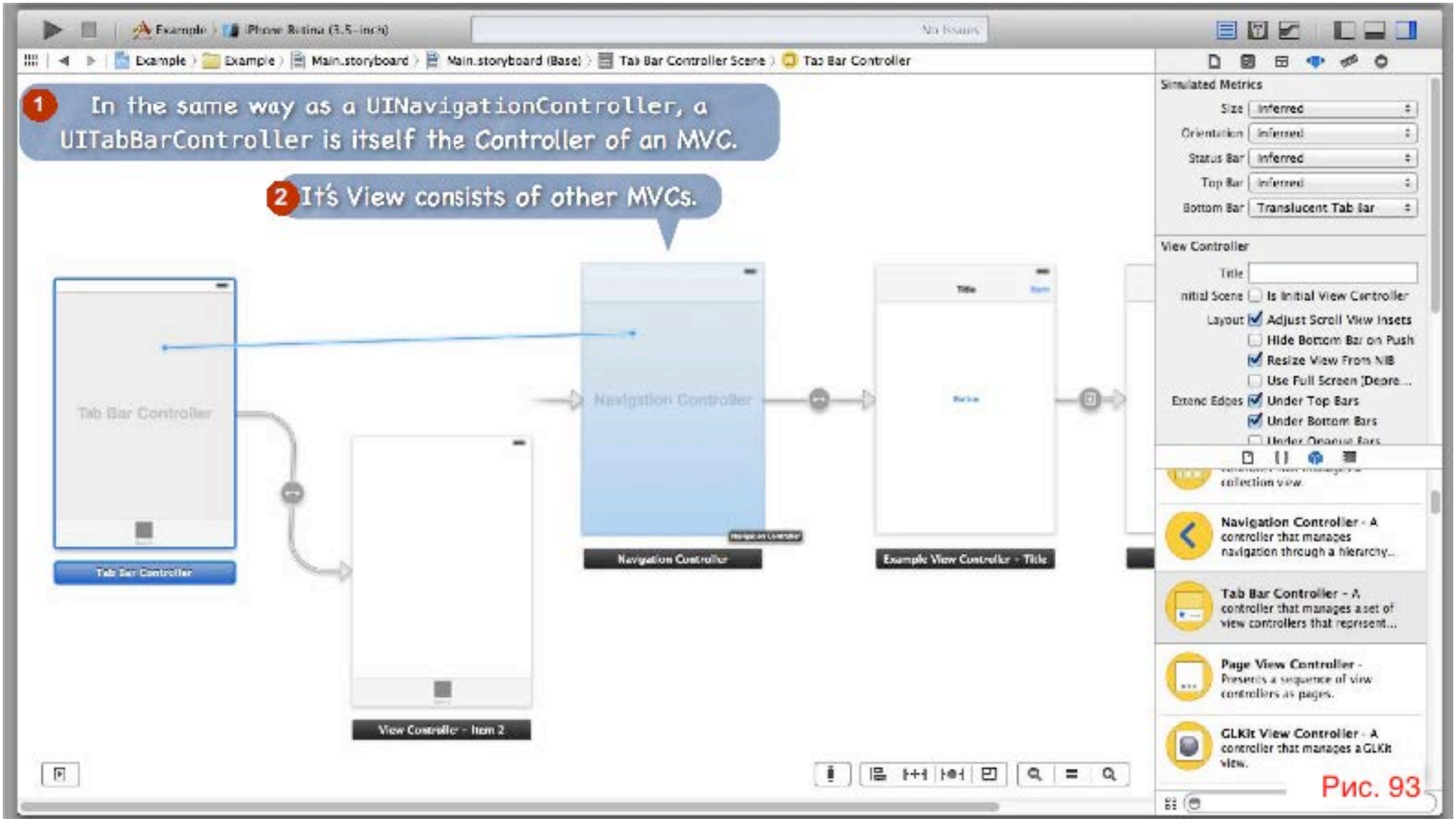

1 In the same way as a UINavigationController, a UITabBarController is itself the Controller of an MVC.
2 It's View consists of other MVCs.
Tab Bar Controller
Navigation Controller
Example View Controller - Title
View Controller - Item 2
Simulated Metrics
Size Inferred
Orientation Inferred
Status Bar Inferred
Top Bar Inferred
Bottom Bar Translucent Tab Bar
View Controller
Title
Is Initial View Controller
Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Under Top Bars
Under Bottom Bars
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 93

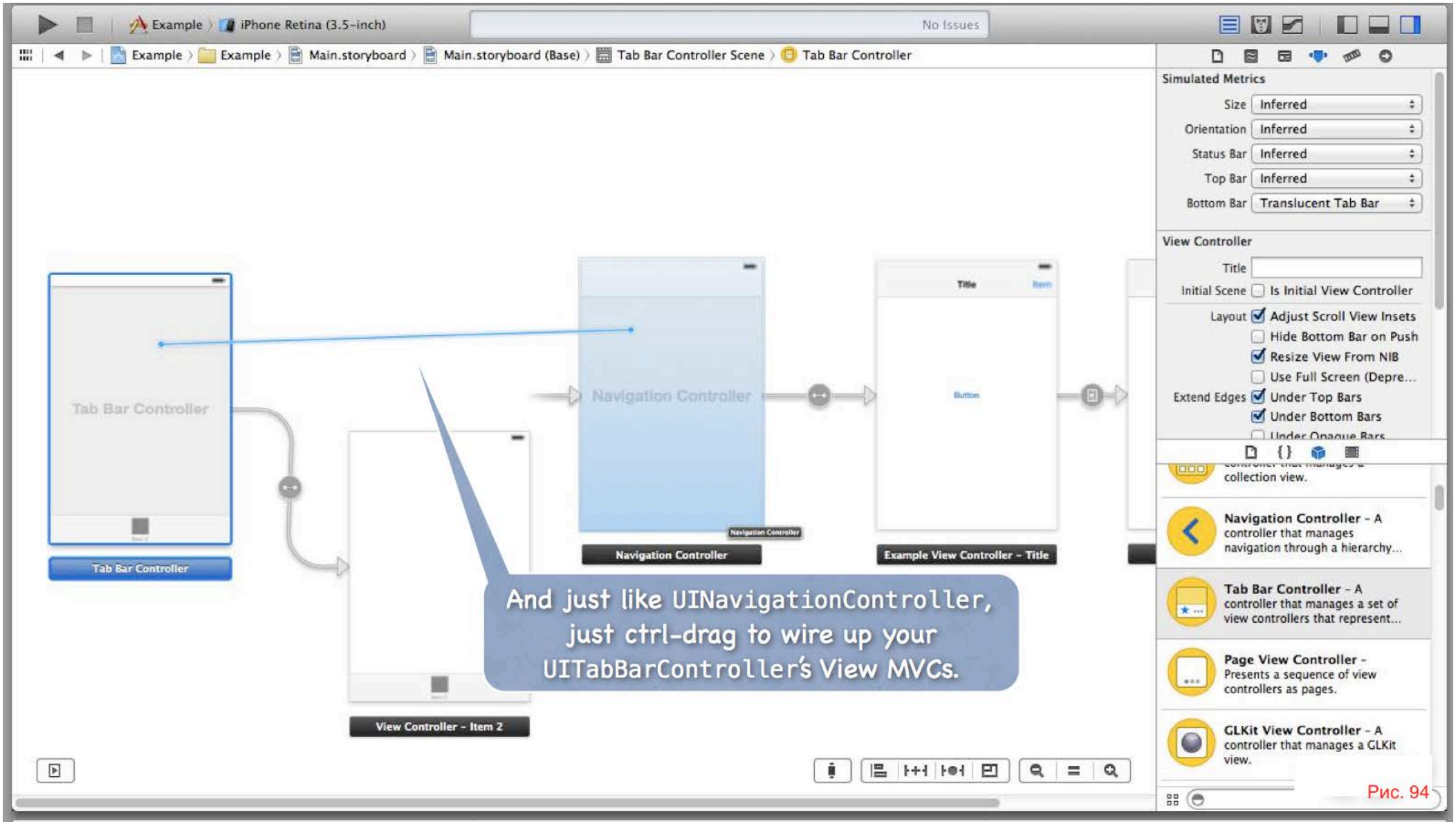

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Tab Bar Controller Scene
Tab Bar Controller
Simulated Metrics
Size
Inferred
Orientation
Inferred
Status Bar
Inferred
Top Bar
Inferred
Bottom Bar
Translucent Tab Bar
View Controller
Title
Initial Scene
Is Initial View Controller
Layout
Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges
Under Top Bars
Under Bottom Bars
Tab Bar Controller
Navigation Controller
Navigation Controller
Title
Button
Example View Controller - Title
Tab Bar Controller
View Controller - Item 2
And just like UINavigationController, just ctrl-drag to wire up your UITabBarController's View MVCs.
collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 94

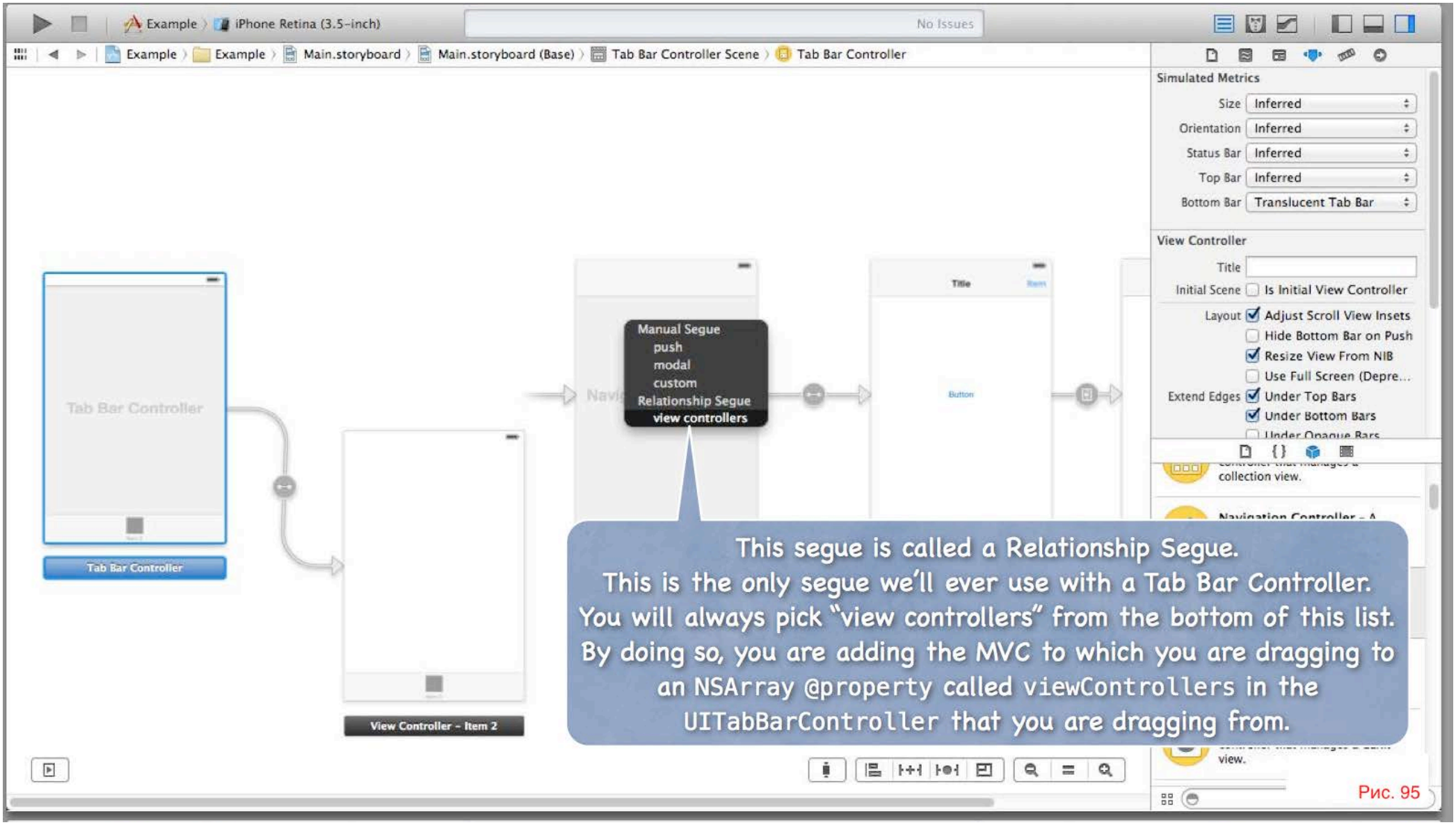

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Tab Bar Controller Scene
Tab Bar Controller
Simulated Metrics
Size
Inferred
Orientation
Inferred
Status Bar
Inferred
Top Bar
Inferred
Bottom Bar
Translucent Tab Bar
View Controller
Title
Initial Scene
Is Initial View Controller
Layout
Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges
Under Top Bars
Under Bottom Bars
Tab Bar Controller
Tab Bar Controller
View Controller - Item 2
Manual Segue
push
modal
custom
Relationship Segue
view controllers
Title
Button
This segue is called a Relationship Segue.
This is the only segue we'll ever use with a Tab Bar Controller.
You will always pick "view controllers" from the bottom of this list.
By doing so, you are adding the MVC to which you are dragging to
an NSArray @property called viewControllers in the
UITabBarController that you are dragging from.

Рис. 95

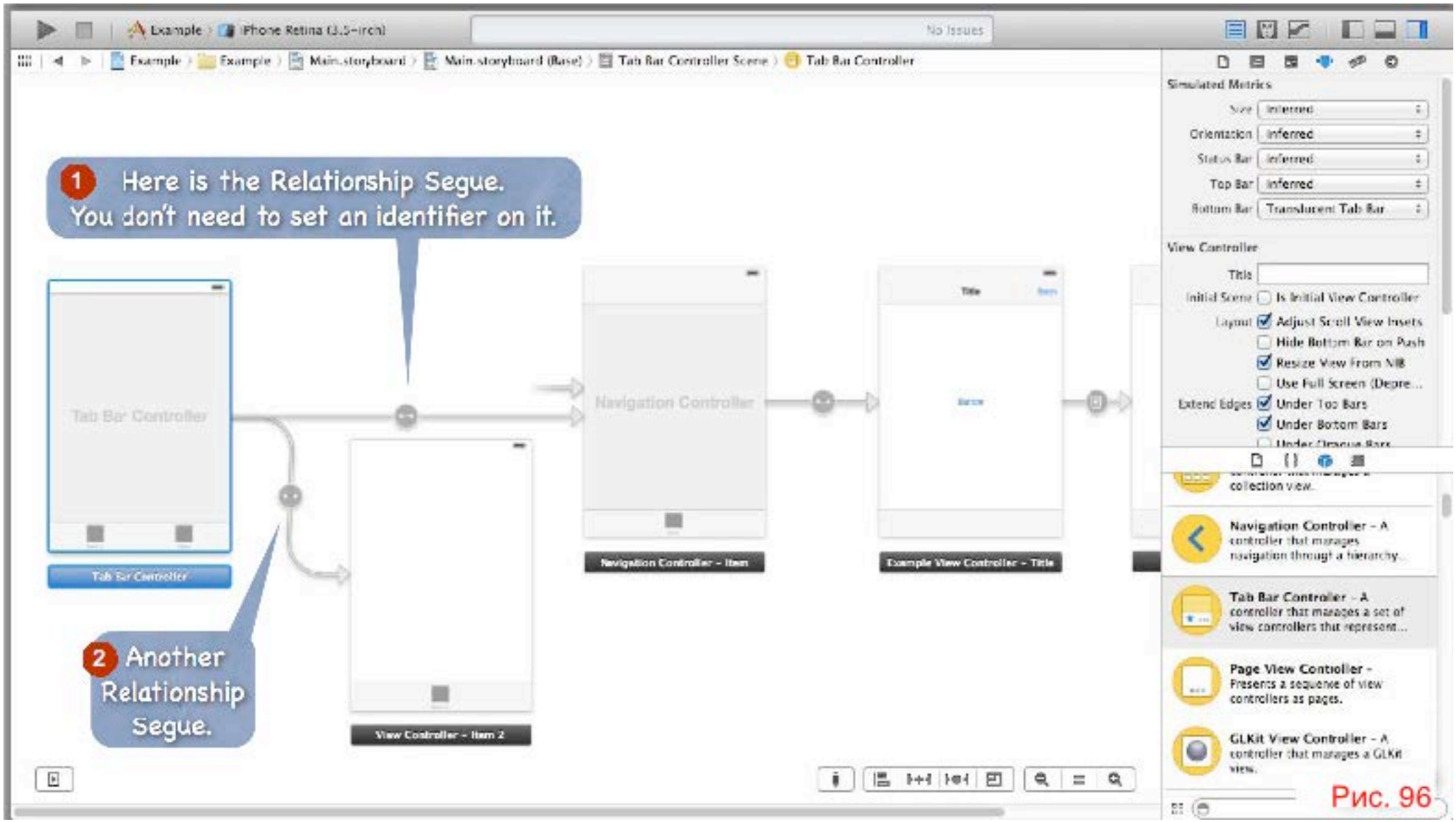

1 Here is the Relationship Segue.
You don't need to set an identifier on it.
2 Another Relationship Segue.
Tab Bar Controller
Navigation Controller
Navigation Controller – Item
Example View Controller – Title
View Controller – Item 2
Simulated Metrics
Orientation
Inferred
Status Bar
Top Bar
Bottom Bar
Translucent Tab Bar
View Controller
Title
Initial Scene
Is Initial View Controller
Layout
Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges
Under Top Bars
Under Bottom Bars
Navigation Controller – A controller that manages navigation through a hierarchy.
Tab Bar Controller – A controller that manages a set of view controllers that represent...
Page View Controller – Presents a sequence of view controllers as pages.
GLKit View Controller – A controller that manages a GLKit view.

Рис. 96

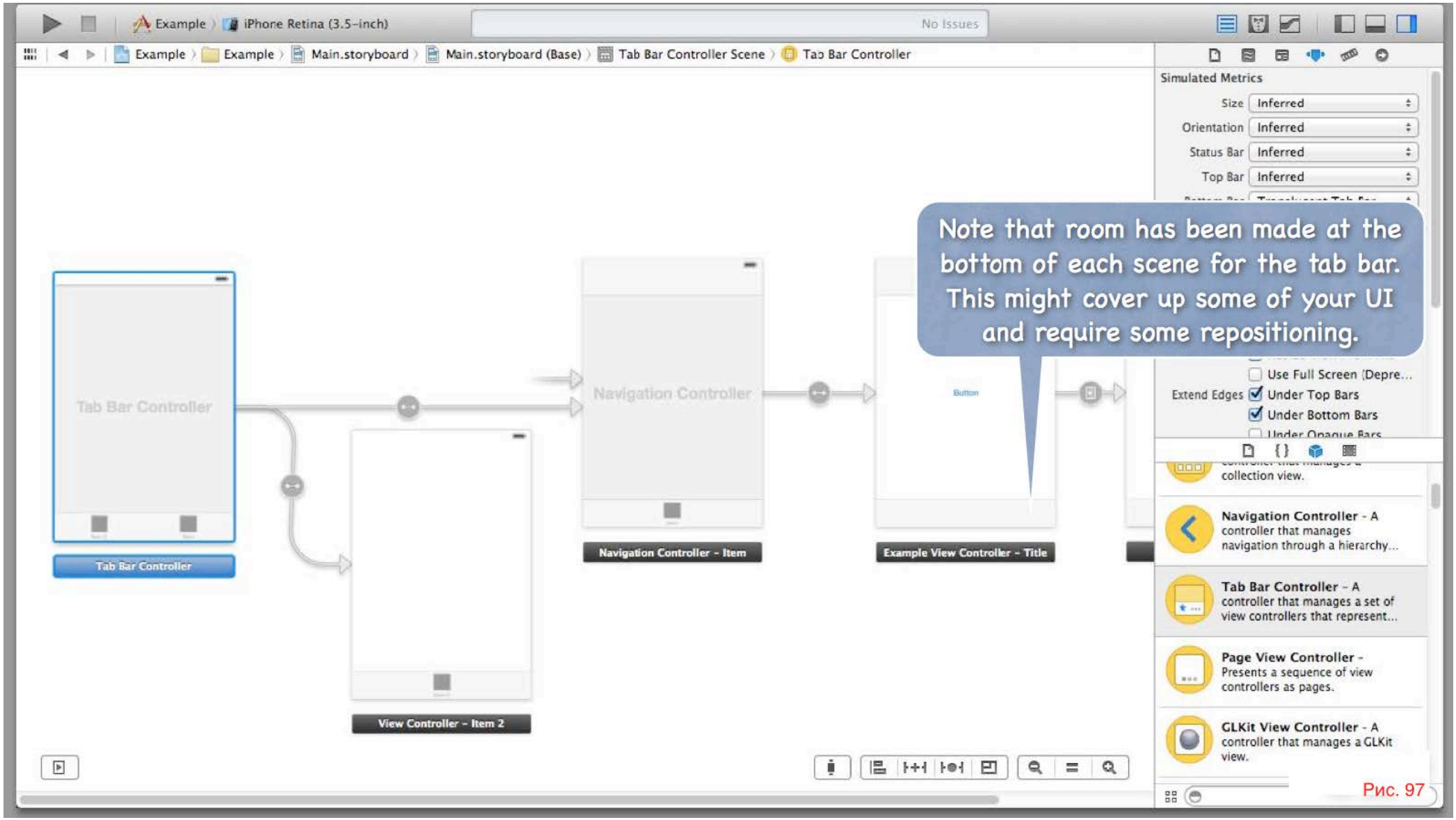

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Tab Bar Controller Scene
Tab Bar Controller
Simulated Metrics
Size
Inferred
Orientation
Inferred
Status Bar
Inferred
Top Bar
Inferred
Note that room has been made at the bottom of each scene for the tab bar. This might cover up some of your UI and require some repositioning.
Use Full Screen (Depre...
Extend Edges
Under Top Bars
Under Bottom Bars
Tab Bar Controller
Navigation Controller
Navigation Controller - Item
Example View Controller - Title
View Controller - Item 2
collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 97

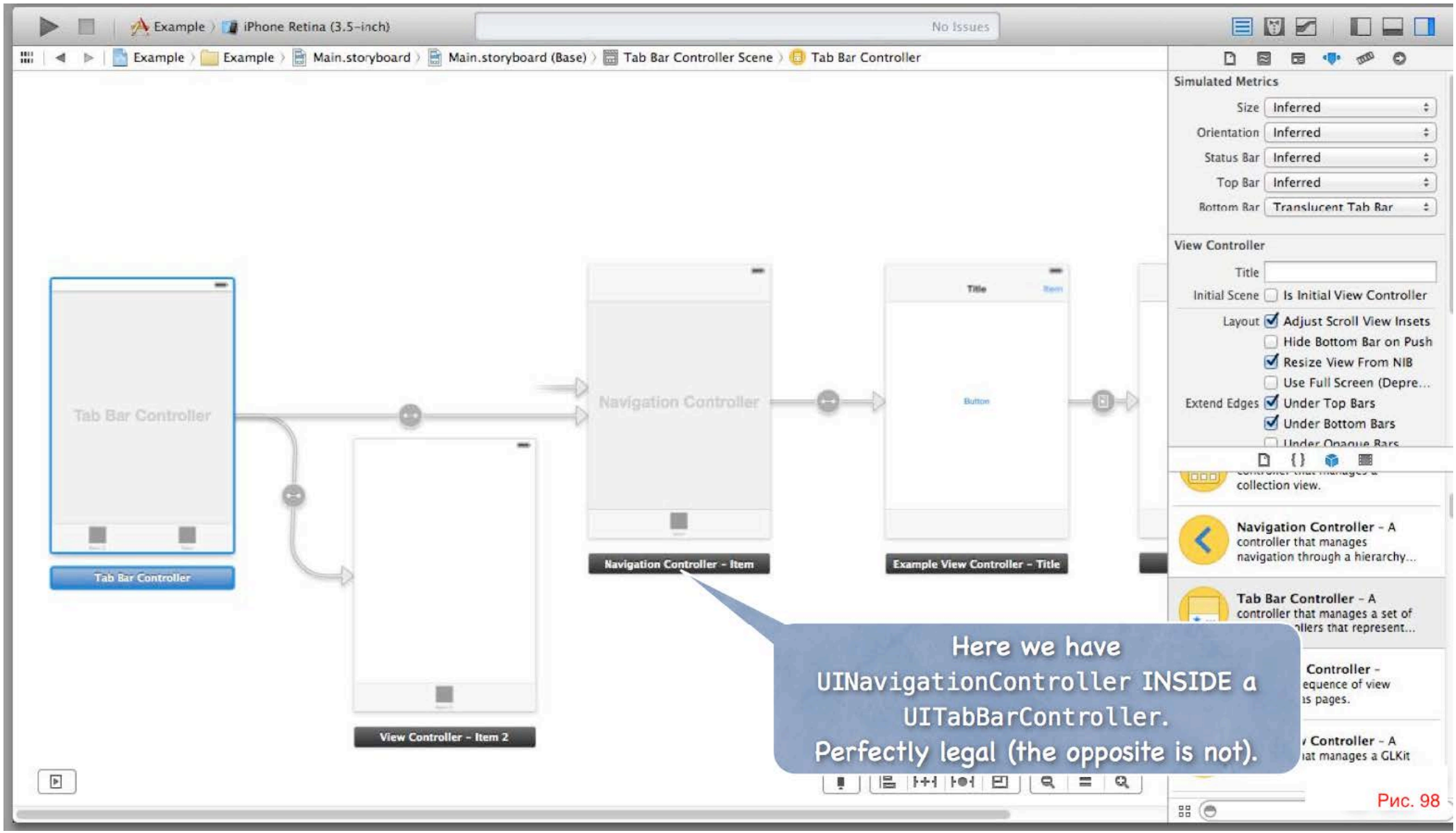

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Tab Bar Controller Scene
Tab Bar Controller
Simulated Metrics
Size
Inferred
Orientation
Inferred
Status Bar
Inferred
Top Bar
Inferred
Bottom Bar
Translucent Tab Bar
View Controller
Title
Initial Scene
Is Initial View Controller
Layout
Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges
Under Top Bars
Under Bottom Bars
Tab Bar Controller
Tab Bar Controller
Navigation Controller
Navigation Controller - Item
Title
Button
Example View Controller - Title
View Controller - Item 2
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of
Here we have
UINavigationController INSIDE a
UITabBarController.
Perfectly legal (the opposite is not).

Рис. 98

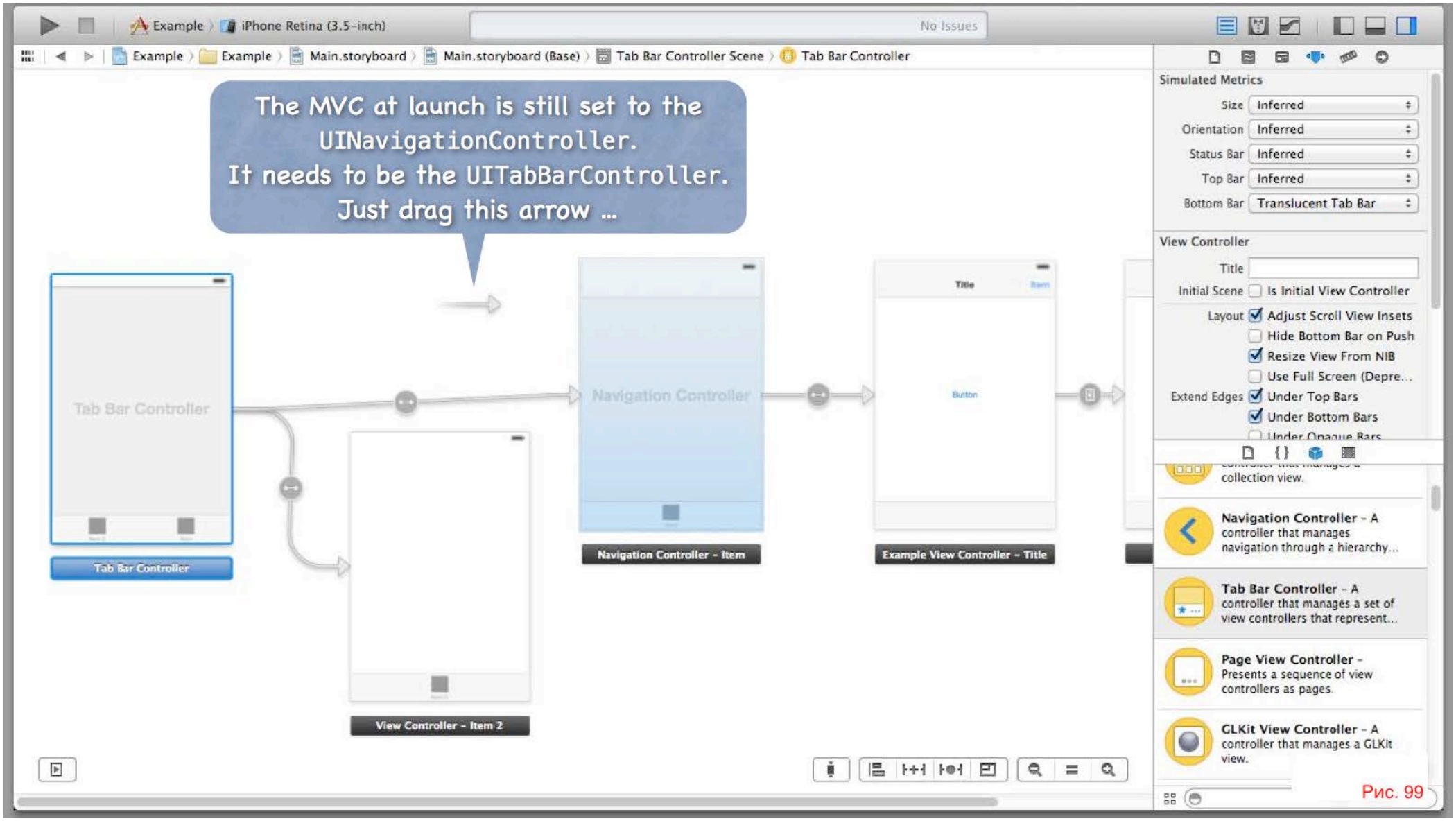

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Tab Bar Controller Scene
Tab Bar Controller
The MVC at launch is still set to the UINavigationController.
It needs to be the UITabBarController.
Just drag this arrow ...
Tab Bar Controller
Tab Bar Controller
Navigation Controller
Navigation Controller - Item
Title
Button
Example View Controller - Title
View Controller - Item 2
Simulated Metrics
Size Inferred
Orientation Inferred
Status Bar Inferred
Top Bar Inferred
Bottom Bar Translucent Tab Bar
View Controller
Title
Initial Scene Is Initial View Controller
Layout Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges Under Top Bars
Under Bottom Bars
collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 99

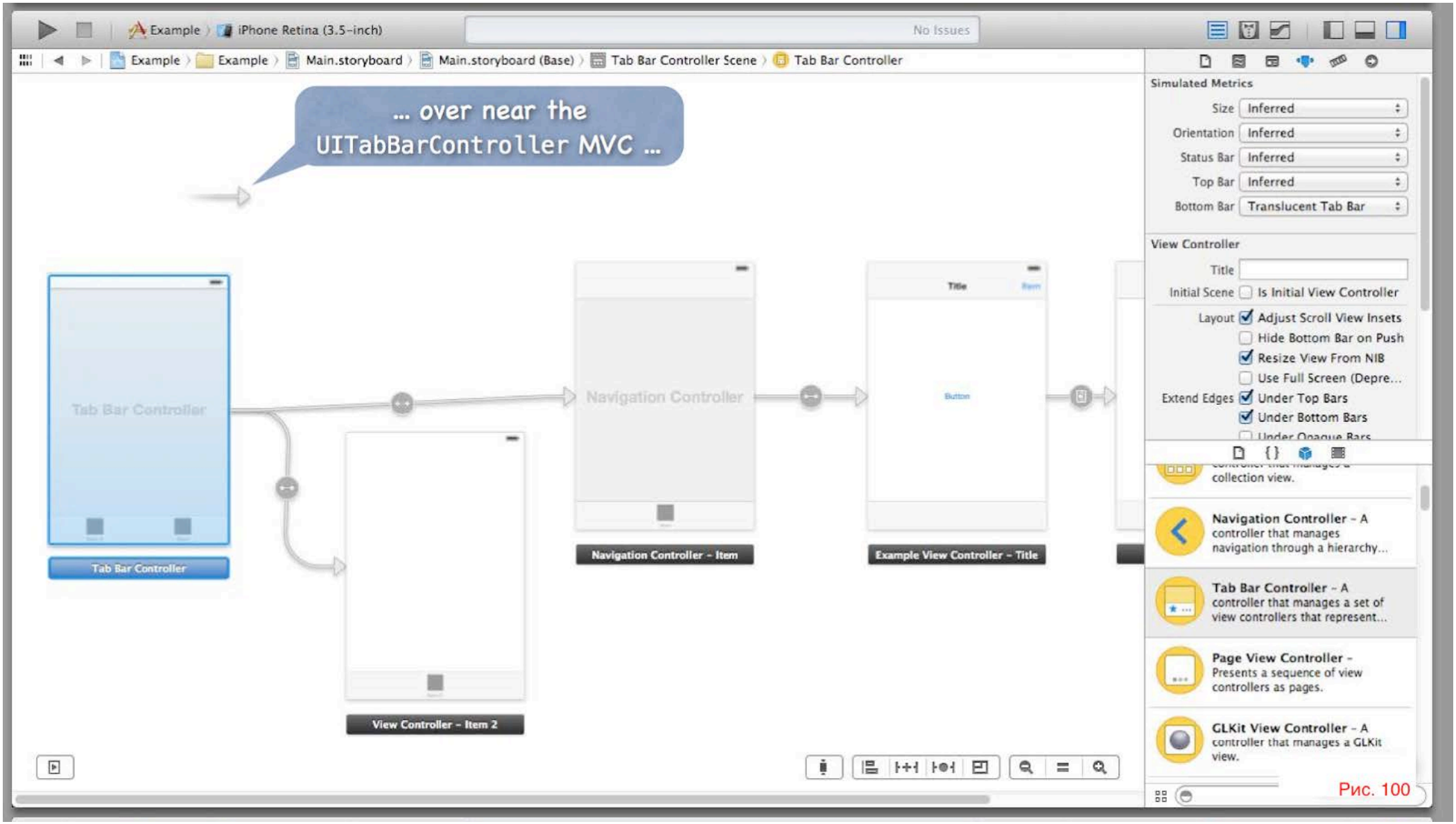

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Tab Bar Controller Scene
Tab Bar Controller
... over near the
UITabBarController MVC ...
Tab Bar Controller
Tab Bar Controller
Navigation Controller
Navigation Controller - Item
Title
Button
Example View Controller - Title
View Controller - Item 2
Simulated Metrics
Size
Inferred
Orientation
Inferred
Status Bar
Inferred
Top Bar
Inferred
Bottom Bar
Translucent Tab Bar
View Controller
Title
Initial Scene
Is Initial View Controller
Layout
Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges
Under Top Bars
Under Bottom Bars
collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 100

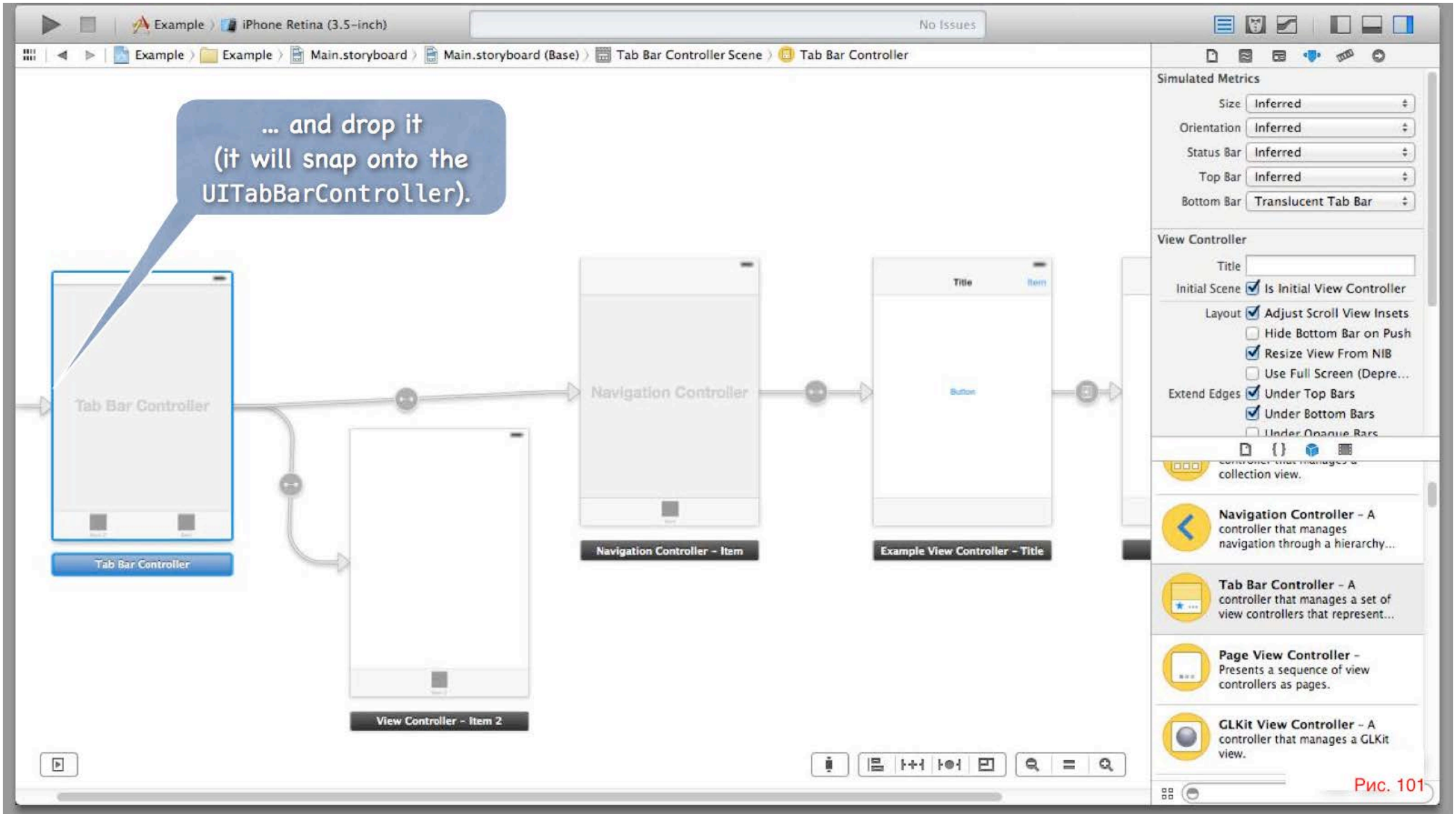

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Tab Bar Controller Scene
Tab Bar Controller
... and drop it
(it will snap onto the
UITabBarController).
Tab Bar Controller
Tab Bar Controller
View Controller - Item 2
Navigation Controller
Navigation Controller - Item
Title
Example View Controller - Title
Simulated Metrics
Size Inferred
Orientation Inferred
Status Bar Inferred
Top Bar Inferred
Bottom Bar Translucent Tab Bar
View Controller
Title
Initial Scene Is Initial View Controller
Layout Adjust Scroll View Insets
Hide Bottom Bar on Push
Resize View From NIB
Use Full Screen (Depre...
Extend Edges Under Top Bars
Under Bottom Bars
collection view.
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 101

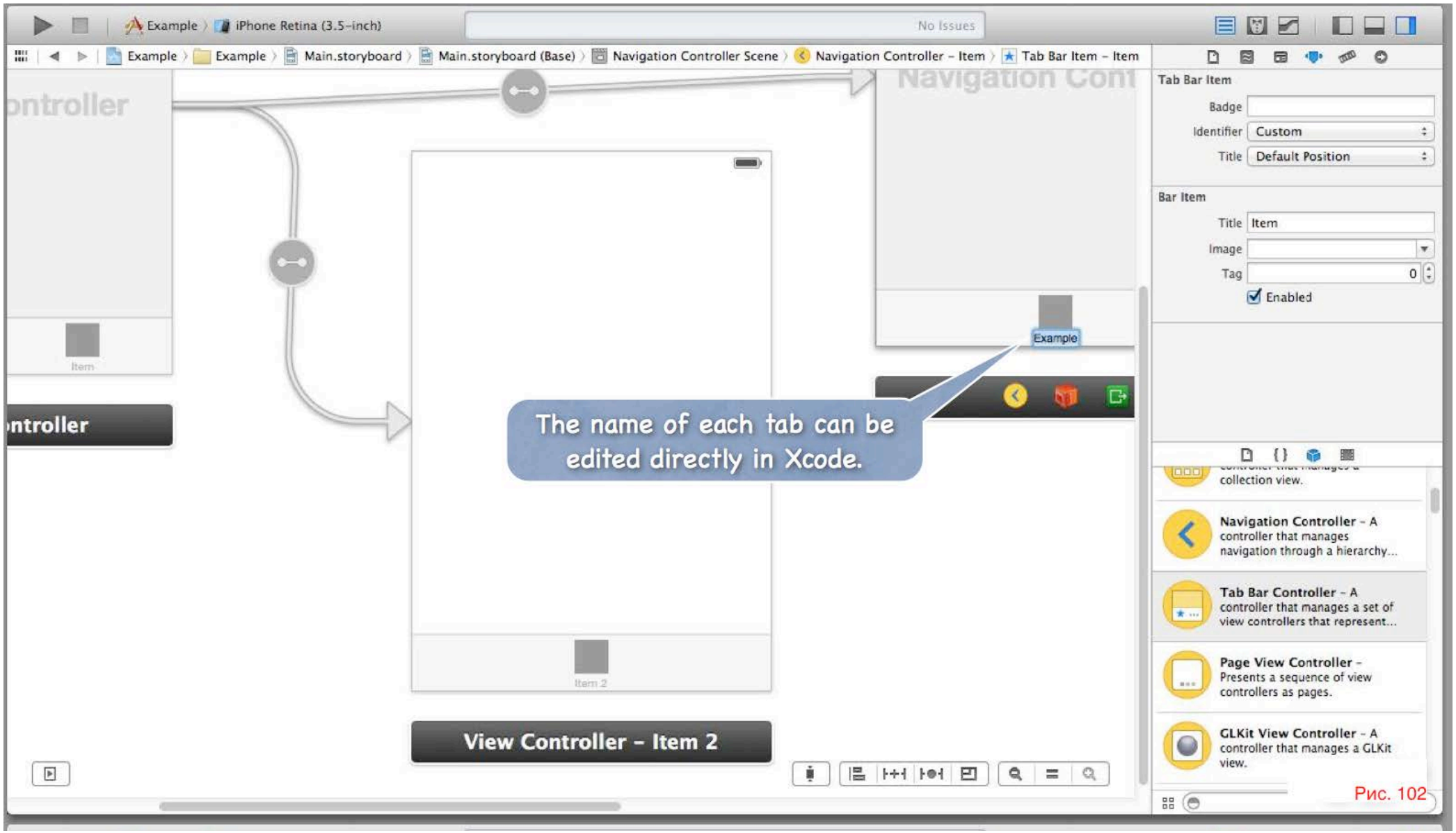

Example
iPhone Retina (3.5-inch)
No Issues
Example
Example
Main.storyboard
Main.storyboard (Base)
Navigation Controller Scene
Navigation Controller - Item
Tab Bar Item - Item
Tab Bar Item
Badge
Identifier
Custom
Title
Default Position
Bar Item
Title
Item
Image
Tag
0
Enabled
Navigation Controller - A controller that manages navigation through a hierarchy...
Tab Bar Controller - A controller that manages a set of view controllers that represent...
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.
Example
Item
Item 2
The name of each tab can be edited directly in Xcode.
View Controller - Item 2

Рис. 102

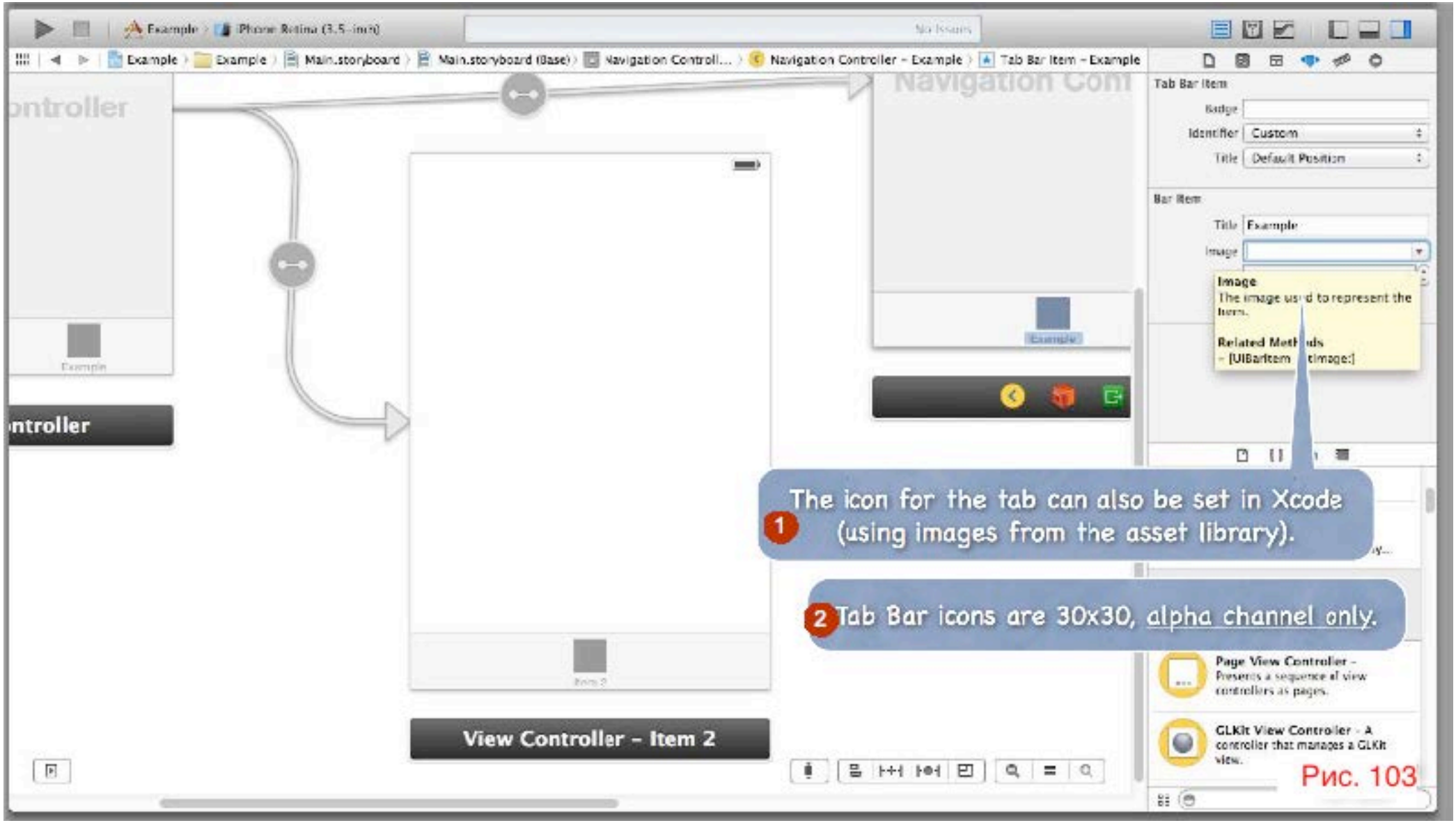

Example
Example
Main.storyboard
Main.storyboard (Base)
Navigation Controller - Example
Tab Bar Item - Example
Tab Bar Item
Badge
Identifier
Custom
Title
Default Position
Bar Item
Title
Example
Image
Image
The image used to represent the item.
Related Methods
- [UIBarItem initWithImage:]
1 The icon for the tab can also be set in Xcode (using images from the asset library).
2 Tab Bar icons are 30x30, alpha channel only.
View Controller - Item 2
Page View Controller - Presents a sequence of view controllers as pages.
GLKit View Controller - A controller that manages a GLKit view.

Рис. 103