

iPhone for .NET Developers

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What you need

- A Mac
- Xcode
- iPhone SDK (limited to Simulator)
- iPhone Developer Program (\$99 /year)

Objective-C

- Based on C
- Object Oriented
- Dynamic
- A little weird
- Powerful

Objective-C Primer

- Calling methods

Objective-C Primer

- Calling methods

```
[someObject someMethod];
```

Objective-C Primer

- Calling methods

```
[someObject someMethod];
```

```
[someObject someMethodWithInput:5];
```

Objective-C Primer

- Calling methods

```
[someObject someMethod];
```

```
[someObject someMethodWithInput:5];
```

```
[dictionary setObject:obj  
            forKey:key];
```

Objective-C Primer

- Nesting method calls

Objective-C Primer

- Nesting method calls

```
[NSString stringWithFormat:  
    [prefs format]];
```

Objective-C Primer

- Instantiating classes

Objective-C Primer

- Instantiating classes

```
UIView *view = [[UIView alloc] init];
```

Objective-C Primer

- Instantiating classes

```
UIView *view = [[UIView alloc] init];
```

```
NSDate *date = [NSDate date];
```

Objective-C Primer

- Defining Classes

Objective-C Primer

- Defining Classes

```
//Person.h
@interface Person {
    //instance variables
}

//properties & methods

@end
```

Objective-C Primer

- Defining Classes

Objective-C Primer

- Defining Classes

```
//Person.m
#import "Person.h"

@implementation Person

//implement properties & methods

@end
```

Objective-C Primer

- Defining Methods

Objective-C Primer

- Defining Methods

```
- (void)showLoadingText:(NSString *)text animated:(BOOL)animated; |
```

Objective-C Primer

- Defining Methods

```
- (void)showLoadingText:(NSString *)text animated:(BOOL)animated;
```

Method name (selector)



Objective-C Primer

- Defining Methods

The diagram illustrates the structure of an Objective-C method definition. It features a dark grey rectangular box containing the code: `- (void)showLoadingText:(NSString *)text animated:(BOOL)animated;`. A green arrow points from the label "Return Type" to the word "void". Two pink arrows point from the label "Method name (selector)" to the opening parenthesis of the selector "showLoadingText:". The parameters "(text animated:)" are shown below the selector.

```
- (void)showLoadingText:(NSString *)text animated:(BOOL)animated;
```

Return Type

Method name (selector)

Objective-C Primer

- Defining Methods

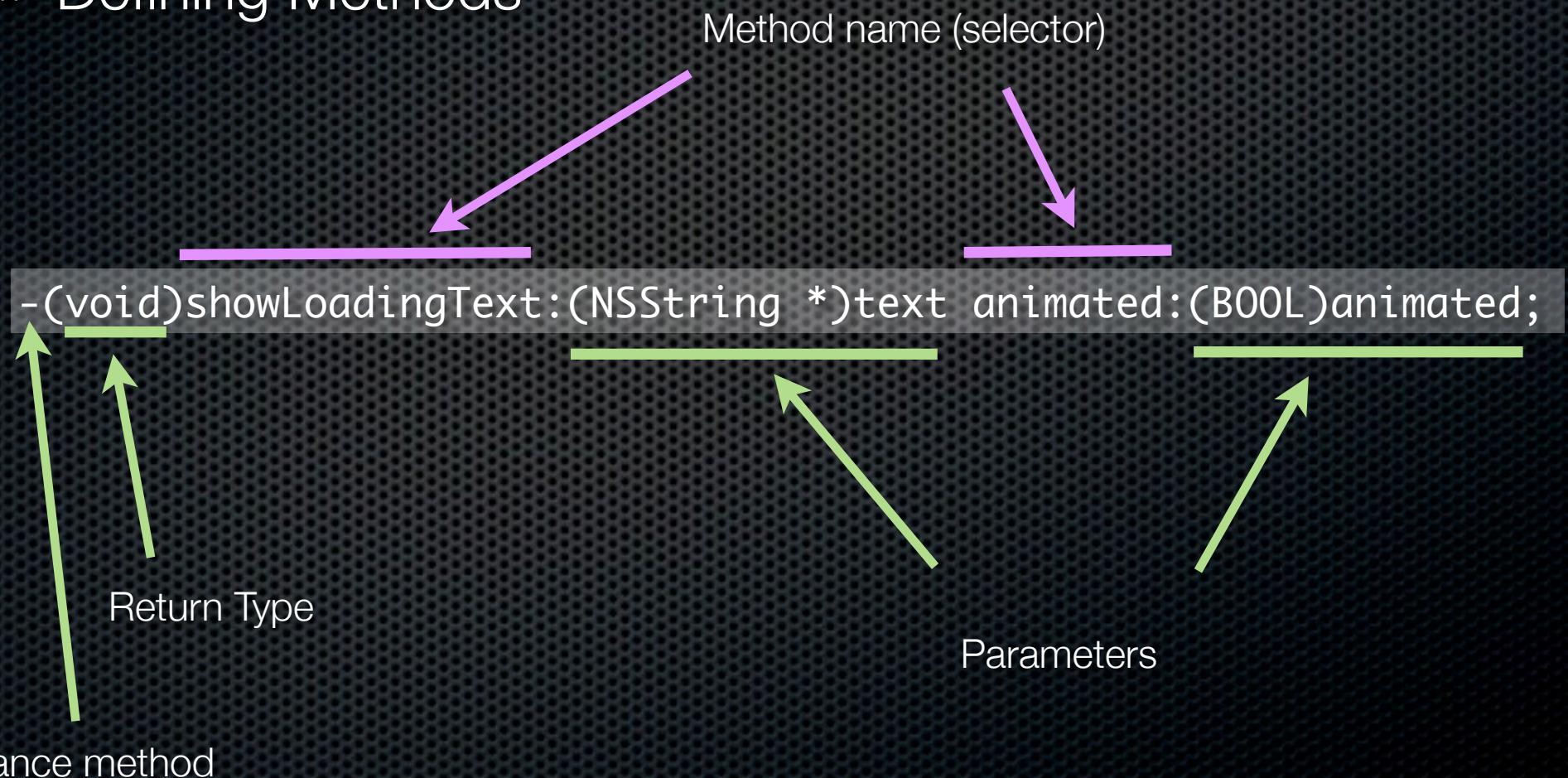
```
- (void)showLoadingText:(NSString *)text animated:(BOOL)animated;
```

The diagram illustrates the components of an Objective-C method definition:

- Return Type:** Indicated by a green arrow pointing to the word `(void)`.
- Instance method:** Indicated by a green arrow pointing to the opening brace `-`.
- Method name (selector):** Indicated by a purple arrow pointing to the identifier `showLoadingText`.

Objective-C Primer

- Defining Methods



Memory Management

- ❖ No garbage collection on the iPhone
- ❖ Retain / Release

Memory Management

- Retain / Release Dance

Memory Management

- Retain / Release Dance

```
Foo *foo = [[Foo alloc] init];
```

1

Memory Management

- Retain / Release Dance

```
Foo *foo = [[Foo alloc] init];
```

1

```
[foo retain];
```

2

Memory Management

- Retain / Release Dance

```
Foo *foo = [[Foo alloc] init];
```

1

```
[foo retain];
```

2

```
[foo release];
```

1

Memory Management

- Retain / Release Dance

```
Foo *foo = [[Foo alloc] init];
```

1

```
[foo retain];
```

2

```
[foo release];
```

1

```
[foo release];
```

0

Memory Management

- Retain / Release Dance

```
Foo *foo = [[Foo alloc] init];
```

1

```
[foo retain];
```

2

```
[foo release];
```

1

```
[foo release];
```

foo is deallocated

0

Getters / Setters

Getters / Setters

```
[foo setBar:@"baz"];
```

Getters / Setters

```
[foo setBar:@"baz"];
```

```
[foo bar]; //returns @"baz"
```

Getters / Setters

```
[foo setBar:@"baz"];
```

```
[foo bar]; //returns @"baz"
```

```
foo.bar = @"gruul";
```

Getters / Setters

```
[foo setBar:@"baz"];
```

```
[foo bar]; //returns @"baz"
```

```
foo.bar = @"gruul";
```

```
foo.bar //returns @"gruul"
```

Implementing setters

Implementing setters

```
- (void)setBar:(id)value {
```

Implementing setters

```
- (void) setBar:(id) value {  
    if(bar == value) return;
```

Implementing setters

```
- (void) setBar:(id) value {  
    if(bar == value) return;  
    if(bar != nil) {
```

Implementing setters

```
- (void) setBar:(id) value {  
    if (bar == value) return;  
    if (bar != nil) {  
        [bar release];
```

Implementing setters

```
- (void) setBar:(id) value {  
    if (bar == value) return;  
    if (bar != nil) {  
        [bar release];  
    }  
    bar = nil;
```

Implementing setters

```
- (void) setBar:(id) value {  
    if (bar == value) return;  
    if (bar != nil) {  
        [bar release];  
        bar = nil;  
    }  
}
```

Implementing setters

```
- (void) setBar:(id) value {  
    if(bar == value) return;  
    if(bar != nil) {  
        [bar release];  
        bar = nil;  
    }  
    if(value != nil)
```

Implementing setters

```
- (void) setBar:(id) value {  
    if (bar == value) return;  
    if (bar != nil) {  
        [bar release];  
        bar = nil;  
    }  
    if (value != nil)  
        bar = [value retain];  
}
```

Implementing setters

```
- (void) setBar:(id) value {  
    if (bar == value) return;  
    if (bar != nil) {  
        [bar release];  
        bar = nil;  
    }  
    if (value != nil)  
        bar = [value retain];  
}
```

No Thanks

Properties

Properties

```
//Foo.h
```

Properties

```
//Foo.h  
@property (nonatomic, retain) UIImage *image;
```

Properties

```
//Foo.h  
@property (nonatomic, retain) UIImage *image;  
@property (nonatomic, copy) NSString *message;
```

Properties

```
//Foo.h
```

```
@property (nonatomic, retain) UIImage *image;  
@property (nonatomic, copy) NSString *message;
```

```
//Foo.m
```

Properties

```
//Foo.h  
@property (nonatomic, retain) UIImage *image;  
@property (nonatomic, copy) NSString *message;  
  
//Foo.m  
@synthesize image, message;
```

Properties

```
//Foo.h
@property (nonatomic, retain) UIImage *image;
@property (nonatomic, copy) NSString *message;

//Foo.m
@synthesize image, message;

-(void)dealloc {
```

Properties

```
//Foo.h
@property (nonatomic, retain) UIImage *image;
@property (nonatomic, copy) NSString *message;

//Foo.m
@synthesize image, message;

-(void)dealloc {
    [image release];
}
```

Properties

```
//Foo.h
@property (nonatomic, retain) UIImage *image;
@property (nonatomic, copy) NSString *message;

//Foo.m
@synthesize image, message;

-(void)dealloc {
    [image release];
    [message release];
}
```

Properties

```
//Foo.h
@property (nonatomic, retain) UIImage *image;
@property (nonatomic, copy) NSString *message;

//Foo.m
@synthesize image, message;

-(void)dealloc {
    [image release];
    [message release];
    [super dealloc];
```

Properties

```
//Foo.h
@property (nonatomic, retain) UIImage *image;
@property (nonatomic, copy) NSString *message;

//Foo.m
@synthesize image, message;

-(void)dealloc {
    [image release];
    [message release];
    [super dealloc];
}
```

Dot Syntax Dogma

Use dot syntax if you like it

Just be aware of what it's hiding

Xcode

- Your IDE
 - Code completion
 - Interactive Debugger
-
- Lacks good refactoring tools



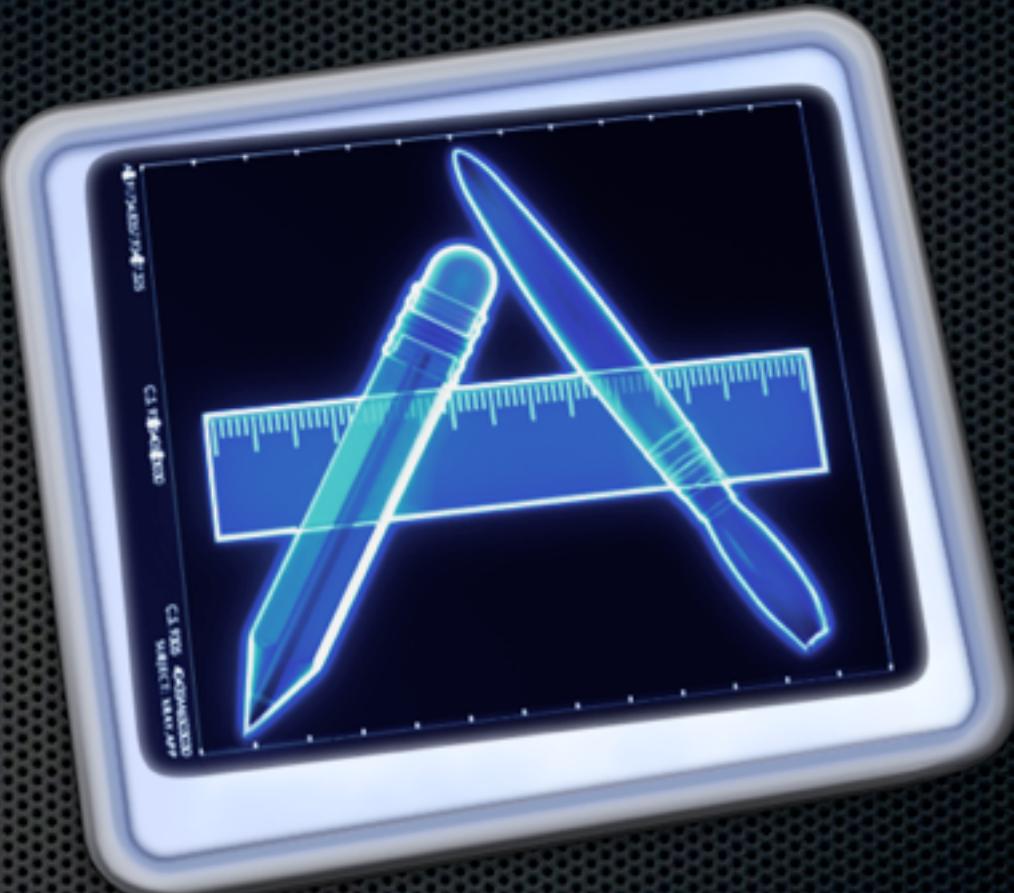
Interface Builder



- Drag-n-drop UI building
- Layouts are defined in XIBs (XML representation). Usually called "Nibs"
- "Make connections" with classes defined in Xcode
 - variables --> UI components
 - UI events --> methods

Instruments

- Find Memory Leaks
- Analyze Memory Usage
- Track down slow code



iOS SDK

Your app

UIKit

CoreFoundation

CoreGraphics

Accelerate

AddressBook

AudioToolbox

AVFoundation

CoreAudio

CoreData

CoreLocation

CFNetwork

CoreMotion

CoreTelephony

CoreText

CoreVideo

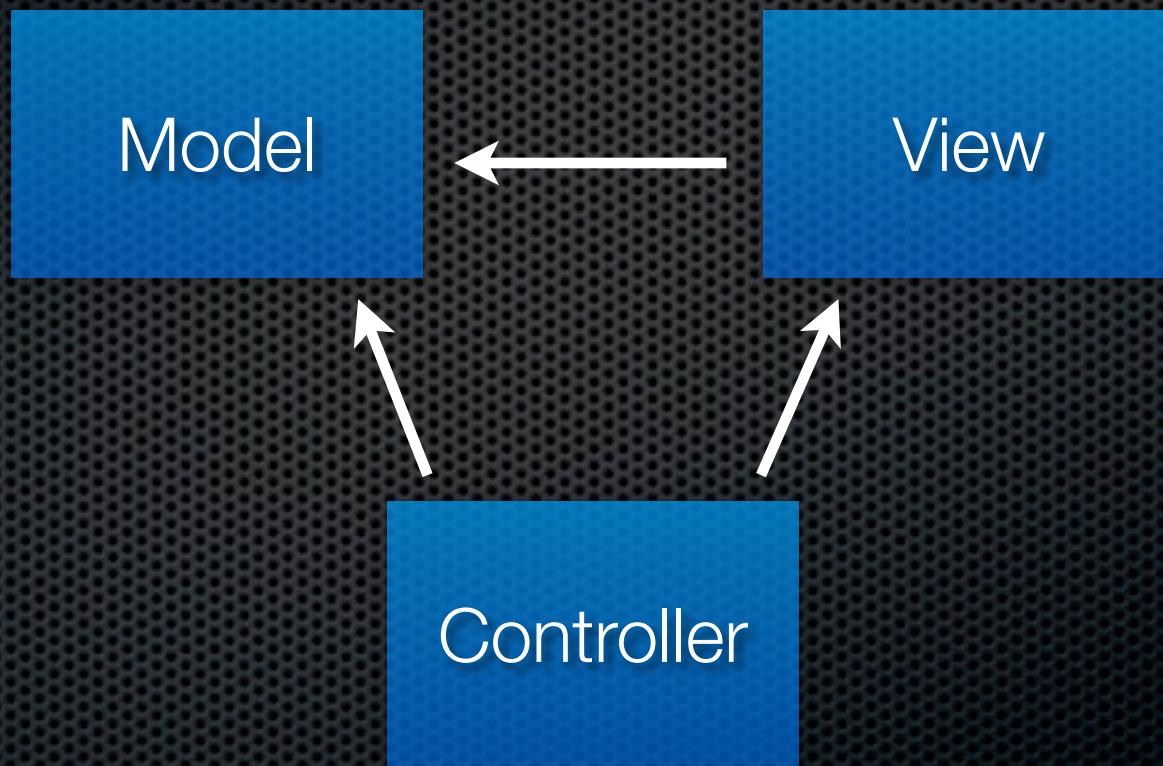
GameKit

iAd

MapKit

StoreKit

Model View Controller



The View Controller

- Handles setup logic for a screen
- Handles user input
- Interacts with the model
- Contains 1 or more views

The View

- Visual representation
- Drawing
- Laying out subviews (autorotation)
- May Handle touch events

Lifecycle of an App

main.m

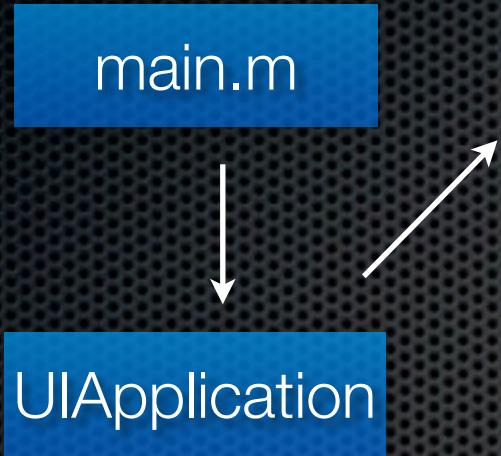
Lifecycle of an App

main.m



UIApplication

Lifecycle of an App



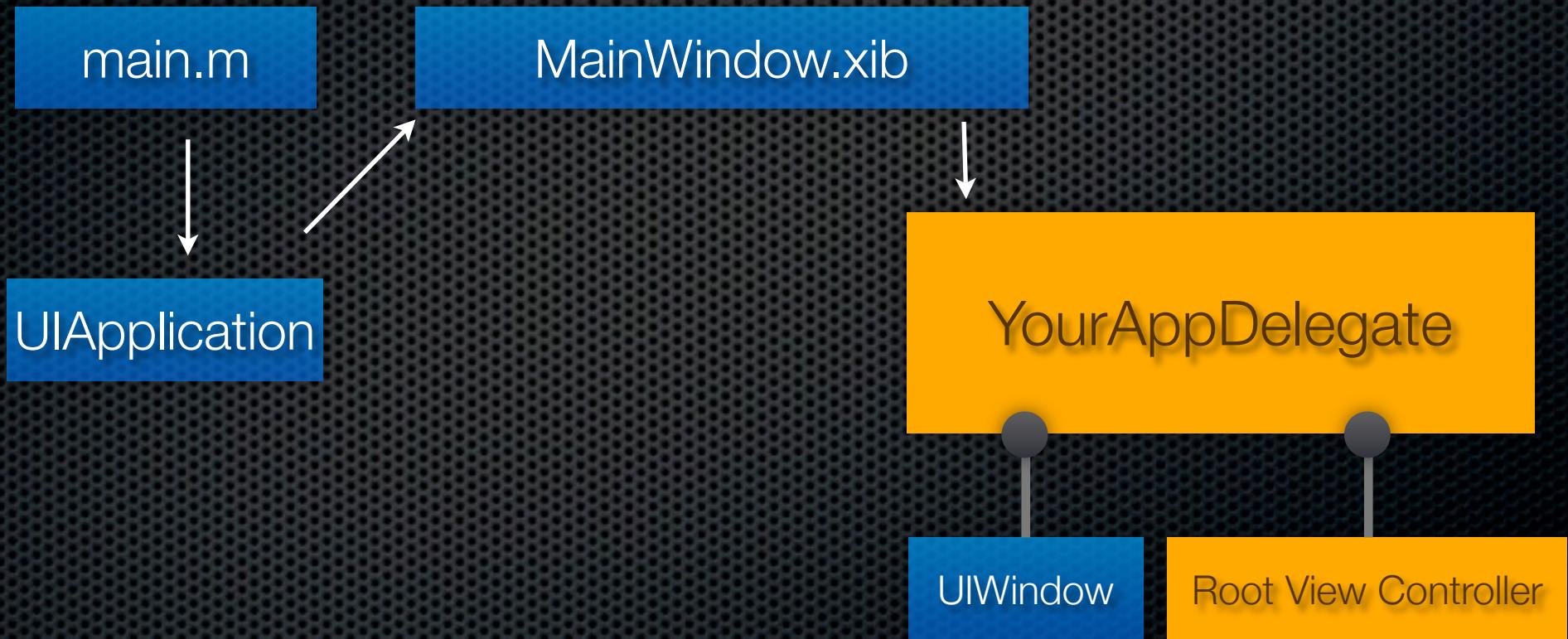
Lifecycle of an App



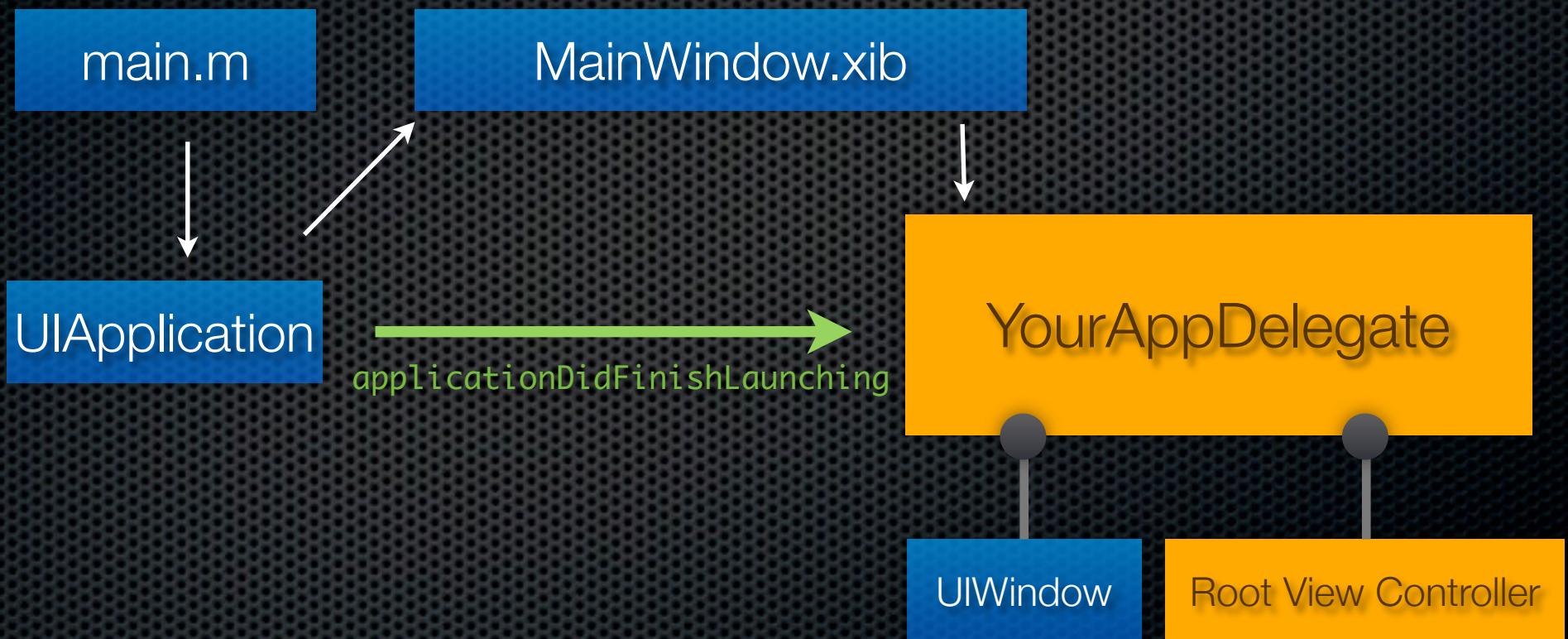
Lifecycle of an App



Lifecycle of an App



Lifecycle of an App



Time to code!