

#WWDC18

Understanding Crashes and Crash Logs

Session 414

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Fundamentals

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Accessing crash logs

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Analyzing crash logs

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Accessing crash logs

Analyzing crash logs

Memory errors

Fundamentals

Accessing crash logs

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Memory errors

Multithreading issues



Why Do Crashes Occur?



Why Do Crashes Occur?

Impossible for the CPU to execute code



Why Do Crashes Occur?

Impossible for the CPU to execute code

Operating system is enforcing a policy



Why Do Crashes Occur?

Impossible for the CPU to execute code

Operating system is enforcing a policy

Programming language is preventing failure



Why Do Crashes Occur?

Impossible for the CPU to execute code

Operating system is enforcing a policy

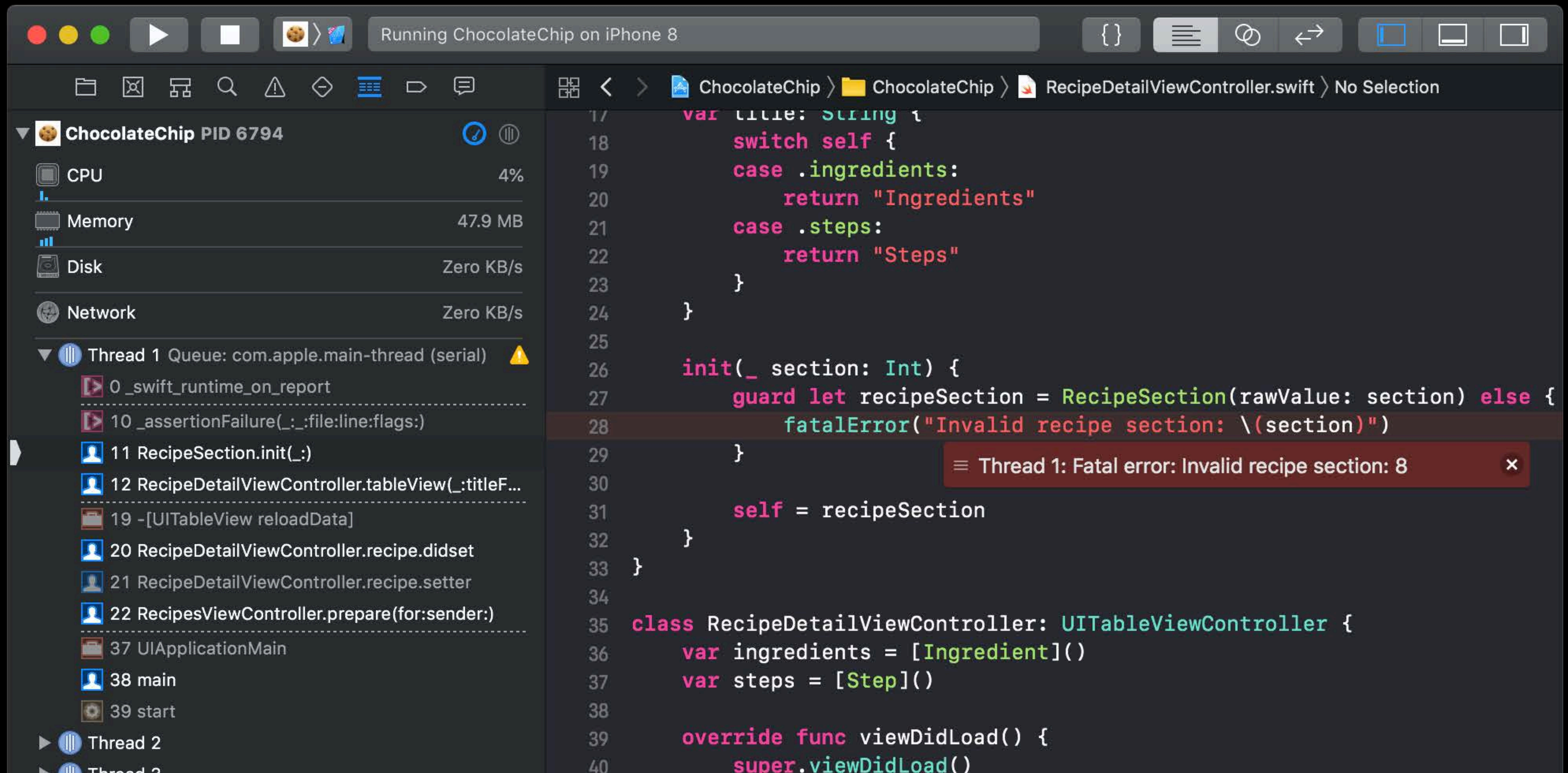
Programming language is preventing failure

Developer is preventing failure



What Does a Crash Look Like?

The debugger



The screenshot shows the Xcode debugger interface. The top bar indicates the application is running on an iPhone 8. The left sidebar shows the process 'ChocolateChip' (PID 6794) with system metrics: CPU (4%), Memory (47.9 MB), Disk (Zero KB/s), and Network (Zero KB/s). Below this, the thread stack for 'Thread 1' is visible, with a yellow warning icon next to the top entry. The stack includes:

- 0 _swift_runtime_on_report
- 10 _assertionFailure(_:file:line:flags:)
- 11 RecipeSection.init(_:)
- 12 RecipeDetailViewController.tableView(_:titleF...)
- 19 -[UITableView reloadData]
- 20 RecipeDetailViewController.recipe.didset
- 21 RecipeDetailViewController.recipe.setter
- 22 RecipesViewController.prepare(for:sender:)
- 37 UIApplicationMain
- 38 main
- 39 start

The main editor displays the Swift source code for 'RecipeDetailViewController.swift'. The crash is highlighted on line 28, where a `fatalError` is triggered. A red error message box is overlaid on the code, stating: 'Thread 1: Fatal error: Invalid recipe section: 8'. The code snippet is as follows:

```
17     var title: String {
18         switch self {
19             case .ingredients:
20                 return "Ingredients"
21             case .steps:
22                 return "Steps"
23         }
24     }
25
26     init(_ section: Int) {
27         guard let recipeSection = RecipeSection(rawValue: section) else {
28             fatalError("Invalid recipe section: \(section)")
29         }
30
31         self = recipeSection
32     }
33 }
34
35 class RecipeDetailViewController: UITableViewController {
36     var ingredients = [Ingredient]()
37     var steps = [Step]()
38
39     override func viewDidLoad() {
40         super.viewDidLoad()
```

ChocolateChip PID 6794

CPU 4%

Memory 47.9 MB

Disk Zero KB/s

Network Zero KB/s

Thread 1 Queue: com.apple.main-thread (serial)

0 _swift_runtime_on_report

10 _assertionFailure(_:_:file:line:flags:)

11 RecipeSection.init(_:)

12 RecipeDetailViewController.tableView(_:titleF...

19 -[UITableView reloadData]

20 RecipeDetailViewController.recipe.didset

21 RecipeDetailViewController.recipe.setter

22 RecipesViewController.prepare(for:sender:)

37 UIApplicationMain

38 main

39 start

Thread 2

Thread 3

Thread 4

Thread 5

com.apple.uikit.eventfetch_thread (7)

```
17 va
18
19
20
21
22
23
24 }
25
26 in
27
28
29
30
31
32 }
33 }
34
35 class
36 va
37 va
38
39 ov
40
41 }
42
43 va
```

App begins →

The image shows a screenshot of Xcode's Activity Monitor and Call Stack views. The Activity Monitor on the left shows the process 'ChocolateChip PID 6794' with resource usage: CPU (4%), Memory (47.9 MB), Disk (Zero KB/s), and Network (Zero KB/s). Below this, the 'Thread 1 Queue: com.apple.main-thread (serial)' is expanded to show a call stack starting with '0 _swift_runtime_on_report', '10 _assertionFailure(_:_:file:line:flags:)', '11 RecipeSection.init(_:)', '12 RecipeDetailViewController.tableView(_:titleF...', '19 -[UITableView reloadData]', '20 RecipeDetailViewController.recipe.didset', '21 RecipeDetailViewController.recipe.setter', '22 RecipesViewController.prepare(for:sender:)', '37 UIApplicationMain', '38 main', and '39 start'. The Call Stack on the right shows line numbers 17 through 43, with line 28 highlighted in red, corresponding to the '10 _assertionFailure' call in the Activity Monitor.

Crash point →

The screenshot shows the Xcode interface with a crash report for a process named "ChocolateChip" (PID 6794). The report details system resource usage (CPU at 4%, Memory at 47.9 MB, Disk at Zero KB/s, Network at Zero KB/s) and a list of threads. The main thread (Thread 1) is expanded to show the stack trace. The crash point is at line 28, which is highlighted in red. The stack trace includes the following frames:

- 0 _swift_runtime_on_report
- 10 _assertionFailure(_:_:file:line:flags:)
- 11 RecipeSection.init(_:)
- 12 RecipeDetailViewController.tableView(_:titleF...
- 19 -[UITableView reloadData]
- 20 RecipeDetailViewController.recipe.didset
- 21 RecipeDetailViewController.recipe.setter
- 22 RecipesViewController.prepare(for:sender:)
- 37 UIApplicationMain
- 38 main
- 39 start

Other threads (Thread 2, Thread 3, Thread 4, Thread 5, and com.apple.uikit.eventfetch_thread) are also listed but not expanded. The right side of the screenshot shows a portion of the source code with line numbers 17 through 43, where line 28 is highlighted.

App termination →

The screenshot shows the Xcode interface during an app crash. The top toolbar contains standard development tools like a folder, zoom, and search. The main area is split into two panes. The left pane, titled 'ChocolateChip PID 6794', displays system resource usage: CPU at 4%, Memory at 47.9 MB, and Disk/Network at Zero KB/s. Below this, the 'Thread 1 Queue: com.apple.main-thread (serial)' is expanded, showing a call stack with a yellow warning icon. The stack includes: 0 _swift_runtime_on_report, 10 _assertionFailure(_:_:file:line:flags:), 11 RecipeSection.init(_:), 12 RecipeDetailViewController.tableView(_:titleF..., 19 -[UITableView reloadData], 20 RecipeDetailViewController.recipe.didset, 21 RecipeDetailViewController.recipe.setter, 22 RecipesViewController.prepare(for:sender:), 37 UIApplicationMain, 38 main, and 39 start. The right pane shows a portion of the source code with line numbers 17 through 43. Line 28 is highlighted in red, corresponding to the assertion failure in the call stack.

Resource	Usage
CPU	4%
Memory	47.9 MB
Disk	Zero KB/s
Network	Zero KB/s

Thread 1 Queue: com.apple.main-thread (serial) ⚠

- 0 _swift_runtime_on_report
- 10 _assertionFailure(_:_:file:line:flags:)
- 11 RecipeSection.init(_:)
- 12 RecipeDetailViewController.tableView(_:titleF...
- 19 -[UITableView reloadData]
- 20 RecipeDetailViewController.recipe.didset
- 21 RecipeDetailViewController.recipe.setter
- 22 RecipesViewController.prepare(for:sender:)
- 37 UIApplicationMain
- 38 main
- 39 start

Thread 2

Thread 3

Thread 4

Thread 5

com.apple.uikit.eventfetch_thread (7)

```
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35 class  
36 va  
37 va  
38  
39 ov  
40  
41  
42  
43 va
```

ChocolateChip PID 6794

CPU	4%
Memory	47.9 MB
Disk	Zero KB/s
Network	Zero KB/s

Thread 1 Queue: com.apple.main-thread (serial)

- 0 _swift_runtime_on_report
- 10 _assertionFailure(_:_:file:line:flags:)
- 11 RecipeSection.init(_:)
- 12 RecipeDetailViewController.tableView(_:titleF...
- 19 -[UITableView reloadData]
- 20 RecipeDetailViewController.recipe.didset
- 21 RecipeDetailViewController.recipe.setter
- 22 RecipesViewController.prepare(for:sender:)
- 37 UIApplicationMain
- 38 main
- 39 start

Thread 2

Thread 3

Thread 4

Thread 5

com.apple.vikit.eventfetch_thread (7)

```
0 _swift_runtime_on_report
-----
10 _assertionFailure(_:_:file:line:flags:)
11 RecipeSection.init(_:)
12 RecipeDetailViewController.tableView...
-----
19 -[UITableView reloadData]
20 RecipeDetailViewController.recipe.didset
21 RecipeDetailViewController.recipe.setter
22 RecipesViewController.prepare(for:...
-----
37 UIApplicationMain
38 main
39 start
```

What Does a Crash Look Like?

A crash log

```
0 _swift_runtime_on_report
-----
10 _assertionFailure(_:_:file:line:flags:)
-----
11 RecipeSection.init(_:)
-----
12 RecipeDetailViewController.tableView...
-----
19 -[UITableView reloadData]
-----
20 RecipeDetailViewController.recipe.didset
21 RecipeDetailViewController.recipe.setter
22 RecipesViewController.prepare(for:...
-----
37 UIApplicationMain
-----
38 main
-----
39 start
```



What Does a Crash Log Look Like?

Unsymbolicated

```
0  libswiftCore.dylib 0x10240ccec 0x1023a8000 + 412908
1  ChocolateChip      0x1020d966c 0x1020cc000 + 54892
2  ChocolateChip      0x1020d6c7c 0x1020cc000 + 44156
3  UIKit              0x18b41a2e8 0x18b338000 + 926440
-----
10 UIKit             0x18b446cfc 0x18b338000 + 1109244
11 ChocolateChip     0x1020d93a8 0x1020cc000 + 54184
12 ChocolateChip     0x1020da2ec 0x1020cc000 + 58092
13 ChocolateChip     0x1020da3e0 0x1020cc000 + 58336
14 UIKit             0x18bd0a980 0x18b338000 + 10299776
-----
28 ChocolateChip     0x1020d3e80 0x1020cc000 + 32384
29 libdyld.dylib      0x181105fc0 0x181105000 + 4032
```



What Does a Crash Log Look Like?

Unsymbolicated

```
0  libswiftCore.dylib 0x10240ccec 0x1023a8000 + 412908
1  ChocolateChip      0x1020d966c 0x1020cc000 + 54892
2  ChocolateChip      0x1020d6c7c 0x1020cc000 + 44156
3  UIKit              0x18b41a2e8 0x18b338000 + 926440
-----
10 UIKit             0x18b446cfc 0x18b338000 + 1109244
11 ChocolateChip     0x1020d93a8 0x1020cc000 + 54184
12 ChocolateChip     0x1020da2ec 0x1020cc000 + 58092
13 ChocolateChip     0x1020da3e0 0x1020cc000 + 58336
14 UIKit             0x18bd0a980 0x18b338000 + 10299776
-----
28 ChocolateChip     0x1020d3e80 0x1020cc000 + 32384
29 libdyld.dylib      0x181105fc0 0x181105000 + 4032
```



What Does a Crash Log Look Like?

Symbolicated

```
0  libswiftCore.dylib 0x10240ccec _assertionFailure(_:_:file:line:flags:...)
1  ChocolateChip      0x1020d966c RecipeDetailViewController.tableView(_...
2  ChocolateChip      0x1020d6c7c @objc RecipeDetailViewController.table...
3  UIKit              0x18b41a2e8 -[UITableView _delegateWantsHeaderTitl...
-----
10 UIKit              0x18b446cfc -[UITableView reloadData] + 96
11 ChocolateChip      0x1020d93a8 RecipeDetailViewController.recipe.didS...
12 ChocolateChip      0x1020da2ec RecipesViewController.prepare(for:send...
13 ChocolateChip      0x1020da3e0 @objc RecipesViewController.prepare(fo...
14 UIKit              0x18bd0a980 -[UIStoryboardSegueTemplate _performWi...
-----
28 ChocolateChip      0x1020d3e80 main + 16 (AppDelegate.swift:12)
29 libdyld.dylib      0x181105fc0 start + 4
```



Accessing Crash Logs



Archives
Crashes
Energy

iOS Apps

ChocolateChip

macOS Apps

Frosting

tvOS Apps

Sprinkles

App Store > Build 5

ChocolateChip: RecipeSection.init(:) + 268
242 devices

ChocolateChip: _VariantDictionaryBuffer.ensur...
124 devices

ChocolateChip: RecipeStore.recipes() + 784
108 devices

ChocolateChip: RecipeStore.init(serializedReci...
88 devices

ChocolateWatch: -[ChocolateExporter export...
76 devices

ChocolateShare: -[RecipePackager serializeRe...
42 devices

ChocolateChip: RecipeSection.init(:) + 432
41 devices

ChocolateWatch: -[ChocolateImporter import...
14 devices

ChocolateChip: -[RecipeSync syncSteps] + 268
10 devices

Previous Top Crash Logs

ChocolateChip: RecipeSection.init(:) + 72
72 devices

ChocolateShare: __46-[OtherShareViewContro...
13 devices

ChocolateChip: StepsViewController.setUp() + ...
8 devices

Filter

ChocolateChip: RecipeSection.init(:) + 268

Thread 0

1 libswiftCore.dylib _assertionFailure(_:_:file:line:flags:)

2 libswiftCore.dylib default argument 1 of precondition(_:_:file:line:)

3 ChocolateChip RecipeSection.init(:)

4 ChocolateChip @objc RecipeDetailViewController.tableView(_:_:titleForHea...

5 UIKit -[UITableView _delegateWantsHeaderTitleForSection:]

6 UIKit -[UITableView _delegateWantsHeaderForSection:]

9 UIKit -[UITableView noteNumberOfRowsChanged]

10 UIKit -[UITableView reloadData]

11 ChocolateChip RecipeDetailViewController.recipe.didset

12 ChocolateChip RecipesViewController.prepare(for:sender:)

13 ChocolateChip @objc RecipesViewController.prepare(for:sender:)

14 UIKit -[UIStoryboardSegueTemplate _performWithDestinationVi...

15 UIKit -[UIStoryboardSegueTemplate _perform:]

26 GraphicsServices GSEventRunModal

27 UIKit UIApplicationMain

28 ChocolateChip main

29 libdyld.dylib start

Crash Information

ChocolateChip: RecipeSe...
242 devices

[Open in Project...](#)

Crash Log Details

Binary ChocolateChip 1.0 (5)

Thread 0

iOS 11.3 (15E216)

Device iPhone 7 (Model 1660, 1778...

Last 2 Weeks Operating System

242

TOTAL

iOS 11.3	68%
iOS 11.2	14%
iOS 11.1	14%
iOS 11.0	5%

Notes

No Notes

[Mark As Resolved](#)

Filter
1 of 5

Crashes Organizer

The screenshot displays the 'Crashes' tab in the Crashes Organizer. The interface is divided into several sections:

- Left Panel:** Lists applications under different OS categories: iOS Apps (ChocolateChip), macOS Apps (Frosting), and tvOS Apps (Sprinkles).
- Crash List:** A list of crashes for 'Build 5' of 'App Store'. The selected crash is 'ChocolateChip: RecipeSection.init(:) + 268' with 242 devices. Other crashes include 'ChocolateChip: _VariantDictionaryBuffer.ensur...' (124 devices), 'ChocolateChip: RecipeStore.recipes() + 784' (108 devices), 'ChocolateChip: RecipeStore.init(serializedReci...' (88 devices), 'ChocolateWatch: -[ChocolateExporter export...' (76 devices), 'ChocolateShare: -[RecipePackager serializeRe...' (42 devices), 'ChocolateChip: RecipeSection.init(:) + 432' (41 devices), 'ChocolateWatch: -[ChocolateImporter import...' (14 devices), and 'ChocolateChip: -[RecipeSync syncSteps] + 268' (10 devices).
- Thread Stack:** Shows the stack for 'Thread 0' of the selected crash. The top frame is 'ChocolateChip: RecipeSection.init(:)' at index 3. Other frames include UIKit methods like 'UITableViewDelegate.wantsHeaderTitleForSection:', 'UITableViewDelegate.wantsHeaderForSection:', 'UITableView.noteNumberOfRowsChanged:', and 'UITableView.reloadData:', as well as 'RecipeDetailViewController.recipe.didset', 'RecipesViewController.prepare(for:sender:)', and 'UIStoryboardSegueTemplate.performWithDestinationViewControllerSegueWithIdentifier:options:'. The stack ends with 'libdyld.dylib: start'.
- Crash Information:** Shows 'ChocolateChip: RecipeSe...' with 242 devices and an 'Open in Project...' button.
- Crash Log Details:** Shows 'Binary ChocolateChip 1.0 (5)', 'Thread 0', and 'iOS 11.3 (15E216)' on 'Device iPhone 7 (Model 1660, 1778...)'. It also includes a 'Last 2 Weeks' chart showing the total number of crashes (242) and a breakdown by operating system version: iOS 11.3 (68%), iOS 11.2 (14%), iOS 11.1 (14%), and iOS 11.0 (5%).
- Notes:** A section for adding notes, currently showing 'No Notes' and a 'Mark As Resolved' button.

Crashes Organizer

TestFlight and App Store apps

The screenshot displays the Crashes Organizer interface with a sidebar menu on the left and a main content area on the right. The sidebar menu includes sections for iOS Apps, macOS Apps, and tvOS Apps, with specific app names listed under each. The main content area is divided into several panels: a list of crashes, a thread stack, and a detailed view of a selected crash.

iOS Apps

- ChocolateChip

macOS Apps

- Frosting

tvOS Apps

- Sprinkles

Crashes List

- ChocolateChip: RecipeSection.init(_:) + 268 (242 devices)
- ChocolateChip: _VariantDictionaryBuffer.ensur... (76 devices)
- ChocolateChip: RecipeStore.recipes() + 784 (42 devices)
- ChocolateChip: RecipeStore.init(serializedRecl... (41 devices)
- ChocolateWatch: -[ChocolateExporter export... (14 devices)
- ChocolateShare: -[RecipePackager serializeRe... (10 devices)
- ChocolateChip: RecipeSection.init(_:) + 432 (72 devices)
- ChocolateWatch: -[ChocolateImporter import... (13 devices)
- ChocolateChip: -[RecipeSync syncSteps] + 268 (8 devices)

Thread 0

- libswiftCore.dylib _assertionFailure(_:_:file:line:flags:)
- libswiftCore.dylib default argument 1 of precondition(_:_:file:line:)
- ChocolateChip RecipeSection.init(_:)**
- ChocolateChip @objc RecipeDetailViewController.tableView(_:_:titleForHea...
- UIKit -[UITableView _delegateWantsHeaderTitleForSection:]
- UIKit -[UITableView _delegateWantsHeaderForSection:]
- UIKit -[UITableView noteNumberOfRowsChanged]
- UIKit -[UITableView reloadData]
- ChocolateChip RecipeDetailViewController.recipe.didset
- ChocolateChip RecipesViewController.prepare(for:sender:)
- ChocolateChip @objc RecipesViewController.prepare(for:sender:)
- UIKit -[UIStoryboardSegueTemplate _performWithDestinationVi...
- UIKit -[UIStoryboardSegueTemplate _perform:]
- GraphicsServices GSEventRunModal
- UIKit UIApplicationMain
- ChocolateChip main
- libdyld.dylib start

Crash Information

ChocolateChip: RecipeSe...
242 devices

Open in Project...

Crash Log Details

Binary ChocolateChip 1.0 (5)
Thread 0
iOS 11.3 (15E216)
Device iPhone7,2 (Model 1660, 1778...)

Last 2 Weeks Operating System

242 TOTAL

Operating System	Percentage
iOS 11.3	68%
iOS 11.2	14%
iOS 11.1	14%
iOS 11.0	5%

Notes

No Notes

Mark As Resolved

Crashes Organizer

TestFlight and App Store apps

All platforms, app extensions

The screenshot displays the 'Crashes' tab in Xcode's interface. The left sidebar shows the project structure with 'ChocolateChip' selected under 'iOS Apps'. The main area lists several crashes, with the top one being 'ChocolateChip: RecipeSection.init(:) + 268' (242 devices). A modal window is open over this crash, showing a thread stack for 'Thread 0' starting with 'libswiftCore.dylib _assertionFailure' and ending with 'libdyld.dylib start'. The right-hand panel provides 'Crash Information' (Binary: ChocolateChip 1.0 (5), Thread: 0, Device: iPhone 7), 'Crash Log Details', and a 'Last 2 Weeks' summary chart showing 242 total crashes, with 68% on iOS 11.3, 14% on iOS 11.2, 14% on iOS 11.1, and 5% on iOS 11.0.

Crashes Organizer

TestFlight and App Store apps

All platforms, app extensions

Recent statistics

The screenshot displays the Crashes Organizer interface with the following components:

- Crash List:** A list of crashes for 'ChocolateChip' (Build 5) on the App Store. The top crash is 'ChocolateChip: RecipeSection.init(:) + 268' with 242 devices. Other crashes include 'ChocolateChip: _VariantDictionaryBuffer.ensur...' (124 devices), 'ChocolateChip: RecipeStore.recipes() + 784' (108 devices), and 'ChocolateChip: RecipeStore.init(serializedRecl...' (88 devices).
- Thread 0:** A stack of 29 frames for the selected crash, starting with 'libswiftCore.dylib _assertionFailure' and ending with 'libdyld.dylib start'.
- Crash Information:** A panel on the right showing 'ChocolateChip: RecipeSe...' with 242 devices and an 'Open in Project...' button.
- Crash Log Details:** A panel showing 'Binary ChocolateChip 1.0 (5)'.
- Summary Overlay:** A floating window titled 'Last 2 Weeks' showing a total of 242 crashes. It includes a donut chart and a bar chart. The operating system breakdown is: iOS 11.3 (68%), iOS 11.2 (14%), iOS 11.1 (14%), and iOS 11.0 (5%). The bar chart shows crash frequency from 05/25 to 06/07.

Crashes Organizer

TestFlight and App Store apps

All platforms, app extensions

Recent statistics

Most affected devices

The screenshot displays the Crashes Organizer interface. On the left, a sidebar lists various app categories: iOS Apps (ChocolateChip), macOS Apps (Frostin), and tvOS Apps (Sprinklr). The main area shows a list of crash logs with columns for the crash message, the number of affected devices, and a status icon. The top entry is "ChocolateChip: _VariantDictionaryBuffer.ensur..." with 124 devices. The second entry is "ChocolateChip: RecipeStore.recipes() + 784" with 108 devices. The third entry is "ChocolateChip: RecipeStore.init(serializedReci..." with 88 devices. The fourth entry is "ChocolateWatch: -[ChocolateExporter export..." with 76 devices. The fifth entry is "ChocolateShare: -[RecipePackager serializeRe..." with 42 devices. The sixth entry is "ChocolateChip: RecipeSection.init(:) + 432" with 41 devices. The seventh entry is "ChocolateWatch: -[ChocolateImporter import..." with 14 devices. The eighth entry is "ChocolateChip: -[RecipeSync syncSteps] + 268" with 10 devices. Below this list is a section for "Previous Top Crash Logs" with the top entry being "ChocolateChip: RecipeSection.init(:) + 72" with 72 devices. The bottom entry is "ChocolateChip: StepsViewController.setUp() + ..." with 8 devices.

The detailed view on the right shows the crash information for "ChocolateChip: RecipeSe..." with 242 devices. It includes a button to "Open in Project...". The "Crash Log Details" section shows the binary "ChocolateChip 1.0 (5)", thread "0", and device "iPhone 7 (Model 1660, 1778...)". The "Last 2 Weeks" section shows a pie chart for the operating system distribution: iOS 11.3 (68%), iOS 11.2 (14%), iOS 11.1 (14%), and iOS 11.0 (5%). A bar chart below shows the crash frequency over time, with a peak around 06/07. The "Notes" section is currently empty, and there is a "Mark As Resolved" button.

Crashes Organizer

TestFlight and App Store apps

All platforms, app extensions

Recent statistics

Most affected devices

Page through logs

The screenshot displays the Crashes Organizer interface with the following components:

- Left Panel:** Lists apps across platforms: iOS Apps (ChocolateChip), macOS Apps (Frosting), and tvOS Apps (Sprinkles).
- Crash List:** A list of crashes for 'ChocolateChip' (Build 5) with columns for app name, crash type, and device count. The top crash is 'ChocolateChip: RecipeSection.init(:) + 268' with 242 devices.
- Thread Stack:** A detailed view of the selected crash showing the call stack for Thread 0, starting with 'libswiftCore.dylib _assertionFailure' and ending with 'libdyld.dylib start'.
- Crash Information:** A summary card for the selected crash, including a button to 'Open in Project...'
- Crash Log Details:** Information about the binary (ChocolateChip 1.0 (5)), thread (Thread 0), OS (iOS 11.3 (15E216)), and device (iPhone 7).
- Last 2 Weeks:** A donut chart showing the total number of crashes (242) and a bar chart showing the distribution by operating system version: iOS 11.3 (68%), iOS 11.2 (14%), iOS 11.1 (14%), and iOS 11.0 (5%).
- Notes:** A section for adding notes to the crash, currently showing 'No Notes'.
- Bottom:** A 'Filter' input field and a pagination control showing '1 of 5'.

Crashes Organizer

TestFlight and App Store apps

All platforms, app extensions

Recent statistics

Most affected devices

Page through logs

Open log in debugger

The screenshot shows the 'Crashes' tab in Xcode's interface. The left sidebar lists apps: 'ChocolateChip' (iOS), 'Frosting' (macOS), and 'Sprinkles' (tvOS). The central pane shows a list of crash reports for 'ChocolateChip' (Build 5). The selected crash is 'ChocolateChip: RecipeSection.init(:) + 268' with 242 devices. The thread stack for this crash is visible, starting with 'libswiftCore.dylib _assertionFailure(::file:line:flags:)' and ending with 'libdyld.dylib start'. The right sidebar shows 'Crash Information' for 'ChocolateChip: RecipeSe...' (242 devices) and 'Crash Log Details' for 'Binary ChocolateChip 1.0 (5)' on 'Thread 0' (iOS 11.3 (15E216)) on an 'iPhone 7 (Model 1660, 1778...)'. A 'Last 2 Weeks' chart shows a total of 242 crashes, with a breakdown by operating system: iOS 11.3 (68%), iOS 11.2 (14%), iOS 11.1 (14%), and iOS 11.0 (5%). A 'Notes' section is empty, and a 'Mark As Resolved' button is at the bottom.

Crashes Organizer

TestFlight and App Store apps

All platforms, app extensions

Recent statistics

Most affected devices

Page through logs

Open log in debugger

Crash point highlighting

The screenshot displays the Crashes Organizer interface. On the left, a sidebar lists various apps and their device counts: ChocolateChip (242 devices), ChocolateChip (124 devices), ChocolateChip (108 devices), ChocolateChip (88 devices), ChocolateWatch (76 devices), ChocolateShare (42 devices), ChocolateChip (41 devices), ChocolateWatch (14 devices), ChocolateChip (10 devices), ChocolateShare (13 devices), and ChocolateChip (8 devices). The main area shows a list of crashes, with the top crash highlighted in red. The crash details for Thread 0 are shown in a modal window:

Thread	Library	Function
1	libswiftCore.dylib	_assertionFailure(_:_:file:line:flags:)
2	libswiftCore.dylib	default argument 1 of precondition(_:_:file:line:)
3	ChocolateChip	RecipeSection.init(_:)
4	ChocolateChip	@objc RecipeDetailViewController.tableView(_:titleForHea...
5	UIKit	-[UITableView _delegateWantsHeaderTitleForSection:]
6	UIKit	-[UITableView _delegateWantsHeaderForSection:]
9	UIKit	-[UITableView noteNumberOfRowsChanged]
10	UIKit	-[UITableView reloadData]
11	ChocolateChip	RecipeDetailViewController.recipe.didset
12	ChocolateChip	RecipesViewController.prepare(for:sender:)
13	ChocolateChip	@objc RecipesViewController.prepare(for:sender:)
14	UIKit	-[UIStoryboardSegueTemplate _performWithDestinationVi...
15	UIKit	-[UIStoryboardSegueTemplate _perform:]
26	GraphicsServices	GSEventRunModal
27	UIKit	UIApplicationMain
28	ChocolateChip	main
29	libdyld.dylib	start

Additional details visible in the interface include a 'Mark As Resolved' button, a 'Filter' input, and a page indicator showing '1 of 5'.

Demo



Crashes Organizer

Getting started

Crashes Organizer

Getting started

- ✔ App Store users opt in

Crashes Organizer

Getting started

- ✓ App Store users opt in
- ✓ Sign in to Xcode

Crashes Organizer

Getting started

- ✓ App Store users opt in
- ✓ Sign in to Xcode
- ✓ Upload app with symbols

Crashes Organizer

Getting started

- ✓ App Store users opt in
- ✓ Sign in to Xcode
- ✓ Upload app with symbols
- ✓ Open Crashes tab of the Organizer window

Accessing Crash Logs

Organizer window

The screenshot shows the Xcode Organizer window with the 'Crashes' tab selected. The interface is divided into three main sections:

- Left Panel (Crash Log List):** A list of crash logs for the 'ChocolateChip' app. The selected crash is 'ChocolateChip: RecipeSection.init(:) + 268' with 242 devices. Other visible crashes include 'ChocolateChip: _VariantDictionaryBuffer.ensur...' (124 devices), 'ChocolateChip: RecipeStore.recipes() + 784' (108 devices), 'ChocolateChip: RecipeStore.init(serializedReci...' (88 devices), 'ChocolateWatch: -[ChocolateExporter export...' (76 devices), 'ChocolateShare: -[RecipePackager serializeRe...' (42 devices), 'ChocolateChip: RecipeSection.init(:) + 432' (41 devices), 'ChocolateWatch: -[ChocolateImporter import...' (14 devices), and 'ChocolateChip: -[RecipeSync syncSteps] + 268' (10 devices).
- Center Panel (Thread Dump):** A detailed view of the selected crash, showing the stack trace for Thread 0. The top of the stack trace is:

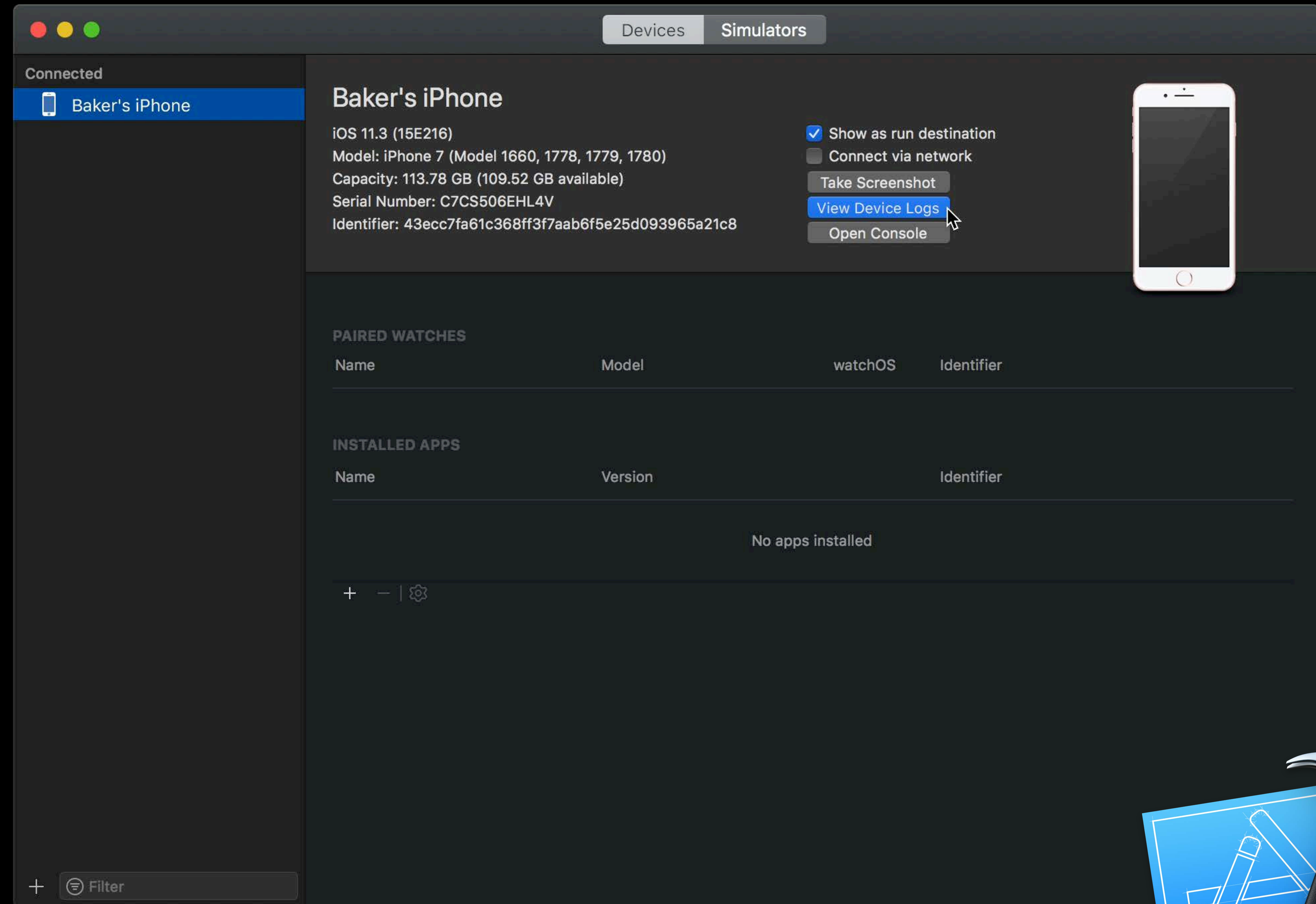
```
1 libswiftCore.dylib _assertionFailure(_:_:file:line:flags:)
2 libswiftCore.dylib default argument 1 of precondition(_:_:file:line:)
3 ChocolateChip RecipeSection.init(:)
4 ChocolateChip @objc RecipeDetailViewController.tableView(_:_:titleForHea...
5 UIKit -[UITableView _delegateWantsHeaderTitleForSection:]
6 UIKit -[UITableView _delegateWantsHeaderForSection:]
9 UIKit -[UITableView noteNumberOfRowsChanged]
10 UIKit -[UITableView reloadData]
11 ChocolateChip RecipeDetailViewController.recipe.didset
12 ChocolateChip RecipesViewController.prepare(for:sender:)
13 ChocolateChip @objc RecipesViewController.prepare(for:sender:)
14 UIKit -[UIStoryboardSegueTemplate _performWithDestinationVi...
15 UIKit -[UIStoryboardSegueTemplate _perform:]
26 GraphicsServices GSEventRunModal
27 UIKit UIApplicationMain
28 ChocolateChip main
29 libdyld.dylib start
```
- Right Panel (Crash Information):** Summary information for the selected crash, including a 'Crash Information' section with a 'ChocolateChip: RecipeSe...' icon and '242 devices', an 'Open in Project...' button, and a 'Crash Log Details' section showing 'Binary ChocolateChip 1.0 (5)', 'Thread 0', and 'Device iPhone 7 (Model 1660, 1778...'. Below this is a 'Last 2 Weeks' section with a circular gauge showing '242 TOTAL' and a bar chart showing crash frequency over time. The gauge is broken down by OS version: iOS 11.3 (68%), iOS 11.2 (14%), iOS 11.1 (14%), and iOS 11.0 (5%). A 'Notes' section at the bottom shows 'No Notes' and a 'Mark As Resolved' button.



Accessing Crash Logs

Organizer window

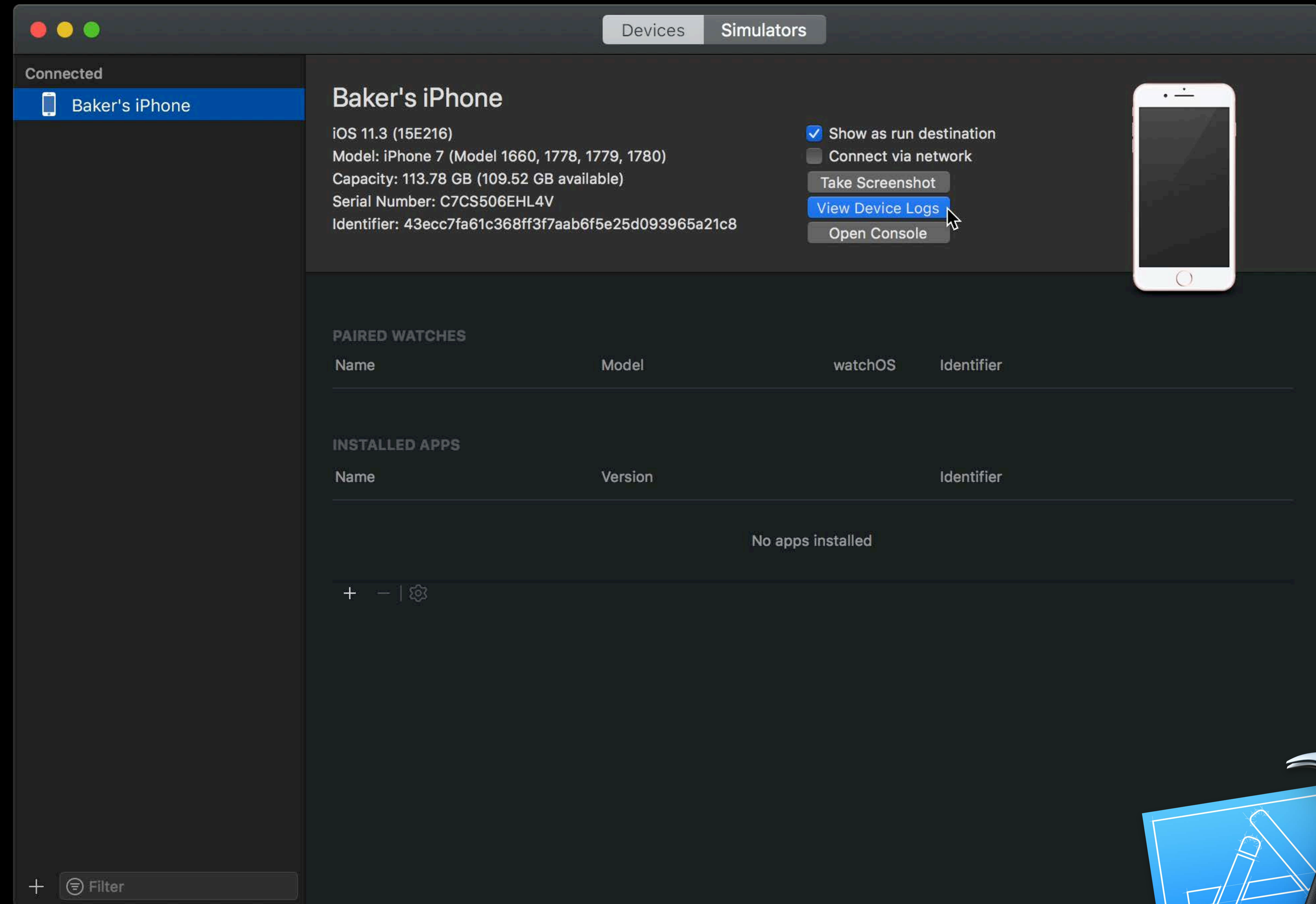
Devices window



Accessing Crash Logs

Organizer window

Devices window

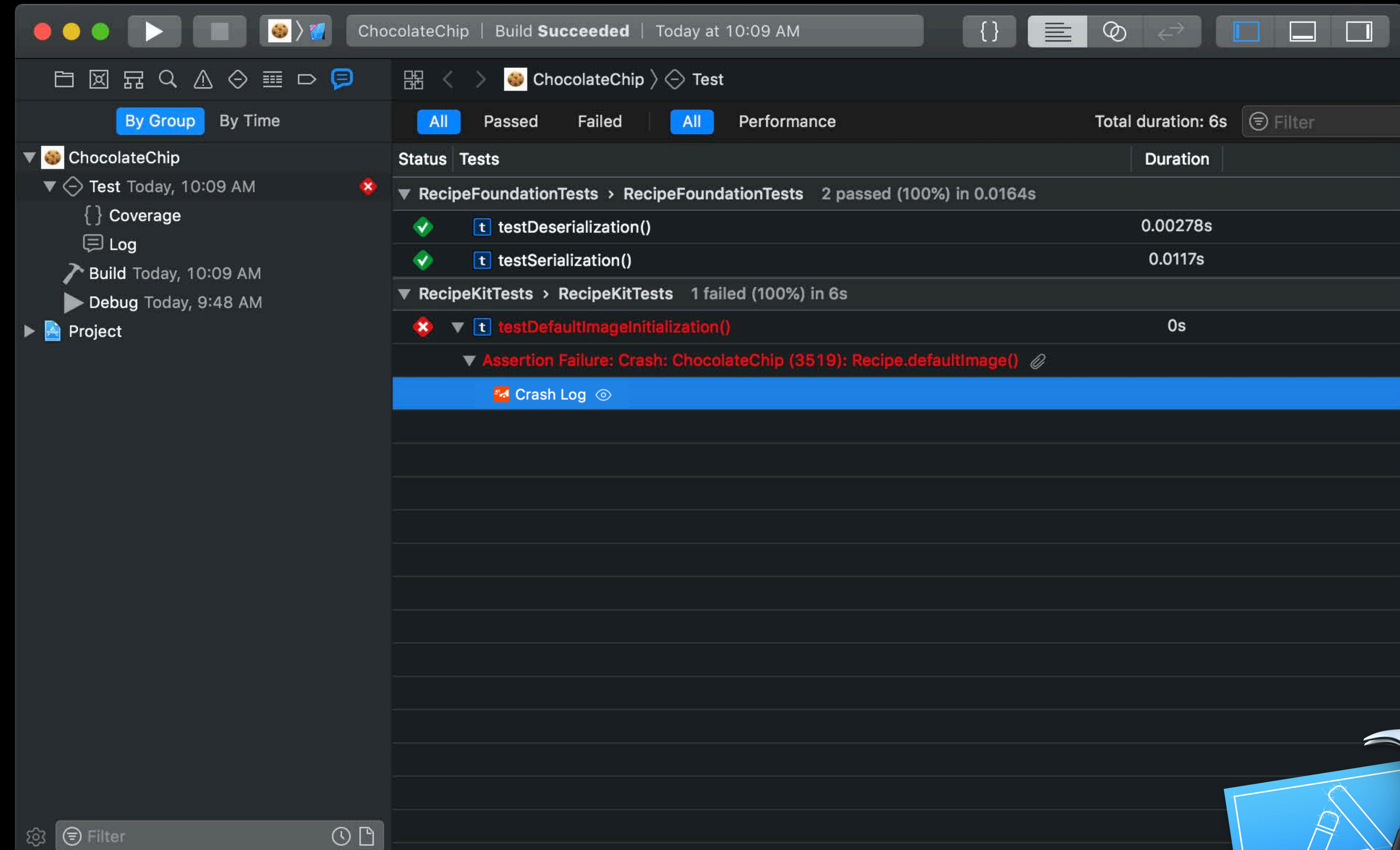


Accessing Crash Logs

Organizer window

Devices window

Automated testing

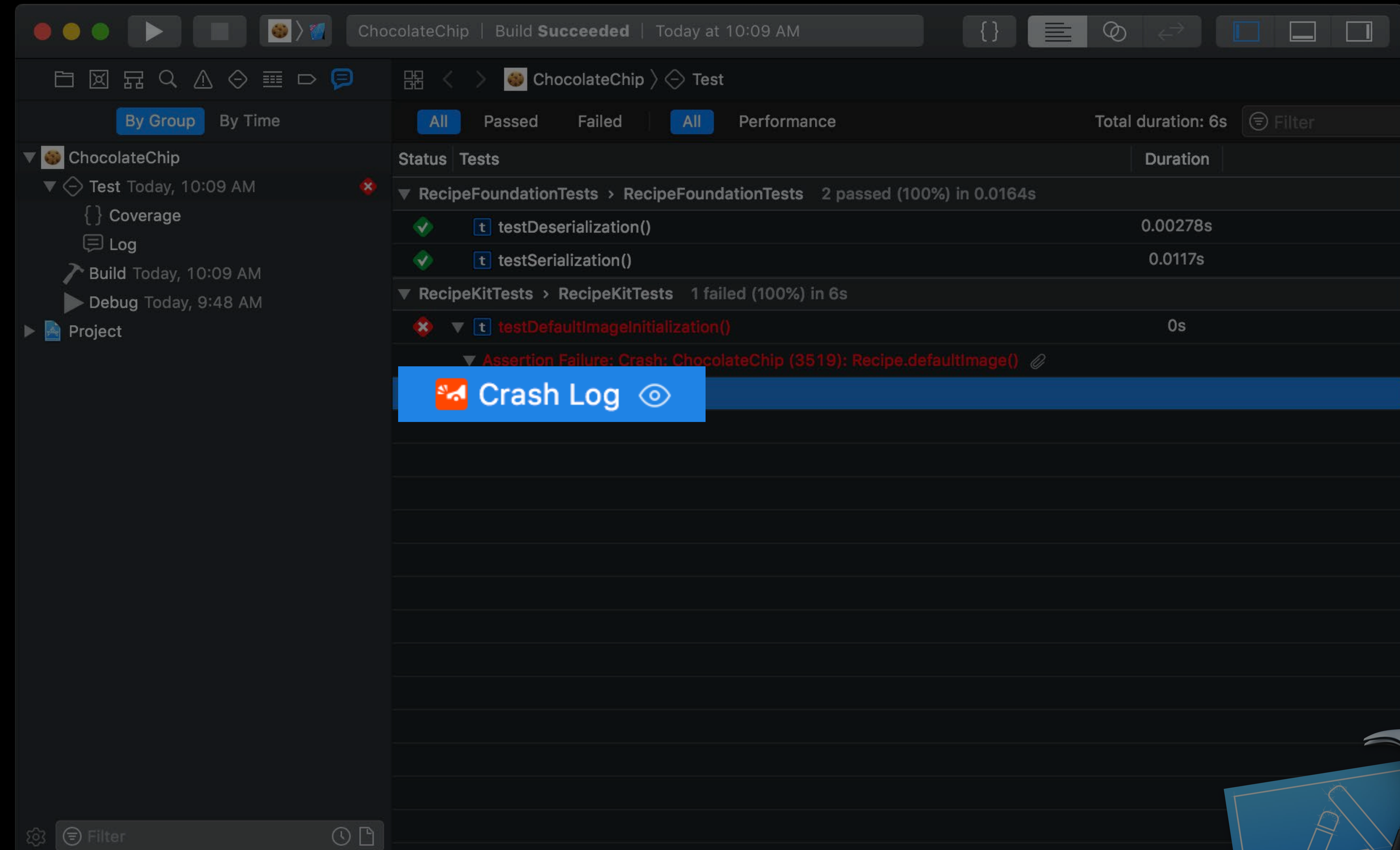


Accessing Crash Logs

Organizer window

Devices window

Automated testing



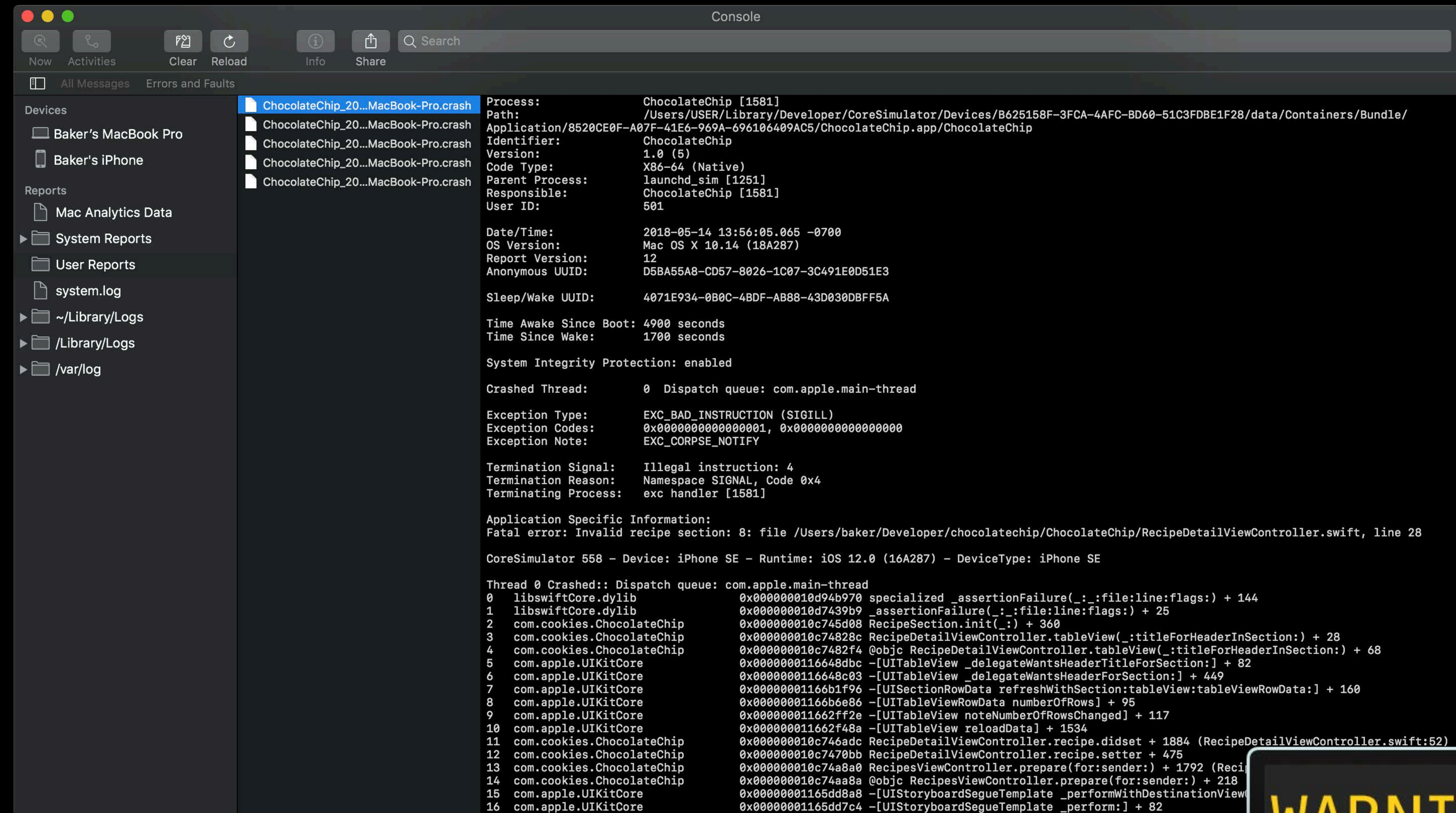
Accessing Crash Logs

Organizer window

Devices window

Automated testing

Console app



The screenshot shows the Xcode Console window with a search bar at the top. The left sidebar is divided into 'Devices' (Baker's MacBook Pro, Baker's iPhone) and 'Reports' (Mac Analytics Data, System Reports, User Reports, system.log, ~/Library/Logs, /Library/Logs, /var/log). The main area displays a crash log for 'ChocolateChip_20...MacBook-Pro.crash'. The log details include process information (ChocolateChip [1581]), path, application ID, version (1.0 (5)), code type (X86-64 (Native)), parent process (launchd_sim [1251]), and user ID (501). It also shows the date/time (2018-05-14 13:56:05.065 -0700), OS version (Mac OS X 10.14 (18A287)), and report version (12). The crash occurred on the main thread (Dispatch queue: com.apple.main-thread) with an exception type of EXC_BAD_INSTRUCTION (SIGILL). The termination signal was 'Illegal instruction: 4'. The application-specific information indicates a fatal error: 'Invalid recipe section: 8: file /Users/baker/Developer/chocolatechip/ChocolateChip/RecipeDetailViewController.swift, line 28'. The thread dump shows the stack trace starting from libswiftCore.dylib and ending at the crash site in RecipeDetailViewController.swift.

```
Process:          ChocolateChip [1581]
Path:            /Users/USER/Library/Developer/CoreSimulator/Devices/B625158F-3FCA-4AFC-BD60-51C3FDBE1F28/data/Containers/Bundle/
Application/8520CE0F-A07F-41E6-969A-696106409AC5/ChocolateChip.app/ChocolateChip
Identifier:      ChocolateChip
Version:         1.0 (5)
Code Type:      X86-64 (Native)
Parent Process: launchd_sim [1251]
Responsible:    ChocolateChip [1581]
User ID:        501

Date/Time:      2018-05-14 13:56:05.065 -0700
OS Version:     Mac OS X 10.14 (18A287)
Report Version: 12
Anonymous UUID: D5BA55A8-CD57-8026-1C07-3C491E0D51E3

Sleep/Wake UUID: 4071E934-0B0C-4BDF-AB88-43D030DBFF5A

Time Awake Since Boot: 4900 seconds
Time Since Wake: 1700 seconds

System Integrity Protection: enabled

Crashed Thread:  0  Dispatch queue: com.apple.main-thread

Exception Type:  EXC_BAD_INSTRUCTION (SIGILL)
Exception Codes: 0x0000000000000001, 0x0000000000000000
Exception Note:  EXC_CORPSE_NOTIFY

Termination Signal: Illegal instruction: 4
Termination Reason: Namespace SIGNAL, Code 0x4
Terminating Process: exc handler [1581]

Application Specific Information:
Fatal error: Invalid recipe section: 8: file /Users/baker/Developer/chocolatechip/ChocolateChip/RecipeDetailViewController.swift, line 28

CoreSimulator 558 - Device: iPhone SE - Runtime: iOS 12.0 (16A287) - DeviceType: iPhone SE

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libswiftCore.dylib                0x000000010d94b970 specialized_assertionFailure(._:file:line:flags:) + 144
1  libswiftCore.dylib                0x000000010d7439b9 _assertionFailure(._:file:line:flags:) + 25
2  com.cookies.ChocolateChip        0x000000010c745d08 RecipeSection.init(._:) + 360
3  com.cookies.ChocolateChip        0x000000010c74828c RecipeDetailViewController.tableView(._:titleForHeaderInSection:) + 28
4  com.cookies.ChocolateChip        0x000000010c7482f4 @objc RecipeDetailViewController.tableView(._:titleForHeaderInSection:) + 68
5  com.apple.UIKitCore               0x0000000116648dbc -[UITableView _delegateWantsHeaderTitleForSection:] + 82
6  com.apple.UIKitCore               0x0000000116648c03 -[UITableView _delegateWantsHeaderForSection:] + 449
7  com.apple.UIKitCore               0x00000001166b1f96 -[UITableViewCell refreshWithSection:tableView:tableViewRowData:] + 160
8  com.apple.UIKitCore               0x00000001166b6e86 -[UITableViewRowData numberOfRows] + 95
9  com.apple.UIKitCore               0x000000011662ff2e -[UITableView noteNumberOfRowsChanged] + 117
10 com.apple.UIKitCore               0x000000011662f48a -[UITableView reloadData] + 1534
11 com.cookies.ChocolateChip        0x000000010c746adc RecipeDetailViewController.recipe.didset + 1884 (RecipeDetailViewController.swift:52)
12 com.cookies.ChocolateChip        0x000000010c7470bb RecipeDetailViewController.recipe.setter + 475
13 com.cookies.ChocolateChip        0x000000010c74a8a0 RecipesViewController.prepare(for:sender:) + 1792 (RecipesViewController.swift:10)
14 com.cookies.ChocolateChip        0x000000010c74aa8a @objc RecipesViewController.prepare(for:sender:) + 218
15 com.apple.UIKitCore               0x00000001165dd8a8 -[UIStoryboardSegueTemplate _performWithDestinationViewController:] + 128
16 com.apple.UIKitCore               0x00000001165dd7c4 -[UIStoryboardSegueTemplate _perform:] + 82
```

WARNING
7:36

Accessing Crash Logs

Organizer window

Devices window

Automated testing

Console app

Sharing from device



Accessing Crash Logs

Organizer window

Devices window

Automated testing

Console app

Sharing from device



Symbolication

Best practices

Symbolication

Best practices

Upload app symbols for server-side symbolication



Upload Symbols

Symbolication

Best practices

Upload app symbols for server-side symbolication

Keep your app archive for local symbolication



Symbolication

Best practices

Upload app symbols for server-side symbolication

Keep your app archive for local symbolication

Download debug symbols for bitcode apps





Analyzing Crash Logs

Greg Parker, Runtime Wrangler

- iOS Apps
 - ChocolateChip
- macOS Apps
 - Frosting
- tvOS Apps
 - Sprinkles

App Store > Build 5

ChocolateChip: RecipeSection.init(:) + 268
242 devices

ChocolateChip: _VariantDictionaryBuffer.ensur...
124 devices

ChocolateChip: RecipeStore.recipes() + 784
108 devices

✓ **ChocolateChip: RecipeStore.init(serializedReci...**
88 devices

ChocolateWatch: -[ChocolateExporter export...
76 devices

ChocolateShare: -[RecipePackager serializeRe...
42 devices

ChocolateChip: RecipeSection.init(:) + 432
41 devices

ChocolateWatch: -[ChocolateImporter import...
14 devices

ChocolateChip: -[RecipeSync syncSteps] + 268
10 devices

Previous Top Crash Logs

✓ **ChocolateChip: RecipeSection.init(:) + 72**
72 devices

ChocolateShare: __46-[OtherShareViewContro...
13 devices

ChocolateChip: StepsViewController.setUp() +...
8 devices

Filter

ChocolateChip: RecipeSection.init(:) + 268

Thread 0

- 1 libswiftCore.dylib _assertionFailure(_:_:file:line:flags:)
- 2 libswiftCore.dylib default argument 1 of precondition(_:_:file:line:)
- 3 ChocolateChip RecipeSection.init(:)**
- 4 ChocolateChip @objc RecipeDetailViewController.tableView(_:_:titleForHea...
- 5 UIKit -[UITableView _delegateWantsHeaderTitleForSection:]
- 6 UIKit -[UITableView _delegateWantsHeaderForSection:]
- 9 UIKit -[UITableView noteNumberOfRowsChanged]
- 10 UIKit -[UITableView reloadData]
- 11 ChocolateChip RecipeDetailViewController.recipe.didset
- 12 ChocolateChip RecipesViewController.prepare(for:sender:)
- 13 ChocolateChip @objc RecipesViewController.prepare(for:sender:)
- 14 UIKit -[UIStoryboardSegueTemplate _performWithDestinationVi...
- 15 UIKit -[UIStoryboardSegueTemplate _perform:]
- 26 GraphicsServices GSEventRunModal
- 27 UIKit UIApplicationMain
- 28 ChocolateChip main
- 29 libdyld.dylib start

Crash Information

ChocolateChip: RecipeSe...
242 devices

Open in Project...

Crash Log Details

Binary ChocolateChip 1.0 (5)
Thread 0
iOS 11.3 (15E216)
Device iPhone 7 (Model 1660, 1778...

Last 2 Weeks Operating System

242 TOTAL

- iOS 11.3 68%
- iOS 11.2 14%
- iOS 11.1 14%
- iOS 11.0 5%

05/25 05/31 06/07

Notes

No Notes

Mark As Resolved

Archives Crashes Energy

iOS Apps

- ChocolateChip

macOS Apps

- Frosting

tvOS Apps

- Sprinkles

App Store > Build 5

ChocolateChip: RecipeSection.init(:) + 268
242 devices

ChocolateChip: _VariantDictionaryBuffer.ensur...
124 devices

ChocolateChip: RecipeStore.recipes() + 784
108 devices

ChocolateChip: RecipeStore.init(serializedReci...
88 devices

ChocolateWatch: -[ChocolateExporter export...
76 devices

ChocolateShare: -[RecipePackager serializeRe...
42 devices

ChocolateChip: RecipeSection.init(:) + 432
41 devices

ChocolateWatch: -[ChocolateImporter import...
14 devices

ChocolateChip: -[RecipeSync syncSteps] + 268
10 devices

Previous Top Crash Logs

- ChocolateChip: RecipeSection.init(:) + 72
72 devices
- ChocolateShare: __46-[OtherShareViewContro...
13 devices
- ChocolateChip: StepsViewController.setUp() +...
8 devices

Thread 0

- 1 libswiftCore.dylib _assertionFailure(_:_:file:line:flags:)
- 2 libswiftCore.dylib default argument 1 of precondition(_:_:file:line:)
- 3 **ChocolateChip** **RecipeSection.init(:)**
- 4 ChocolateChip @objc RecipeDetailViewController.tableView(_:_:titleForHea...
- 5 UIKit -[UITableView _delegateWantsHeaderTitleForSection:]
- 6 UIKit -[UITableView _delegateWantsHeaderForSection:]
- 9 UIKit -[UITableView noteNumberOfRowsChanged]
- 10 UIKit -[UITableView reloadData]
- 11 ChocolateChip RecipeDetailViewController.recipe.didset
- 12 ChocolateChip RecipesViewController.prepare(for:sender:)
- 13 ChocolateChip @objc RecipesViewController.prepare(for:sender:)

Symbolicate

Show in Finder

Crashes Organizer Help

Crash Information

ChocolateChip: RecipeSe...
242 devices

Open in Project...

Crash Log Details

Binary ChocolateChip 1.0 (5)
Thread 0
iOS 11.3 (15E216)
Device iPhone 7 (Model 1660, 1778...

Last 2 Weeks Operating System

242 TOTAL

- iOS 11.3 68%
- iOS 11.2 14%
- iOS 11.1 14%
- iOS 11.0 5%

05/25 05/31 06/07

Notes

No Notes

Mark As Resolved

Filter

< 1 of 5 >

Reveal Now Clear Reload Share Search

Process: ChocolateChip [3895]
Path: /Users/USER/Library/Developer/CoreSimulator/.../ChocolateChip.app/ChocolateChip
Identifier: ChocolateChip
Version: 1.0 (5)
Code Type: X86-64 (Native)
Parent Process: launchd_sim [3258]
Responsible: ChocolateChip [3895]
User ID: 501

Date/Time: 2018-05-23 11:20:44.432 -0700
OS Version: Mac OS X 10.14 (18A2931)
Report Version: 12
Bridge OS Version: 3.0 (14Y664)
Anonymous UUID: 3F60DCDC-546D-C270-3D2F-1821638D7C62

Sleep/Wake UUID: 97A0FE49-B44E-4FA7-9E5B-F4C0E5656643

Time Awake Since Boot: 7000 seconds
Time Since Wake: 340 seconds

System Integrity Protection: enabled

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_INSTRUCTION (SIGILL)
Exception Codes: 0x0000000000000001, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Illegal instruction: 4
Termination Reason: Namespace SIGNAL, Code 0x4
Terminating Process: exc handler [3895]

Application Specific Information:

Reveal Now Clear Reload Share Search

Process: ChocolateChip [3895]
Path: /Users/USER/Library/Developer/CoreSimulator/.../ChocolateChip.app/ChocolateChip
Identifier: ChocolateChip
Version: 1.0 (5)
Code Type: X86-64 (Native)
Parent Process: launchd_sim [3258]
Responsible: ChocolateChip [3895]
User ID: 501

Summary

Date/Time: 2018-05-23 11:20:44.432 -0700
OS Version: Mac OS X 10.14 (18A2931)
Report Version: 12
Bridge OS Version: 3.0 (14Y664)
Anonymous UUID: 3F60DCDC-546D-C270-3D2F-1821638D7C62

Sleep/Wake UUID: 97A0FE49-B44E-4FA7-9E5B-F4C0E5656643

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Application Specific Information:

Reveal Now Clear Reload Share Search

Process: ChocolateChip [3895]
Path: /Users/USER/Library/Developer/CoreSimulator/.../ChocolateChip.app/ChocolateChip
Identifier: ChocolateChip
Version: 1.0 (5)
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Crashed Thread: 0 Dispatch queue: com.apple.main-thread
Exception Type: EXC_BAD_INSTRUCTION (SIGILL)
Exception Codes: 0x0000000000000001, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY

Crash reason

Termination Signal: Illegal instruction: 4
Termination Reason: Namespace SIGNAL, Code 0x4
Terminating Process: exc handler [3895]

Application Specific Information:

Reveal Now Clear Reload Share Search

Process: ChocolateChip [3895]
Path: /Users/USER/Library/Developer/CoreSimulator/.../ChocolateChip.app/ChocolateChip
Identifier: ChocolateChip
Version: 1.0 (5)
Code Type: X86-64 (Native)
Parent Process: launchd_sim [3258]
Responsible: ChocolateChip [3895]
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Date/Time: 2018-05-23 11:20:44.432 -0700
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Report Version: 12
Bridge OS Version: 3.0 (14Y664)
Anonymous UUID: 3F60DCDC-546D-C270-3D2F-1821638D7C62

Sleep/Wake UUID: 97A0FE49-B44E-4FA7-9E5B-F4C0E5656643

Time Awake Since Boot: 7000 seconds
Time Since Wake: 340 seconds

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Crashed Thread: 0 Dispatch queue: com.apple.main-thread

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Termination Signal: Illegal instruction: 4
Termination Reason: Namespace SIGNAL, Code 0x4
Terminating Process: exc handler [3895]

Application Specific Information:

Reveal Now Clear Reload Share Search

Exception type: EXC_BAD_INSTRUCTION (SIGILL)
Exception Codes: 0x0000000000000001, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Illegal instruction: 4
Termination Reason: Namespace SIGNAL, Code 0x4
Terminating Process: exc handler [3895]

Application Specific Information:
Fatal error: Unexpectedly found nil while unwrapping an Optional value

CoreSimulator 558 - Device: iPhone X - Runtime: iOS 12.0 (16A5288f) - DeviceType: iPhone X

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread

```
0  libswiftCore.dylib      0x00000001032dc1a1 specialized _fatalErrorMessage(_:_:file:line:flags:) + 113
1  libswiftCore.dylib      0x0000000103104023 _fatalErrorMessage(_:_:file:line:flags:) + 19
2  com.cookies.RecipeKit    0x0000000102213cff Recipe.image() + 415 (RecipeImage.swift:26)
3  com.cookies.ChocolateChip 0x0000000101ee205f IngredientsViewController.viewDidLoad() + 559 (IngredientsViewController.swift:21)
4  com.cookies.ChocolateChip 0x0000000101ee24d4 @objc IngredientsViewController.viewDidLoad() + 36
5  com.apple.UIKitCore      0x000000010bdbf6f0 -[UIViewController loadViewIfRequired] + 1186
6  com.apple.UIKitCore      0x000000010bdbfb4f -[UIViewController view] + 27
7  com.apple.UIKitCore      0x000000010bc529c2 -[UITableViewController tableView] + 34
8  com.cookies.ChocolateChip 0x0000000101ee2afa IngredientsViewController.recipe.didset + 1466 (IngredientsViewController.swift:32)
9  com.cookies.ChocolateChip 0x0000000101ee34fa IngredientsViewController.recipe.setter + 330
10 com.cookies.ChocolateChip 0x0000000101ee6539 RecipesViewController.prepare(for:sender:) + 1657 (RecipesViewController.swift:46)
11 com.cookies.ChocolateChip 0x0000000101ee66ea @objc RecipesViewController.prepare(for:sender:) + 218
12 com.apple.UIKitCore      0x000000010bb90902 -[UIStoryboardSegueTemplate _performWithDestinationViewController:sender:] + 182
13 com.apple.UIKitCore      0x000000010bb9081e -[UIStoryboardSegueTemplate _perform:] + 82
14 com.apple.UIKitCore      0x000000010bb90ae0 -[UIStoryboardSegueTemplate perform:] + 157
15 com.apple.UIKitCore      0x000000010bbe9861 -[UITableView _selectRowAtIndexPath:animated:scrollPosition:notifyDelegate:] + 1703
16 com.apple.UIKitCore      0x000000010bbe9aea -[UITableView _userSelectRowAtPendingSelectionIndexPath:] + 344
17 com.apple.UIKitCore      0x000000010b6b47e5 _runAfterCACommitDeferredBlocks + 318
18 com.apple.UIKitCore      0x000000010b6a3968 _cleanUpAfterCAFlushAndRunDeferredBlocks + 384
19 com.apple.UIKitCore      0x000000010b6d317c afterCACommitHandler + 135
```

Reveal Now Clear Reload Share Search

Exception type: EXC_BAD_INSTRUCTION (SIGILL)
Exception Codes: 0x0000000000000001, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Illegal instruction: 4
Termination Reason: Namespace SIGNAL, Code 0x4
Terminating Process: exc handler [3895]

Crash message

Application Specific Information:

Fatal error: Unexpectedly found nil while unwrapping an Optional value

CoreSimulator 558 - Device: iPhone X - Runtime: iOS 12.0 (16A5288f) - DeviceType: iPhone X

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread

```
0  libswiftCore.dylib      0x00000001032dc1a1 specialized _fatalErrorMessage(_:_:file:line:flags:) + 113
1  libswiftCore.dylib      0x0000000103104023 _fatalErrorMessage(_:_:file:line:flags:) + 19
2  com.cookies.RecipeKit    0x0000000102213cff Recipe.image() + 415 (RecipeImage.swift:26)
3  com.cookies.ChocolateChip 0x0000000101ee205f IngredientsViewController.viewDidLoad() + 559 (IngredientsViewController.swift:21)
4  com.cookies.ChocolateChip 0x0000000101ee24d4 @objc IngredientsViewController.viewDidLoad() + 36
5  com.apple.UIKitCore      0x000000010bdbf6f0 -[UIViewController loadViewIfRequired] + 1186
6  com.apple.UIKitCore      0x000000010bdbfb4f -[UIViewController view] + 27
7  com.apple.UIKitCore      0x000000010bc529c2 -[UITableViewController tableView] + 34
8  com.cookies.ChocolateChip 0x0000000101ee2afa IngredientsViewController.recipe.didset + 1466 (IngredientsViewController.swift:32)
9  com.cookies.ChocolateChip 0x0000000101ee34fa IngredientsViewController.recipe.setter + 330
10 com.cookies.ChocolateChip 0x0000000101ee6539 RecipesViewController.prepare(for:sender:) + 1657 (RecipesViewController.swift:46)
11 com.cookies.ChocolateChip 0x0000000101ee66ea @objc RecipesViewController.prepare(for:sender:) + 218
12 com.apple.UIKitCore      0x000000010bb90902 -[UIStoryboardSegueTemplate _performWithDestinationViewController:sender:] + 182
13 com.apple.UIKitCore      0x000000010bb9081e -[UIStoryboardSegueTemplate _perform:] + 82
14 com.apple.UIKitCore      0x000000010bb90ae0 -[UIStoryboardSegueTemplate perform:] + 157
15 com.apple.UIKitCore      0x000000010bbe9861 -[UITableView _selectRowAtIndexPath:animated:scrollPosition:notifyDelegate:] + 1703
16 com.apple.UIKitCore      0x000000010bbe9aea -[UITableView _userSelectRowAtPendingSelectionIndexPath:] + 344
17 com.apple.UIKitCore      0x000000010b6b47e5 _runAfterCACommitDeferredBlocks + 318
18 com.apple.UIKitCore      0x000000010b6a3968 _cleanUpAfterCAFlushAndRunDeferredBlocks + 384
19 com.apple.UIKitCore      0x000000010b6d317c afterCACommitHandler + 135
```




Exception type: EXC_BAD_INSTRUCTION (SIGILL)
 Exception Codes: 0x0000000000000001, 0x0000000000000000
 Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Illegal instruction: 4
 Termination Reason: Namespace SIGNAL, Code 0x4
 Terminating Process: exc handler [3895]

Crash message

Application Specific Information:
 Fatal error: Unexpectedly found nil while unwrapping an Optional value

CoreSimulator 558 - Device: iPhone X - Runtime: iOS 12.0 (16A5288f) - DeviceType: iPhone X

Stack traces

```
Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libswiftCore.dylib      0x00000001032dc1a1 specialized _fatalErrorMessage(_:_:file:line:flags:) + 113
1  libswiftCore.dylib      0x0000000103104023 _fatalErrorMessage(_:_:file:line:flags:) + 19
2  com.cookies.RecipeKit    0x0000000102213cff Recipe.image() + 415 (RecipeImage.swift:26)
3  com.cookies.ChocolateChip 0x0000000101ee205f IngredientsViewController.viewDidLoad() + 559 (IngredientsViewController.swift:21)
4  com.cookies.ChocolateChip 0x0000000101ee24d4 @objc IngredientsViewController.viewDidLoad() + 36
5  com.apple.UIKitCore      0x000000010bdbf6f0 -[UIViewController loadViewIfRequired] + 1186
6  com.apple.UIKitCore      0x000000010bdbfb4f -[UIViewController view] + 27
7  com.apple.UIKitCore      0x000000010bc529c2 -[UITableViewController tableView] + 34
8  com.cookies.ChocolateChip 0x0000000101ee2afa IngredientsViewController.recipe.didset + 1466 (IngredientsViewController.swift:32)
9  com.cookies.ChocolateChip 0x0000000101ee34fa IngredientsViewController.recipe.setter + 330
10 com.cookies.ChocolateChip 0x0000000101ee6539 RecipesViewController.prepare(for:sender:) + 1657 (RecipesViewController.swift:46)
11 com.cookies.ChocolateChip 0x0000000101ee66ea @objc RecipesViewController.prepare(for:sender:) + 218
12 com.apple.UIKitCore      0x000000010bb90902 -[UIStoryboardSegueTemplate _performWithDestinationViewController:sender:] + 182
13 com.apple.UIKitCore      0x000000010bb9081e -[UIStoryboardSegueTemplate _perform:] + 82
14 com.apple.UIKitCore      0x000000010bb90ae0 -[UIStoryboardSegueTemplate perform:] + 157
15 com.apple.UIKitCore      0x000000010bbe9861 -[UITableView _selectRowAtIndexPath:animated:scrollPosition:notifyDelegate:] + 1703
16 com.apple.UIKitCore      0x000000010bbe9aea -[UITableView _userSelectRowAtPendingSelectionIndexPath:] + 344
17 com.apple.UIKitCore      0x000000010b6b47e5 _runAfterCACommitDeferredBlocks + 318
18 com.apple.UIKitCore      0x000000010b6a3968 _cleanUpAfterCAFlushAndRunDeferredBlocks + 384
19 com.apple.UIKitCore      0x000000010b6d317c _afterCACommitHandler + 135
```

Reveal Now Clear Reload Share Search

Exception type: EXC_BAD_INSTRUCTION (SIGILL)
Exception Codes: 0x0000000000000001, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Illegal instruction: 4
Termination Reason: Namespace SIGNAL, Code 0x4
Terminating Process: exc handler [3895]

Application Specific Information:
Fatal error: Unexpectedly found nil while unwrapping an Optional value

CoreSimulator 558 - Device: iPhone X - Runtime: iOS 12.0 (16A5288f) - DeviceType: iPhone X

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread

```
0  libswiftCore.dylib      0x00000001032dc1a1 specialized _fatalErrorMessage(_:_:file:line:flags:) + 113
1  libswiftCore.dylib      0x0000000103104023 _fatalErrorMessage(_:_:file:line:flags:) + 19
2  com.cookies.RecipeKit    0x0000000102213cff Recipe.image() + 415 (RecipeImage.swift:26)
3  com.cookies.ChocolateChip 0x0000000101ee205f IngredientsViewController.viewDidLoad() + 559 (IngredientsViewController.swift:21)
4  com.cookies.ChocolateChip 0x0000000101ee24d4 @objc IngredientsViewController.viewDidLoad() + 36
5  com.apple.UIKitCore      0x000000010bdbf6f0 -[UIViewController loadViewIfRequired] + 1186
6  com.apple.UIKitCore      0x000000010bdbfb4f -[UIViewController view] + 27
7  com.apple.UIKitCore      0x000000010bc529c2 -[UITableViewController tableView] + 34
8  com.cookies.ChocolateChip 0x0000000101ee2afa IngredientsViewController.recipe.didset + 1466 (IngredientsViewController.swift:32)
9  com.cookies.ChocolateChip 0x0000000101ee34fa IngredientsViewController.recipe.setter + 330
10 com.cookies.ChocolateChip 0x0000000101ee6539 RecipesViewController.prepare(for:sender:) + 1657 (RecipesViewController.swift:46)
11 com.cookies.ChocolateChip 0x0000000101ee66ea @objc RecipesViewController.prepare(for:sender:) + 218
12 com.apple.UIKitCore      0x000000010bb90902 -[UIStoryboardSegueTemplate _performWithDestinationViewController:sender:] + 182
13 com.apple.UIKitCore      0x000000010bb9081e -[UIStoryboardSegueTemplate _perform:] + 82
14 com.apple.UIKitCore      0x000000010bb90ae0 -[UIStoryboardSegueTemplate perform:] + 157
15 com.apple.UIKitCore      0x000000010bbe9861 -[UITableView _selectRowAtIndexPath:animated:scrollPosition:notifyDelegate:] + 1703
16 com.apple.UIKitCore      0x000000010bbe9aea -[UITableView _userSelectRowAtPendingSelectionIndexPath:] + 344
17 com.apple.UIKitCore      0x000000010b6b47e5 _runAfterCACommitDeferredBlocks + 318
18 com.apple.UIKitCore      0x000000010b6a3968 _cleanUpAfterCAFlushAndRunDeferredBlocks + 384
19 com.apple.UIKitCore      0x000000010b6d317c afterCACommitHandler + 135
```

Reveal Now Clear Reload Share Search

Thread 1:

0 libsystem_pthread.dylib 0x000000011269a730 start_wqthread + 0

Thread 2:

0 libsystem_pthread.dylib 0x000000011269a730 start_wqthread + 0

Thread 3:

0 libsystem_pthread.dylib 0x000000011269a730 start_wqthread + 0

Thread 4:

0 libsystem_pthread.dylib 0x000000011269a730 start_wqthread + 0

Thread 5:: com.apple.uikit.eventfetch-thread

0 libsystem_kernel.dylib 0x00000001126590d6 mach_msg_trap + 10
1 libsystem_kernel.dylib 0x00000001126585dc mach_msg + 60
2 com.apple.CoreFoundation 0x0000000110e05424 __CFRunLoopServiceMachPort + 212
3 com.apple.CoreFoundation 0x0000000110dfffa09 __CFRunLoopRun + 1705
4 com.apple.CoreFoundation 0x0000000110dff021 CFRunLoopRunSpecific + 625
5 com.apple.Foundation 0x000000010ef16a54 -[NSRunLoop(NSRunLoop) runMode:beforeDate:] + 277
6 com.apple.Foundation 0x000000010ef16c26 -[NSRunLoop(NSRunLoop) runUntilDate:] + 79
7 com.apple.UIKitCore 0x000000011852d4b7 -[UIEventFetcher threadMain] + 118
8 com.apple.Foundation 0x000000010ef2be62 __NSThread__start__ + 1221
9 libsystem_pthread.dylib 0x000000011269ab9b _pthread_body + 126
10 libsystem_pthread.dylib 0x000000011269ab1d _pthread_start + 61
11 libsystem_pthread.dylib 0x000000011269a74d thread_start + 13

Thread 0 crashed with X86 Thread State (64-bit):

rax: 0x0000000a5c12131 rbx: 0x000000010ee61e50 rcx: 0x00000000a5c12131 rdx: 0x00000000a5e12927
rdi: 0x00000000a5e12800 rsi: 0x000060000396f720 rbp: 0x00007fffe0ea3760 rsp: 0x00007fffe0ea3720
r8: 0x0000000000000154 r9: 0x00000000000003720 r10: 0x000000010ede07fb r11: 0x0000000000000030
r12: 0x000000010ee61e8a r13: 0x000060000396f720 r14: 0x0000000000000002 r15: 0x0000000000000039
rip: 0x000000010ff569e1 rfl: 0x0000000000010202 cr2: 0x00007fdf7502c000

Reveal Now Clear Reload Share Search

```
Thread 1:
0  libsystem_pthread.dylib      0x000000011269a730 start_wqthread + 0

Thread 2:
0  libsystem_pthread.dylib      0x000000011269a730 start_wqthread + 0

Thread 3:
0  libsystem_pthread.dylib      0x000000011269a730 start_wqthread + 0

Thread 4:
0  libsystem_pthread.dylib      0x000000011269a730 start_wqthread + 0

Thread 5:: com.apple.uikit.eventfetch-thread
0  libsystem_kernel.dylib       0x00000001126590d6 mach_msg_trap + 10
1  libsystem_kernel.dylib       0x00000001126585dc mach_msg + 60
2  com.apple.CoreFoundation     0x0000000110e05424 __CFRunLoopServiceMachPort + 212
3  com.apple.CoreFoundation     0x0000000110dffa09 __CFRunLoopRun + 1705
4  com.apple.CoreFoundation     0x0000000110dff021 CFRunLoopRunSpecific + 625
5  com.apple.Foundation         0x000000010ef16a54 -[NSRunLoop(NSRunLoop) runMode:beforeDate:] + 277
6  com.apple.Foundation         0x000000010ef16c26 -[NSRunLoop(NSRunLoop) runUntilDate:] + 79
7  com.apple.UIKitCore          0x000000011852d4b7 -[UIEventFetcher threadMain] + 118
8  com.apple.Foundation         0x000000010ef2be62 __NSThread__start__ + 1221
9  libsystem_pthread.dylib      0x000000011269ab9b _pthread_body + 126
10 libsystem_pthread.dylib      0x000000011269ab1d _pthread_start + 61
11 libsystem_pthread.dylib      0x000000011269a74d thread_start + 13
```

More stack traces

Thread 0 crashed with X86 Thread State (64-bit):

```
rax: 0x0000000a5c12131  rbx: 0x000000010ee61e50  rcx: 0x00000000a5c12131  rdx: 0x00000000a5e12927
rdi: 0x00000000a5e12800  rsi: 0x000060000396f720  rbp: 0x00007fffe0ea3760  rsp: 0x00007fffe0ea3720
r8: 0x0000000000000154  r9: 0x0000000000000372  r10: 0x000000010ede07fb  r11: 0x0000000000000030
r12: 0x000000010ee61e8a  r13: 0x000060000396f720  r14: 0x0000000000000002  r15: 0x0000000000000039
rip: 0x000000010ff569e1  rfl: 0x0000000000010202  cr2: 0x00007fdf7502c000
```

Reveal Now Clear Reload Share Search

Thread 1:

0 libsystem_pthread.dylib 0x000000011269a730 start_wqthread + 0

Thread 2:

0 libsystem_pthread.dylib 0x000000011269a730 start_wqthread + 0

Thread 3:

0 libsystem_pthread.dylib 0x000000011269a730 start_wqthread + 0

Thread 4:

0 libsystem_pthread.dylib 0x000000011269a730 start_wqthread + 0

Thread 5:: com.apple.uikit.eventfetch-thread

0 libsystem_kernel.dylib 0x00000001126590d6 mach_msg_trap + 10
1 libsystem_kernel.dylib 0x00000001126585dc mach_msg + 60
2 com.apple.CoreFoundation 0x0000000110e05424 __CFRunLoopServiceMachPort + 212
3 com.apple.CoreFoundation 0x0000000110dfffa09 __CFRunLoopRun + 1705
4 com.apple.CoreFoundation 0x0000000110dff021 CFRunLoopRunSpecific + 625
5 com.apple.Foundation 0x000000010ef16a54 -[NSRunLoop(NSRunLoop) runMode:beforeDate:] + 277
6 com.apple.Foundation 0x000000010ef16c26 -[NSRunLoop(NSRunLoop) runUntilDate:] + 79
7 com.apple.UIKitCore 0x000000011852d4b7 -[UIEventFetcher threadMain] + 118
8 com.apple.Foundation 0x000000010ef2be62 __NSThread__start__ + 1221
9 libsystem_pthread.dylib 0x000000011269ab9b _pthread_body + 126
10 libsystem_pthread.dylib 0x000000011269ab1d _pthread_start + 61
11 libsystem_pthread.dylib 0x000000011269a74d thread_start + 13

Thread 0 crashed with X86 Thread State (64-bit):

rax: 0x0000000a5c12131 rbx: 0x000000010ee61e50 rcx: 0x00000000a5c12131 rdx: 0x00000000a5e12927
rdi: 0x00000000a5e12800 rsi: 0x000060000396f720 rbp: 0x00007fffe0ea3760 rsp: 0x00007fffe0ea3720
r8: 0x0000000000000154 r9: 0x00000000000003720 r10: 0x000000010ede07fb r11: 0x0000000000000030
r12: 0x000000010ee61e8a r13: 0x000060000396f720 r14: 0x0000000000000002 r15: 0x0000000000000039
rip: 0x000000010ff569e1 rfl: 0x0000000000010202 cr2: 0x00007fdf7502c000

Reveal Now Clear Reload Share Search

Thread 0 crashed with X86 Thread State (64-bit):

```
rax: 0x0000000a5c12131  rbx: 0x000000010ee61e50  rcx: 0x0000000a5c12131  rdx: 0x0000000a5e12927
rdi: 0x0000000a5e12800  rsi: 0x000060000396f720  rbp: 0x00007fffe0ea3760  rsp: 0x00007fffe0ea3720
r8: 0x0000000000000154  r9: 0x00000000000003720  r10: 0x000000010ede07fb  r11: 0x0000000000000030
r12: 0x000000010ee61e8a  r13: 0x000060000396f720  r14: 0x0000000000000002  r15: 0x0000000000000039
rip: 0x000000010ff569e1  rfl: 0x0000000000010202  cr2: 0x00007fdf7502c000
```

Logical CPU: 2
Error Code: 0x00000000
Trap Number: 6

Binary Images:

```
0x10ed57000 - 0x10ed6cfff +com.cookies.ChocolateChip (1.0 - 5) <3C263DAC-C610-30C3-88EF-D8CAFC9FF048> /Users/USER/Library/Dev
0x10ed96000 - 0x10eddd747 +dyld_sim (620.3) <24507B9A-F823-3D94-9428-632AE3662134> /Applications/Xcode-beta.app/Contents/Deve
0x10ee2d000 - 0x10ee38ff7 +com.cookies.RecipeFoundation (1.0 - 5) <D885460F-9703-3F04-B363-8A7A599C7751> /Users/USER/Library/
0x10ee60000 - 0x10ee61ff7 +com.cookies.RecipeKit (1.0 - 5) <20B90E28-BC05-37E5-8D31-0B6150FA48E9> /Users/USER/Library/Develo
0x10ee68000 - 0x10f17eff7 com.apple.Foundation (6.9 - 1535.12) <29D5709C-A8AB-35A4-9B62-DE320EB1CB11> /Applications/Xcode-be
0x10f48d000 - 0x10fb3b81f +libobjc.A.dylib (744) <519473CA-B08A-3A17-AFAB-ABC482C41133> /Applications/Xcode-beta.app/Contents
0x10fcf0000 - 0x10fcf1ff7 +libSystem.B.dylib (1252.200.5) <DA951B97-E994-3EDC-ADF6-140BA6942913> /Applications/Xcode-beta.app
0x10fcf8000 - 0x10fcf8fff com.apple.UIKit (1.0 - 61000) <CB224DF1-F85E-38F5-A979-52834A7A1E1E> /Applications/Xcode-beta.app/
0x10fcfc000 - 0x1100d8fff +libswiftCore.dylib (4.2 - 1000.0.16.3) <4D858062-A4EB-3601-8613-299F62B597CD> /Users/USER/Library/
0x1103e3000 - 0x1103e6fff +libswiftCoreFoundation.dylib (4.2 - 1000.0.16.3) <00B70BB1-FBB8-3A65-B3DB-15345B67C39E> /Users/USE
0x1103eb000 - 0x1103fcff7 +libswiftCoreGraphics.dylib (4.2 - 1000.0.16.3) <97679543-2262-3D16-9B1E-D39180603214> /Users/USER/
0x110422000 - 0x110427ff3 +libswiftCoreImage.dylib (4.2 - 1000.0.16.3) <C0A382C8-D8EC-3B3F-9D9E-12D62A4E9E85> /Users/USER/Lib
0x11042c000 - 0x110436fff +libswiftDarwin.dylib (4.2 - 1000.0.16.3) <A8A67BAF-65DF-3451-AA97-43E118BE7DBE> /Users/USER/Librar
0x110449000 - 0x110467fff +libswiftDispatch.dylib (4.2 - 1000.0.16.3) <DD21D075-32CB-3B95-B428-9B1335B0311F> /Users/USER/Libr
0x1104ab000 - 0x110666fff +libswiftFoundation.dylib (4.2 - 1000.0.16.3) <F4E62922-441D-3485-8A1A-CA5ACA64F62E> /Users/USER/Li
0x110812000 - 0x110818ff7 +libswiftMetal.dylib (4.2 - 1000.0.16.3) <918E783C-51DE-35E1-AF65-A485709B37A9> /Users/USER/Library
0x110820000 - 0x110826ff7 +libswiftObjectiveC.dylib (4.2 - 1000.0.16.3) <DFA57703-35B7-3CD3-9332-FE32A7DA8F3A> /Users/USER/Li
0x110831000 - 0x110836ff7 +libswiftQuartzCore.dylib (4.2 - 1000.0.16.3) <76C60E6C-DC8C-34F3-93D4-ACB884511CE7> /Users/USER/Li
0x11083c000 - 0x11086afff +libswiftSwiftOnoneSupport.dylib (4.2 - 1000.0.16.3) <89E701D6-6265-3FDC-AE2C-A0F3BD2A5596> /Users/
0x110840000 - 0x110841fff +libswiftUIKit.dylib (4.2 - 1000.0.16.3) <D0174417-D400-0000-0000-000000000000> /Users/USER/Lib
```

Reveal
Now
Clear
Reload
Share

```

Thread 0 crashed with X86 Thread State (64-bit):
  rax: 0x0000000a5c12131  rbx: 0x000000010ee61e50  rcx: 0x0000000a5c12131  rdx: 0x0000000a5e12927
  rdi: 0x0000000a5e12800  rsi: 0x000060000396f720  rbp: 0x00007fffe0ea3760  rsp: 0x00007fffe0ea3720
   r8: 0x0000000000000154   r9: 0x00000000000003720  r10: 0x000000010ede07fb  r11: 0x0000000000000030
  r12: 0x000000010ee61e8a  r13: 0x000060000396f720  r14: 0x0000000000000002  r15: 0x0000000000000039
  rip: 0x000000010ff569e1  rfl: 0x0000000000010202  cr2: 0x00007fdf7502c000
  
```

Register state

```

Logical CPU:      2
Error Code:      0x00000000
Trap Number:     6
  
```

Binary Images:

```

0x10ed57000 - 0x10ed6cfff +com.cookies.ChocolateChip (1.0 - 5) <3C263DAC-C610-30C3-88EF-D8CAFC9FF048> /Users/USER/Library/Dev
0x10ed96000 - 0x10eddd747 +dyld_sim (620.3) <24507B9A-F823-3D94-9428-632AE3662134> /Applications/Xcode-beta.app/Contents/Deve
0x10ee2d000 - 0x10ee38ff7 +com.cookies.RecipeFoundation (1.0 - 5) <D885460F-9703-3F04-B363-8A7A599C7751> /Users/USER/Library/
0x10ee60000 - 0x10ee61ff7 +com.cookies.RecipeKit (1.0 - 5) <20B90E28-BC05-37E5-8D31-0B6150FA48E9> /Users/USER/Library/Develo
0x10ee68000 - 0x10f17eff7 com.apple.Foundation (6.9 - 1535.12) <29D5709C-A8AB-35A4-9B62-DE320EB1CB11> /Applications/Xcode-be
0x10f48d000 - 0x10fb3b81f +libobjc.A.dylib (744) <519473CA-B08A-3A17-AFAB-ABC482C41133> /Applications/Xcode-beta.app/Contents
0x10fcf0000 - 0x10fcf1ff7 +libSystem.B.dylib (1252.200.5) <DA951B97-E994-3EDC-ADF6-140BA6942913> /Applications/Xcode-beta.app
0x10fcf8000 - 0x10fcf8fff com.apple.UIKit (1.0 - 61000) <CB224DF1-F85E-38F5-A979-52834A7A1E1E> /Applications/Xcode-beta.app/
0x10fcfc000 - 0x1100d8fff +libswiftCore.dylib (4.2 - 1000.0.16.3) <4D858062-A4EB-3601-8613-299F62B597CD> /Users/USER/Library/
0x1103e3000 - 0x1103e6fff +libswiftCoreFoundation.dylib (4.2 - 1000.0.16.3) <00B70BB1-FBB8-3A65-B3DB-15345B67C39E> /Users/USE
0x1103eb000 - 0x1103fcff7 +libswiftCoreGraphics.dylib (4.2 - 1000.0.16.3) <97679543-2262-3D16-9B1E-D39180603214> /Users/USER/
0x110422000 - 0x110427ff3 +libswiftCoreImage.dylib (4.2 - 1000.0.16.3) <C0A382C8-D8EC-3B3F-9D9E-12D62A4E9E85> /Users/USER/Lib
0x11042c000 - 0x110436fff +libswiftDarwin.dylib (4.2 - 1000.0.16.3) <A8A67BAF-65DF-3451-AA97-43E118BE7DBE> /Users/USER/Librar
0x110449000 - 0x110467fff +libswiftDispatch.dylib (4.2 - 1000.0.16.3) <DD21D075-32CB-3B95-B428-9B1335B0311F> /Users/USER/Libr
0x1104ab000 - 0x110666fff +libswiftFoundation.dylib (4.2 - 1000.0.16.3) <F4E62922-441D-3485-8A1A-CA5ACA64F62E> /Users/USER/Li
0x110812000 - 0x110818ff7 +libswiftMetal.dylib (4.2 - 1000.0.16.3) <918E783C-51DE-35E1-AF65-A485709B37A9> /Users/USER/Library
0x110820000 - 0x110826ff7 +libswiftObjectiveC.dylib (4.2 - 1000.0.16.3) <DFA57703-35B7-3CD3-9332-FE32A7DA8F3A> /Users/USER/Li
0x110831000 - 0x110836ff7 +libswiftQuartzCore.dylib (4.2 - 1000.0.16.3) <76C60E6C-DC8C-34F3-93D4-ACB884511CE7> /Users/USER/Li
0x11083c000 - 0x11086afff +libswiftSwiftOnoneSupport.dylib (4.2 - 1000.0.16.3) <89E701D6-6265-3FDC-AE2C-A0F3BD2A5596> /Users/
  
```

Reveal
Now
Clear
Reload
Share

```

Thread 0 crashed with X86 Thread State (64-bit):
  rax: 0x0000000a5c12131  rbx: 0x000000010ee61e50  rcx: 0x0000000a5c12131  rdx: 0x0000000a5e12927
  rdi: 0x0000000a5e12800  rsi: 0x000060000396f720  rbp: 0x00007fffe0ea3760  rsp: 0x00007fffe0ea3720
   r8: 0x0000000000000154   r9: 0x00000000000003720  r10: 0x000000010ede07fb  r11: 0x0000000000000030
  r12: 0x000000010ee61e8a  r13: 0x000060000396f720  r14: 0x0000000000000002  r15: 0x0000000000000039
  rip: 0x000000010ff569e1  rfl: 0x0000000000010202  cr2: 0x00007fdf7502c000
  
```

Register state

```

Logical CPU:      2
Error Code:      0x00000000
Trap Number:     6
  
```

Loaded binaries

```

Binary Images:
0x10ed57000 - 0x10ed6cfff +com.cookies.ChocolateChip (1.0 - 5) <3C263DAC-C610-30C3-88EF-D8CAFC9FF048> /Users/USER/Library/Dev
0x10ed96000 - 0x10eddd747 +dyld_sim (620.3) <24507B9A-F823-3D94-9428-632AE3662134> /Applications/Xcode-beta.app/Contents/Deve
0x10ee2d000 - 0x10ee38ff7 +com.cookies.RecipeFoundation (1.0 - 5) <D885460F-9703-3F04-B363-8A7A599C7751> /Users/USER/Library/
0x10ee60000 - 0x10ee61ff7 +com.cookies.RecipeKit (1.0 - 5) <20B90E28-BC05-37E5-8D31-0B6150FA48E9> /Users/USER/Library/Develop
0x10ee68000 - 0x10f17eff7 com.apple.Foundation (6.9 - 1535.12) <29D5709C-A8AB-35A4-9B62-DE320EB1CB11> /Applications/Xcode-be
0x10f48d000 - 0x10fb3b81f +libobjc.A.dylib (744) <519473CA-B08A-3A17-AFAB-ABC482C41133> /Applications/Xcode-beta.app/Contents
0x10fcf0000 - 0x10fcf1ff7 +libSystem.B.dylib (1252.200.5) <DA951B97-E994-3EDC-ADF6-140BA6942913> /Applications/Xcode-beta.app
0x10fcf8000 - 0x10fcf8fff com.apple.UIKit (1.0 - 61000) <CB224DF1-F85E-38F5-A979-52834A7A1E1E> /Applications/Xcode-beta.app/
0x10fcfc000 - 0x1100d8fff +libswiftCore.dylib (4.2 - 1000.0.16.3) <4D858062-A4EB-3601-8613-299F62B597CD> /Users/USER/Library/
0x1103e3000 - 0x1103e6fff +libswiftCoreFoundation.dylib (4.2 - 1000.0.16.3) <00B70BB1-FBB8-3A65-B3DB-15345B67C39E> /Users/USE
0x1103eb000 - 0x1103fcff7 +libswiftCoreGraphics.dylib (4.2 - 1000.0.16.3) <97679543-2262-3D16-9B1E-D39180603214> /Users/USER/
0x110422000 - 0x110427ff3 +libswiftCoreImage.dylib (4.2 - 1000.0.16.3) <C0A382C8-D8EC-3B3F-9D9E-12D62A4E9E85> /Users/USER/Lib
0x11042c000 - 0x110436fff +libswiftDarwin.dylib (4.2 - 1000.0.16.3) <A8A67BAF-65DF-3451-AA97-43E118BE7DBE> /Users/USER/Librar
0x110449000 - 0x110467fff +libswiftDispatch.dylib (4.2 - 1000.0.16.3) <DD21D075-32CB-3B95-B428-9B1335B0311F> /Users/USER/Libr
0x1104ab000 - 0x110666fff +libswiftFoundation.dylib (4.2 - 1000.0.16.3) <F4E62922-441D-3485-8A1A-CA5ACA64F62E> /Users/USER/Li
0x110812000 - 0x110818ff7 +libswiftMetal.dylib (4.2 - 1000.0.16.3) <918E783C-51DE-35E1-AF65-A485709B37A9> /Users/USER/Library
0x110820000 - 0x110826ff7 +libswiftObjectiveC.dylib (4.2 - 1000.0.16.3) <DFA57703-35B7-3CD3-9332-FE32A7DA8F3A> /Users/USER/Li
0x110831000 - 0x110836ff7 +libswiftQuartzCore.dylib (4.2 - 1000.0.16.3) <76C60E6C-DC8C-34F3-93D4-ACB884511CE7> /Users/USER/Li
0x11083c000 - 0x11086afff +libswiftSwiftOnoneSupport.dylib (4.2 - 1000.0.16.3) <89E701D6-6265-3FDC-AE2C-A0F3BD2A5596> /Users/
  
```


Reveal Now Clear Reload Share Search

Thread 0 crashed with X86 Thread State (64-bit):

```
rax: 0x0000000a5c12131  rbx: 0x000000010ee61e50  rcx: 0x0000000a5c12131  rdx: 0x0000000a5e12927
rdi: 0x0000000a5e12800  rsi: 0x000060000396f720  rbp: 0x00007fffe0ea3760  rsp: 0x00007fffe0ea3720
r8: 0x0000000000000154  r9: 0x00000000000003720  r10: 0x000000010ede07fb  r11: 0x0000000000000030
r12: 0x000000010ee61e8a  r13: 0x000060000396f720  r14: 0x0000000000000002  r15: 0x0000000000000039
rip: 0x000000010ff569e1  rfl: 0x0000000000010202  cr2: 0x00007fdf7502c000
```

Logical CPU: 2
Error Code: 0x00000000
Trap Number: 6

Binary Images:

```
0x10ed57000 - 0x10ed6cfff +com.cookies.ChocolateChip (1.0 - 5) <3C263DAC-C610-30C3-88EF-D8CAFC9FF048> /Users/USER/Library/Dev
0x10ed96000 - 0x10eddd747 +dyld_sim (620.3) <24507B9A-F823-3D94-9428-632AE3662134> /Applications/Xcode-beta.app/Contents/Deve
0x10ee2d000 - 0x10ee38ff7 +com.cookies.RecipeFoundation (1.0 - 5) <D885460F-9703-3F04-B363-8A7A599C7751> /Users/USER/Library/
0x10ee60000 - 0x10ee61ff7 +com.cookies.RecipeKit (1.0 - 5) <20B90E28-BC05-37E5-8D31-0B6150FA48E9> /Users/USER/Library/Develo
0x10ee68000 - 0x10f17eff7 com.apple.Foundation (6.9 - 1535.12) <29D5709C-A8AB-35A4-9B62-DE320EB1CB11> /Applications/Xcode-be
0x10f48d000 - 0x10fb3b81f +libobjc.A.dylib (744) <519473CA-B08A-3A17-AFAB-ABC482C41133> /Applications/Xcode-beta.app/Contents
0x10fcf0000 - 0x10fcf1ff7 +libSystem.B.dylib (1252.200.5) <DA951B97-E994-3EDC-ADF6-140BA6942913> /Applications/Xcode-beta.app
0x10fcf8000 - 0x10fcf8fff com.apple.UIKit (1.0 - 61000) <CB224DF1-F85E-38F5-A979-52834A7A1E1E> /Applications/Xcode-beta.app/
0x10fcfc000 - 0x1100d8fff +libswiftCore.dylib (4.2 - 1000.0.16.3) <4D858062-A4EB-3601-8613-299F62B597CD> /Users/USER/Library/
0x1103e3000 - 0x1103e6fff +libswiftCoreFoundation.dylib (4.2 - 1000.0.16.3) <00B70BB1-FBB8-3A65-B3DB-15345B67C39E> /Users/USE
0x1103eb000 - 0x1103fcff7 +libswiftCoreGraphics.dylib (4.2 - 1000.0.16.3) <97679543-2262-3D16-9B1E-D39180603214> /Users/USER/
0x110422000 - 0x110427ff3 +libswiftCoreImage.dylib (4.2 - 1000.0.16.3) <C0A382C8-D8EC-3B3F-9D9E-12D62A4E9E85> /Users/USER/Lib
0x11042c000 - 0x110436fff +libswiftDarwin.dylib (4.2 - 1000.0.16.3) <A8A67BAF-65DF-3451-AA97-43E118BE7DBE> /Users/USER/Librar
0x110449000 - 0x110467fff +libswiftDispatch.dylib (4.2 - 1000.0.16.3) <DD21D075-32CB-3B95-B428-9B1335B0311F> /Users/USER/Libr
0x1104ab000 - 0x110666fff +libswiftFoundation.dylib (4.2 - 1000.0.16.3) <F4E62922-441D-3485-8A1A-CA5ACA64F62E> /Users/USER/Li
0x110812000 - 0x110818ff7 +libswiftMetal.dylib (4.2 - 1000.0.16.3) <918E783C-51DE-35E1-AF65-A485709B37A9> /Users/USER/Library
0x110820000 - 0x110826ff7 +libswiftObjectiveC.dylib (4.2 - 1000.0.16.3) <DFA57703-35B7-3CD3-9332-FE32A7DA8F3A> /Users/USER/Li
0x110831000 - 0x110836ff7 +libswiftQuartzCore.dylib (4.2 - 1000.0.16.3) <76C60E6C-DC8C-34F3-93D4-ACB884511CE7> /Users/USER/Li
0x11083c000 - 0x11086afff +libswiftSwiftOnoneSupport.dylib (4.2 - 1000.0.16.3) <89E701D6-6265-3FDC-AE2C-A0F3BD2A5596> /Users/
0x110840000 - 0x110841fff +libswiftUIKit.dylib (4.2 - 1000.0.16.3) <D017447B-6000-0000-0000-000000000000> /Users/USER/Lib
```

Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 340 SECONDS

System Integrity Protection: enabled

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_INSTRUCTION (SIGILL)
Exception Codes: 0x0000000000000001, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Illegal instruction: 4
Termination Reason: Namespace SIGNAL, Code 0x4
Terminating Process: exc handler [3895]

Application Specific Information:
Fatal error: Unexpectedly found nil while unwrapping an Optional value

CoreSimulator 558 - Device: iPhone X - Runtime: iOS 12.0 (16A5288f) - DeviceType: iPhone X

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread

```
0  libswiftCore.dylib      0x00000001032dc1a1 specialized _fatalErrorMessage(_:_:file:line:flags:) + 113
1  libswiftCore.dylib      0x0000000103104023 _fatalErrorMessage(_:_:file:line:flags:) + 19
2  com.cookies.RecipeKit    0x0000000102213cff Recipe.image() + 415 (RecipeImage.swift:26)
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6  com.apple.UIKitCore      0x000000010bdbfb4f -[UIViewController view] + 27
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9  com.cookies.ChocolateChip 0x0000000101ee34fa IngredientsViewController.recipe.setter + 330
10 com.cookies.ChocolateChip 0x0000000101ee6539 RecipesViewController.prepare(for:sender:) + 1657 (RecipesViewController.swift:46)
11 com.cookies.ChocolateChip 0x0000000101ee66ea @objc RecipesViewController.prepare(for:sender:) + 218
12 com.apple.UIKitCore      0x000000010bb90902 -[UIStoryboardSegueTemplate _performWithDestinationViewController:sender:] + 182
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```

Reveal Now Clear Reload Share Search

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Reveal Now Clear Reload Share Search

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Reveal Now Clear Reload Share Search

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Reveal Now Clear Reload Share Search

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```

     Search

Reveal Now Clear Reload Share

TIME SINCE WAKE: 340 SECONDS

System Integrity Protection: enabled

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

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Reveal
Now
Clear
Reload
Share
Search

TIME SINCE WAKE:

340 SECONDS

System Integrity Protection: enabled

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```

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```



```
// Source of RecipeImage.swift
```

```
...
```

```
21
```

```
22 private func image() -> UIImage {
```

```
23     let bundle = Bundle(identifier: "com.cookies.RecipeKit")!
```

```
24     let defaultImageURL = bundle.url(forResource: "Default", withExtension: "png")!
```

```
25
```

```
26     return UIImage(contentsOfFile: defaultImageURL.path)!
```

```
27 }
```

```
28
```

```
// Source of RecipeImage.swift
```

```
...
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```
21
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```
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```

Line 26

```
27 }
```

```
28
```

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```
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```
27 }
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```
28
```



Line 26



Forced unwrap operator

```
// Source of RecipeImage.swift

...

21
22 private func image() -> UIImage {
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27 }
28
```

Line 26

Forced unwrap operator

```
Application Specific Information:
Fatal error: Unexpectedly found nil while unwrapping an Optional value
```

Assertions and Preconditions

Assertions and Preconditions

Deliberately halt the process when an error has occurred

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Deliberately halt the process when an error has occurred

Examples:

Assertions and Preconditions

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Examples:

- Forced unwrap of an `Optional` that stores nil

Assertions and Preconditions

Deliberately halt the process when an error has occurred

Examples:

- Forced unwrap of an `Optional` that stores nil
- Out-of-bounds `Swift.Array` access

Assertions and Preconditions

Deliberately halt the process when an error has occurred

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- Swift arithmetic overflow

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Deliberately halt the process when an error has occurred

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Assertions and Preconditions

Deliberately halt the process when an error has occurred

Examples:

- Forced unwrap of an `Optional` that stores nil
- Out-of-bounds `Swift.Array` access
- Swift arithmetic overflow
- Uncaught exception
- Custom assertion in your code

Terminations by the Operating System

Terminations by the Operating System

Watchdog events

Terminations by the Operating System

Watchdog events

Device overheated

Terminations by the Operating System

Watchdog events

Device overheated

Memory exhaustion

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Invalid code signature

Terminations by the Operating System

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Invalid code signature

These crash logs are available in the Devices window

Terminations by the Operating System

Watchdog events

Device overheated

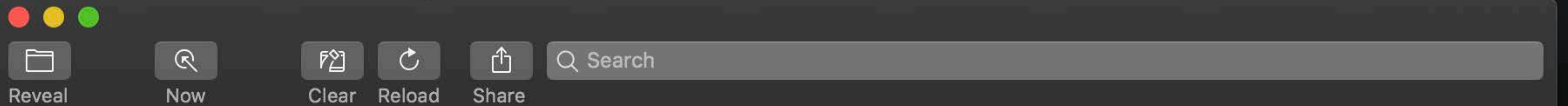
Memory exhaustion

Invalid code signature

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TN2151 at developer.apple.com
Understanding and Analyzing
Application Crash Reports



```
IDENTIFIER: com.cookies.chocolatechip
Version: 5 (1.0)
Code Type: ARM-64 (Native)
Role: Foreground
Parent Process: launchd [1]
Coalition: com.cookies.ChocolateChip [509]
```

```
Date/Time: 2018-05-31 08:34:52.1139 -0700
Launch Time: 2018-05-31 08:34:32.0773 -0700
OS Version: iPhone OS 11.3.1 (15E302)
Baseband Version: 1.89.00
Report Version: 104
```

```
Exception Type: EXC_CRASH (SIGKILL)
Exception Codes: 0x0000000000000000, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY
```

```
Termination Reason: Namespace SPRINGBOARD, Code 0x8badf00d
```

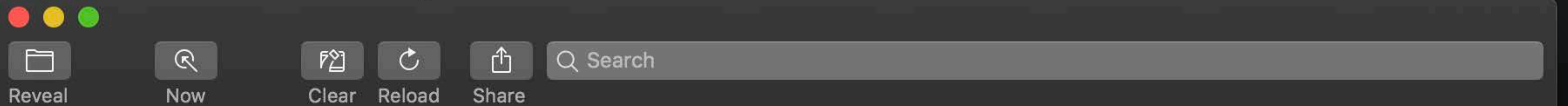
```
Termination Description: SPRINGBOARD, scene-create watchdog transgression: com.cookies.ChocolateChip exhausted real (wall clock) time allowance of 19.97 seconds | | ProcessVisibility: Foreground | ProcessState: Running | WatchdogEvent: scene-create | WatchdogVisibility: Foreground | WatchdogCPUStatistics: ( | "Elapsed total CPU time (seconds): 22.120 (user 22.120, system 0.000), 18% CPU", | "Elapsed application CPU time (seconds): 20.008, 17% CPU" | )
```

```
Triggered by Thread: 0
```

```
Thread 0 name: Dispatch queue: com.apple.main-thread
```

```
Thread 0 Crashed:
```

```
0  UIKit 0x000000018b8c6ee0 -[UIViewController loadViewIfRequired] + 1020
1  UIKit 0x000000018b974e98 -[UINavigationController _updateScrollViewFromViewController:toView
2  UIKit 0x000000018b974354 -[UINavigationController _startTransition:fromViewController:toViewC
3  UIKit 0x000000018b973c90 -[UINavigationController _startDeferredTransitionIfNeeded:] + 1164
4  UIKit 0x000000018b973720 -[UINavigationController __viewWillLayoutSubviews] + 164
5  UIKit 0x000000018b974720 -[UILayoutContainerView layoutSubviews] + 188
```



```
IDENTIFIER: com.cookies.ChocolateChip
Version: 5 (1.0)
Code Type: ARM-64 (Native)
Role: Foreground
Parent Process: launchd [1]
Coalition: com.cookies.ChocolateChip [509]
```

```
Date/Time: 2018-05-31 08:34:52.1139 -0700
Launch Time: 2018-05-31 08:34:32.0773 -0700
OS Version: iPhone OS 11.3.1 (15E302)
Baseband Version: 1.89.00
Report Version: 104
```

```
Exception Type: EXC_CRASH (SIGKILL)
Exception Codes: 0x0000000000000000, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY
Termination Reason: Namespace SPRINGBOARD, Code 0x8badf00d
Termination Description: SPRINGBOARD, scene-create watchdog transgression: com.cookies.ChocolateChip exhausted real (wall clock) time allowance of 19.97 seconds | | ProcessVisibility: Foreground | ProcessState: Running | WatchdogEvent: scene-create | WatchdogVisibility: Foreground | WatchdogCPUStatistics: ( | "Elapsed total CPU time (seconds): 22.120 (user 22.120, system 0.000), 18% CPU", | "Elapsed application CPU time (seconds): 20.008, 17% CPU" | )
Triggered by Thread: 0
```

```
Thread 0 name: Dispatch queue: com.apple.main-thread
```

```
Thread 0 Crashed:
0  UIKit 0x000000018b8c6ee0 -[UIViewController loadViewIfRequired] + 1020
1  UIKit 0x000000018b974e98 -[UINavigationController _updateScrollViewFromViewController:toView
2  UIKit 0x000000018b974354 -[UINavigationController _startTransition:fromViewController:toViewC
3  UIKit 0x000000018b973c90 -[UINavigationController _startDeferredTransitionIfNeeded:] + 1164
4  UIKit 0x000000018b973720 -[UINavigationController __viewWillLayoutSubviews] + 164
5  UIKit 0x000000018b974720 -[UILayoutContainerView layoutSubviews] + 188
```

```

Reveal Now Clear Reload Share Search
IDENTIFIER: com.cookies.ChocolateChip
Version: 5 (1.0)
Code Type: ARM-64 (Native)
Role: Foreground
Parent Process: launchd [1]
Coalition: com.cookies.ChocolateChip [509]

Date/Time: 2018-05-31 08:34:52.1139 -0700
Launch Time: 2018-05-31 08:34:32.0773 -0700
OS Version: iPhone OS 11.3.1 (15E302)
Baseband Version: 1.89.00
Report Version: 104

Exception Type: EXC_CRASH (SIGKILL)
Exception Codes: 0x0000000000000000, 0x0000000000000000
Exception Note: EXC_CORPSE_NOTIFY
Termination Reason: Namespace SPRINGBOARD, Code 0x8badf00d
Termination Description: SPRINGBOARD, scene-create watchdog transgression: com.cookies.ChocolateChip exhausted real (wall
clock) time allowance of 19.97 seconds | | ProcessVisibility: Foreground | ProcessState: Running | WatchdogEvent: scene-
create | WatchdogVisibility: Foreground | WatchdogCPUStatistics: ( | "Elapsed total CPU time (seconds): 22.120 (user 22.120,
system 0.000), 18% CPU", | "Elapsed application CPU time (seconds): 20.008, 17% CPU" | )
Triggered by Thread: 0

Thread 0 name: Dispatch queue: com.apple.main-thread
Thread 0 Crashed:
0  UIKit 0x000000018b8c6ee0 -[UIViewController loadViewIfRequired] + 1020
1  UIKit 0x000000018b974e98 -[UINavigationController _updateScrollViewFromViewController:toView
2  UIKit 0x000000018b974354 -[UINavigationController _startTransition:fromViewController:toViewC
3  UIKit 0x000000018b973c90 -[UINavigationController _startDeferredTransitionIfNeeded:] + 1164
4  UIKit 0x000000018b973720 -[UINavigationController __viewWillLayoutSubviews] + 164
5  UIKit 0x000000018b974720 -[UILayoutContainerView layoutSubviews] + 188

```

```

Reveal Now Clear Reload Share Search
IDENTIFIER: com.cookies.ChocolateChip
Version: 5 (1.0)
Code Type: ARM-64 (Native)
Role: Foreground
Parent Process: launchd [1]
Coalition: com.cookies.ChocolateChip [509]

Date/Time: 2018-05-31 08:34:52.1139 -0700
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Exception Type: EXC_CRASH (SIGKILL)
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Thread 0 name: Dispatch queue: com.apple.main-thread
Thread 0 Crashed:
0  UIKit 0x000000018b8c6ee0 -[UIViewController loadViewIfRequired] + 1020
1  UIKit 0x000000018b974e98 -[UINavigationController _updateScrollViewFromViewController:toView
2  UIKit 0x000000018b974354 -[UINavigationController _startTransition:fromViewController:toViewC
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4  UIKit 0x000000018b973720 -[UINavigationController __viewWillLayoutSubviews] + 164
5  UIKit 0x000000018b974720 -[UILayoutContainerView layoutSubviews] + 188

```

Avoiding Launch Timeouts

Avoiding Launch Timeouts

Frequent crash reason in app review

Avoiding Launch Timeouts

Frequent crash reason in app review

Disabled in Simulator and in the debugger

Avoiding Launch Timeouts

Frequent crash reason in app review

Disabled in Simulator and in the debugger

Test your app

Avoiding Launch Timeouts

Frequent crash reason in app review

Disabled in Simulator and in the debugger

Test your app

- without the debugger

Avoiding Launch Timeouts

Frequent crash reason in app review

Disabled in Simulator and in the debugger

Test your app

- without the debugger
- on a real device

Avoiding Launch Timeouts

Frequent crash reason in app review

Disabled in Simulator and in the debugger

Test your app

- without the debugger
- on a real device
- on older hardware

Memory Errors

```

Crashed Thread:      0  Dispatch queue: com.apple.main-thread

Exception Type:      EXC_BAD_ACCESS (SIGSEGV)
Exception Codes:     KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note:      EXC_CORPSE_NOTIFY

Termination Signal:  Segmentation fault: 11
Termination Reason:  Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT          0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW  /usr/lib/dyld
-->
  MALLOC_TINY         00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib    0x00007fff6011713c objc_release + 28
1  RideSharingApp     0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib    0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3  libobjc.A.dylib    0x00007fff60117276 objc_destructInstance + 76
4  libobjc.A.dylib    0x00007fff60117218 object_dispose + 22
5  RideSharingApp     0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp     0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib      0x00007fff610a2ee1 start + 1

```



```
Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1  RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3  libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4  libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:

__LINKEDIT 0000000113bc3000-0000000113beb000 [160K] r--/rwx SM=COW /usr/lib/dyld
-->
MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0 libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1 RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2 libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3 libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4 libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5 RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6 RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7 libdyld.dylib 0x00007fff610a2ee1 start + 1

Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:

__LINKEDIT 0000000113bc3000-0000000113beb000 [160K] r--/rwx SM=COW /usr/lib/dyld
-->
MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread

0	libobjc.A.dylib	0x00007fff6011713c	objc_release + 28
1	RideSharingApp	0x00000001000022ea	@objc LoginViewController.__ivar_destroyer + 42
2	libobjc.A.dylib	0x00007fff6011ed66	object_cxxDestructFromClass(objc_object*, objc_class
3	libobjc.A.dylib	0x00007fff60117276	objc_destructInstance + 76
4	libobjc.A.dylib	0x00007fff60117218	object_dispose + 22
5	RideSharingApp	0x0000000100002493	Initialize() + 339 (main.swift:33)
6	RideSharingApp	0x0000000100001e75	main + 245 (main.swift:37)
7	libdyld.dylib	0x00007fff610a2ee1	start + 1

Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:

--> __LINKEDIT 000000113bc3000-000000113beb000 [160K] r--/rwx SM=COW /usr/lib/dyld
MALLOC_TINY 00007fdd5e40000-00007fdd5e80000 [4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread

0	libobjc.A.dylib	0x00007fff6011713c	objc_release + 28
1	RideSharingApp	0x00000001000022ea	@objc LoginViewController.__ivar_destroyer + 42
2	libobjc.A.dylib	0x00007fff6011ed66	object_cxxDestructFromClass(objc_object*, objc_class)
3	libobjc.A.dylib	0x00007fff60117276	objc_destructInstance + 76
4	libobjc.A.dylib	0x00007fff60117218	object_dispose + 22
5	RideSharingApp	0x0000000100002493	Initialize() + 339 (main.swift:33)
6	RideSharingApp	0x0000000100001e75	main + 245 (main.swift:37)
7	libdyld.dylib	0x00007fff610a2ee1	start + 1

```
TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1  RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3  libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
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5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

```
Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
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5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

```
TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1  RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3  libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4  libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

```
Reveal Now Clear Reload Share Search
Time since wake: 07:00 seconds

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: KERN_INVALID_ADDRESS at 7fdd5e70700
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1  RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class)
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7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```



```
Reveal Now Clear Reload Share Search
Time since wake: 07:00 seconds

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: KERN_INVALID_ADDRESS at 7fdd5e70700
Termination Reason: Namespace MALLOC_TINY 7fdd5e400000-00007fdd5e800000
Terminating Process: exc handler

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

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0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
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5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

```
Reveal Now Clear Reload Share Search

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: SIGSEGV KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Termination Reason: Namespace MALLOC_TINY
Terminating Process: exc handler 0x000007fdd5e40000-000007fdd5e80000

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

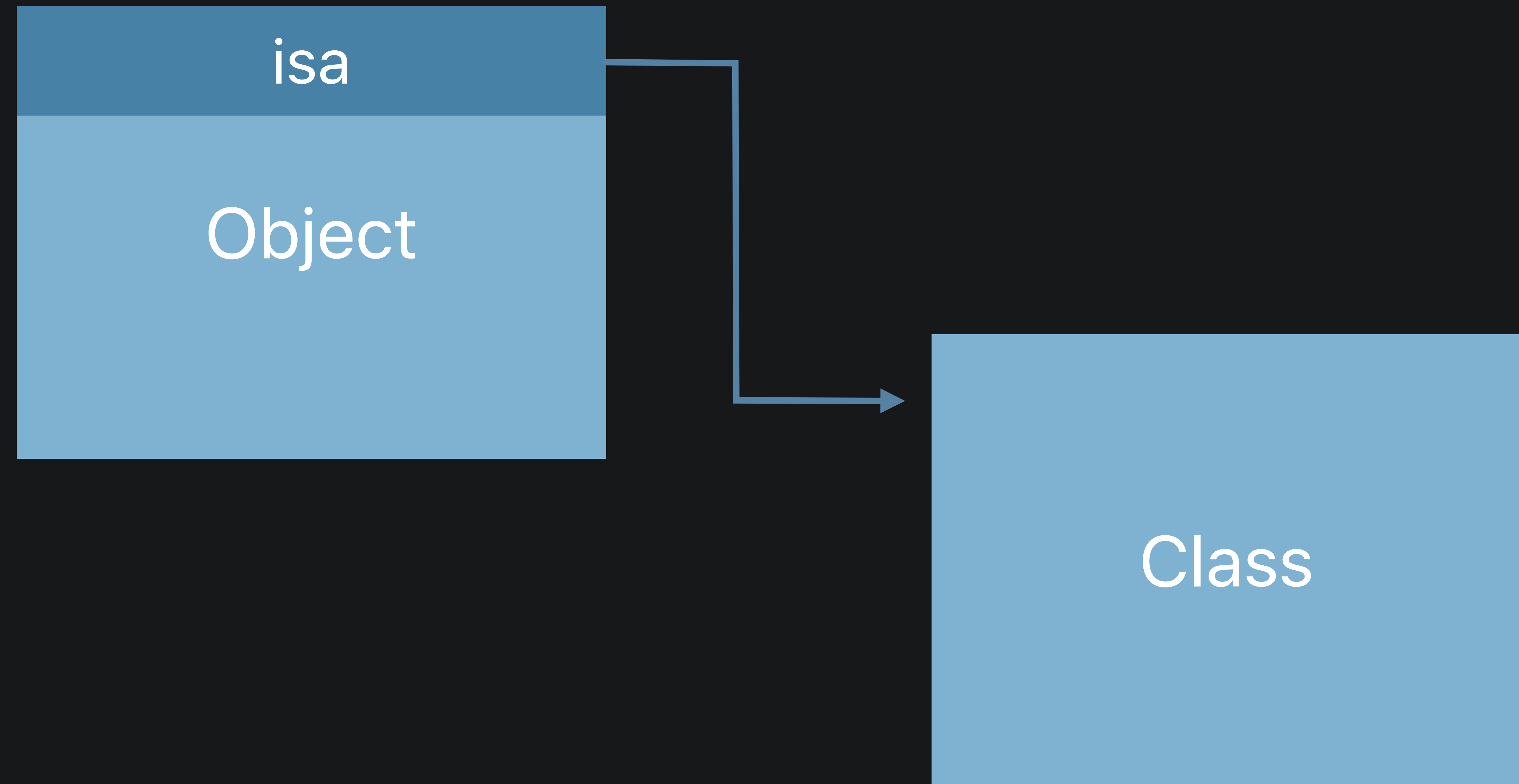
Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1  RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class)
3  libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4  libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

KERN_INVALID_ADDRESS at
MALLOC_TINY

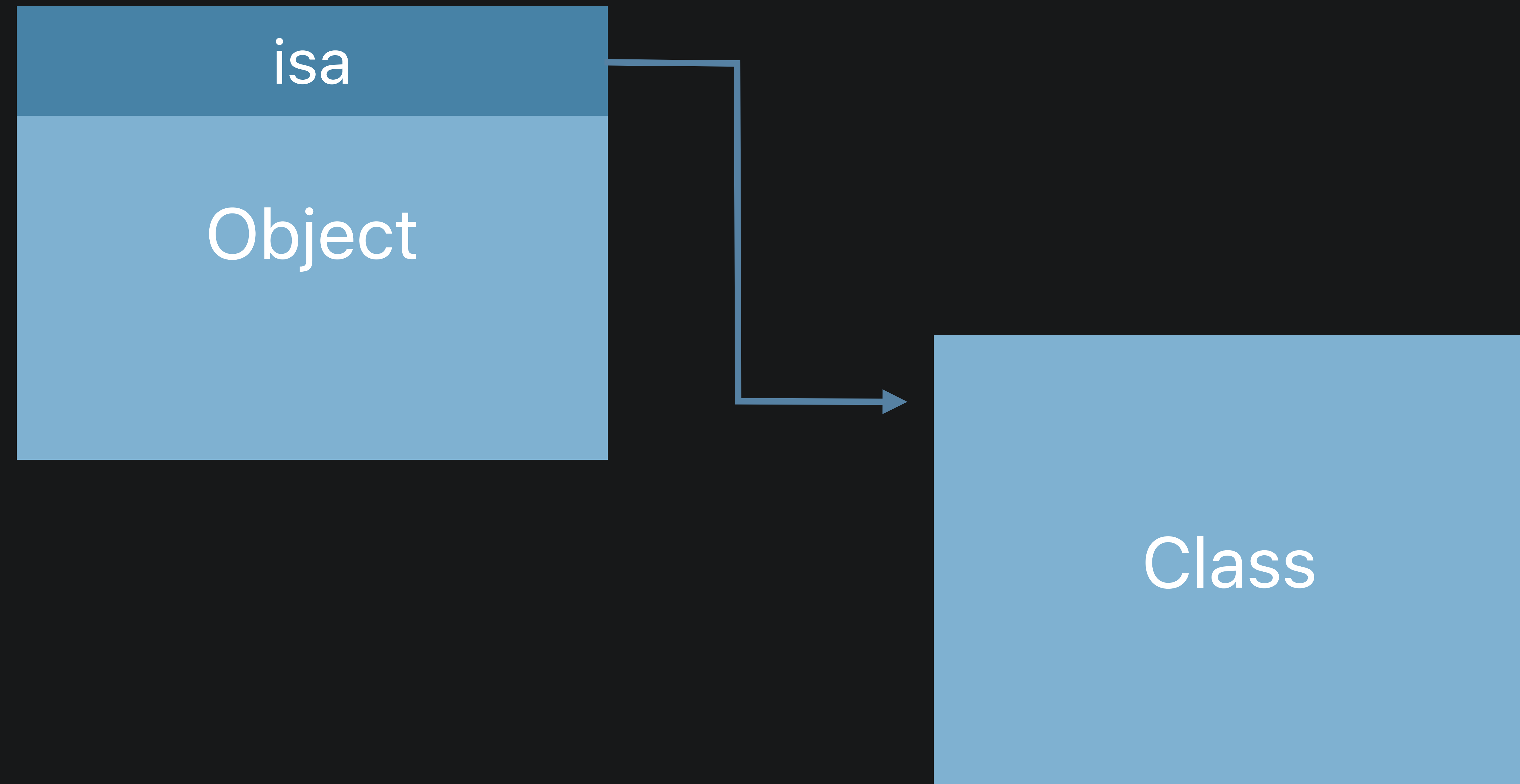
7fdd5e70700
7fdd5e400000-00007fdd5e800000



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

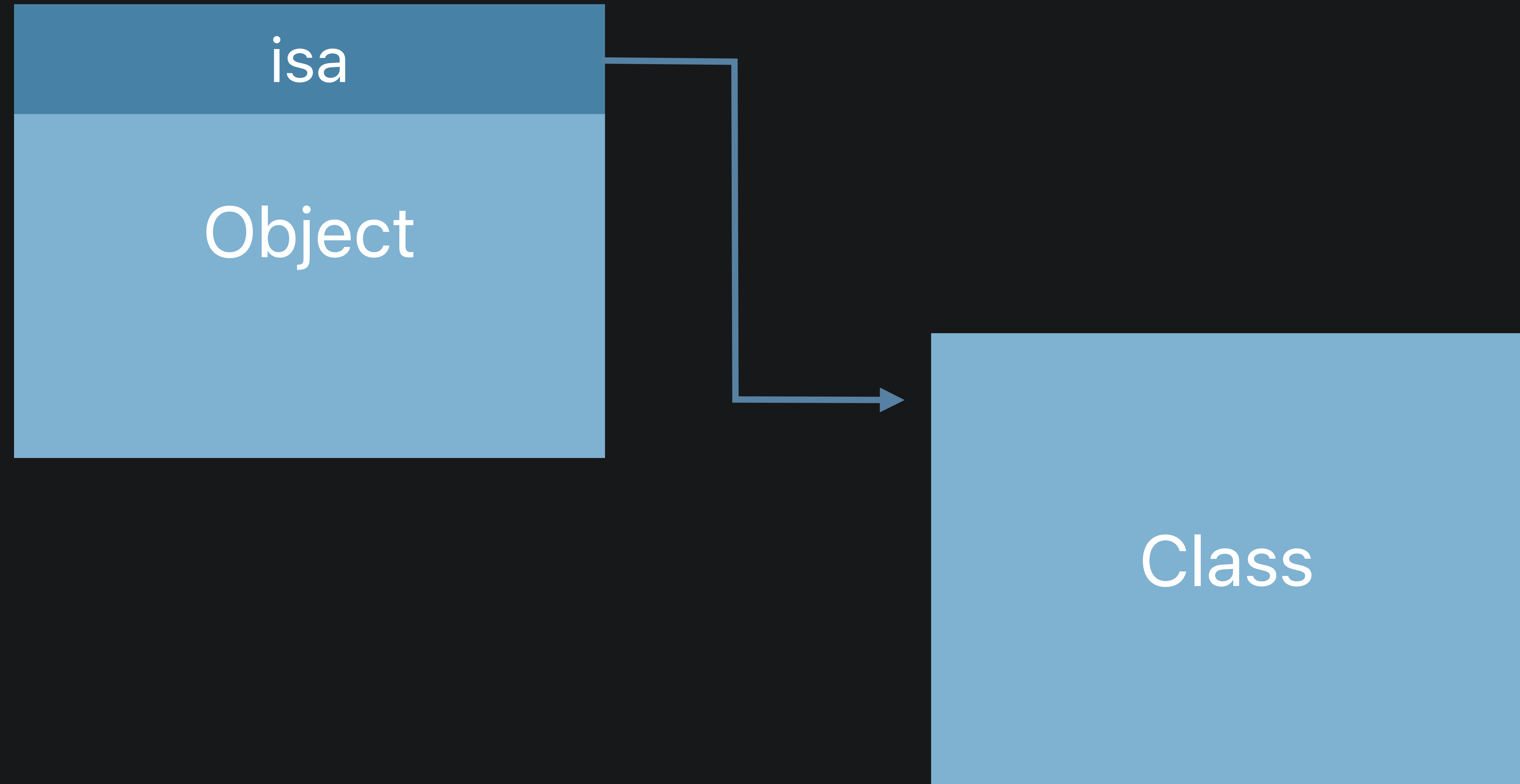
objc_release:



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

objc_release:



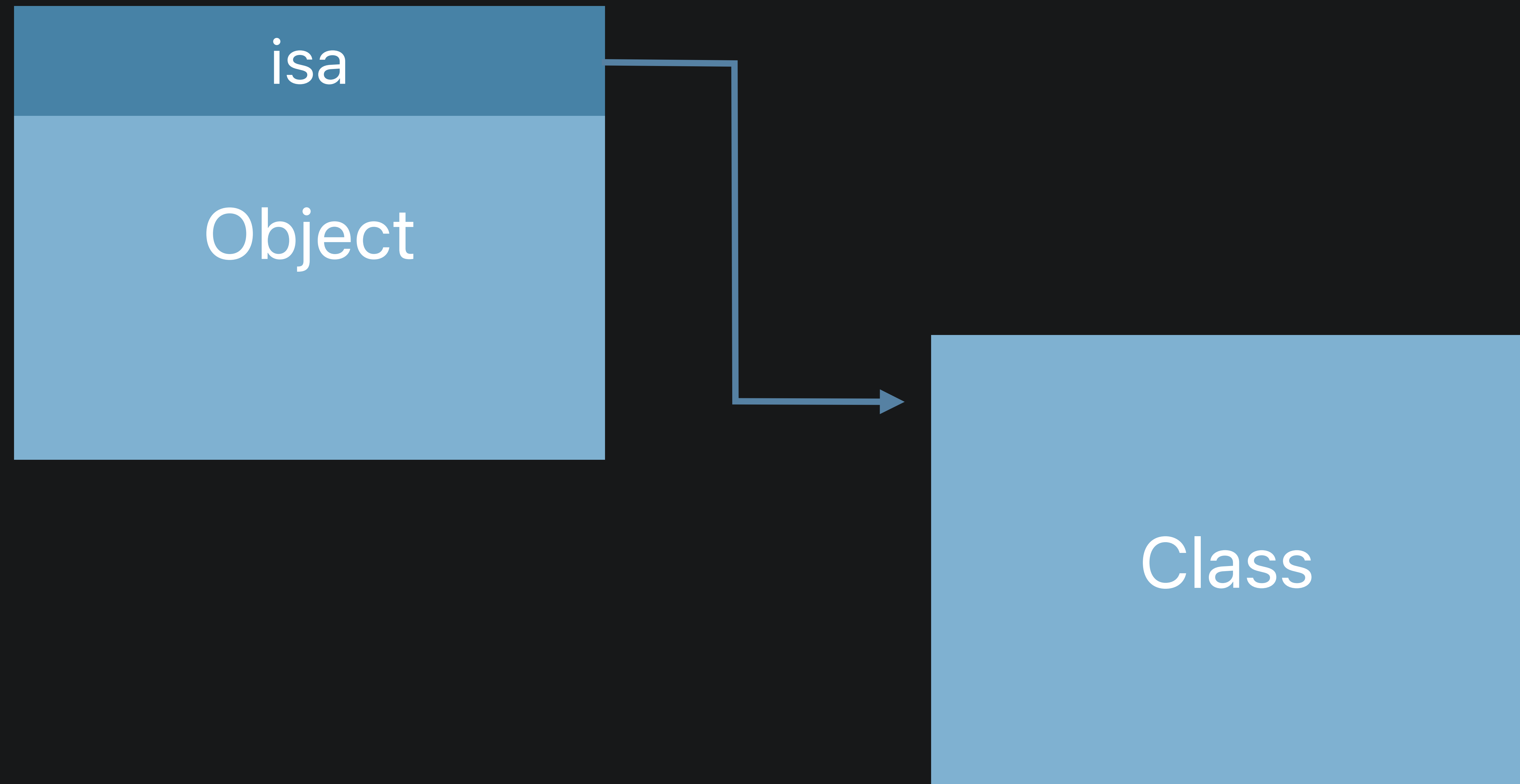
KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

objc_release:



dereference



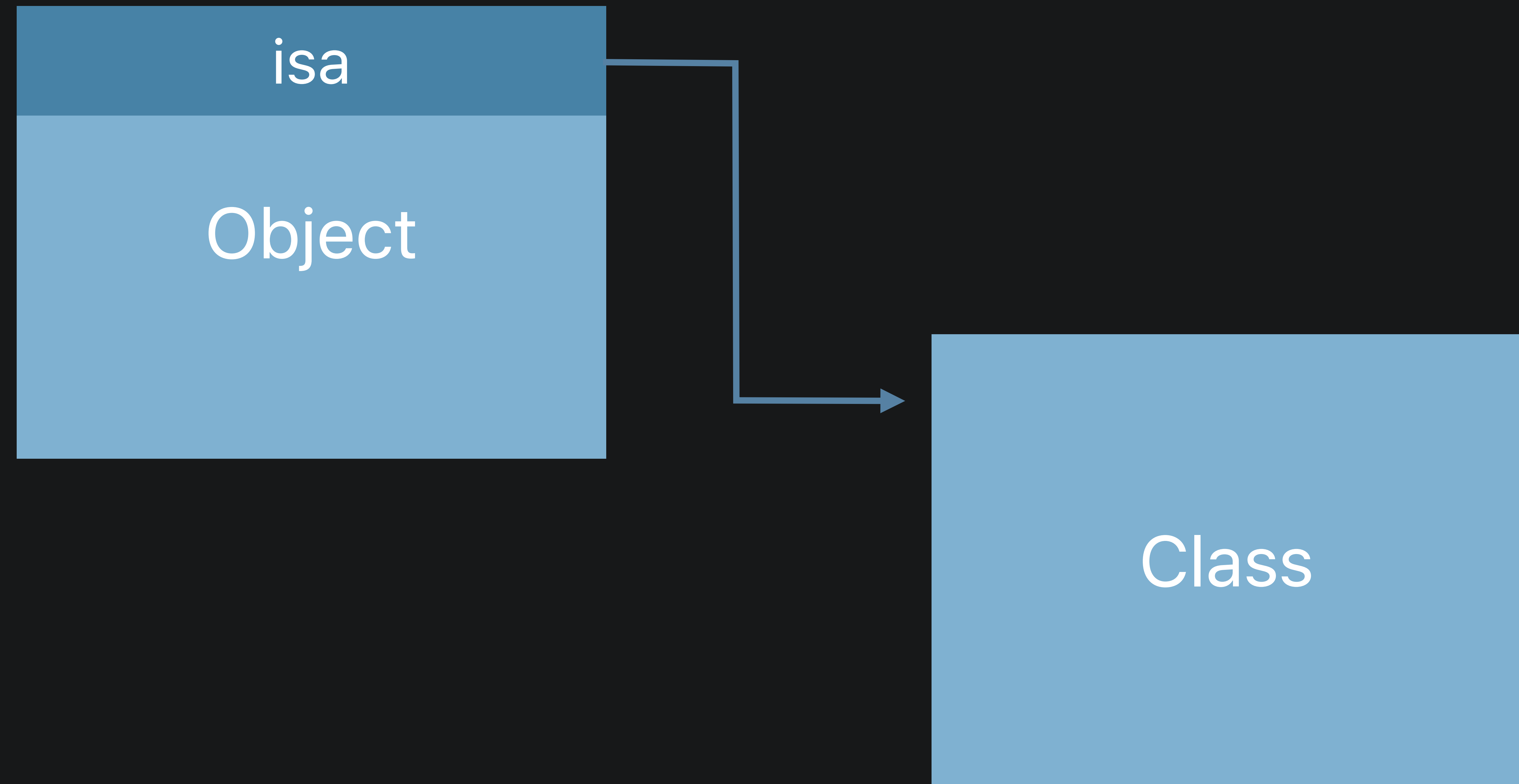
KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

objc_release:

isa

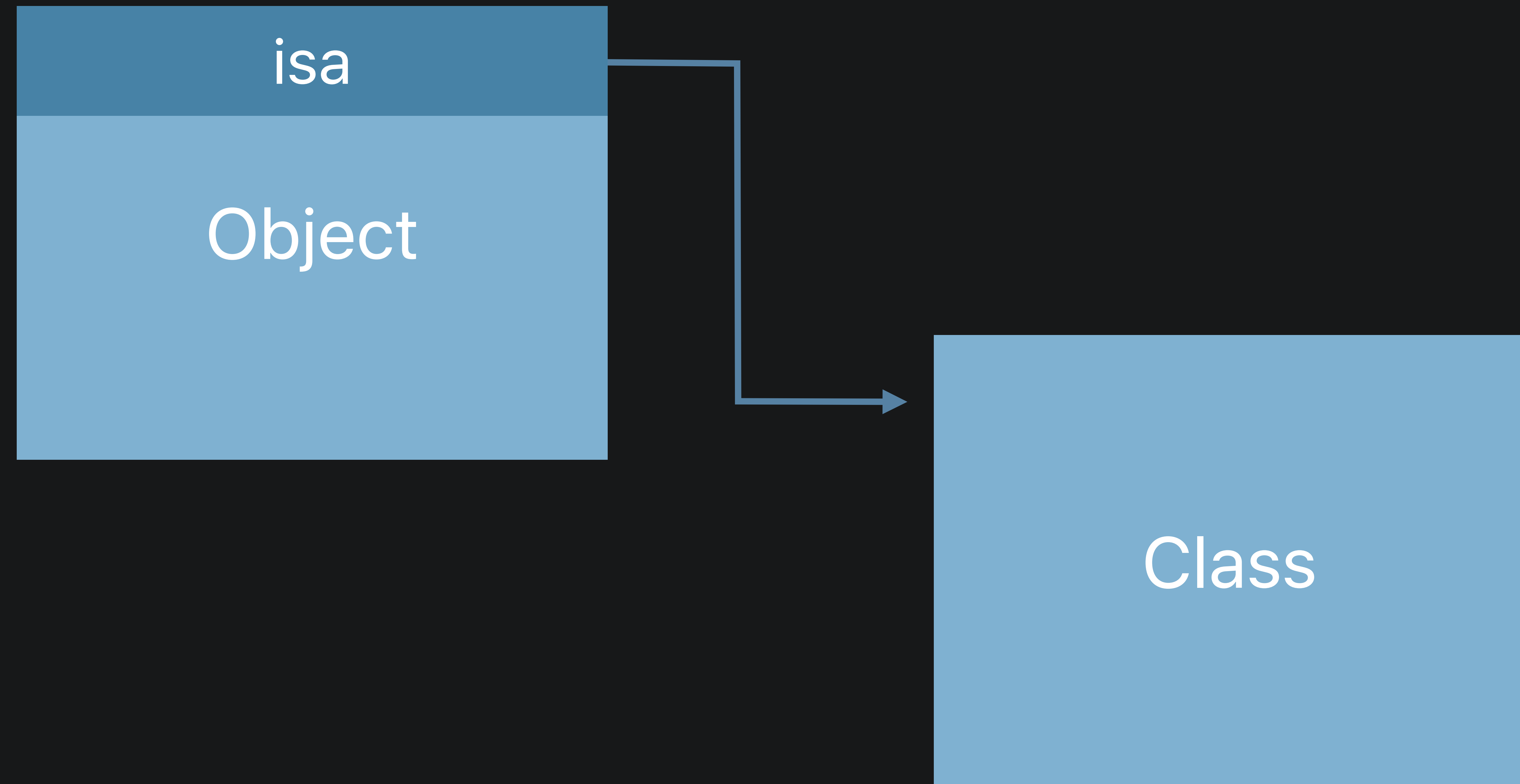
dereference



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

free/dealloc:



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

free/dealloc:



Freed
object

KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

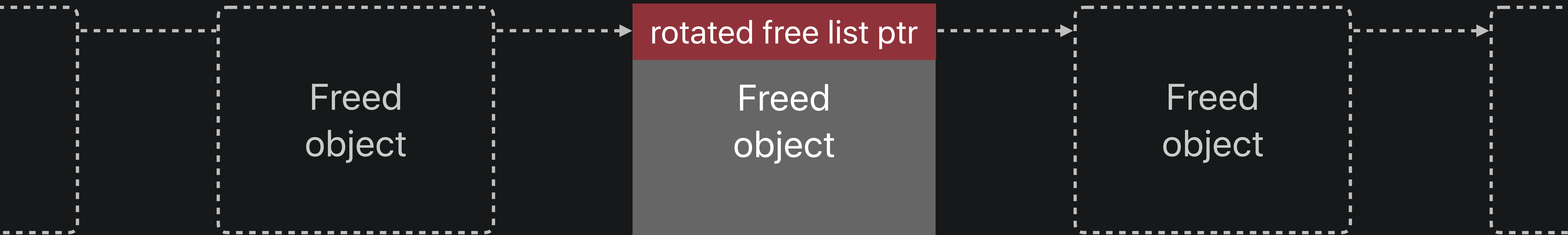
free/dealloc:



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

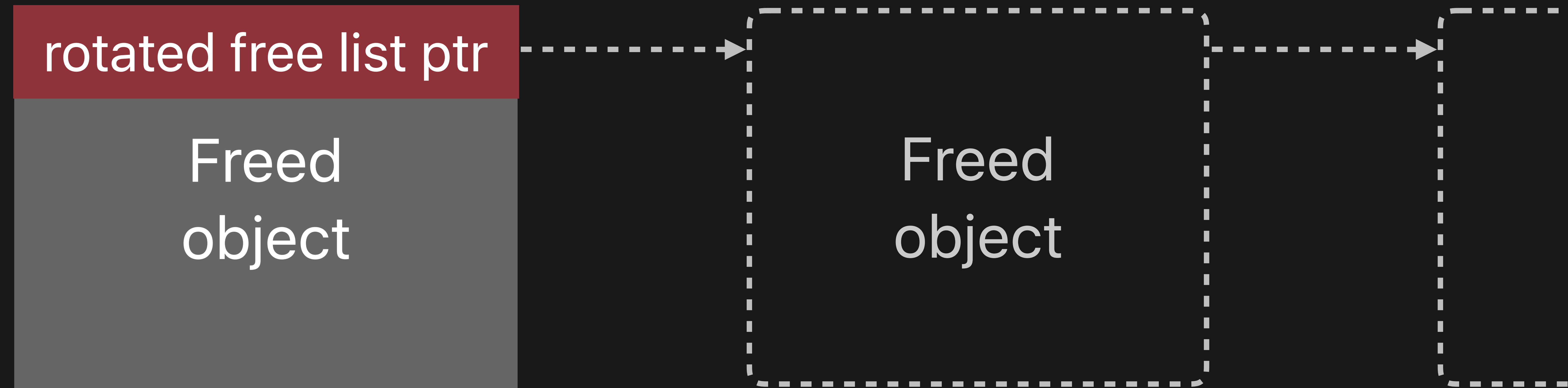
free/dealloc:



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

objc_release:



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

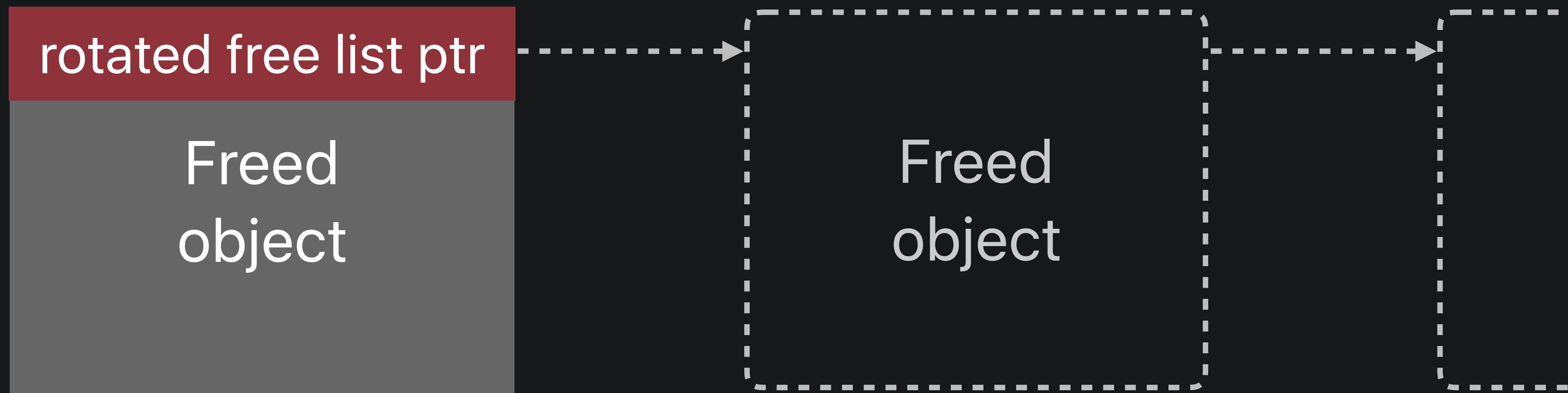
objc_release:

rotated free list ptr

rotated free list ptr

Freed
object

Freed
object



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

objc_release:

rotated free list ptr

dereference

rotated free list ptr

Freed
object

Freed
object



KERN_INVALID_ADDRESS at
MALLOC_TINY

7fdd5e70700
7fdd5e400000-00007fdd5e800000

objc_release:

rotated free list ptr

dereference



rotated free list ptr

Freed
object

Freed
object




```
TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1  RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3  libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4  libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

```
Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0 libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1 RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2 libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class)
3 libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4 libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5 RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6 RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7 libdyld.dylib 0x00007fff610a2ee1 start + 1
```

```
Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
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Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0 libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1 RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2 libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3 libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4 libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5 RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6 RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7 libdyld.dylib 0x00007fff610a2ee1 start + 1
```

```
Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1  RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3  libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4  libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

Reveal Now Clear Reload Share Search

Time since wake: 07:00 seconds

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:

__LINKEDIT 000000113bc3000-000000113beb000 [160K] r--/rwx SM=COW /usr/lib/dyld
-->
MALLOC_TINY 0007fdd5e400000-0007fdd5e800000 [4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread

0 libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1 RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2 libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3 libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4 libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5 RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6 RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7 libdyld.dylib 0x00007fff610a2ee1 start + 1

Compiler-generated function

```
// LoginViewController.swift

class LoginViewController: UIViewController {
    var userName: String
    var database: DatabaseProxy
    var views: [UIView]
    ...
}
```

```
Reveal Now Clear Reload Share Search

TIME SINCE WAKE: 07:00 SECONDS

Crashed Thread: 0 Dispatch queue: com.apple.main-thread

Exception Type: EXC_BAD_ACCESS (SIGSEGV)
Exception Codes: KERN_INVALID_ADDRESS at 0x000007fdd5e70700
Exception Note: EXC_CORPSE_NOTIFY

Termination Signal: Segmentation fault: 11
Termination Reason: Namespace SIGNAL, Code 0xb
Terminating Process: exc handler [0]

VM Regions Near 0x7fdd5e70700:
  __LINKEDIT 0000000113bc3000-0000000113beb000 [ 160K] r--/rwx SM=COW /usr/lib/dyld
-->
  MALLOC_TINY 00007fdd5e400000-00007fdd5e800000 [ 4096K] rw-/rwx SM=PRV

Thread 0 Crashed:: Dispatch queue: com.apple.main-thread
0  libobjc.A.dylib 0x00007fff6011713c objc_release + 28
1  RideSharingApp 0x00000001000022ea @objc LoginViewController.__ivar_destroyer + 42
2  libobjc.A.dylib 0x00007fff6011ed66 object_cxxDestructFromClass(objc_object*, objc_class
3  libobjc.A.dylib 0x00007fff60117276 objc_destructInstance + 76
4  libobjc.A.dylib 0x00007fff60117218 object_dispose + 22
5  RideSharingApp 0x0000000100002493 Initialize() + 339 (main.swift:33)
6  RideSharingApp 0x0000000100001e75 main + 245 (main.swift:37)
7  libdyld.dylib 0x00007fff610a2ee1 start + 1
```

\$ 11db

(11db)


```
$ lldb
```

```
(lldb) command script import lldb.macosx.crashlog
```

```
"crashlog" and "save_crashlog" command installed...
```

```
...
```

```
(lldb)
```

```
$ lldb
(lldb) command script import lldb.macosx.crashlog
"crashlog" and "save_crashlog" command installed...
...
(lldb) crashlog /Users/.../RideSharingApp-2018-05-24-1.crash
...
Thread[0] EXC_BAD_ACCESS (SIGSEGV) (0x000007fdd5e70700)
[ 0] 0x00007fff6011713c libobjc.A.dylib`objc_release + 28
[ 1] 0x00000001000022ea RideSharingApp`@objc LoginViewController.__ivar_destroyer + 42
[ 2] 0x00007fff6011ed66 libobjc.A.dylib`object_cxxDestructFromClass + 127
[ 3] 0x00007fff60117276 libobjc.A.dylib`objc_destructInstance + 76
[ 4] 0x00007fff60117218 libobjc.A.dylib`object_dispose + 22
[ 5] 0x0000000100002493 RideSharingApp`Initialize (main.swift:33)
[ 6] 0x0000000100001e75 RideSharingApp`main (main.swift:37)
[ 7] 0x00007fff610a2ee1 libdyld.dylib`start + 1
...
(lldb)
```


...

(lldb) disassemble -a 0x1000022ea

RideSharingApp`@objc LoginViewController.__ivar_destroyer:

```
0x1000022c0 <+0>:  pushq  %rbp
0x1000022c1 <+1>:  movq   %rsp, %rbp
0x1000022c4 <+4>:  pushq  %rbx
0x1000022c5 <+5>:  pushq  %rax
0x1000022c6 <+6>:  movq   %rdi, %rbx
0x1000022c9 <+9>:  movq   0x551e40(%rip), %rax      ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq   0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq  0x1004adc90              ; swift_unknownRelease
0x1000022da <+26>: movq   0x551e37(%rip), %rax      ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq   (%rbx,%rax), %rdi
0x1000022e5 <+37>: callq  0x1004bf9e6              ; symbol stub for: objc_release
0x1000022ea <+42>: movq   0x551e2f(%rip), %rax      ; direct field offset for LoginViewController.views
0x1000022f1 <+49>: movq   (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq   $0x8, %rsp
0x1000022f9 <+57>: popq   %rbx
0x1000022fa <+58>: popq   %rbp
0x1000022fb <+59>: jmp    0x1004adec0              ; swift_bridgeObjectRelease
```

...

(lldb) `disassemble -a 0x1000022ea`

RideSharingApp`@objc LoginViewController.__ivar_destructor:

```
0x1000022c0 <+0>:  pushq  %rbp
0x1000022c1 <+1>:  movq   %rsp, %rbp
0x1000022c4 <+4>:  pushq  %rbx
0x1000022c5 <+5>:  pushq  %rax
0x1000022c6 <+6>:  movq   %rdi, %rbx

0x1000022c9 <+9>:  movq   0x551e40(%rip), %rax      ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq   0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq  0x1004adc90              ; swift_unknownRelease

0x1000022da <+26>: movq   0x551e37(%rip), %rax      ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq   (%rbx,%rax), %rdi
0x1000022e5 <+37>: callq  0x1004bf9e6              ; symbol stub for: objc_release

0x1000022ea <+42>: movq   0x551e2f(%rip), %rax      ; direct field offset for LoginViewController.views
0x1000022f1 <+49>: movq   (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq   $0x8, %rsp
0x1000022f9 <+57>: popq   %rbx
0x1000022fa <+58>: popq   %rbp
0x1000022fb <+59>: jmp    0x1004adec0              ; swift_bridgeObjectRelease
```

...

(lldb) disassemble -a 0x1000022ea

RideSharingApp`@objc LoginViewController.__ivar_destroyer:

```
0x1000022c0 <+0>: pushq %rbp
0x1000022c1 <+1>: movq %rsp, %rbp
0x1000022c4 <+4>: pushq %rbx
0x1000022c5 <+5>: pushq %rax
0x1000022c6 <+6>: movq %rdi, %rbx

0x1000022c9 <+9>: movq 0x551e40(%rip), %rax ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq 0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq 0x1004adc90 ; swift_unknownRelease

0x1000022da <+26>: movq 0x551e37(%rip), %rax ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq (%rbx,%rax), %rdi
0x1000022e5 <+37>: callq 0x1004bf9e6 ; symbol stub for: objc_release

0x1000022ea <+42>: movq 0x551e2f(%rip), %rax ; direct field offset for LoginViewController.views
0x1000022f1 <+49>: movq (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq $0x8, %rsp
0x1000022f9 <+57>: popq %rbx
0x1000022fa <+58>: popq %rbp
0x1000022fb <+59>: jmp 0x1004adec0 ; swift_bridgeObjectRelease
```

Releases .userName

movq 0x551e40(%rip), %rax
movq 0x10(%rbx,%rax), %rdi
callq 0x1004adc90

direct field offset for LoginViewController.userName

```
...
(lldb) disassemble -a 0x1000022ea
RideSharingApp`@objc LoginViewController.__ivar_destructor:
```

```
0x1000022c0 <+0>:  pushq  %rbp
0x1000022c1 <+1>:  movq   %rsp, %rbp
0x1000022c4 <+4>:  pushq  %rbx
0x1000022c5 <+5>:  pushq  %rax
0x1000022c6 <+6>:  movq   %rdi, %rbx

0x1000022c9 <+9>:  movq   0x551e40(%rip), %rax      ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq   0x10(%rbx,%rax), %rdi
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0x1000022ea <+42>: movq   0x551e2f(%rip), %rax      ; direct field offset for LoginViewController.views
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0x1000022f5 <+53>: addq   $0x8, %rsp
0x1000022f9 <+57>: popq   %rbx
0x1000022fa <+58>: popq   %rbp
0x1000022fb <+59>: jmp    0x1004adec0              ; swift_bridgeObjectRelease
```

Releases .database

0x1000022da <+26>: movq 0x551e37(%rip), %rax
0x1000022e1 <+33>: movq (%rbx,%rax), %rdi
0x1000022e5 <+37>: callq 0x1004bf9e6

0x1000022da <+26>: movq 0x551e37(%rip), %rax ; direct field offset for LoginViewController.database

```
...
(lldb) disassemble -a 0x1000022ea
RideSharingApp`@objc LoginViewController.__ivar_destructor:
```

```
0x1000022c0 <+0>:  pushq  %rbp
0x1000022c1 <+1>:  movq   %rsp, %rbp
0x1000022c4 <+4>:  pushq  %rbx
0x1000022c5 <+5>:  pushq  %rax
0x1000022c6 <+6>:  movq   %rdi, %rbx

0x1000022c9 <+9>:  movq   0x551e40(%rip), %rax           ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq   0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq  0x1004adc90                   ; swift_unknownRelease

0x1000022da <+26>: movq   0x551e37(%rip), %rax           ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq   (%rbx,%rax), %rdi
0x1000022e5 <+37>: callq  0x1004bf9e6                   ; objc_release

0x1000022ea <+42>: movq   0x551e2f(%rip), %rax           ; direct field offset for LoginViewController.views
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0x1000022f5 <+53>: addq   $0x8, %rsp
0x1000022f9 <+57>: popq   %rbx
0x1000022fa <+58>: popq   %rbp
0x1000022fb <+59>: jmp    0x1004adec0                   ; swift_bridgeObjectRelease
```

Releases .views

```
0x1000022ea <+42>: movq   0x551e2f(%rip), %rax
0x1000022f1 <+49>: movq   (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq   $0x8, %rsp
0x1000022f9 <+57>: popq   %rbx
0x1000022fa <+58>: popq   %rbp
0x1000022fb <+59>: jmp    0x1004adec0
```

```
; direct field offset for LoginViewController.views
```



...

(lldb) disassemble -a 0x1000022ea

RideSharingApp`@objc LoginViewController.__ivar_destroyer:

```
0x1000022c0 <+0>:  pushq  %rbp
0x1000022c1 <+1>:  movq   %rsp, %rbp
0x1000022c4 <+4>:  pushq  %rbx
0x1000022c5 <+5>:  pushq  %rax
0x1000022c6 <+6>:  movq   %rdi, %rbx

0x1000022c9 <+9>:  movq   0x551e40(%rip), %rax      ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq   0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq  0x1004adc90              ; swift_unknownRelease

0x1000022da <+26>: movq   0x551e37(%rip), %rax      ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq   (%rbx,%rax), %rdi
0x1000022e5 <+37>: callq  0x1004bf9e6              ; symbol stub for: objc_release

0x1000022ea <+42>: movq   0x551e2f(%rip), %rax      ; direct field offset for LoginViewController.views
0x1000022f1 <+49>: movq   (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq   $0x8, %rsp
0x1000022f9 <+57>: popq   %rbx
0x1000022fa <+58>: popq   %rbp
0x1000022fb <+59>: jmp    0x1004adec0              ; swift_bridgeObjectRelease
```

...

(lldb) `disassemble -a 0x1000022ea`

RideSharingApp`@objc LoginViewController.__ivar_destroyer:

```
0x1000022c0 <+0>:  pushq  %rbp
0x1000022c1 <+1>:  movq   %rsp, %rbp
0x1000022c4 <+4>:  pushq  %rbx      objc_release + 28
0x1000022c5 <+5>:  pushq  %rax      @objc LoginViewController.__ivar_destroyer + 42
0x1000022c6 <+6>:  movq   %rdi, %rbx

0x1000022c9 <+9>:  movq   0x551e40(%rip), %rax      ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq   0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq  0x1004adc90      ; swift_unknownRelease

0x1000022da <+26>: movq   0x551e37(%rip), %rax      ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq   (%rbx,%rax), %rdi
0x1000022e5 <+37>: callq  0x1004bf9e6      ; symbol stub for: objc_release

0x1000022ea <+42>: movq   0x551e2f(%rip), %rax      ; direct field offset for LoginViewController.views
0x1000022f1 <+49>: movq   (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq   $0x8, %rsp
0x1000022f9 <+57>: popq   %rbx
0x1000022fa <+58>: popq   %rbp
0x1000022fb <+59>: jmp    0x1004adec0      ; swift_bridgeObjectRelease
```

...

(lldb) disassemble -a 0x1000022ea

RideSharingApp`@objc LoginViewController.__ivar_destroyer:

```
0x1000022c0 <+0>: pushq %rbp
0x1000022c1 <+1>: movq %rsp, %rbp
0x1000022c4 <+4>: pushq %rbx
0x1000022c5 <+5>: pushq %rax
0x1000022c6 <+6>: movq %rdi, %rbx

0x1000022c9 <+9>: movq 0x551e40(%rip), %rax ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq 0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq 0x1004adc90 ; swift_unknownRelease

0x1000022da <+26>: movq 0x551e37(%rip), %rax ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq (%rbx,%rax), %rdi
0x1000022e5 <+37>: callq 0x1004bf9e6 ; symbol stub for: objc_release

<+42>: movq 0x551e2f(%rip), %rax ; direct field offset for LoginViewController.views
0x1000022f1 <+49>: movq (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq $0x8, %rsp
0x1000022f9 <+57>: popq %rbx
0x1000022fa <+58>: popq %rbp
0x1000022fb <+59>: jmp 0x1004adec0 ; swift_bridgeObjectRelease
```

...

(lldb) disassemble -a 0x1000022ea

RideSharingApp`@objc LoginViewController.__ivar_destroyer:

```
0x1000022c0 <+0>: pushq %rbp
0x1000022c1 <+1>: movq %rsp, %rbp
0x1000022c4 <+4>: pushq %rbx
0x1000022c5 <+5>: pushq %rax
0x1000022c6 <+6>: movq %rdi, %rbx

0x1000022c9 <+9>: movq 0x551e40(%rip), %rax ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq 0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq 0x1004adc90 ; swift_unknownRelease

0x1000022da <+26>: movq 0x551e37(%rip), %rax ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq (%rbx,%rax), %rdi
0x1000022e4 <+37>: callq 0x1004bf9e6 ; symbol stub for: objc_release

0x1000022ea <+42>: movq 0x551e2f(%rip), %rax ; direct field offset for LoginViewController.views
0x1000022f1 <+49>: movq (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq $0x8, %rsp
0x1000022f9 <+57>: popq %rbx
0x1000022fa <+58>: popq %rbp
0x1000022fb <+59>: jmp 0x1004adec0 ; swift_bridgeObjectRelease
```

...

(lldb) disassemble -a 0x1000022ea

RideSharingApp`@objc LoginViewController.__ivar_destructor:

```
0x1000022c0 <+0>: pushq %rbp
0x1000022c1 <+1>: movq %rsp, %rbp
0x1000022c4 <+4>: pushq %rbx          objc_release + 28
0x1000022c5 <+5>: pushq %rax          @objc LoginViewController.__ivar_destructor + 42
0x1000022c6 <+6>: movq %rdi, %rbx

0x1000022c9 <+9>: movq 0x551e40(%rip), %rax ; direct field offset for LoginViewController.userName
0x1000022d0 <+16>: movq 0x10(%rbx,%rax), %rdi
0x1000022d5 <+21>: callq 0x1004adc90 ; swift_unknownRelease

0x1000022da <+26>: movq 0x551e37(%rip), %rax ; direct field offset for LoginViewController.database
0x1000022e1 <+33>: movq (%rbx,%rax), %rdi
0x1000022e8 <+37>: callq 0x1004bf9e6 ; symbol stub for: objc_release

0x1000022ea <+42>: movq 0x551e2f(%rip), %rax ; direct field offset for LoginViewController.views
0x1000022f1 <+49>: movq (%rbx,%rax), %rdi
0x1000022f5 <+53>: addq $0x8, %rsp
0x1000022f9 <+57>: popq %rbx
0x1000022fa <+58>: popq %rbp
0x1000022fb <+59>: jmp 0x1004adec0 ; swift_bridgeObjectRelease
```

```
// LoginViewController.swift

class LoginViewController: UIViewController {
    var userName: String
    var database: DatabaseProxy
    var views: [UIView]
    ...
}
```

```
// LoginViewController.swift
```

```
class LoginViewController: UIViewController {
```

```
    var userName: String
```

```
    var database: DatabaseProxy // TODO: This property is being over-released.
```

```
    var views: [UIView]
```

```
    ...
```

```
}
```

Crash Log Analysis Summary

Crash Log Analysis Summary

Understand the crash reason

Crash Log Analysis Summary

Understand the crash reason

Examine the crashed thread's stack trace

Crash Log Analysis Summary

Understand the crash reason

Examine the crashed thread's stack trace

Look for more clues in bad address and disassembly

Common Memory Error Symptoms

Common Memory Error Symptoms

Crash in `objc_msgSend` or retain/release

<code>libobjc.A.dylib</code>	<code>0x00007fff6011713c</code>	<code>objc_release + 28</code>
<code>libswiftCore.dylib</code>	<code>0x00000001053ac99c</code>	<code>_swift_release_dealloc + 16</code>
<code>libobjc.A.dylib</code>	<code>0x00000001a7315870</code>	<code>objc_object::release() + 16</code>
<code>libobjc.A.dylib</code>	<code>0x00000001a7314198</code>	<code>objc_retain + 8</code>

Common Memory Error Symptoms

Crash in `objc_msgSend` or retain/release

<code>libobjc.A.dylib</code>	<code>0x00007fff6011713c</code>	<code>objc_release + 28</code>
<code>libswiftCore.dylib</code>	<code>0x00000001053ac99c</code>	<code>_swift_release_dealloc + 16</code>
<code>libobjc.A.dylib</code>	<code>0x00000001a7315870</code>	<code>objc_object::release() + 16</code>
<code>libobjc.A.dylib</code>	<code>0x00000001a7314198</code>	<code>objc_retain + 8</code>

Unrecognized selector exception

```
Application Specific Information:  
*** Terminating app due to uncaught exception 'NSInvalidArgumentException', reason:  
'-[NSURL _isResizable]: unrecognized selector sent to instance 0x280742c40'
```

Common Memory Error Symptoms

Crash in `objc_msgSend` or `retain/release`

<code>libobjc.A.dylib</code>	<code>0x00007fff6011713c</code>	<code>objc_release + 28</code>
<code>libswiftCore.dylib</code>	<code>0x00000001053ac99c</code>	<code>_swift_release_dealloc + 16</code>
<code>libobjc.A.dylib</code>	<code>0x00000001a7315870</code>	<code>objc_object::release() + 16</code>
<code>libobjc.A.dylib</code>	<code>0x00000001a7314198</code>	<code>objc_retain + 8</code>

Unrecognized selector exception

```
Application Specific Information:  
*** Terminating app due to uncaught exception 'NSInvalidArgumentException', reason:  
'-[NSURL _isResizable]: unrecognized selector sent to instance 0x280742c40'
```

`abort()` inside `malloc/free`

Crash Analysis Tips

Crash Analysis Tips

Look at code other than the line that crashed

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Look at code other than the line that crashed

Look at thread stack traces other than the crashed thread

Crash Analysis Tips

Look at code other than the line that crashed

Look at thread stack traces other than the crashed thread

Look at more than one crash log

Crash Analysis Tips

Look at code other than the line that crashed

Look at thread stack traces other than the crashed thread

Look at more than one crash log

Use Address Sanitizer and Zombies to reproduce memory errors

Multithreading Issues

Kuba Mracek, Program Analysis Engineer

Demo

Diagnosing a multithreading bug using Thread Sanitizer

Thread Sanitizer Detects Multithreading Issues

Thread Sanitizer Detects Multithreading Issues

Reliably reproduces multithreaded bugs

Thread Sanitizer Detects Multithreading Issues

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Works in Simulator

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Only finds bugs in code that is exercised

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Only finds bugs in code that is exercised

Apple **Xcode** File Edit View Find Navigate Editor **Product** Debug Source Control Window Help

Apple Xcode File Edit View Find Navigate Editor Product Debug Source Control Window Help

Run ⌘R

Test ⌘U

Profile ⌘I

Analyze ⌘⇧B

Archive

Build For ▶

Perform Action ▶

Build ⌘B

Clean Build Folder ⌘⇧K

Stop ⌘.

Scheme ▶

Destination ▶

Create Bot...

- Run ⌘R
- Test ⌘U
- Profile ⌘I
- Analyze ⇧⌘B
- Archive
- Build For ▶
- Perform Action ▶
- Build ⌘B
- Clean Build Folder ⇧⌘K
- Stop ⌘.
- Scheme ▶**
- Destination ▶
- Create Bot...

- Choose Scheme ^O
- Select Next Scheme ^⌘]
- Select Previous Scheme ^⌘[
- Edit Scheme... ⌘<**
- New Scheme...
- Manage Schemes...
- ✓ ChocolateChip
- RecipeFoundation
- RecipeKit

- ▶️ 🛠️ **Build**
3 targets
- ▶️ ▶️ **Run**
Debug
- ▶️ 🛠️ **Test**
Debug
- ▶️ 📊 **Profile**
Release
- ▶️ 📊 **Analyze**
Debug
- ▶️ 📦 **Archive**
Release

Info

Arguments

Options

Diagnostics

Build Configuration

Executable

Debug executable

Debug Process As Me (baker)

root

Launch Automatically

Wait for executable to be launched

Duplicate Scheme

Manage Schemes...

Shared

Close

- ▶ **Build**
3 targets
- ▶ ▶ **Run**
Debug
- ▶ **Test**
Debug
- ▶ **Profile**
Release
- ▶ **Analyze**
Debug
- ▶ **Archive**
Release

Info	Arguments	Options	Diagnostics
	Runtime Sanitization Requires recompilation	<input type="checkbox"/> Address Sanitizer <input type="checkbox"/> Detect use of stack after return	
		<input type="checkbox"/> Thread Sanitizer <input type="checkbox"/> Pause on issues	
		<input type="checkbox"/> Undefined Behavior Sanitizer <input type="checkbox"/> Pause on issues	
	Runtime API Checking	<input checked="" type="checkbox"/> Main Thread Checker <input type="checkbox"/> Pause on issues	
	Memory Management	<input type="checkbox"/> Malloc Scribble	
		<input type="checkbox"/> Malloc Guard Edges	
		<input type="checkbox"/> Guard Malloc	
		<input type="checkbox"/> Zombie Objects	
	Logging	<input type="checkbox"/> Malloc Stack Live Allocations Only	
		<input type="checkbox"/> Dynamic Linker API Usage	
		<input type="checkbox"/> Dynamic Library Loads	


```
// Use Thread Names and Queue Names for Debugging
```

```
// Naming a DispatchQueue
```

```
let queue = DispatchQueue(label: "com.example.myapp.networking")
```

```
// Use Thread Names and Queue Names for Debugging

// Naming a DispatchQueue
let queue = DispatchQueue(label: "com.example.myapp.networking")

// Naming an OperationQueue
let operationQueue = OperationQueue()
operationQueue.name = "Networking OperationQueue"
```

```
// Use Thread Names and Queue Names for Debugging

// Naming a DispatchQueue
let queue = DispatchQueue(label: "com.example.myapp.networking")

// Naming an OperationQueue
let operationQueue = OperationQueue()
operationQueue.name = "Networking OperationQueue"

// Naming a Thread
let thread = Thread(...)
thread.name = "Networking Thread"
```

```
Process:           MyApp [8626]
Exception Type:    EXC_BAD_ACCESS (SIGSEGV)
Exception Codes:   KERN_INVALID_ADDRESS at 0x0000000000000000
Exception Note:    EXC_CORPSE_NOTIFY
```

```
Thread 0:: Dispatch queue: com.apple.main-thread
```

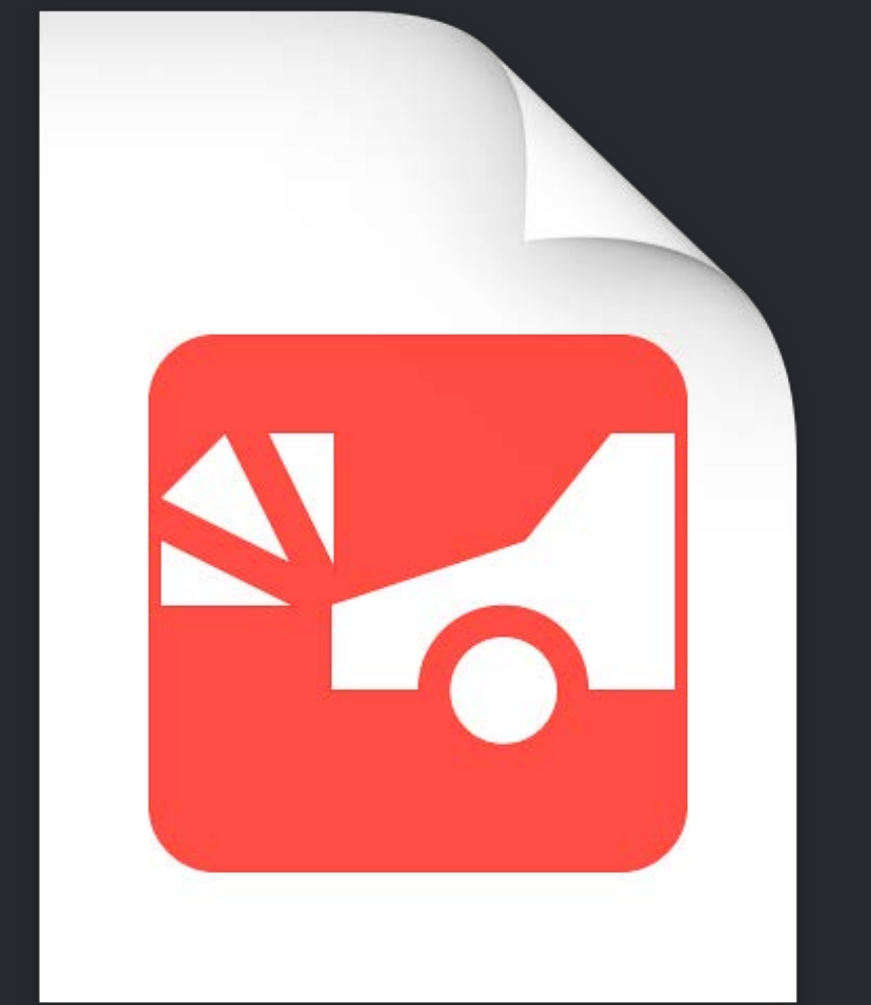
```
0  libsystem_kernel.dylib          0x000000010abe5f8a kevent_id + 10
1  libdispatch.dylib              0x000000010a850f31 _dispatch_kq_poll + 117
...
```

```
Thread 1:: Dispatch queue: MyOperationQueue
```

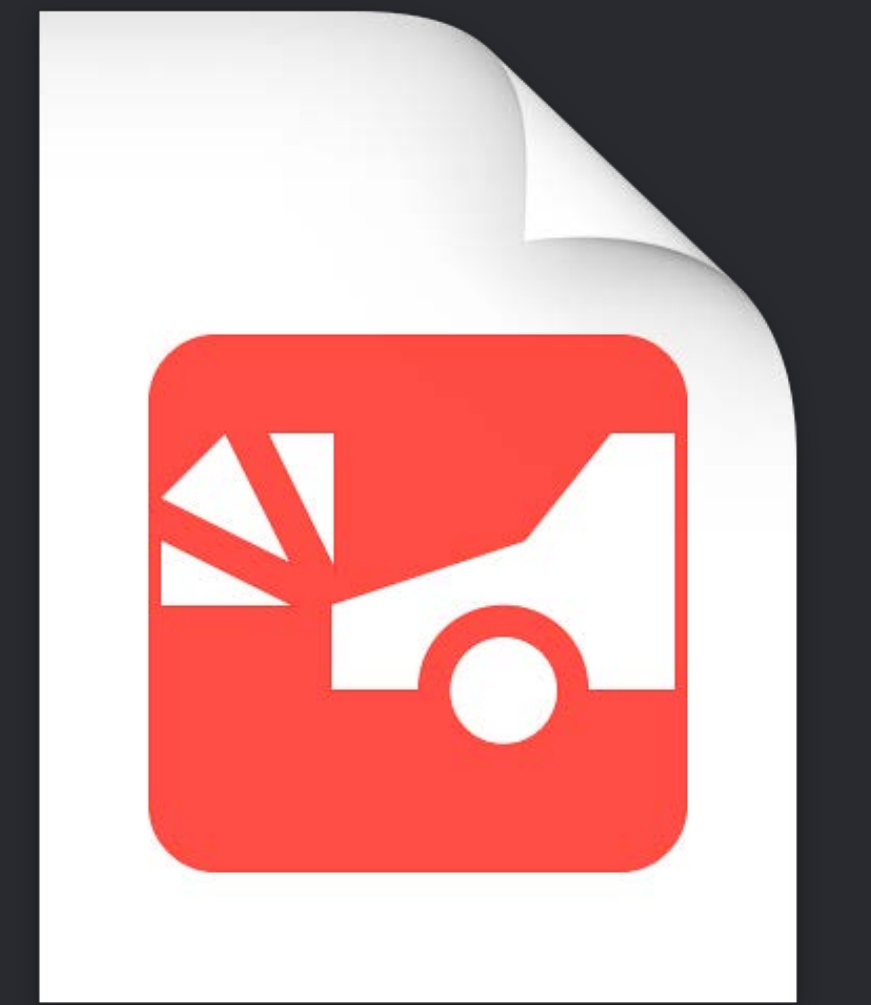
```
0  libsystem_kernel.dylib          0x000000010abe5f8a kevent_id + 10
1  libdispatch.dylib              0x000000010a850f31 _dispatch_kq_poll + 117
...
```

```
Thread 2:: NetworkingThread
```

```
0  libsystem_kernel.dylib          0x000000010abe5f8a kevent_id + 10
1  libdispatch.dylib              0x000000010a850f31 _dispatch_kq_poll + 117
...
```



```
Process:           MyApp [8626]
Exception Type:    EXC_BAD_ACCESS (SIGSEGV)
Exception Codes:   KERN_INVALID_ADDRESS at 0x0000000000000000
Exception Note:    EXC_CORPSE_NOTIFY
```



```
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```
0  libsystem_kernel.dylib      0x000000010abe5f8a kevent_id + 10
1  libdispatch.dylib          0x000000010a850f31 _dispatch_kq_poll + 117
...
```

```
Thread 1:: Dispatch queue: MyOperationQueue
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```
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...
```

```
Thread 2:: NetworkingThread
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```
0  libsystem_kernel.dylib      0x000000010abe5f8a kevent_id + 10
1  libdispatch.dylib          0x000000010a850f31 _dispatch_kq_poll + 117
...
```

Takeaways

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Test your app on real devices

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Try to reproduce crashes

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Try to reproduce crashes

Use bug-finding tools on hard-to-reproduce crashes

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- Address Sanitizer for memory corruption bugs

Takeaways

Test your app on real devices

Try to reproduce crashes

Use bug-finding tools on hard-to-reproduce crashes

- Address Sanitizer for memory corruption bugs
- Thread Sanitizer for multithreading problems

Summary

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Use Organizer to access crash logs

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Analyze reproducible crashes

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Look for signs of memory corruption and threading issues

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Use Organizer to access crash logs

Analyze reproducible crashes

Look for signs of memory corruption and threading issues

Use bug-finding tools to help reproduce

More Information

<https://developer.apple.com/wwdc18/414>

 **WWDC18**