

#WWDC19

What's New in Xcode 11

Ken Orr, Developer Tools













Per-editor-pane Modes

Previews

Assistants

Free-form Splits

Authors Always Available



SCM Logs Always Available

Per-editor Options

Code Review

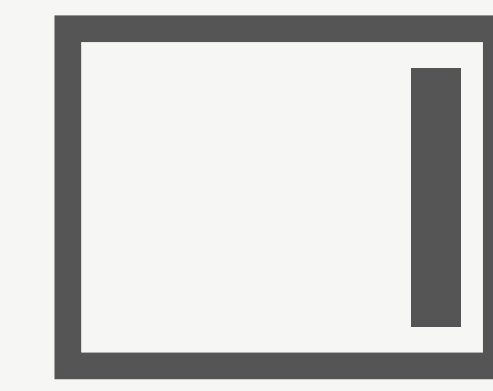
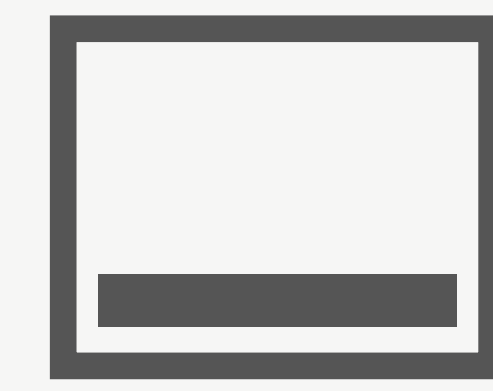
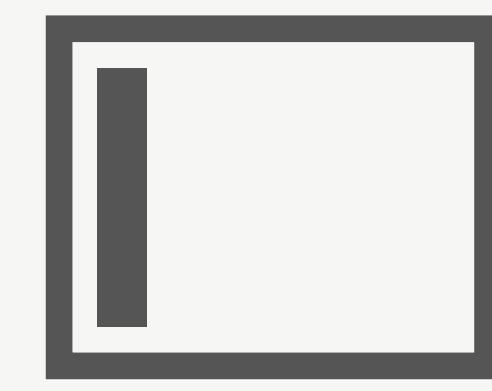
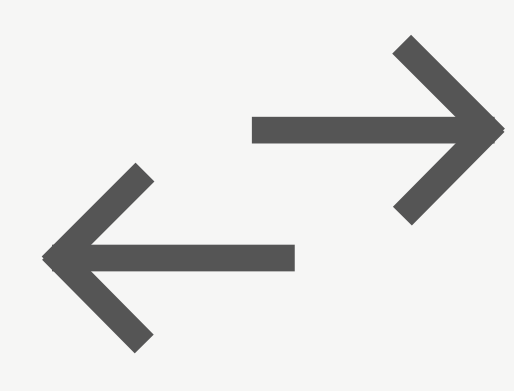
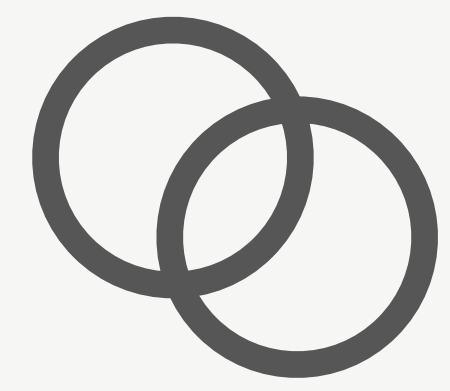
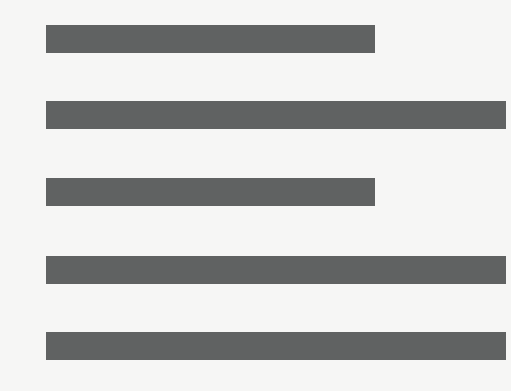
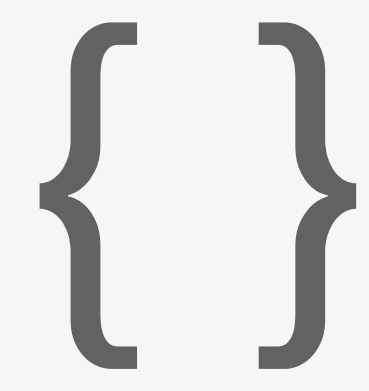
Playgrounds Live View Mode

Destination Chooser

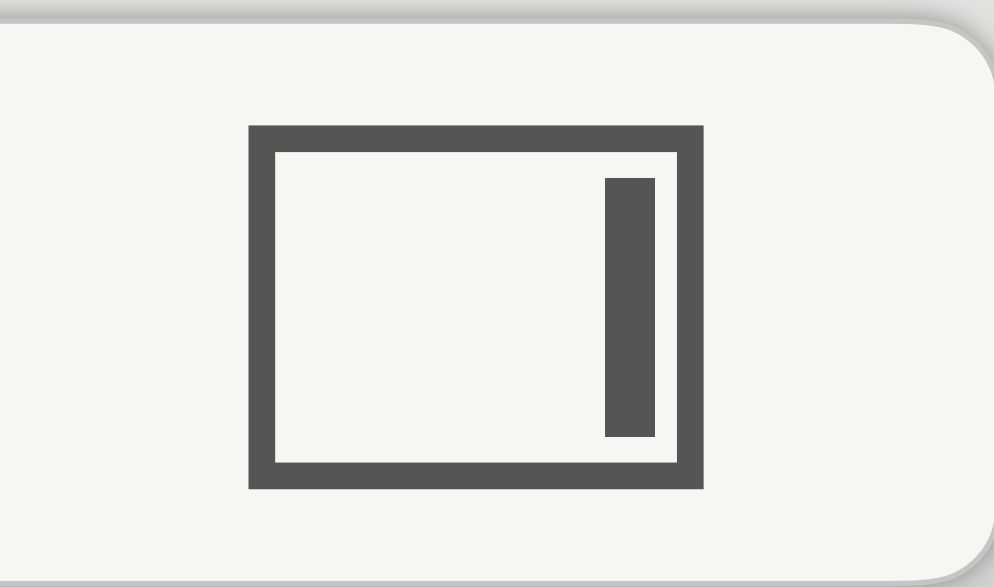
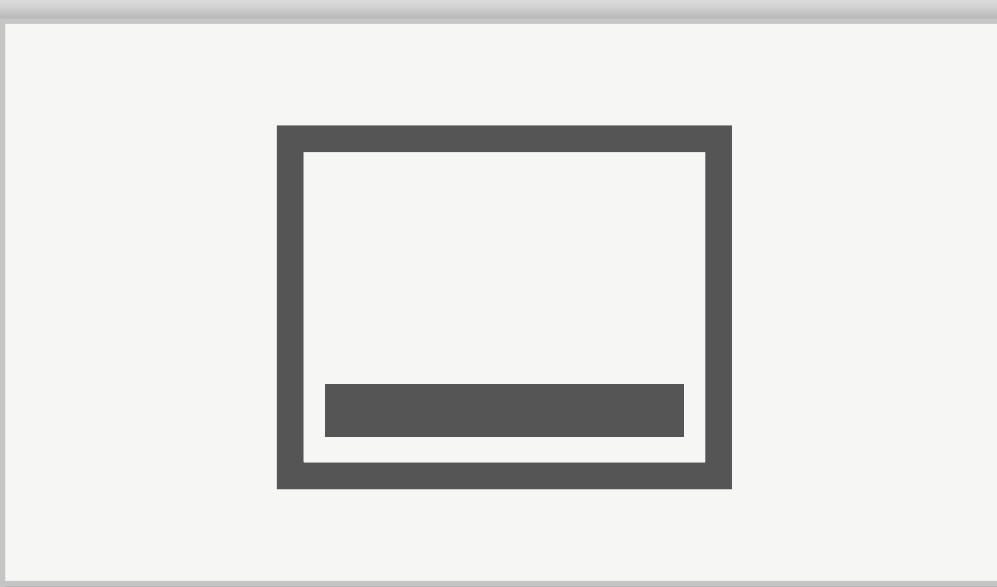
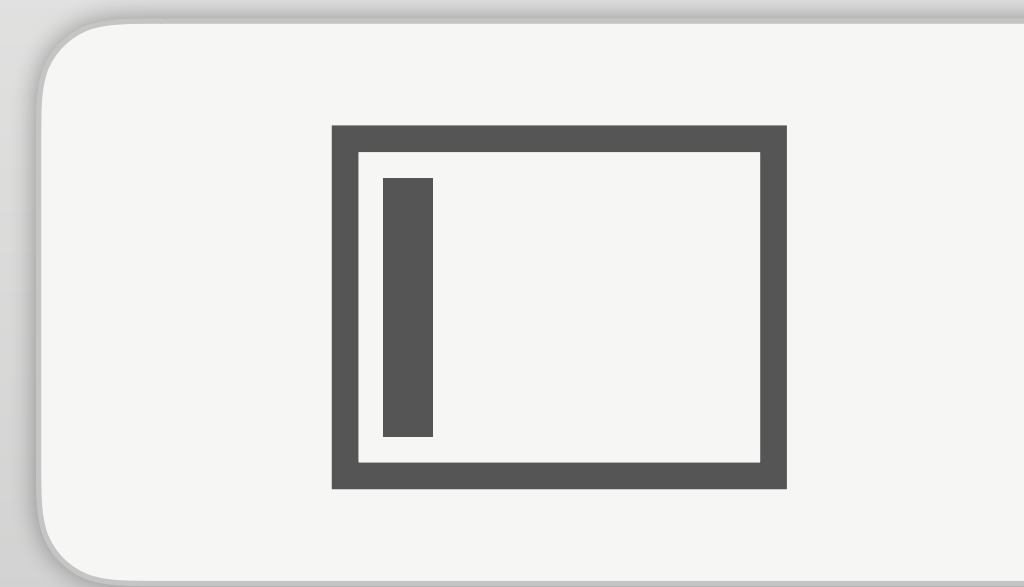
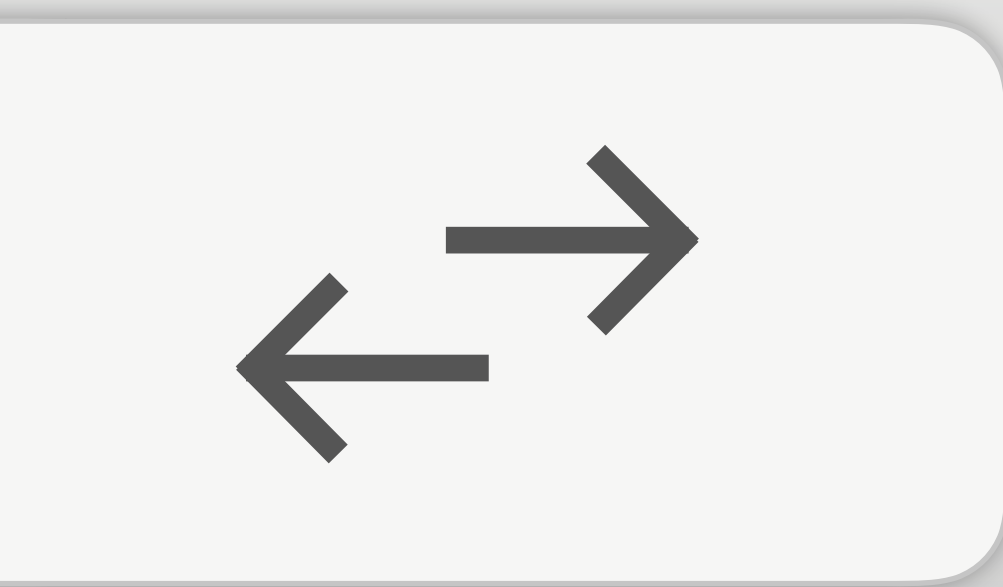
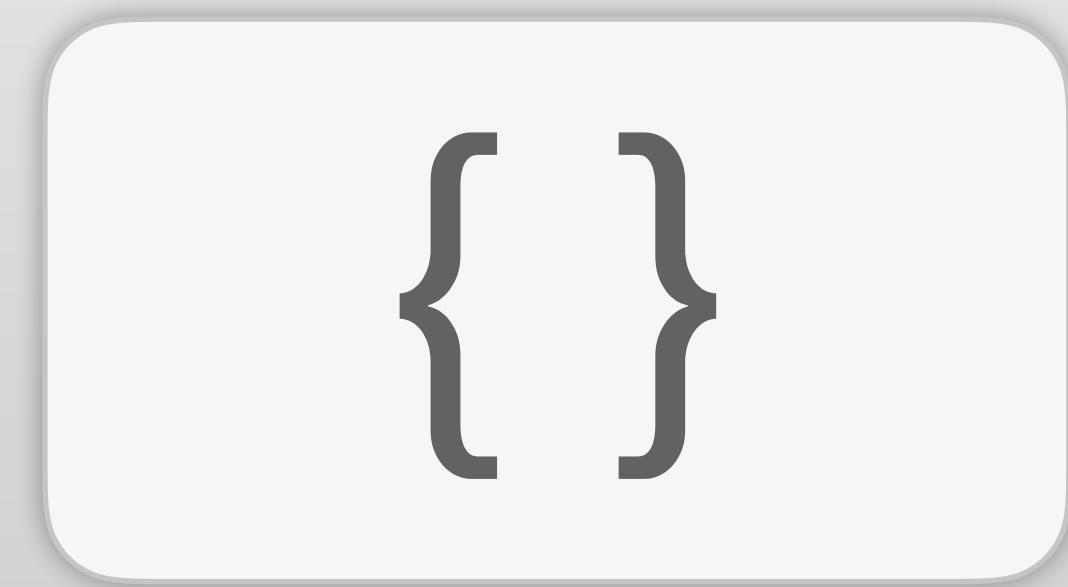




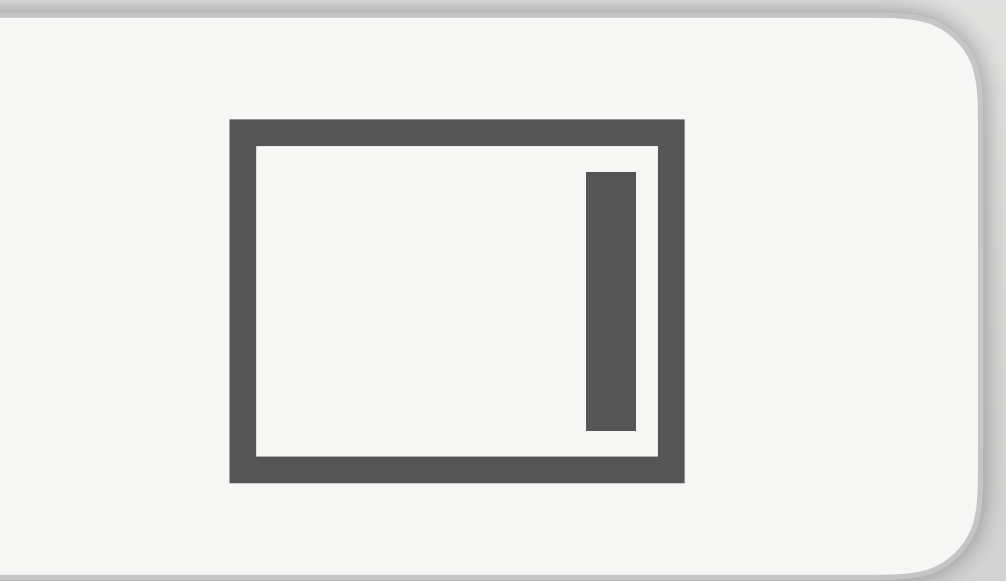
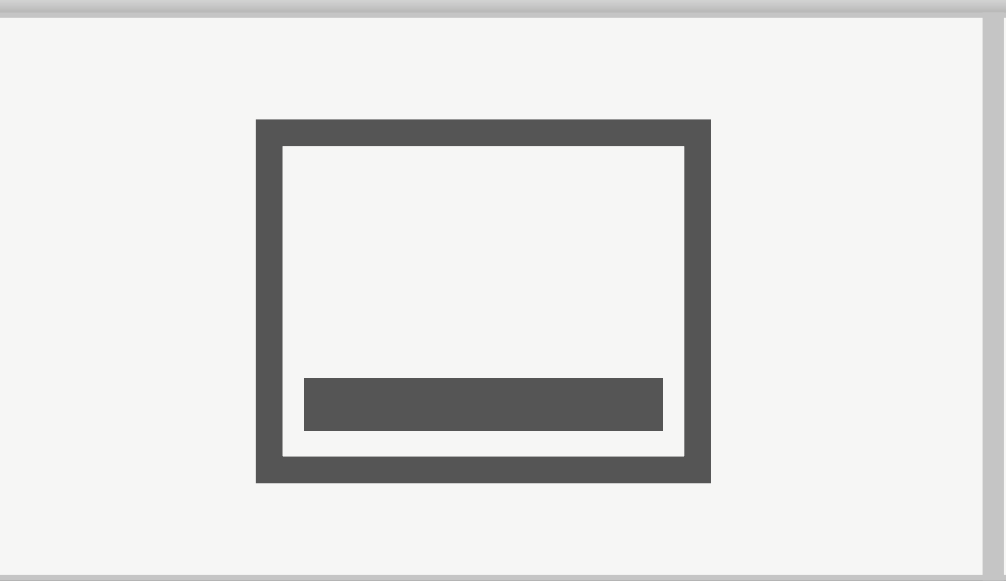
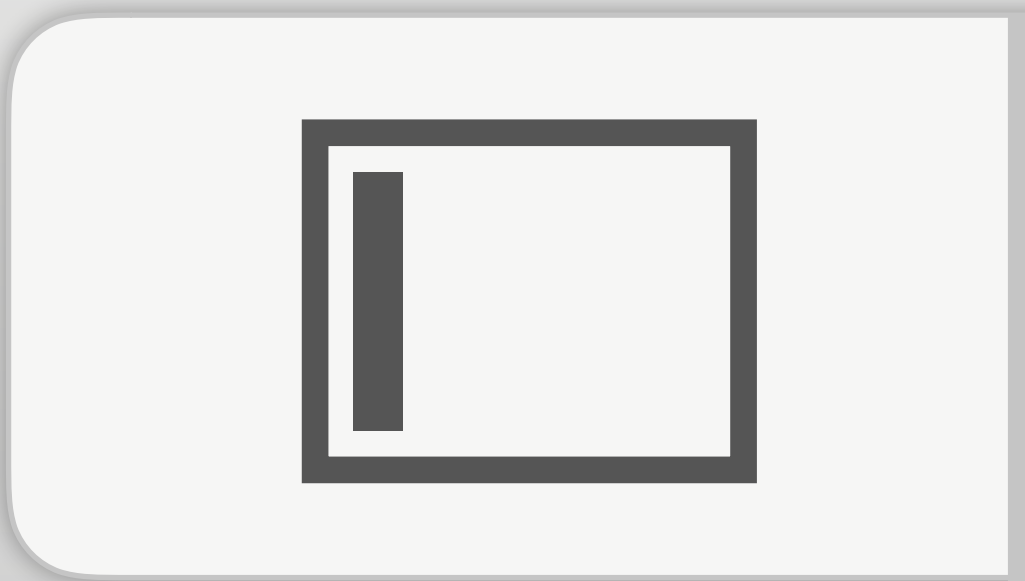
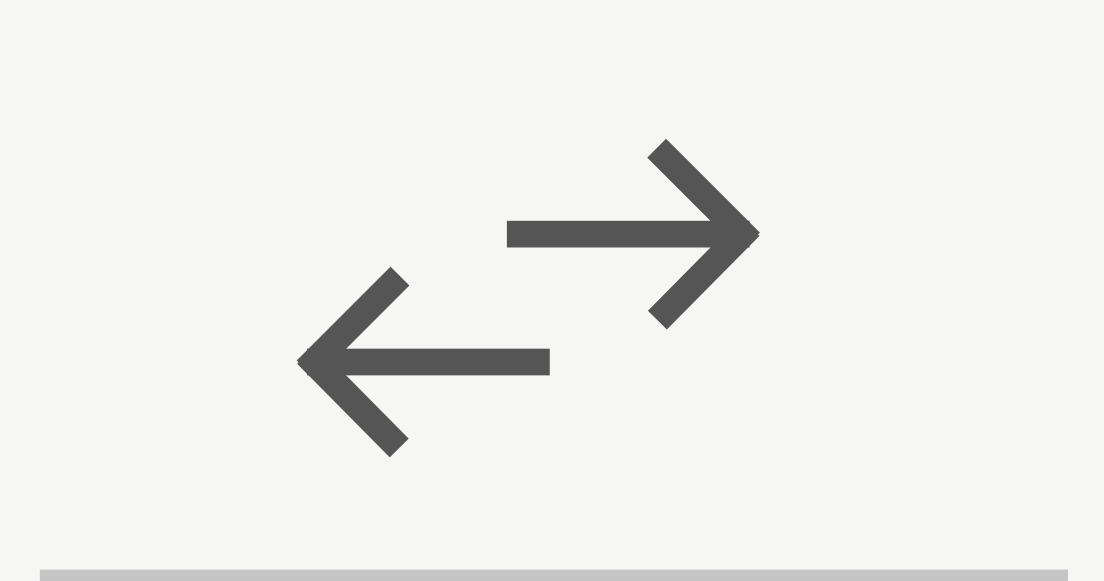
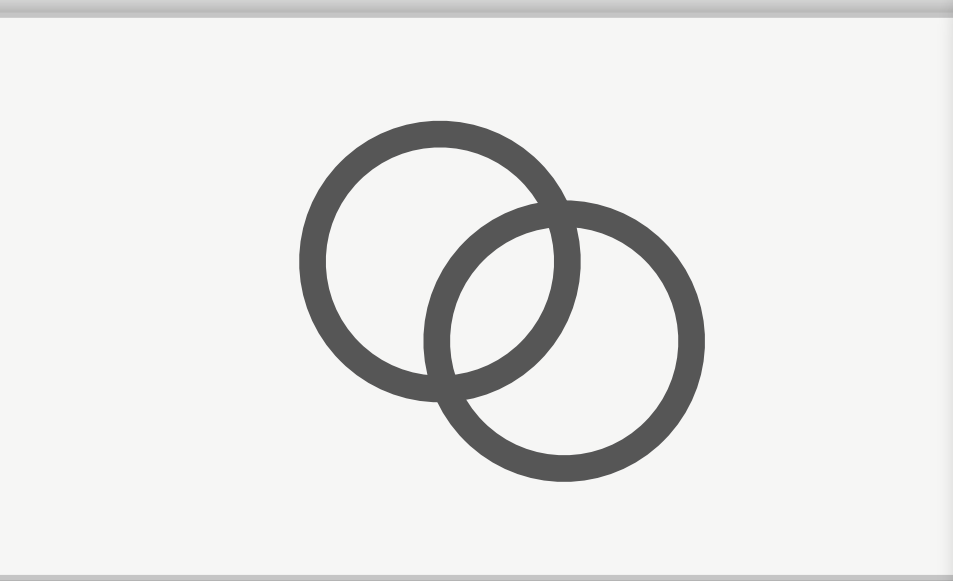
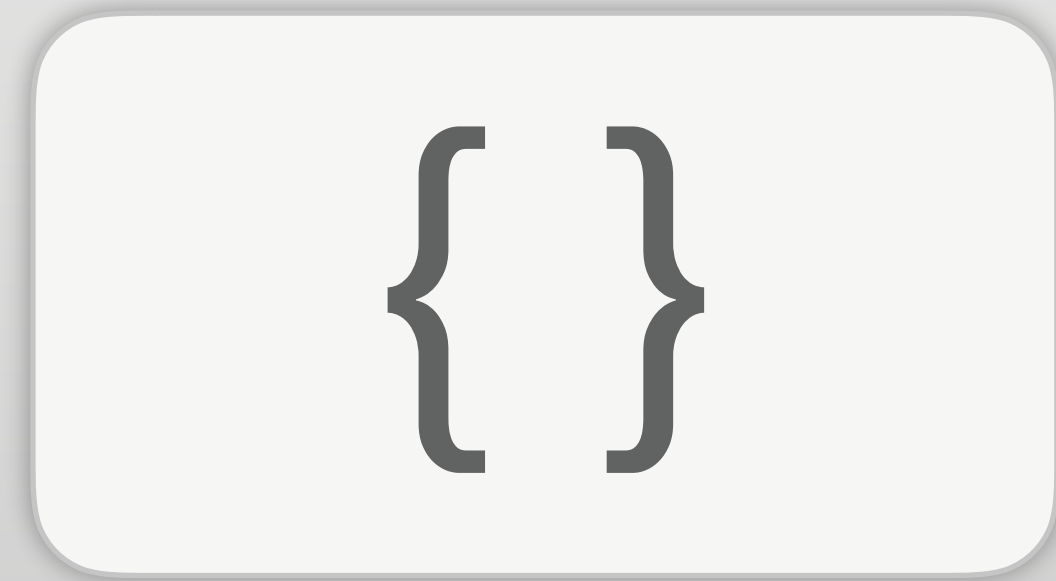
Xcode 10



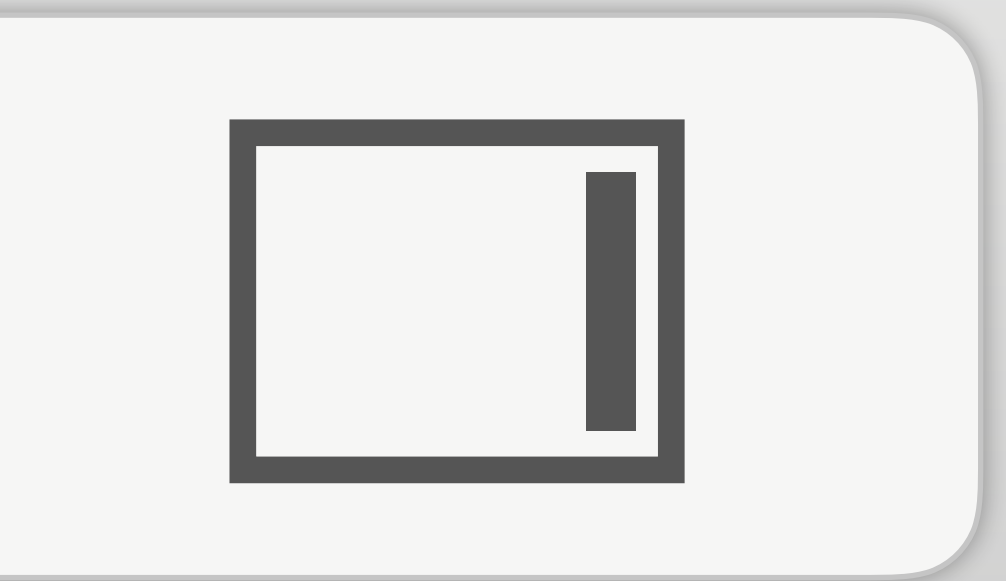
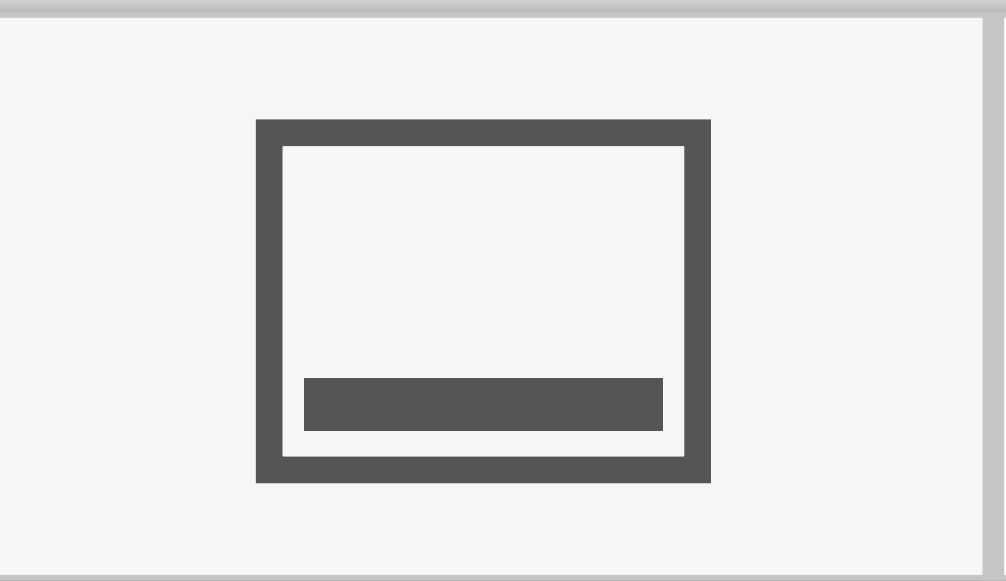
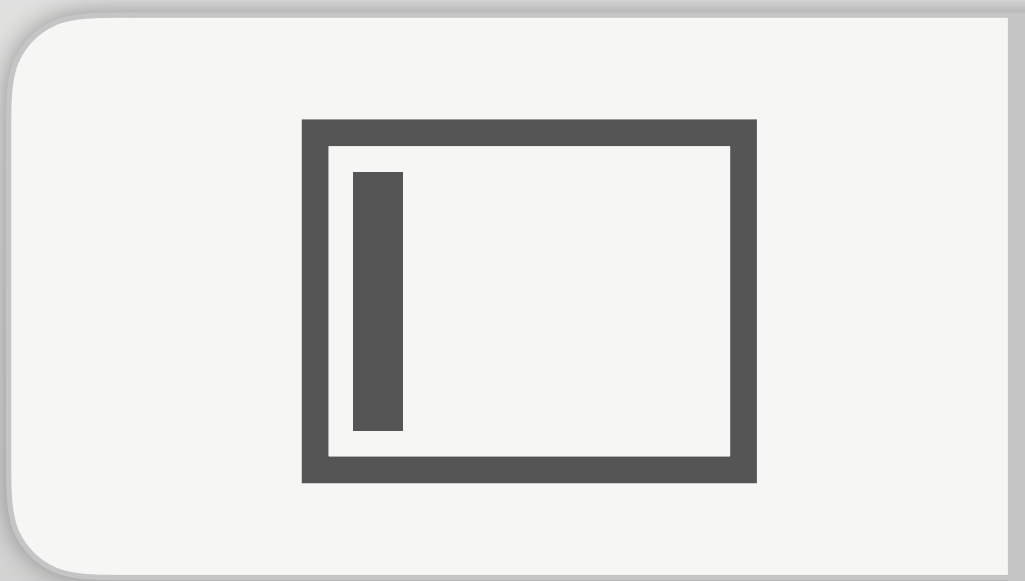
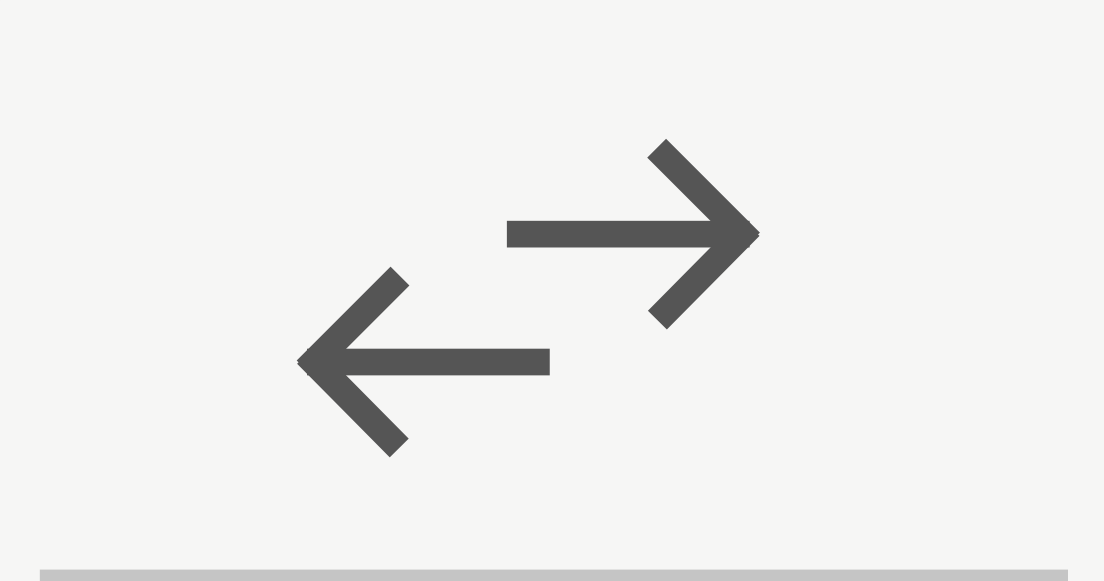
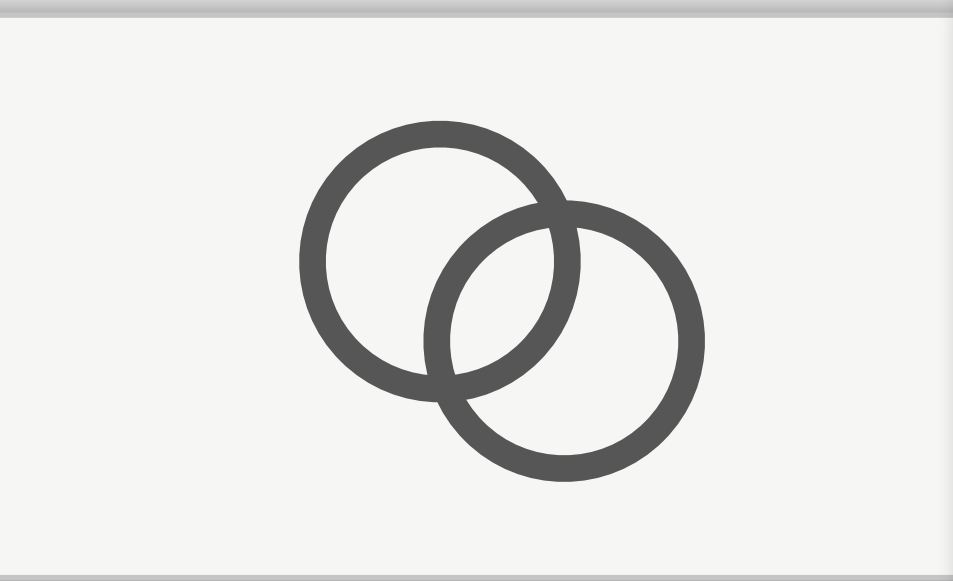
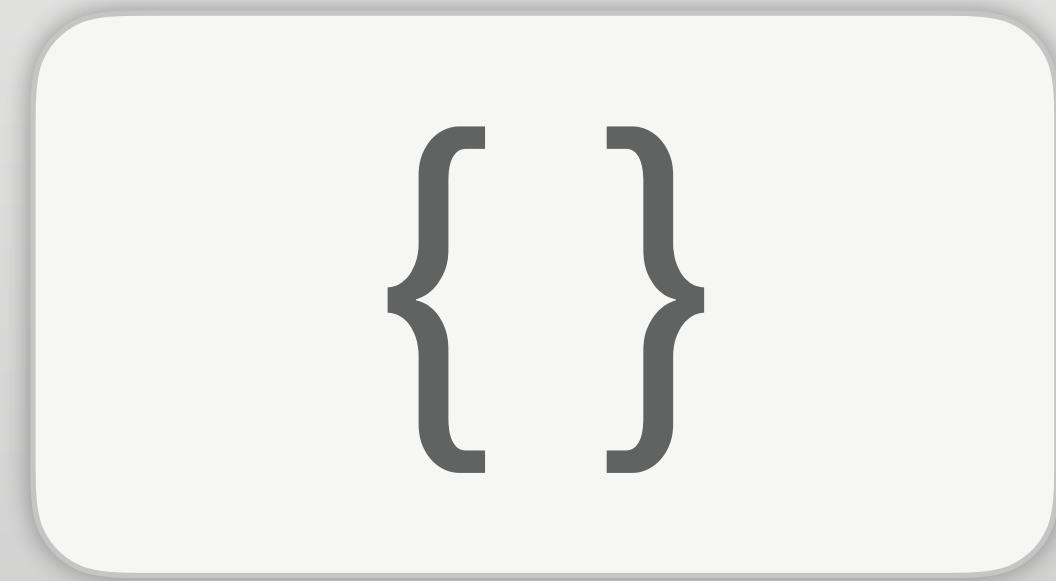
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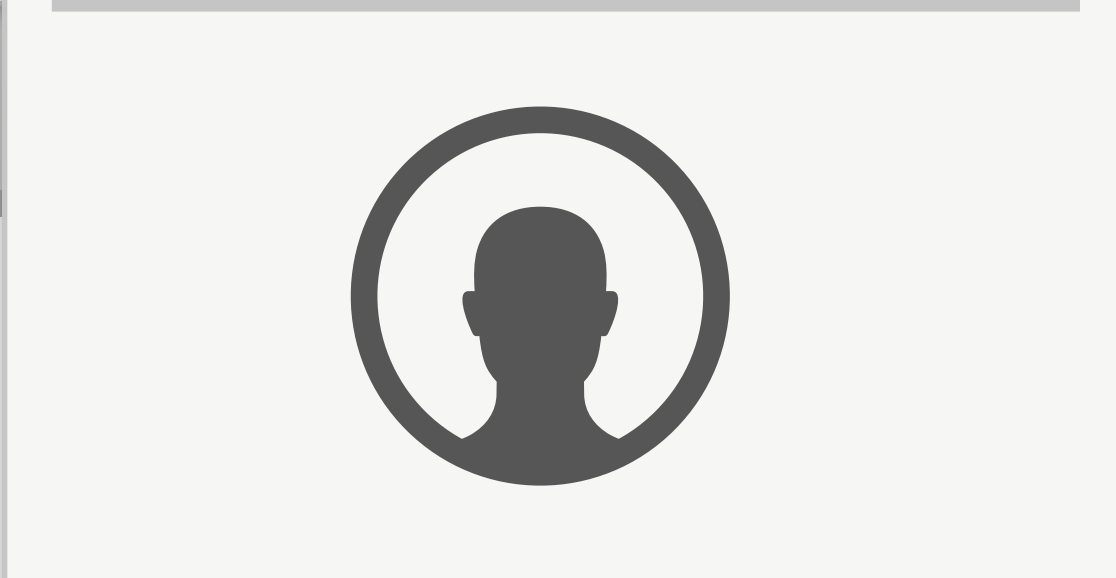
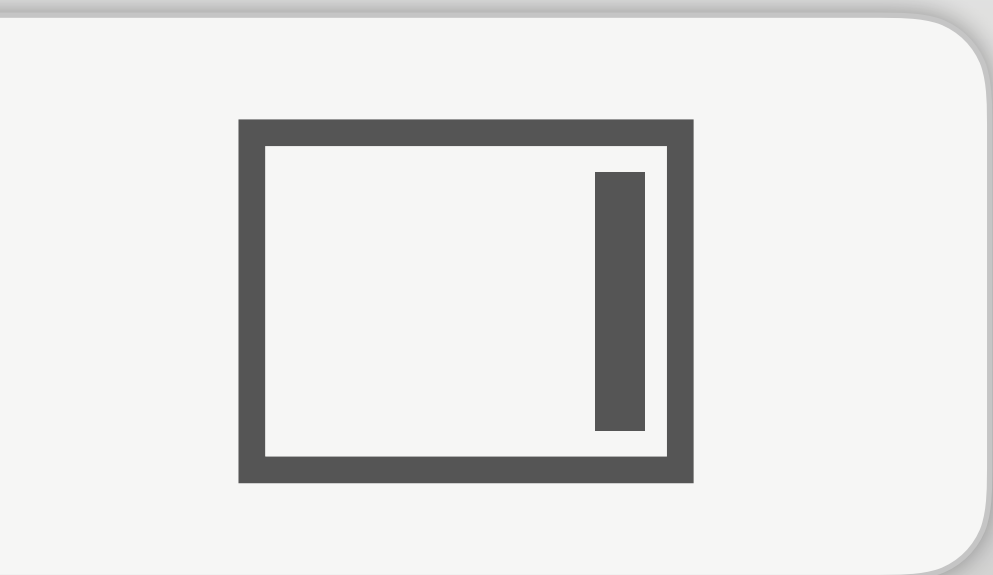
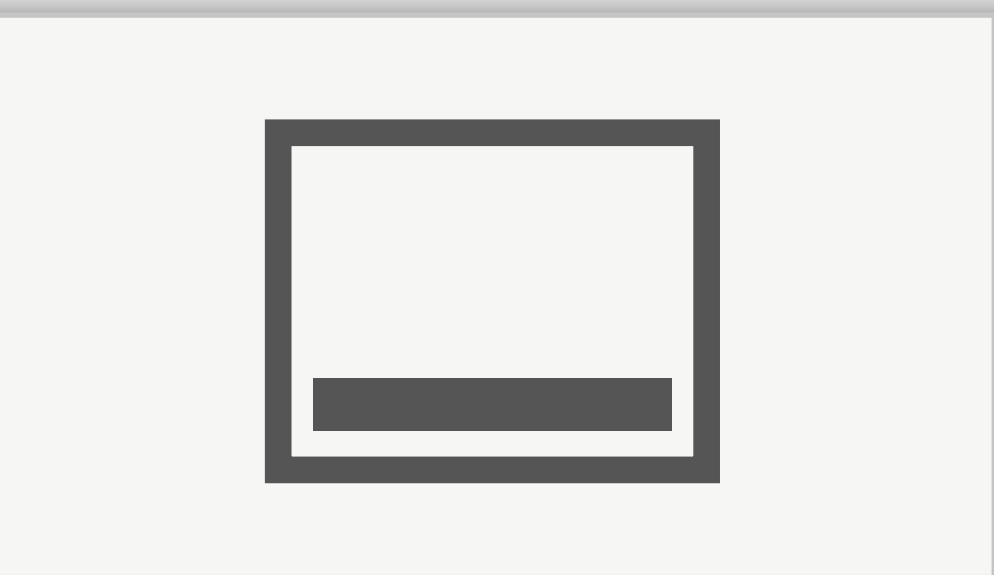
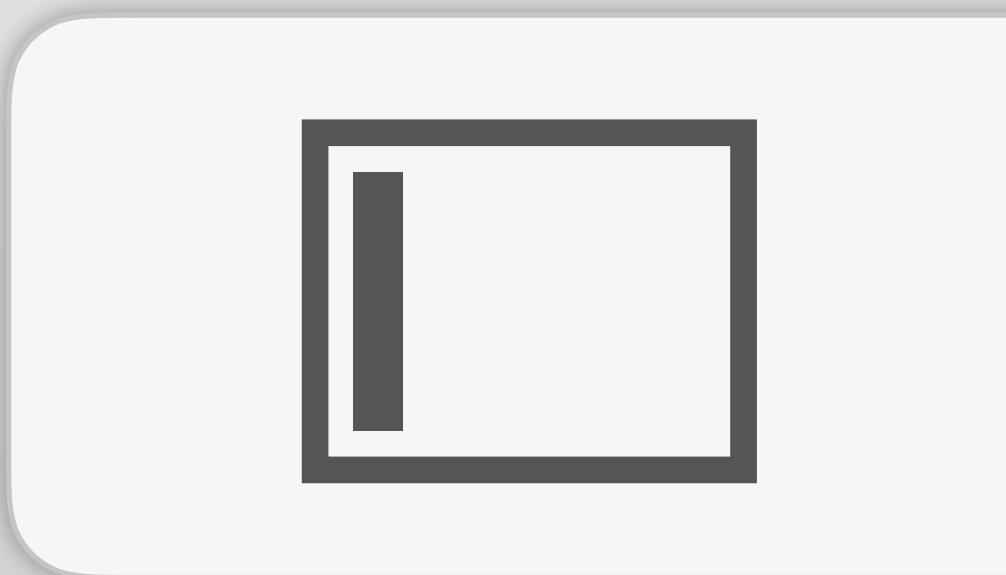
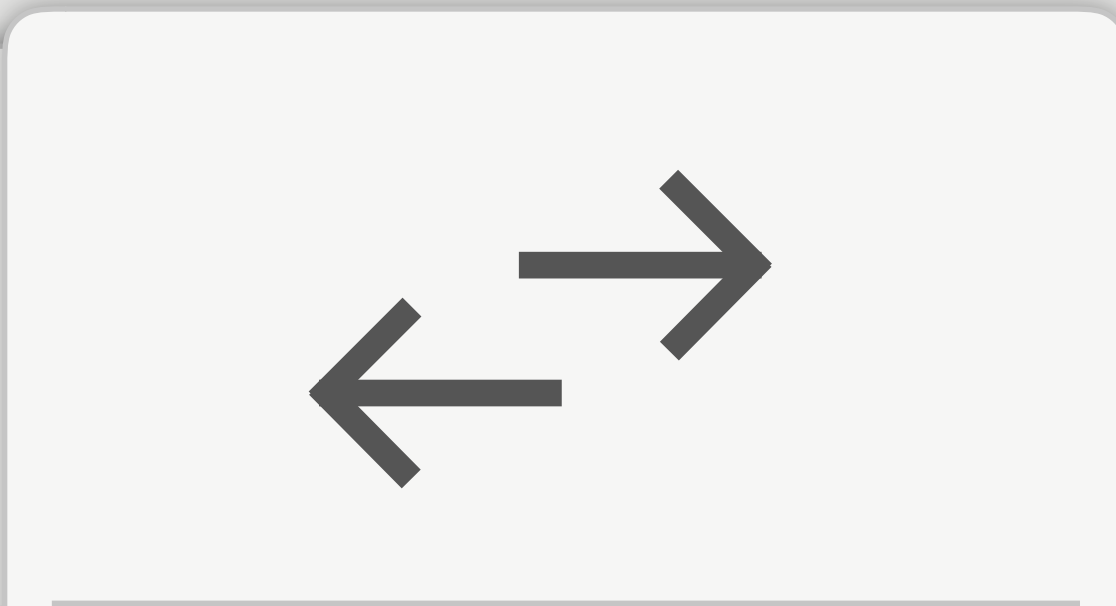
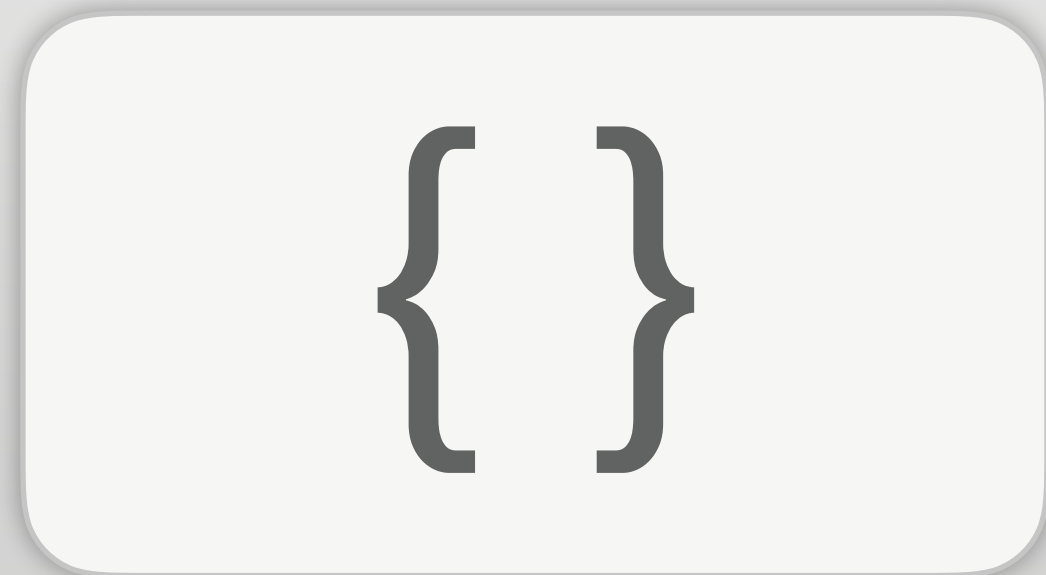


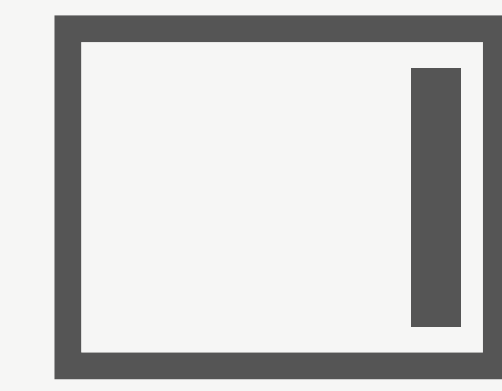
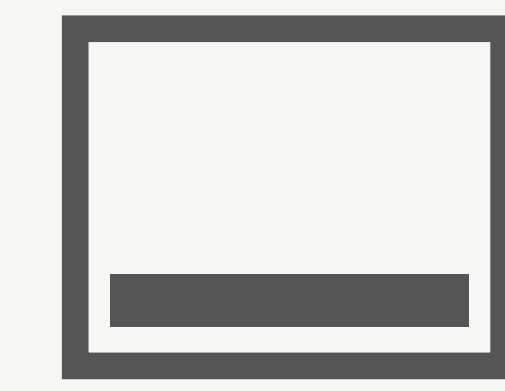
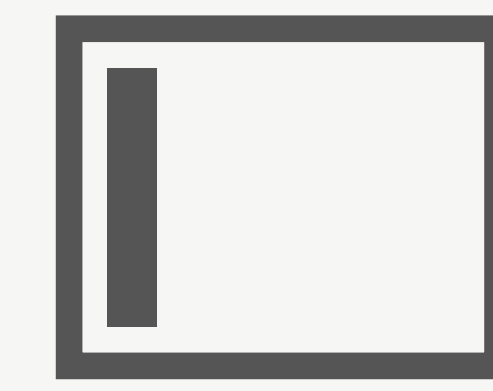
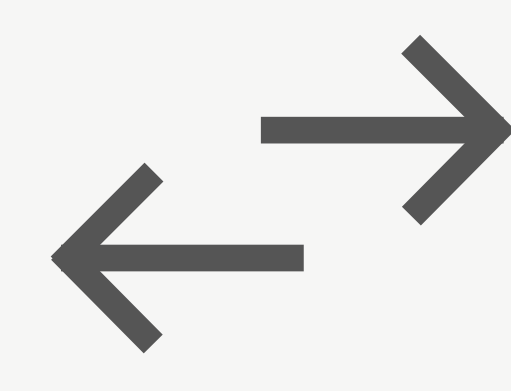
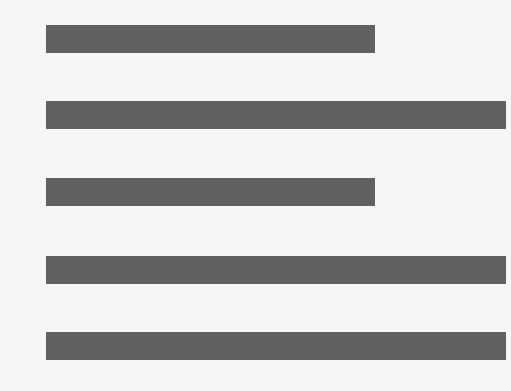
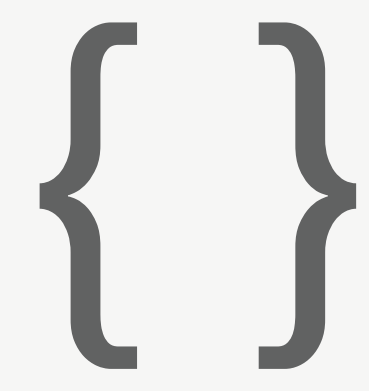
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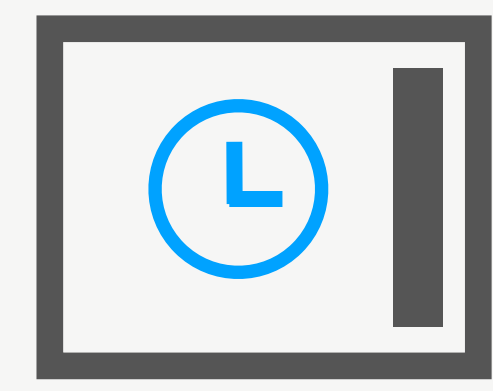
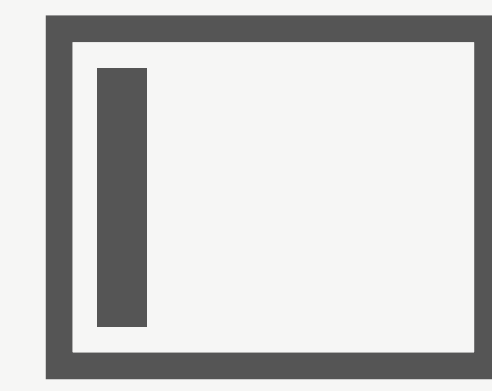
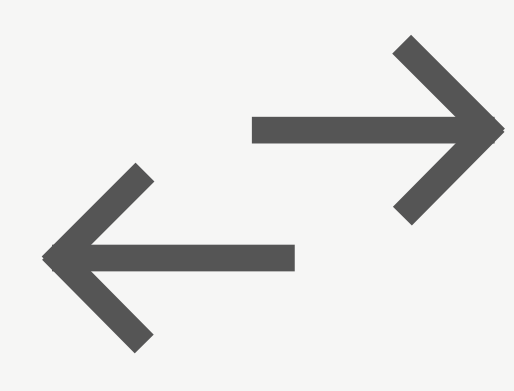
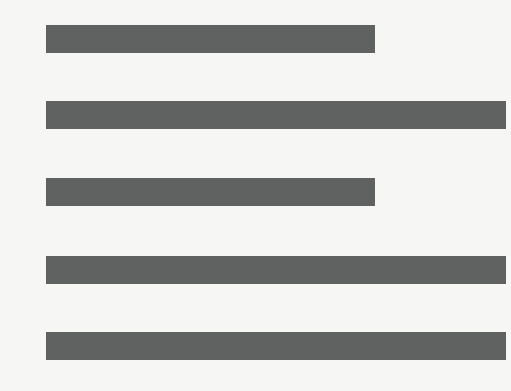
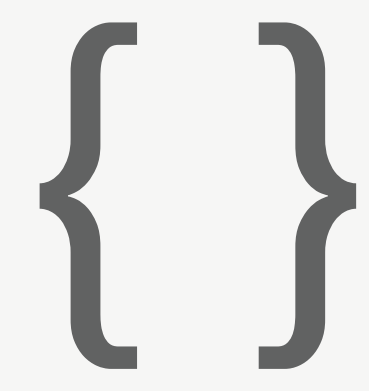


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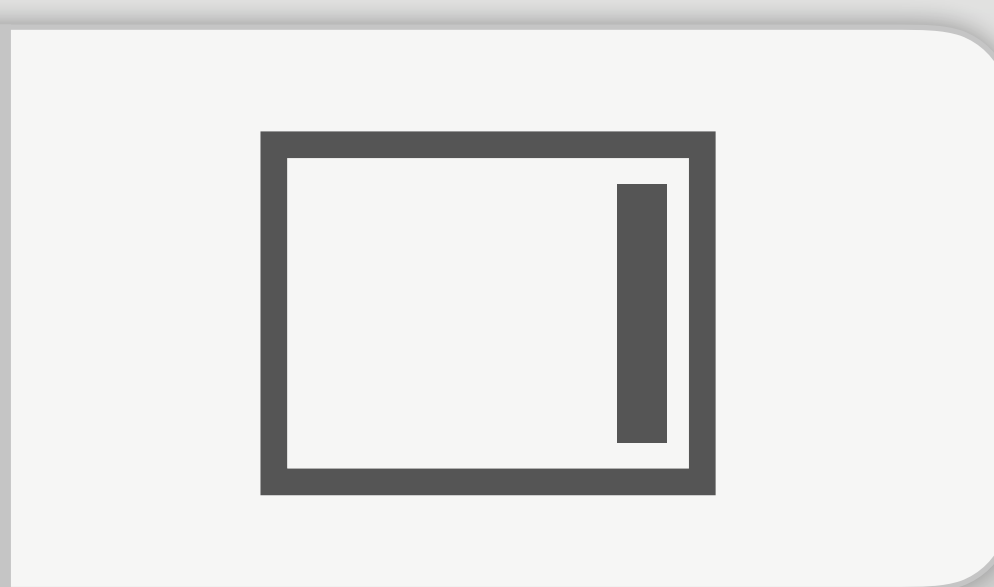
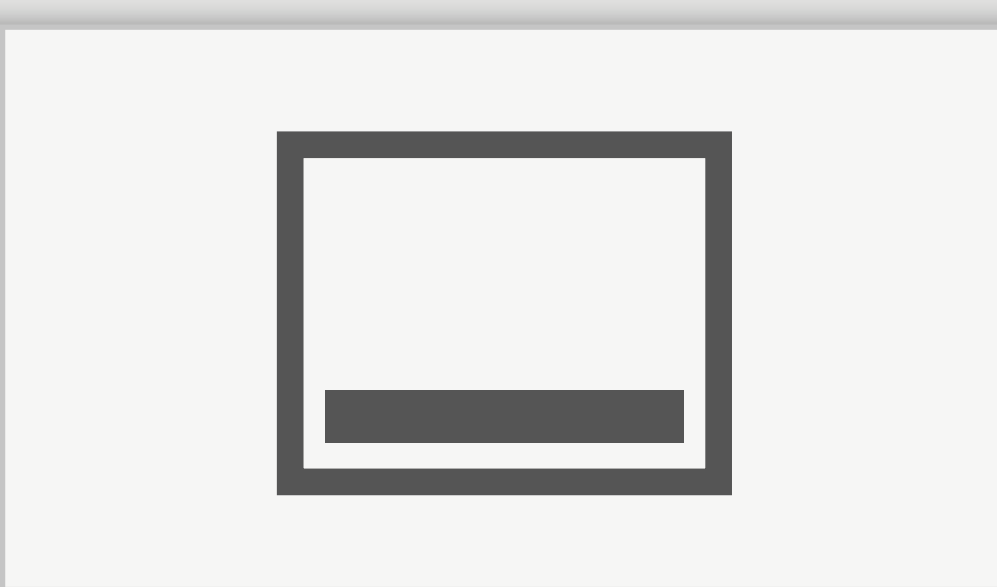
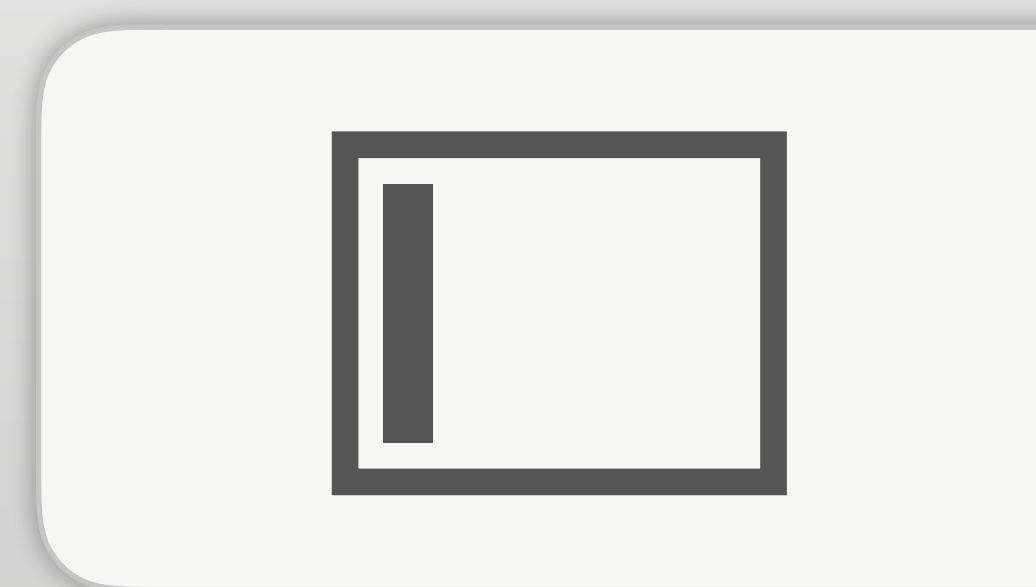
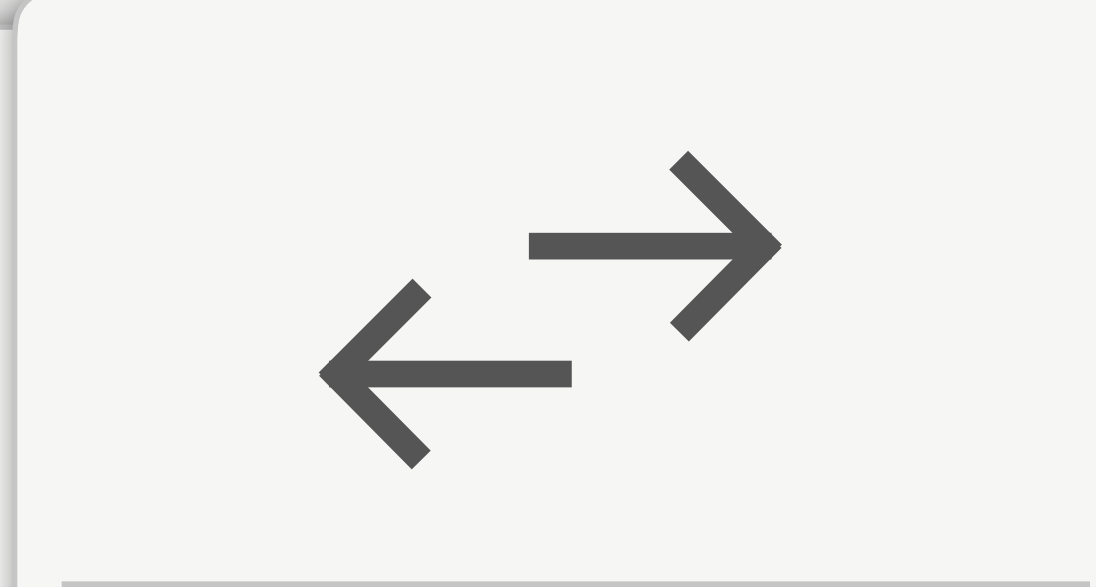
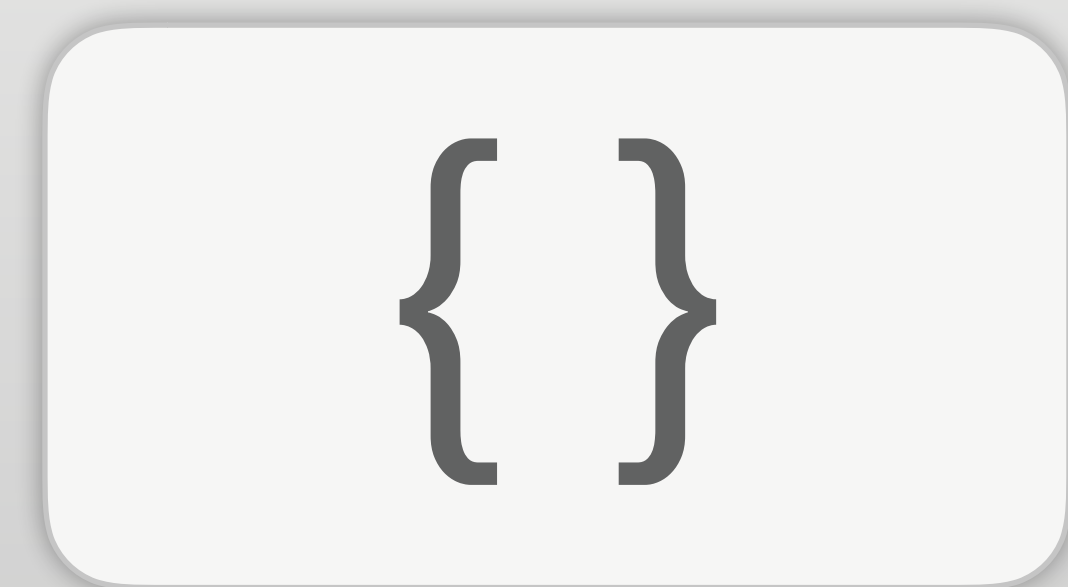


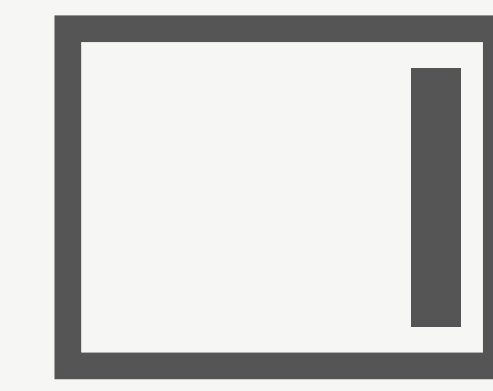
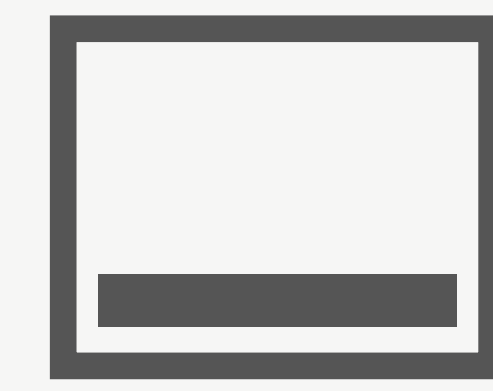
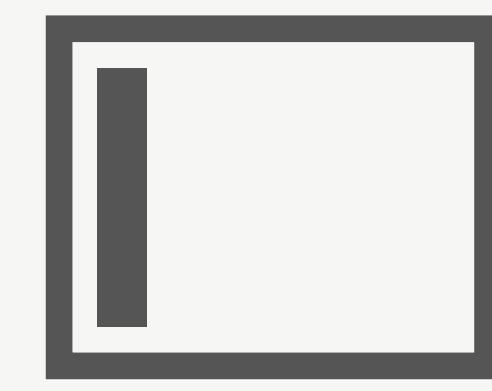
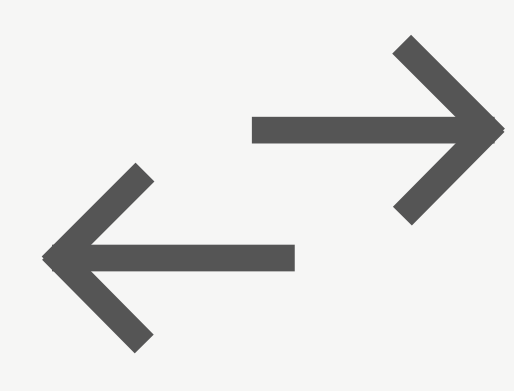
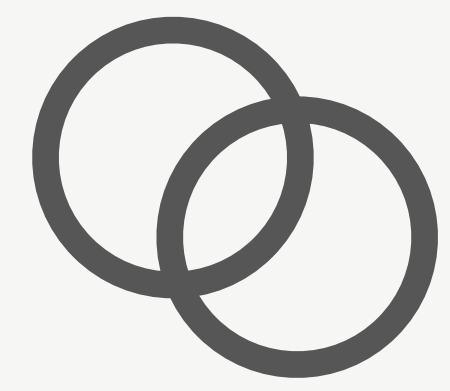
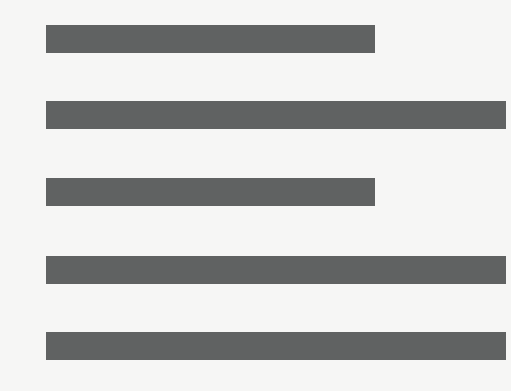
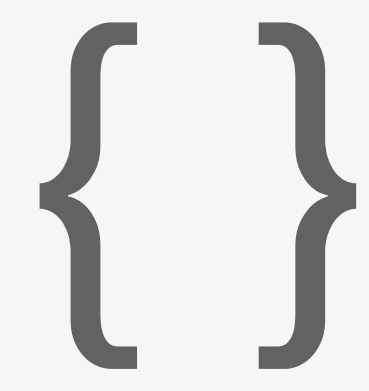


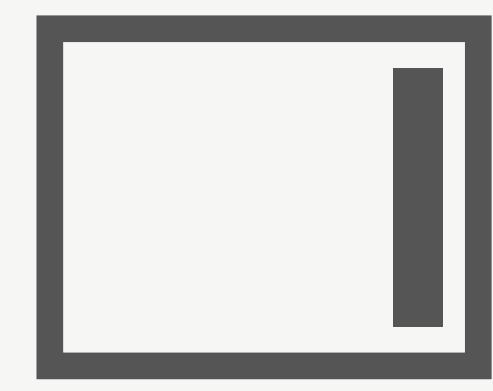
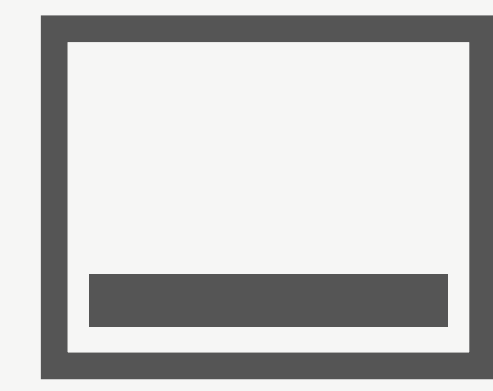
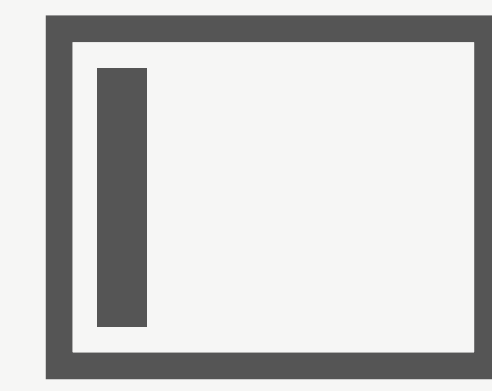
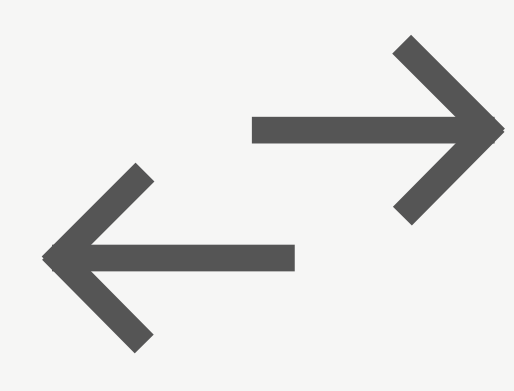
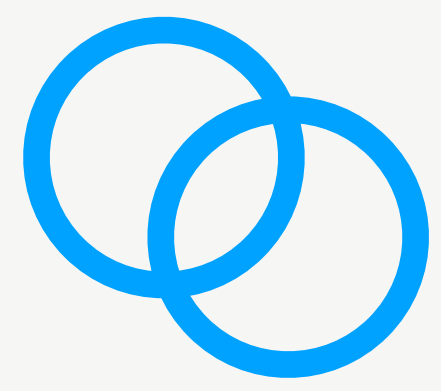
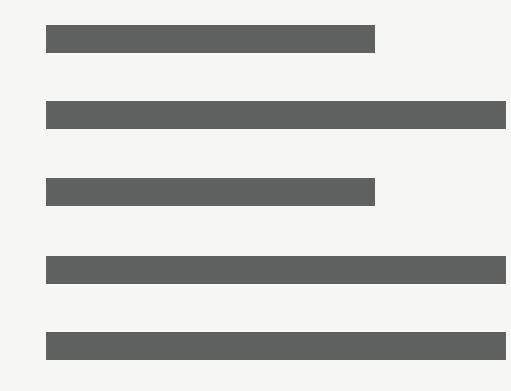
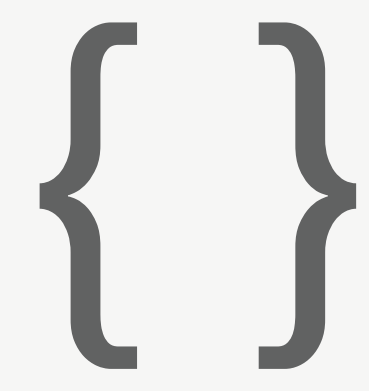


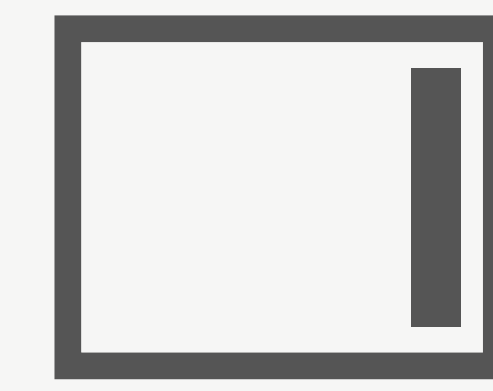
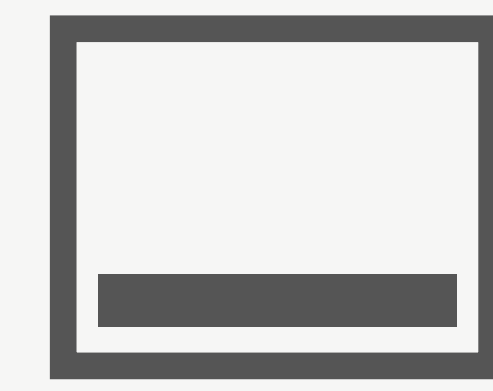
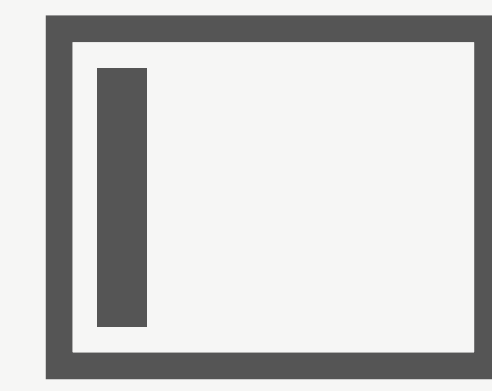
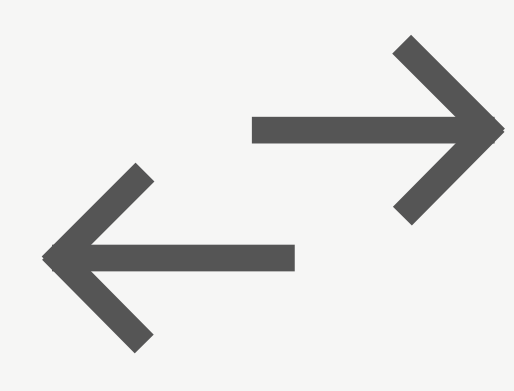
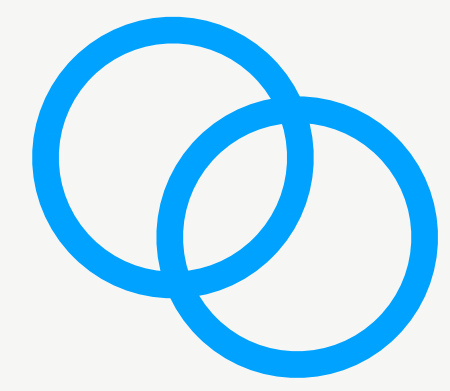
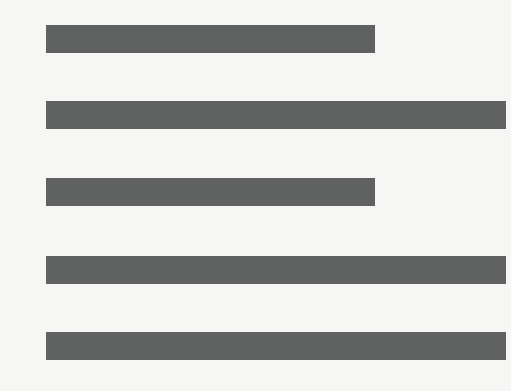
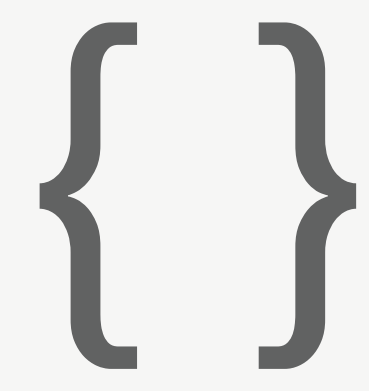


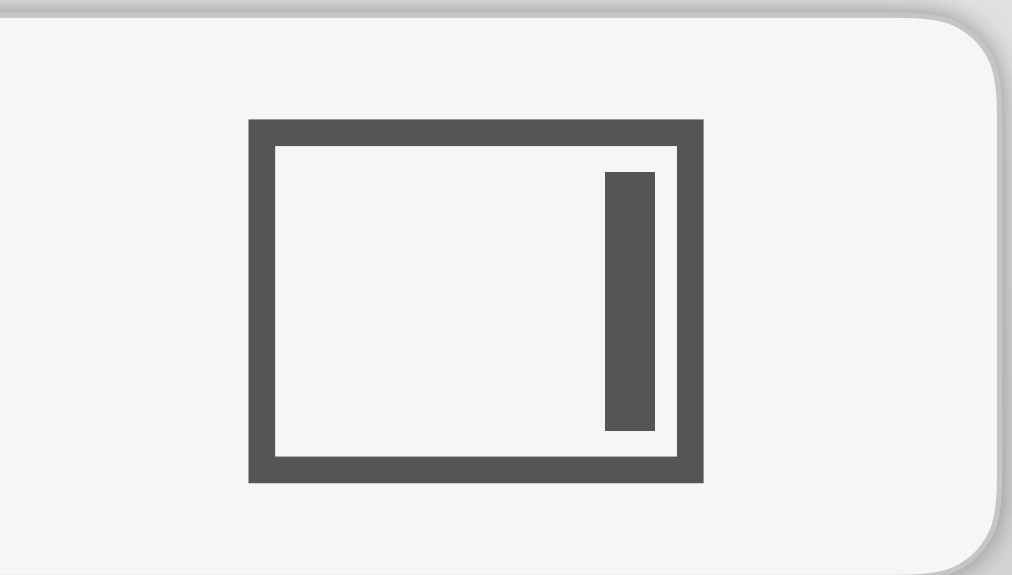
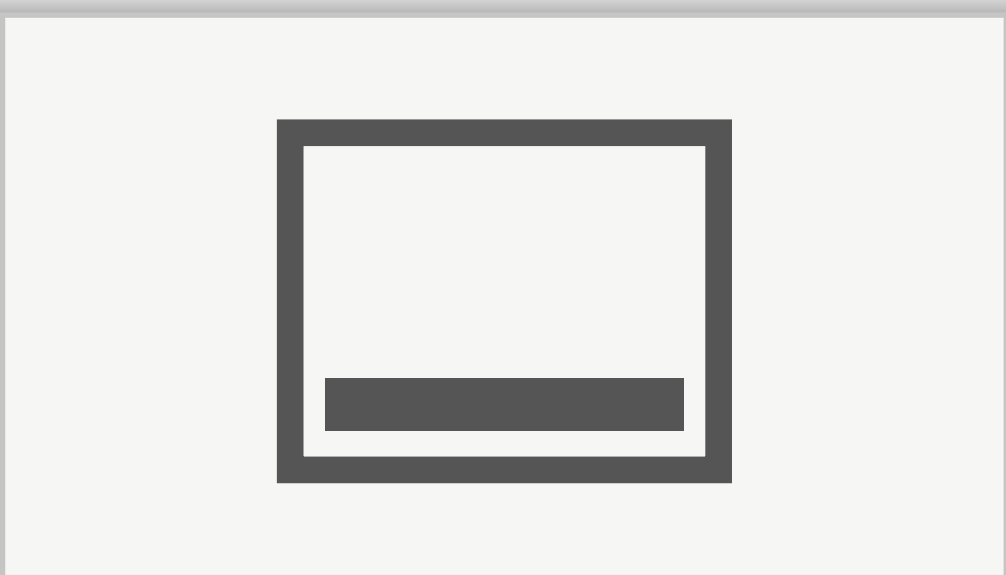
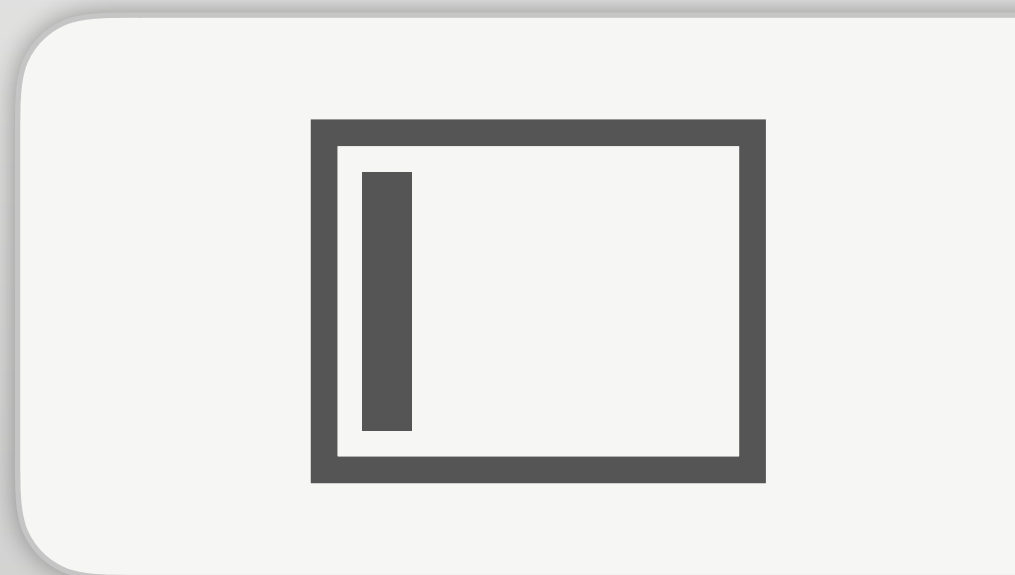
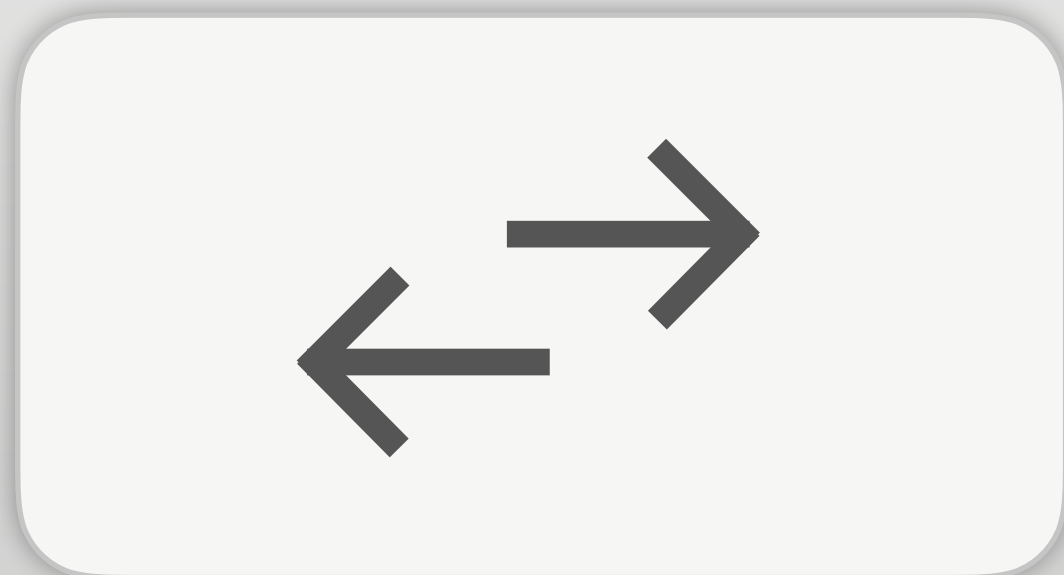
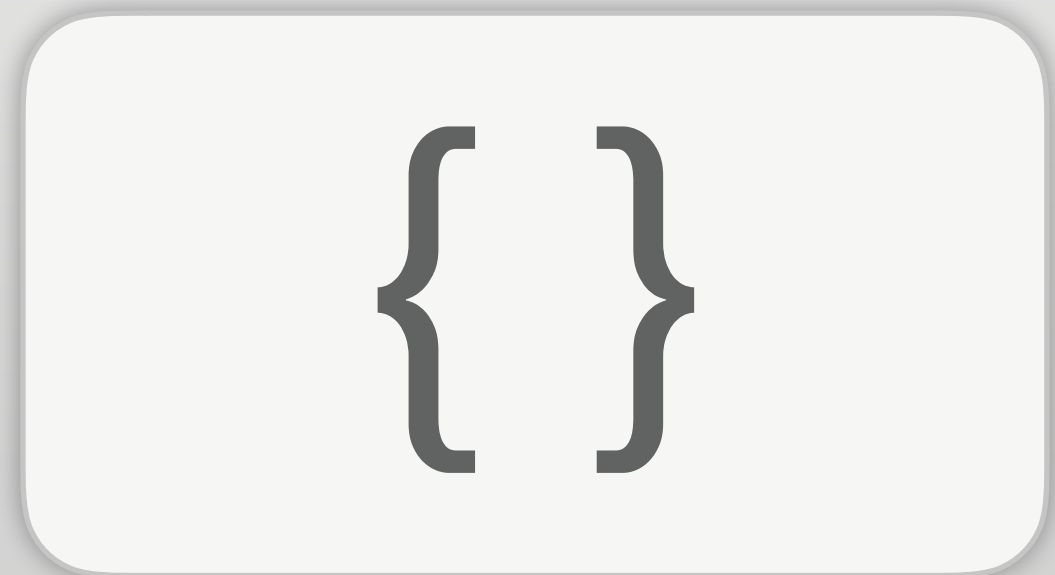
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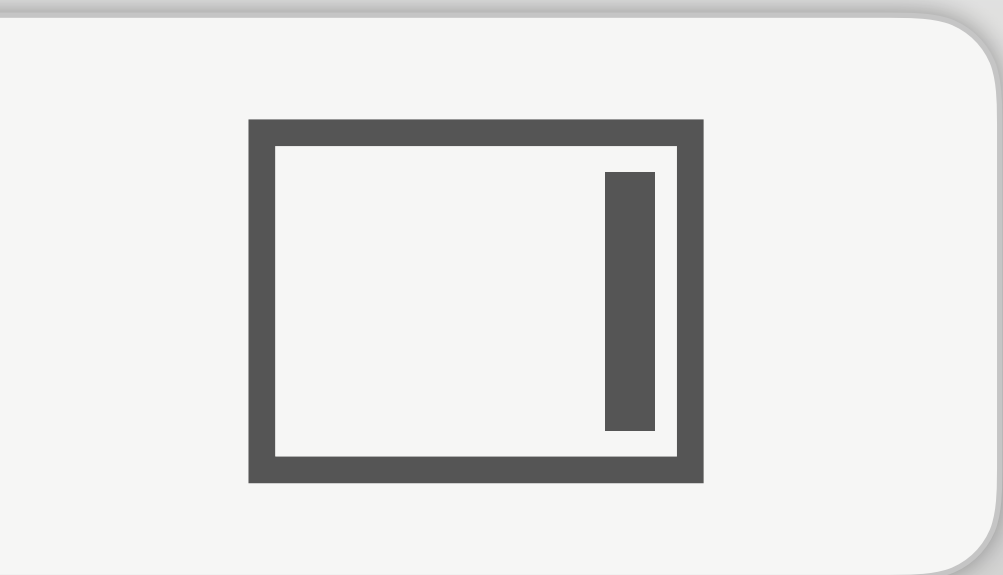
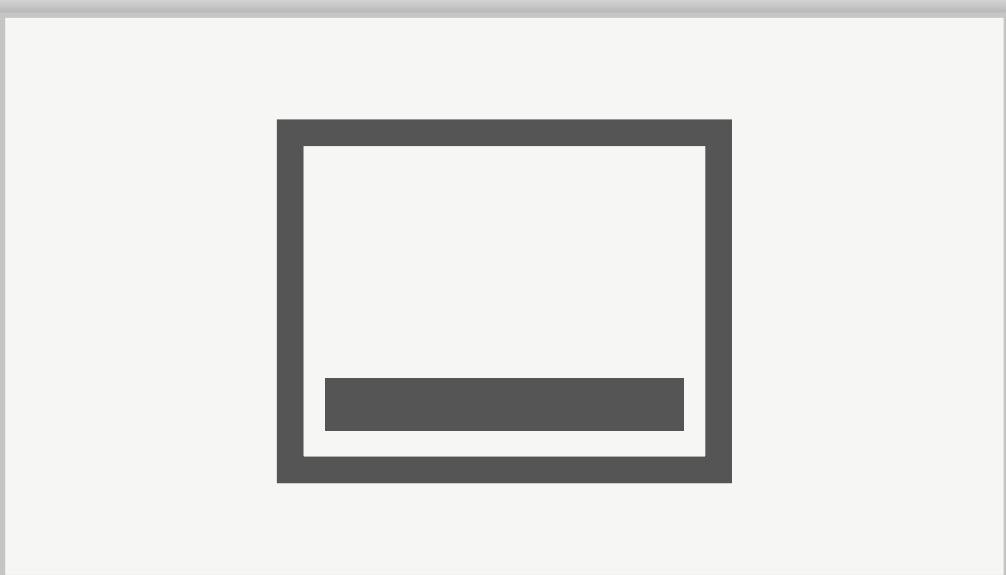
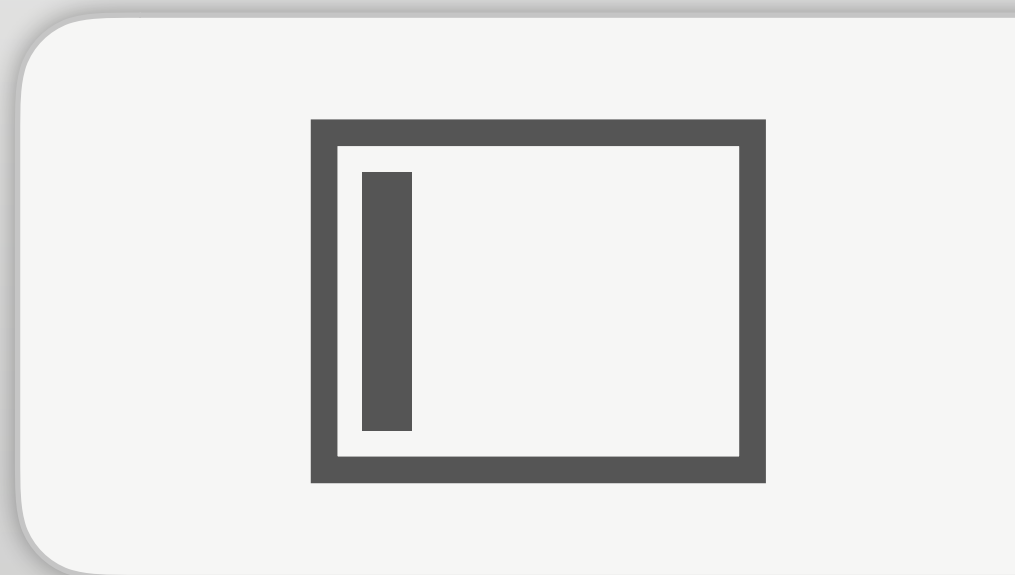
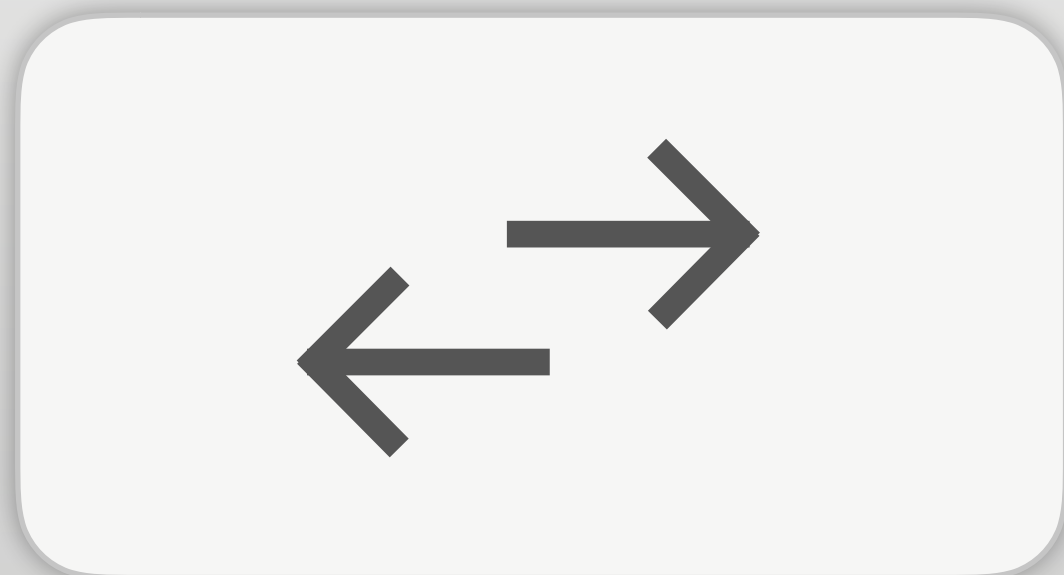
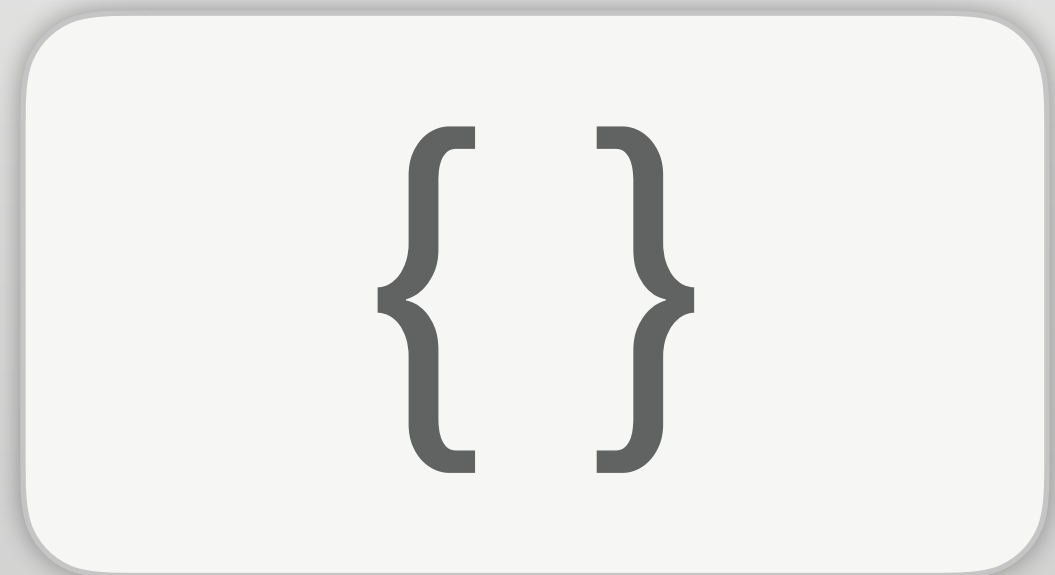


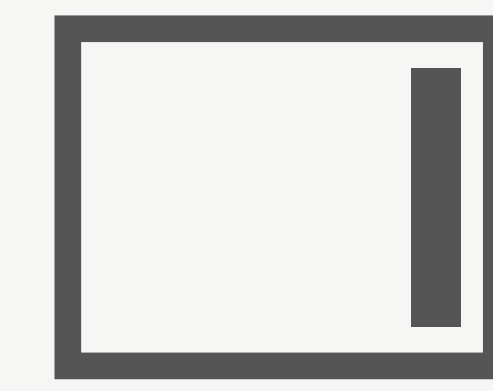
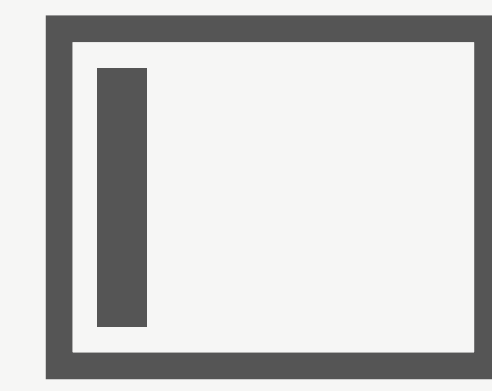
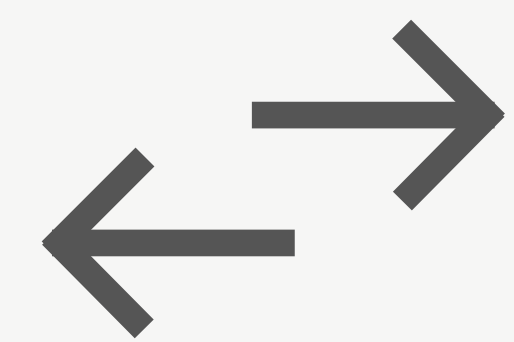
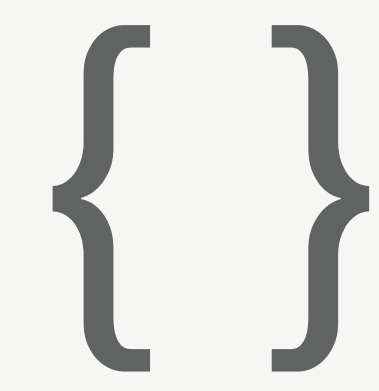


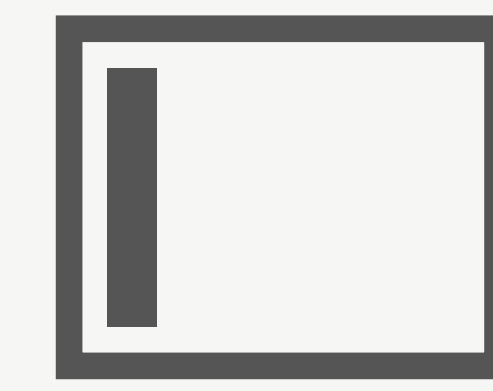
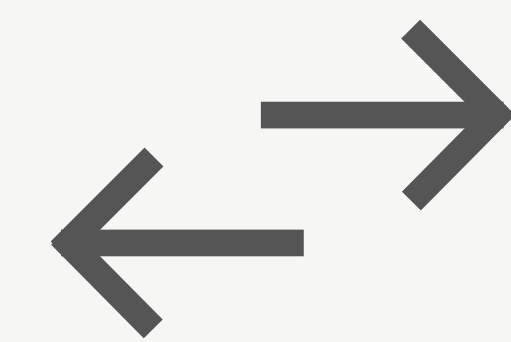
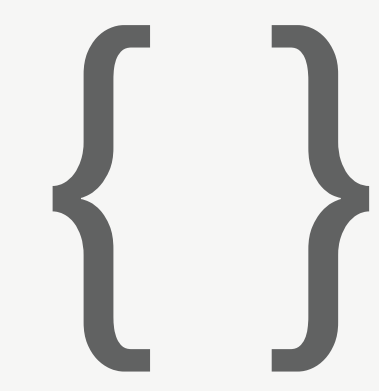






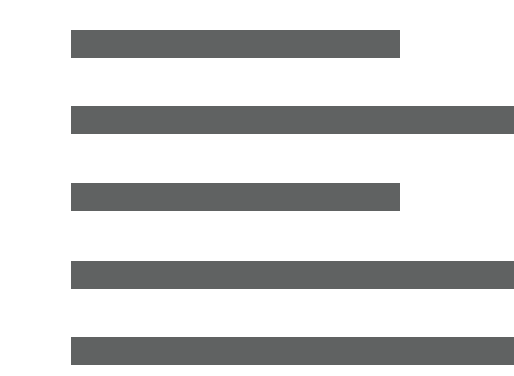
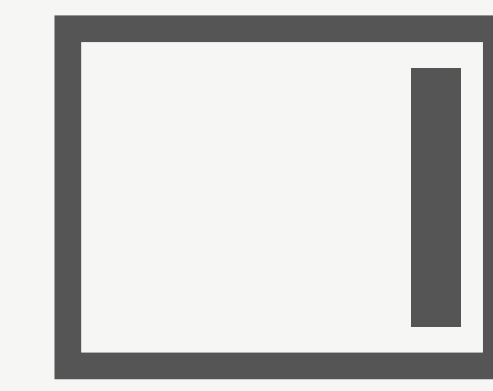
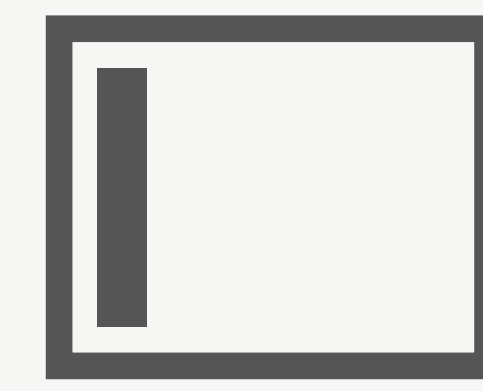
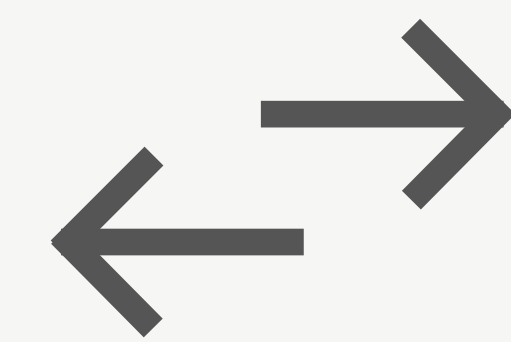
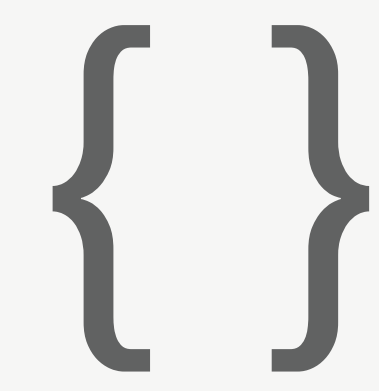


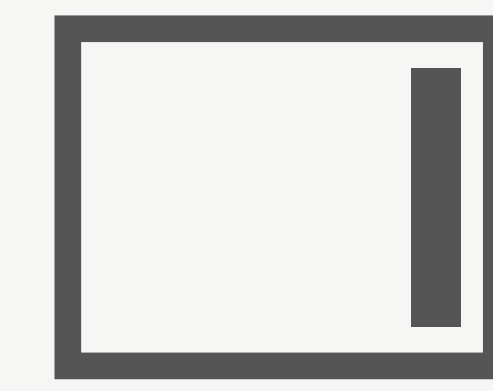
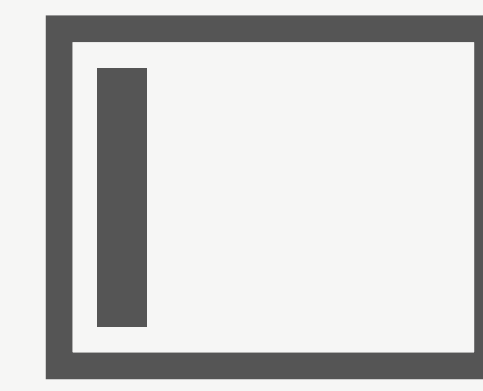
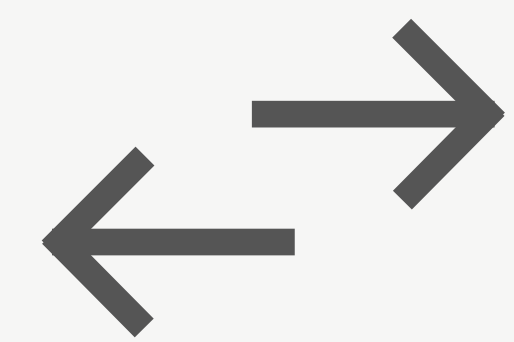
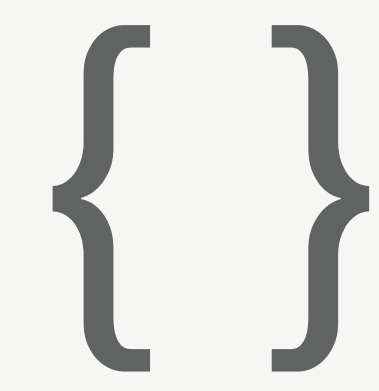


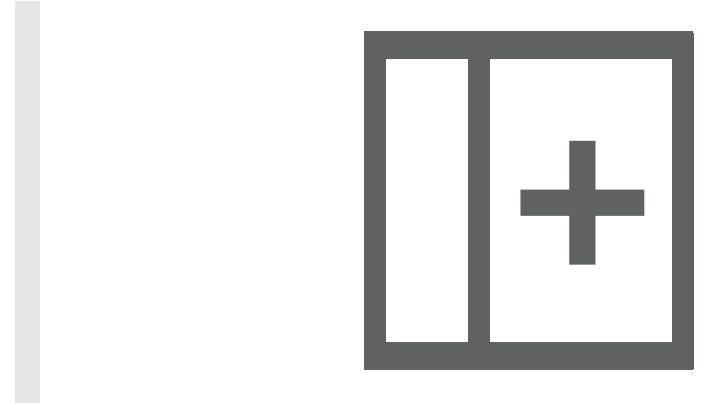
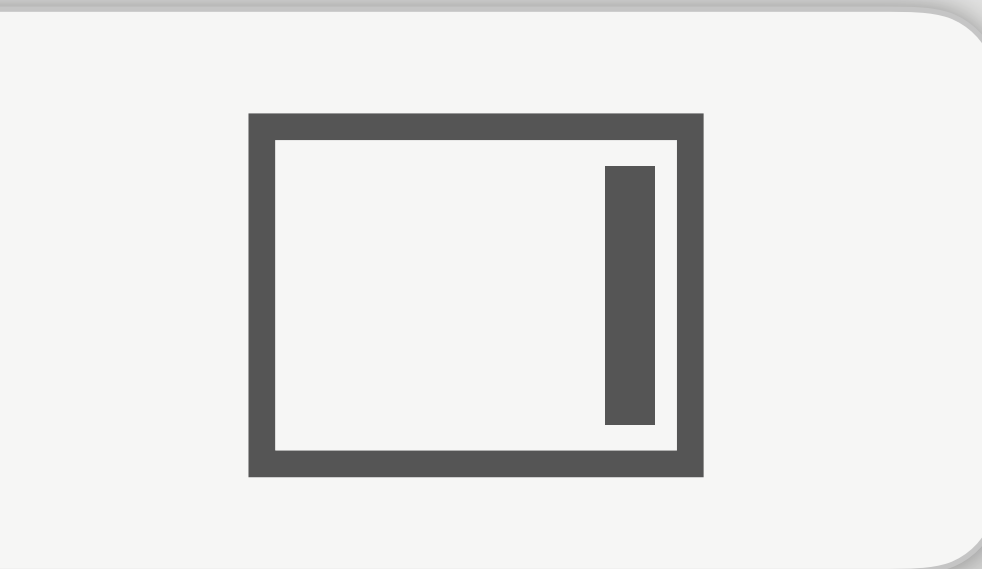
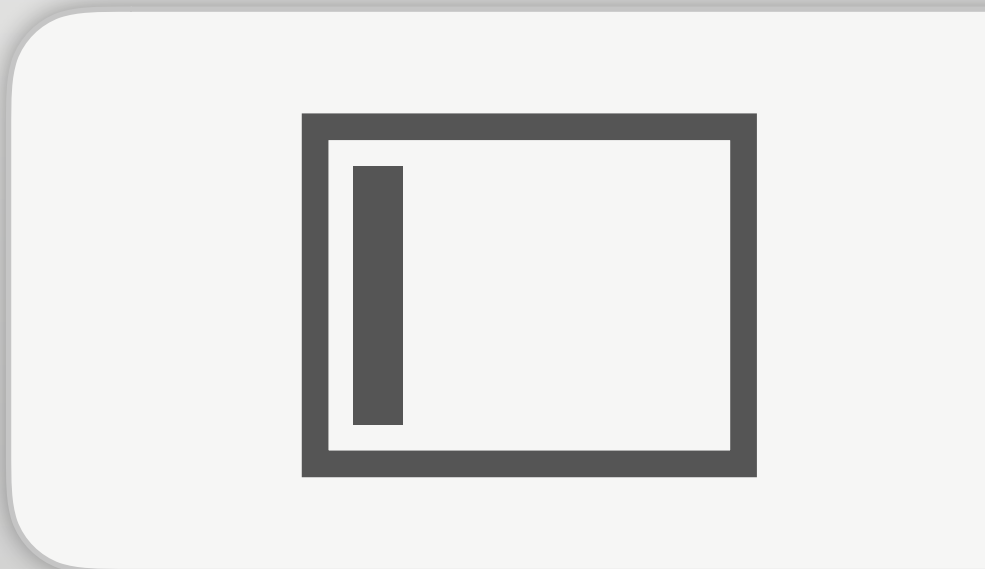
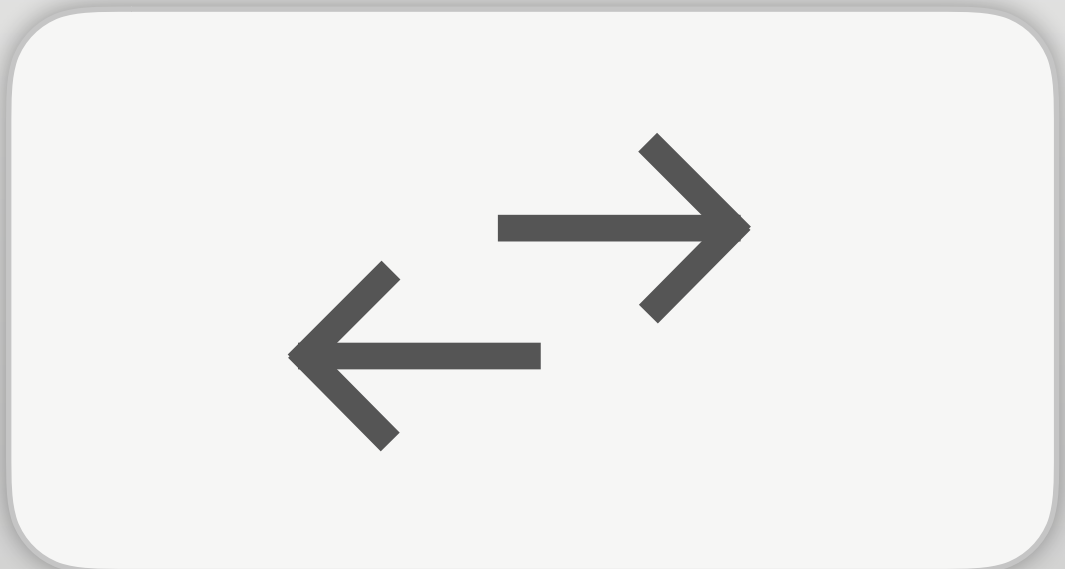
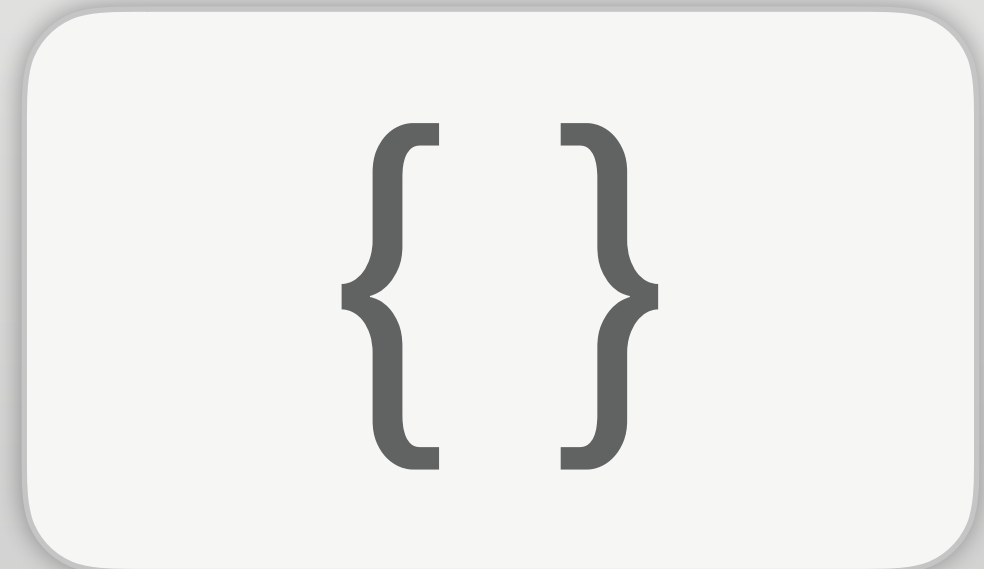


Editor Options →

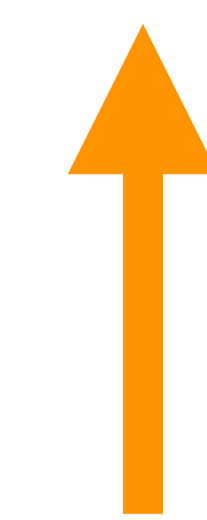
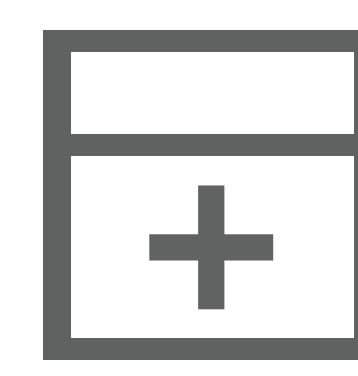
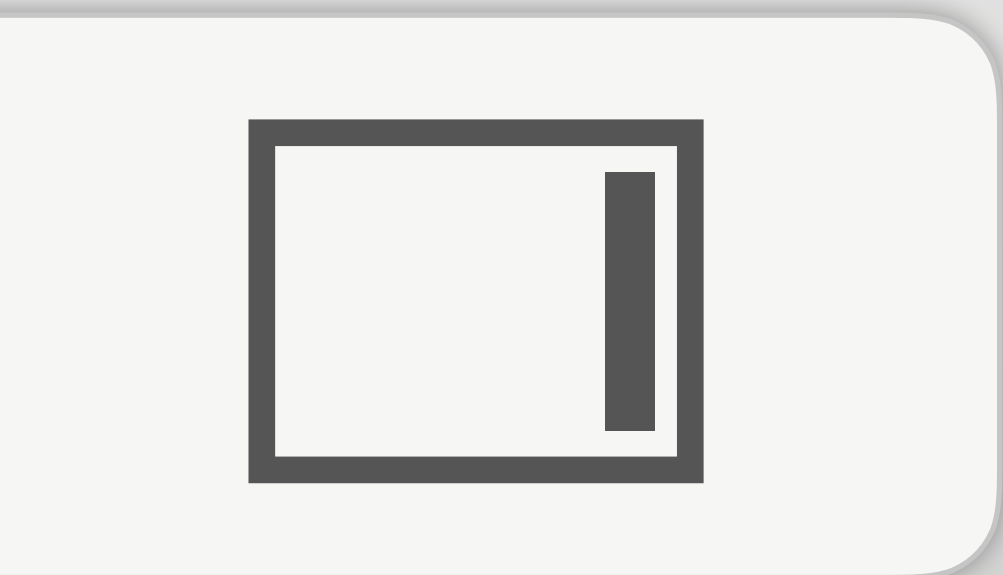
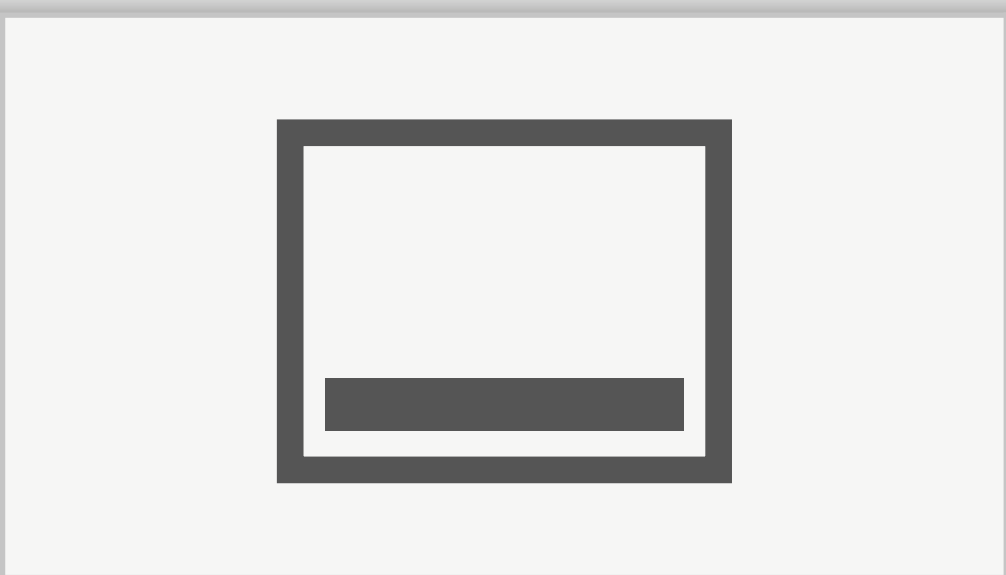
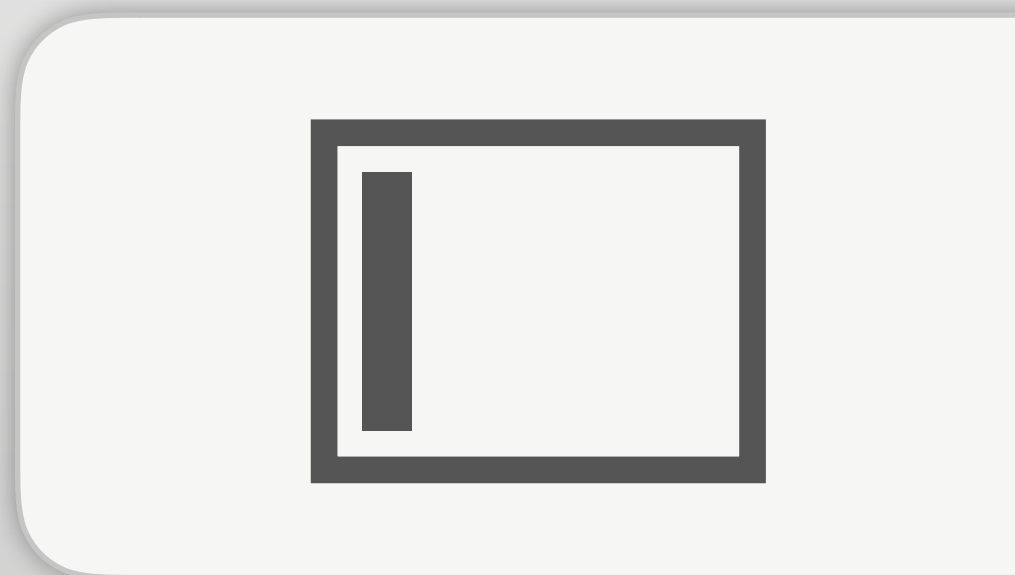
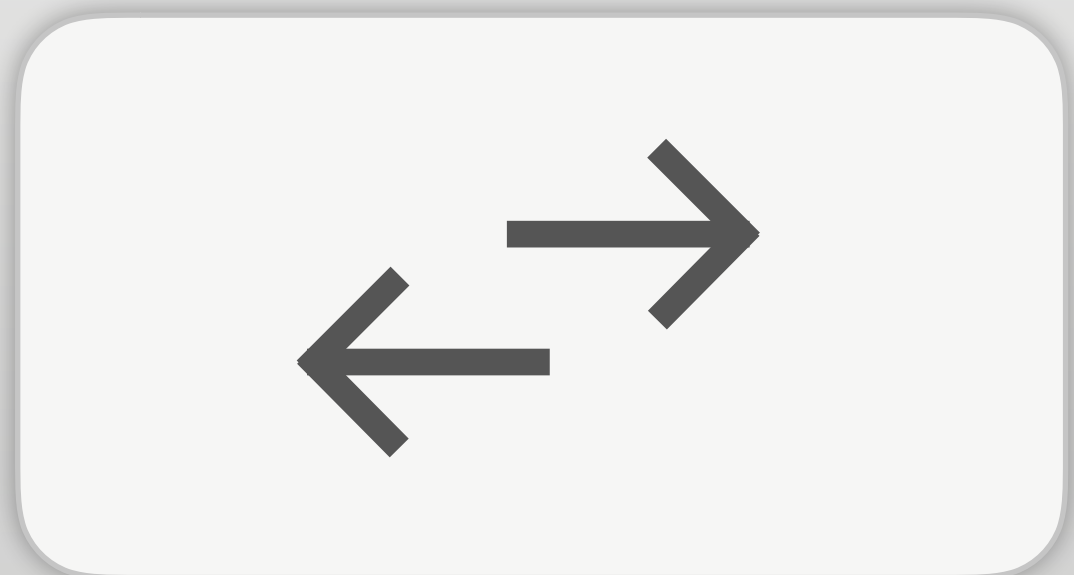
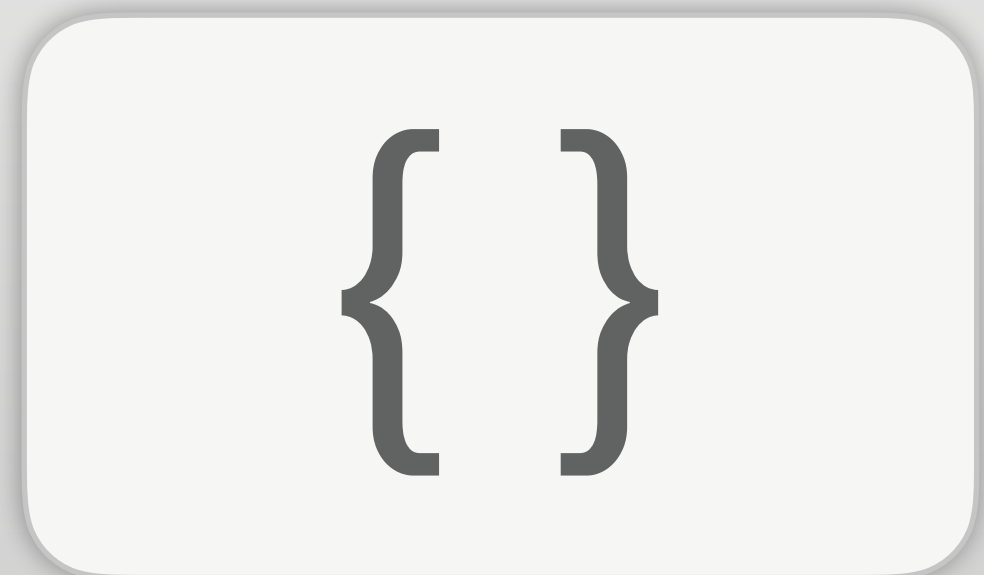






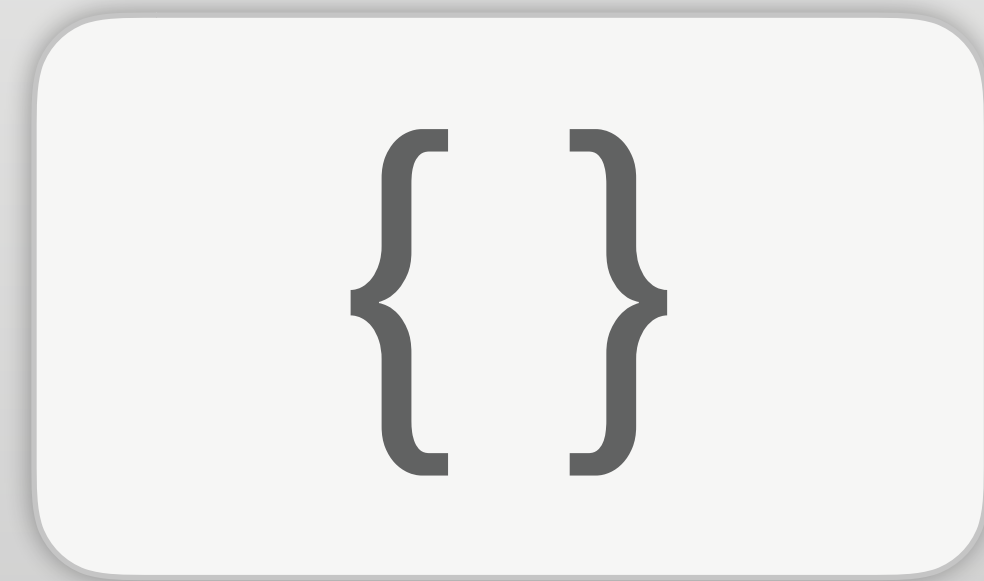


Add Editor

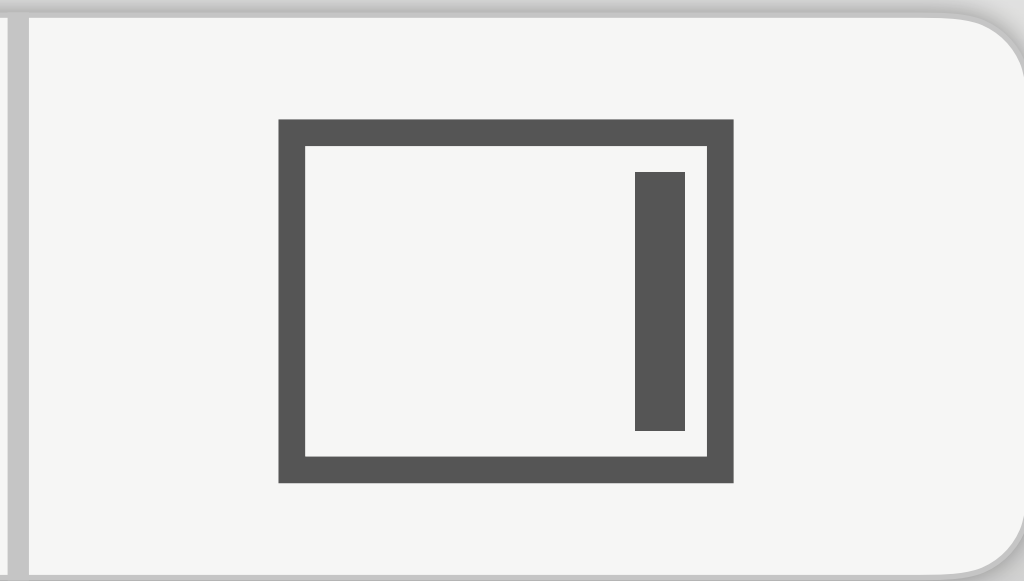
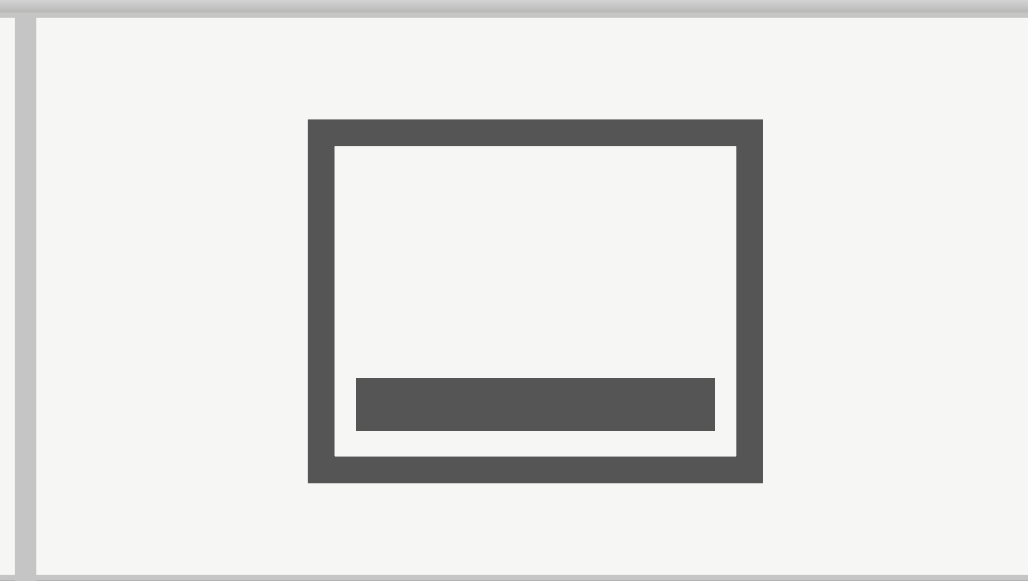
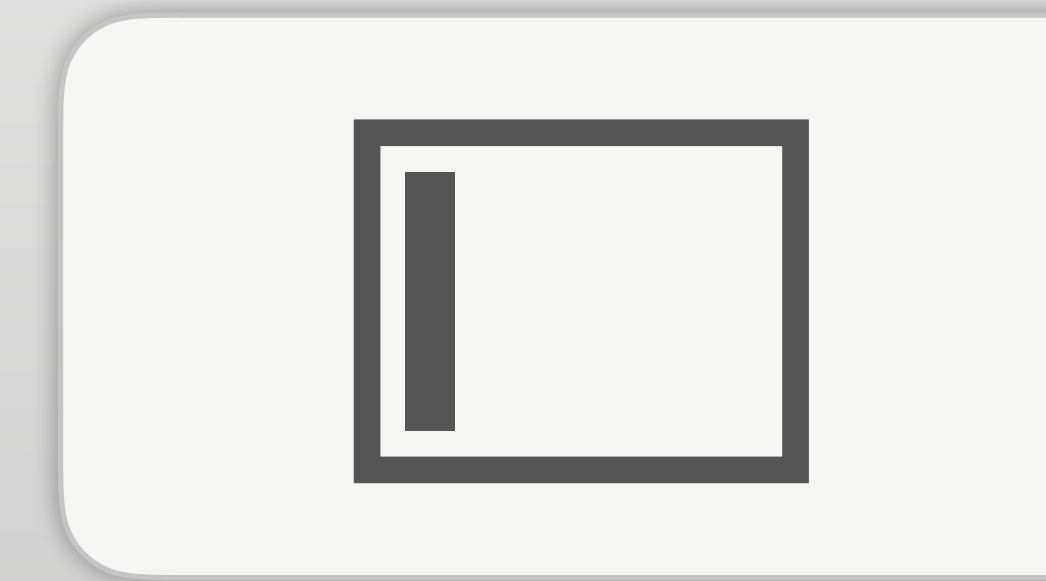
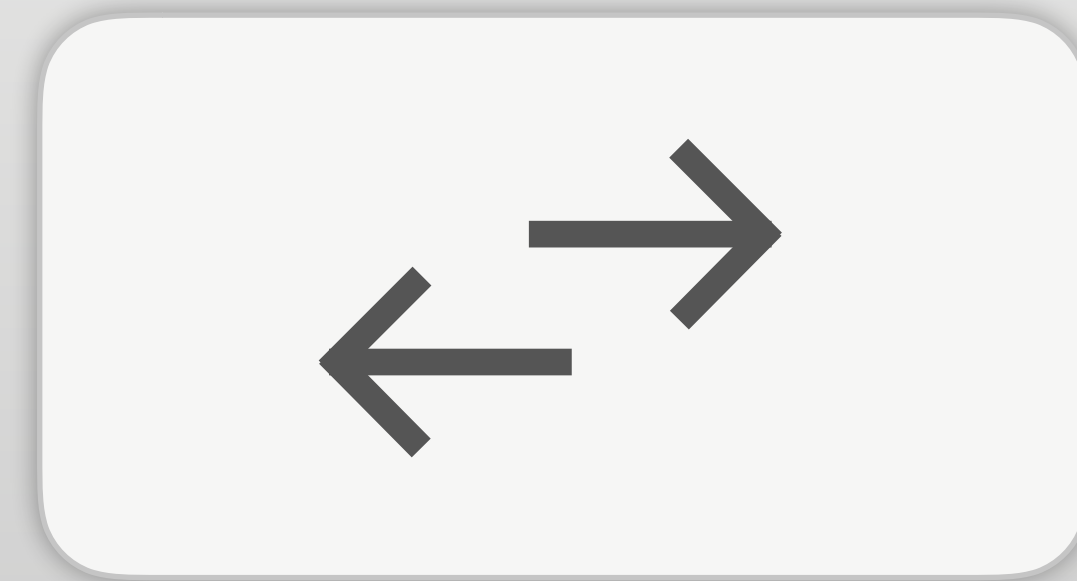
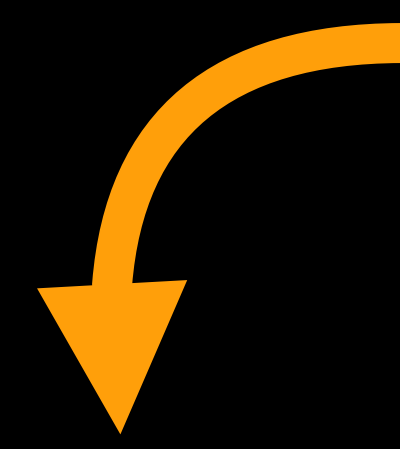


Add Editor

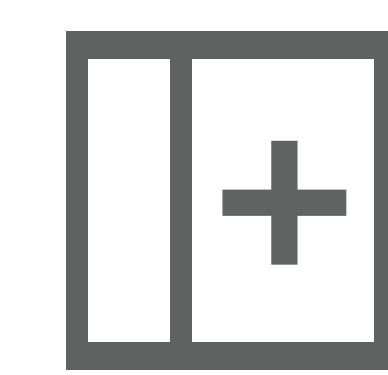
Library



Code Review



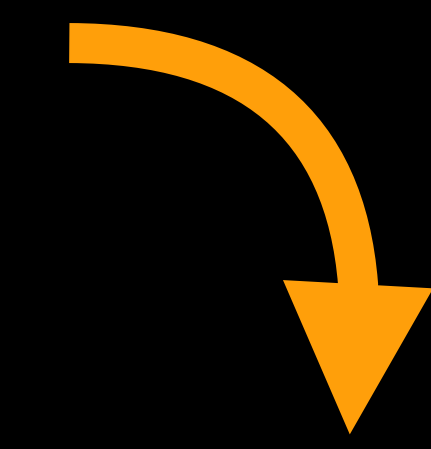
Editor Options



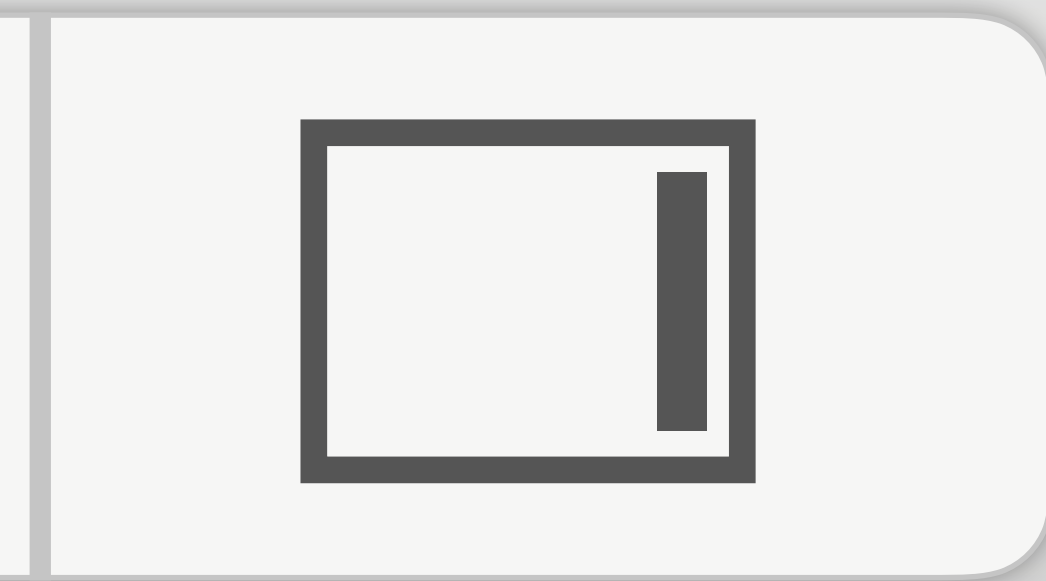
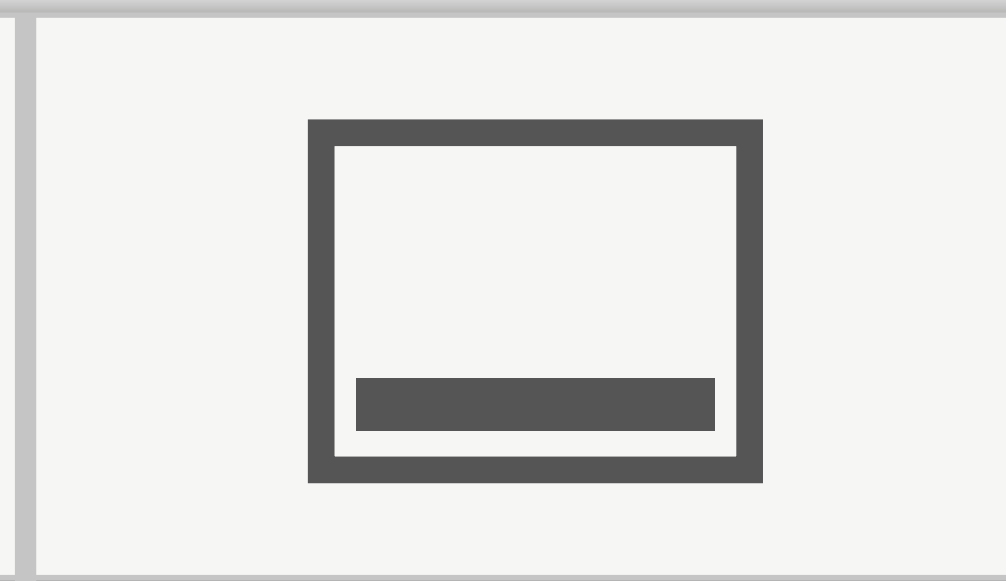
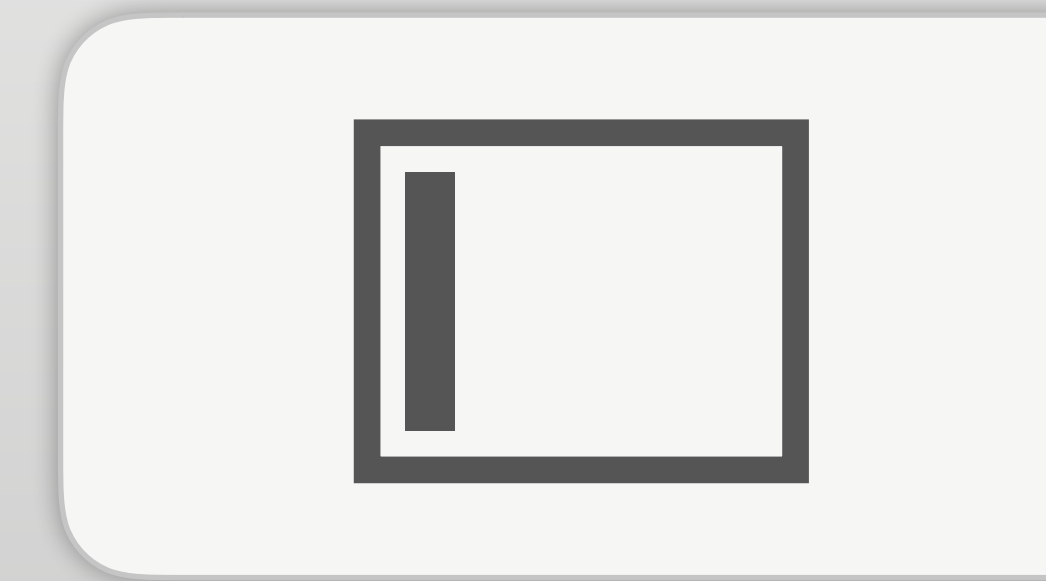
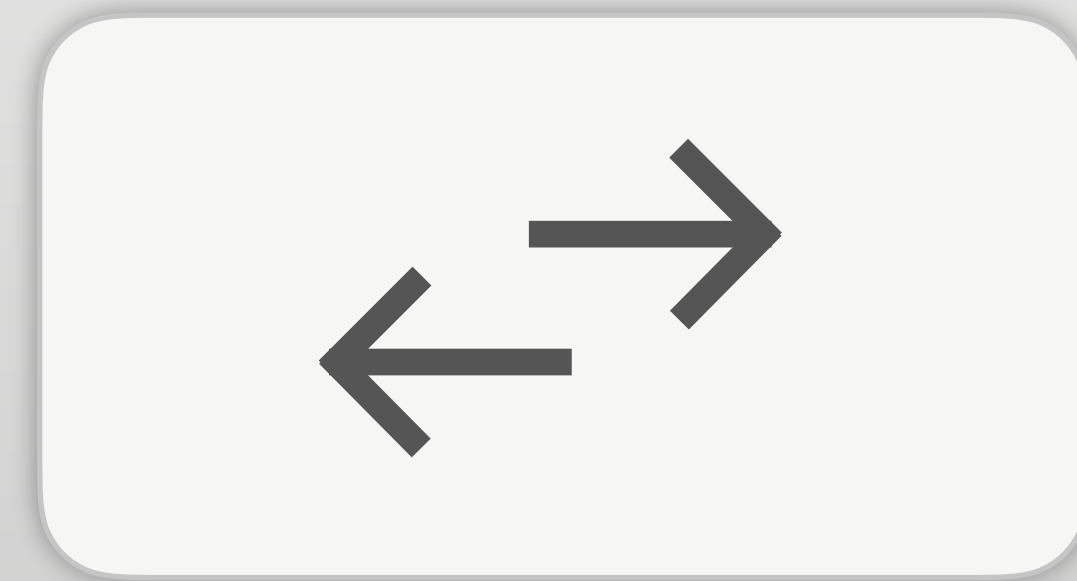
Add Editor



Library



Code Review



Editor Options



Add Editor



Demo

Workflow updates

Brendan Donohoe, Developer Tools

Demo

Workflow updates

Getting Started with Xcode

Tuesday, 11:00AM





Code Completion Improvements

Spell Checking

Code Drag and Drop Improvements

High Contrast Themes

Minimap

Nested Code Folding

Mark Separator Rendering

Inline Diff

Finer Grained Syntax Coloring Options

Enhanced Comment Rendering



Code Completion Improvements

Spell Checking

Code Drag and Drop Improvements

High Contrast Themes

Minimap

Nested Code Folding

Mark Separator Rendering

Inline Diff

Finer Grained Syntax Coloring Options

Enhanced Comment Rendering



#W 

#W 

#w █

```
warning( "message" )
```



```
var colors: [UIColor] = [.system 
```

```
var colors: [UIColor] = [.system 
```

```
var colors: [UIColor] = [.system 
```

```
systemRed
```

```
systemBlue
```

```
systemGray
```

```
systemMint
```

```
systemPink
```

```
struct TimeMachine {  
    func travel(backTo: Date) {...}  
    func travel(forwardTo: Date) {...}  
}
```

```
let timeTravel = TimeMachine()  
timeTravel.travel(■
```

```
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    func travel(forwardTo: Date) {...}  
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}
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let timeTravel = TimeMachine()  
timeTravel.travel(■
```

(backTo: Date)

(forwardTo: Date)



Swift Package Manager

Swift Package Manager

Introduced with Swift open source

Thousands of packages

Great way to factor your project



Swift Package Manager

Introduced with Swift open source

Thousands of packages

Great way to factor your project





+



Swift Package Manager

Packages are first class

Integrated throughout Xcode

Great for consuming and producing





Bitbucket



GitHub



GitLab

Demo

Patrick Killian, Developer Tools

Demo

Adopting Swift Packages in Xcode

Wednesday, 3:00PM

Creating Swift Packages

Thursday, 9:00AM

Binary Frameworks in Swift

Thursday, 3:00PM



Source Control

- Travel
 - README.md
 - Travel
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 - AppDelegate.swift
 - MainTabView.swift
 - Model
 - Plan.swift** M
 - Event.swift
 - Region.swift
 - PointOfInterest.swift
 - Location.swift
 - Photo.swift
 - DataSource.swift
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 - PlanDetailView.swift
 - PlanHeaderView.swift
 - DateWeatherHeaderView.swift M
 - SolarAltitudeS...atorView.swift M
 - EventView.swift M
 - Journal
 - Journal.storyboard M
 - StoryboardHostView.swift
 - JournalView.swift
 - JournalCollectio...Controller.swift
 - JournalCollectionViewCell.swift
 - JournalDetailTab...Controller.swift

```

4 //
5 // Copyright © 2019 Apple Inc. All rights reserved.
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35     }
36
37     func hash(into hasher: inout Hasher) {

```


- Commit... ⌘⌘C
- Push...
- Pull... ⌘⌘X
- Fetch and Refresh Status
- Cherry-Pick...
- Stash Changes...**
- Discard All Changes...
- Add Selected Files
- Discard Changes in Selected Files...
- Mark Selected Files as Resolved
- Create Git Repositories...
- Clone...

Travel > iPhone Xs

Travel > Travel >

- Travel
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Stash changes

Enter a description for your stashed changes so you can reference them later. Stashes will appear in the Source Control navigator for your repository.

Optional message

Cancel
Stash

Travel

- Travel
 - README.md
 - Travel
 - Travel.entitlements
 - AppDelegate.swift
 - MainTabView.swift
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Stash changes

Enter a description for your stashed changes so you can reference them later. Stashes will appear in the Source Control navigator for your repository.

First cut of "travel journal" feature.

Cancel Stash

Travel | Build Travel: **Succeeded** | Today at 2:41 PM

travel_app > Stashed Changes > Stashed from master at c96eed6

travel_app master

- Branches
 - master (current) ↓1
- Stashed Changes
 - aa0fe8c Prepare...for Mac app icon. ...
 - Stashed from master at c96eed6 M...
 - Stashed from master at c96eed6 M...
- Tags
- Remotes
 - origin

Hierarchical Flat

- App
 - Travel
 - Travel
 - Journal
 - Journ...yboard M
 - Login Screen
 - Login....board M
 - Model
 - Plan.swift M
 - Plan
 - Date...ew.swift M
 - Event...w.swift M
 - Solar...w.swift M

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28     init(title: String, region: String, completed:
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32         self.completed = completed
33     }
34
35     static func == (lhs: Plan, rhs: Plan) -> Bool {
36         return lhs.title == rhs.title
37     }
38
39     func hash(into hasher: inout Hasher) {
40         title.hash(into: &hasher)
41     }

```

```

1 //
2 // Plan.swift
3 // Travel
4 //
5 // Copyright © 2019 Ap
6 //
7
8 import Foundation
9
10 // Journal are complete
11 typealias Journal = Pla
12
13 class Plan : Codable, H
14     let title: String
15     let region: String
16     var events: [Event]
17
18 // Completed plans
19 let completed: Bool
20
21 init(title: String,
22     Bool = false) {
23     self.title = ti
24     self.region = r
25     self.completed
26 }
27
28 static func == (lhs
29     return lhs.titl
30 }
31
32 func hash(into hash
33     title.hash(into

```


travel_app journal_feature

- Branches
 - journal_feature (current)
 - master ↓1
- Stashed Changes
 - aa0fe8c Prepare...for Mac app icon. ...
 - Stashed from master at c96eed6 M...
 - Stashed from master at c96eed6 M...
- Tags
- Remotes
 - origin

All Last 24 Hours Last 7 Days Last 30 Days Filter

Sebastian Fischer origin/branches/edsanchez/tweaks
Fix color reference.

Sebastian Fischer
Fix storyboard reference.

Edward Sanchez
Update project file

Edward Sanchez
Rename button color

Edward Sanchez
Replace bag image to give handle more contrast

Edward Sanchez
Rename login screen

Sebastian Fischer
Fix json format.

Patrick Killian
[Hotfix] date => dateString in Plans.json

Sebastian Fischer
Fix date format.

Patrick Killian Merge
Merge pull request #6

Sebastian Fischer
Add a few more points of interests.

Sebastian Fischer
Fix height of Journal table view cells.

travel_app journal_feature

- Branches
 - journal_feature (current)
 - master ↓1
- Stashed Changes
 - aa0fe8c Prepare...for Mac app icon. ...
 - Stashed from master at c96eed6 M...
 - Stashed from master at c96eed6 M...
- Tags
- Remotes
 - origin

travel_app > Branches > journal_feature

All Last 24 Hours Last 7 Days Last 30 Days Filter

- Sebastian Fischer** origin/branches/edsanchez/tweaks
Fix color reference.
- Sebastian Fischer**
Fix storyboard reference.
- Edward Sanchez**
Update project file
- Edward Sanchez**
Rename bu
- Edward Sa**
Replace ba
- Edward Sa**
Rename lo
- Sebastian**
Fix json for
- Patrick Kil** [Hotfix] da
- Sebastian Fischer**
Fix date format.
- Patrick Killian** Merge
Merge pull request #6
- Sebastian Fischer**
Add a few more points of interests.
- Sebastian Fischer**
Fix height of Journal table view cells.

- Copy Commit Message
- Copy Identifier
- Email Edward Sanchez...
- Tag "42e41d4"...
- Branch from "42e41d4"...
- Cherry-Pick "42e41d4"...**
- View on Host...
- Checkout "42e41d4"...
- History Editor Help

Travel | Build Travel: **Succeeded** | Today at 2:41 PM



Branches > journal_feature



Last 7 Days Last 30 Days

Filter

origin/branches/edsanchez/tweaks

9233a5d

5/22/19

8354308

5/22/19

2c37dab

5/22/19

42e41d4

5/22/19

92b77be

5/22/19

0d3308f

5/22/19

15f4074

5/22/19

43ef7d4

5/22/19

2de8a8a

5/22/19

13b4ea2

b6f': [README] Update readm 5/22/19

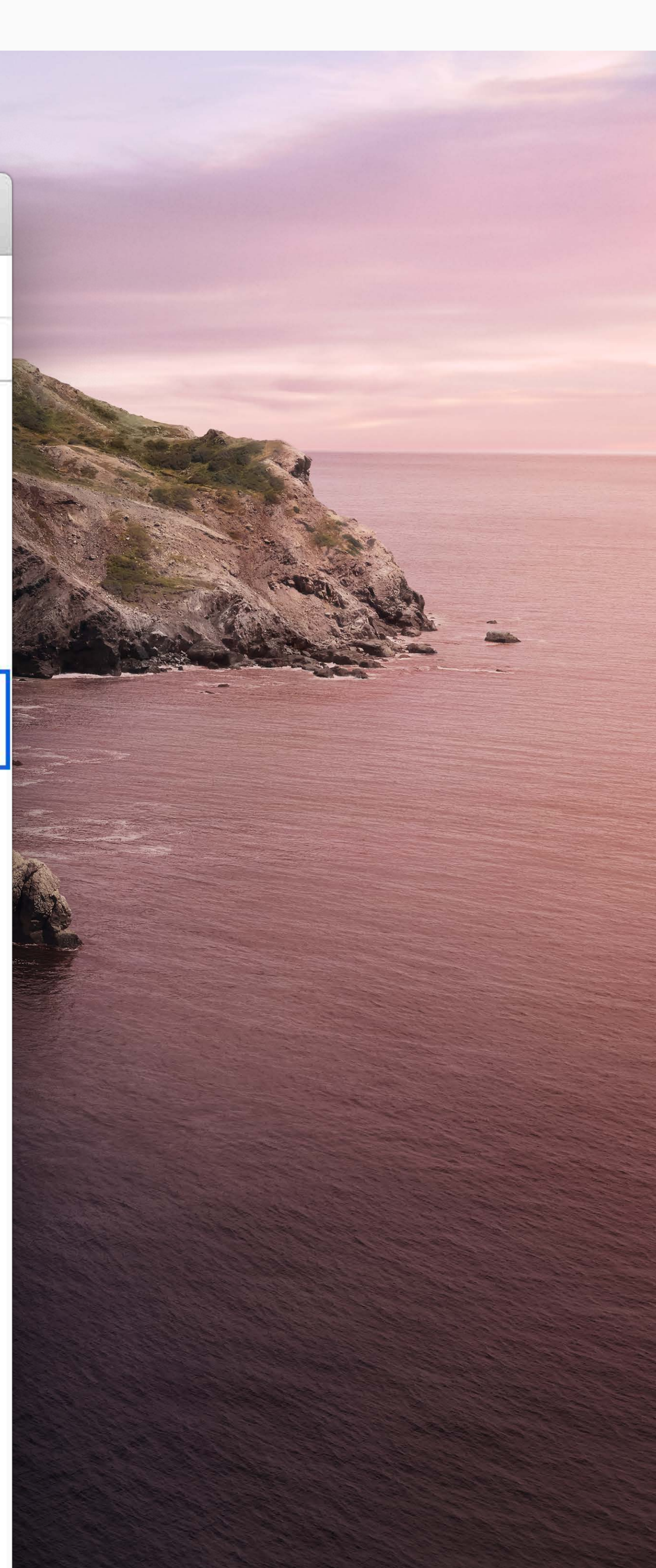
c7bdfc4

5/22/19

727b853

5/22/19

- Commit Message
- Identifier
- Edward Sanchez...
- 42e41d4"...
- ch from "42e41d4"...
- y-Pick "42e41d4"...**
- on Host...
- kout "42e41d4"...
- ry Editor Help



Travel | Build Travel: **Succeeded** | Today at 2:41 PM



Travel > Journal > JournalCollectionViewController.swift > JournalCollectionViewController



CollectionViewController.swift

© 2019 Apple Inc. All rights reserved.

```
useIdentifier = "JournalCell"
```

```
CollectionViewController: UICollectionViewController, UICollectionViewDelegateFlowLayout {
```

```
func viewDidLoad() {
    viewDidLoad()
}
```

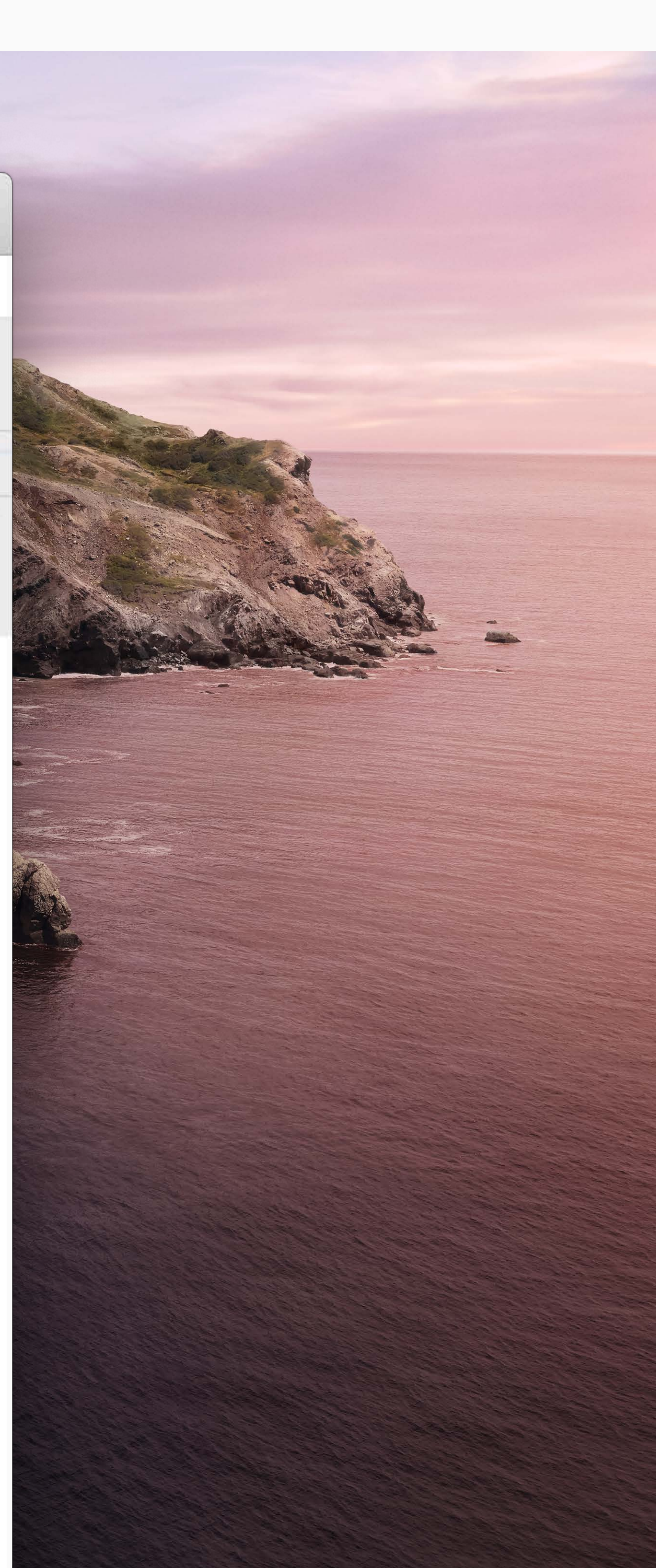
Navigation

For a storyboard-based application, you will often want to do a little preparation before navigation

```
func prepare(for segue: UIStoryboardSegue, sender: Any?) {
    let cell = sender as? JournalCollectionViewCell else { return }
    detailController = segue.destination as? JournalDetailTableViewController {
    detailController.journal = cell.journal
}
```

UICollectionViewDataSource

```
func numberOfSections(in collectionView: UICollectionView) -> Int {
    1
}
```



Travel | Build Travel: **Succeeded** | Today at 2:41 PM

Travel > Journal > JournalCollectionViewController.swift > No Selection

```
JournalCollectionViewController.swift

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useIdentifier = "JournalCell"

JournalCollectionViewController: UICollectionView,
CollectionViewDelegateFlowLayout {

func viewDidLoad() {
    viewDidLoad()
}

Navigation

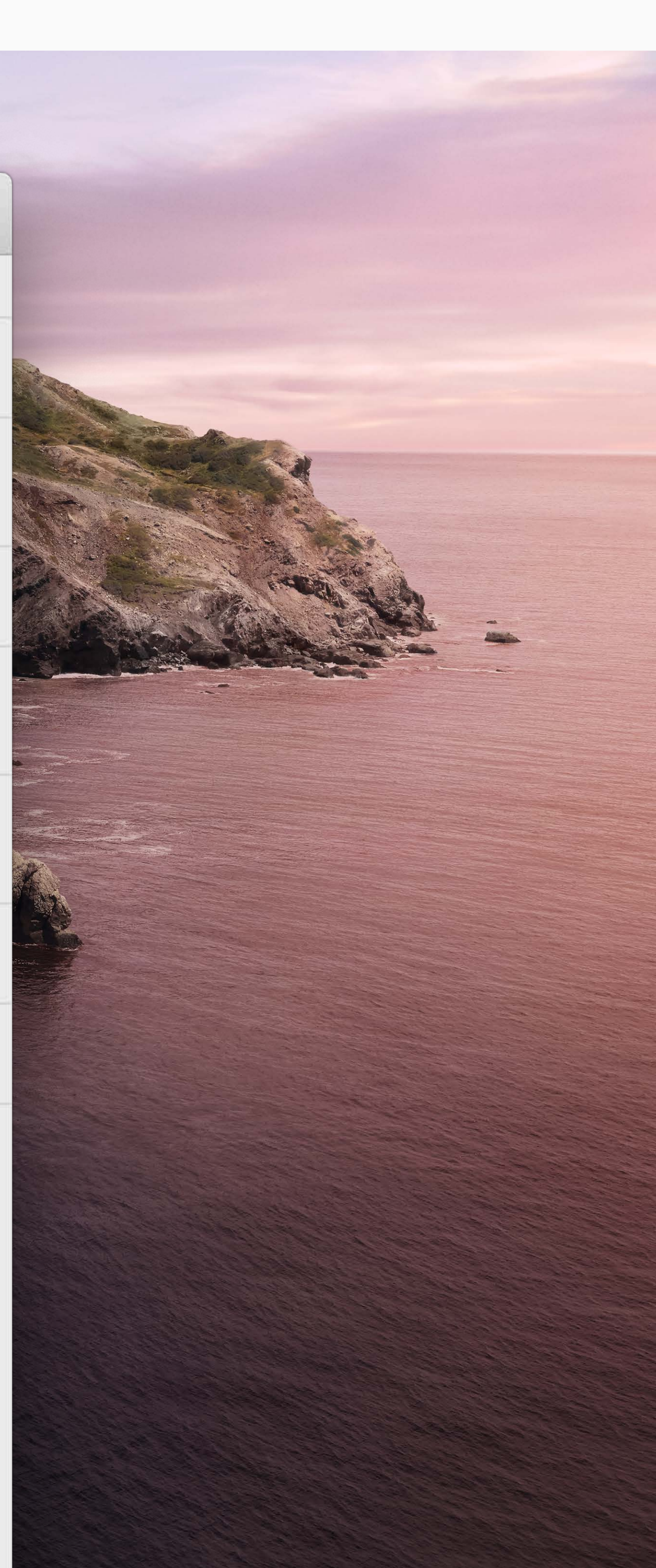
Storyboard-based application, you will often want to do a little preparation
before navigation
func prepare(for segue: UIStoryboardSegue, sender: Any?) {
    let cell = sender as? JournalCollectionViewCell else { return }
    let detailController = segue.destination as? JournalDetailTableViewController {
    detailController.journal = cell.journal
}

UICollectionViewDataSource

func numberOfSections(in collectionView: UICollectionView) -> Int {
    1
}
```



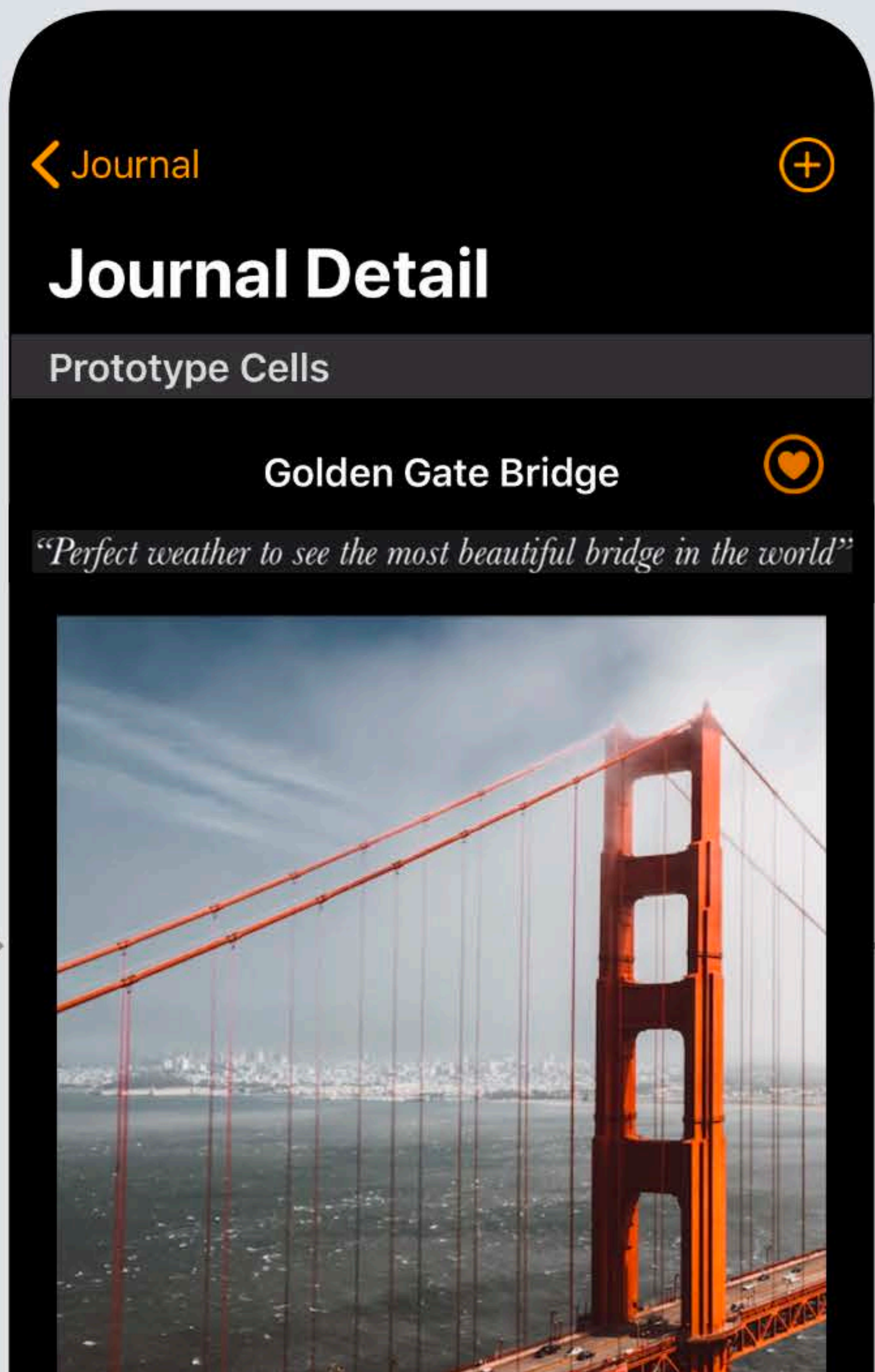
Author	Message	Commit ID	Date
Mosab Elagha	Feedback from review	2031a2b	5/20/19
Mosab Elagha	Saving in memory works, still have issue with retrieving saved image	854a003	5/19/19
Mosab Elagha	Code cleanup	3411add	5/19/19
Mosab Elagha	Adding new entry screen is there, yet to be able to save	01dfca7	5/19/19
Mosab Elagha	Cells mostly set up, adding journals is set up. Need backend for journals...	795959d	5/19/19
Sebastian Fischer	Show Journals.	4cc82f9	5/8/19
Sebastian Fischer	Add project with main tabbed view.	2468c90	5/2/19



Travel | Build Travel: **Succeeded** | Today at 2:41 PM

Travel > Journal > Journal.storyboard > No Selection

Journal Detail



Icons for file operations: document, clock, question mark, grid, download, list, refresh.

Sebastian Fischer 3e8dd72
Tweak UI of journal tab. 5/23/19

Sebastian Fischer 727b853
Fix height of Journal table view cells. 5/22/19

Sebastian Fischer 9aac979
Delete unused view controller. 5/21/19

Mosab Elagha ecb8321
Undid IB version change 5/21/19

Mosab Elagha e7ab92c
Added items for change and feedback from PR 5/21/19

Daniel Tsai 725d92c
added accessibility labels to Journal elements 5/20/19

Mosab Elagha 854a003
Saving in memory works, still have issue with retrieving saved image 5/19/19

Mosab Elagha 3411add
Code cleanup 5/19/19

Sebastian Fischer c75c584
More navigation bar styling to storyboard. 5/19/19

Mosab Elagha 01dfca7
Adding new entry screen is there, yet to be able to save 5/19/19

Mosab Elagha 795959d
Cells mostly set up, adding journals 5/19/19



Design Tools

Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > iPhone Xs Max

Travel > Travel > Journal > Journ...board > Journ...Scene > Journ...Detail > Table View > Journ...ntifier > Content View > View > heart.circle

Travel

- README.md
- Travel
 - Travel.entitlements
 - AppDelegate.swift
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 - Journal.storyboard **M**
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 - Frameworks

Journal Detail

Prototype Cells

Golden Gate Bridge

"Perfect weather to see the most beautiful bridge in the world"




Table View

Prototype Content

View as: iPad Pro 12.9" (3rd generation) (w R h R) 50%

Device Interface Style Orientation Layout

Vary for Traits

Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > iPhone Xs Max

Travel > Travel > Journal > Journ...board > Journ...Scene > Journ...Detail > Table View > Journ...ntifier > Content View > View > heart.circle

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Journal Detail

Prototype Cells

Golden Gate Bridge

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Table View

Prototype Content

View as: iPad Pro 12.9" (3rd generation) (w R h R)

50%

Device

Interface Style

Orientation

Layout

Vary for Traits

Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > iPhone Xs Max

Travel > Travel > Journal > Journ...board > Journ...Scene > Journ...Detail > Table View > Journ...ntifier > Content View > View > heart.circle

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MainMenu

Application File Edit Format View Window Help

Journal Detail

Prototype Cells

Golden Gate Bridge

"Perfect weather to see the most beautiful bridge in the world"

View as: My Mac (wR hR) 75%

Device Interface Style Vary for Traits

Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > iPhone Xs Max

Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > Travel > Jo...al > Jo...rd > Jo...ne > Jo...ail > Ta...ew > Jo...ier > C...iew > View > heart.circle

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Journal Detail

Prototype Cells

Golden Gate Bridge

"Perfect weather to see the most beautiful bridge in the world"

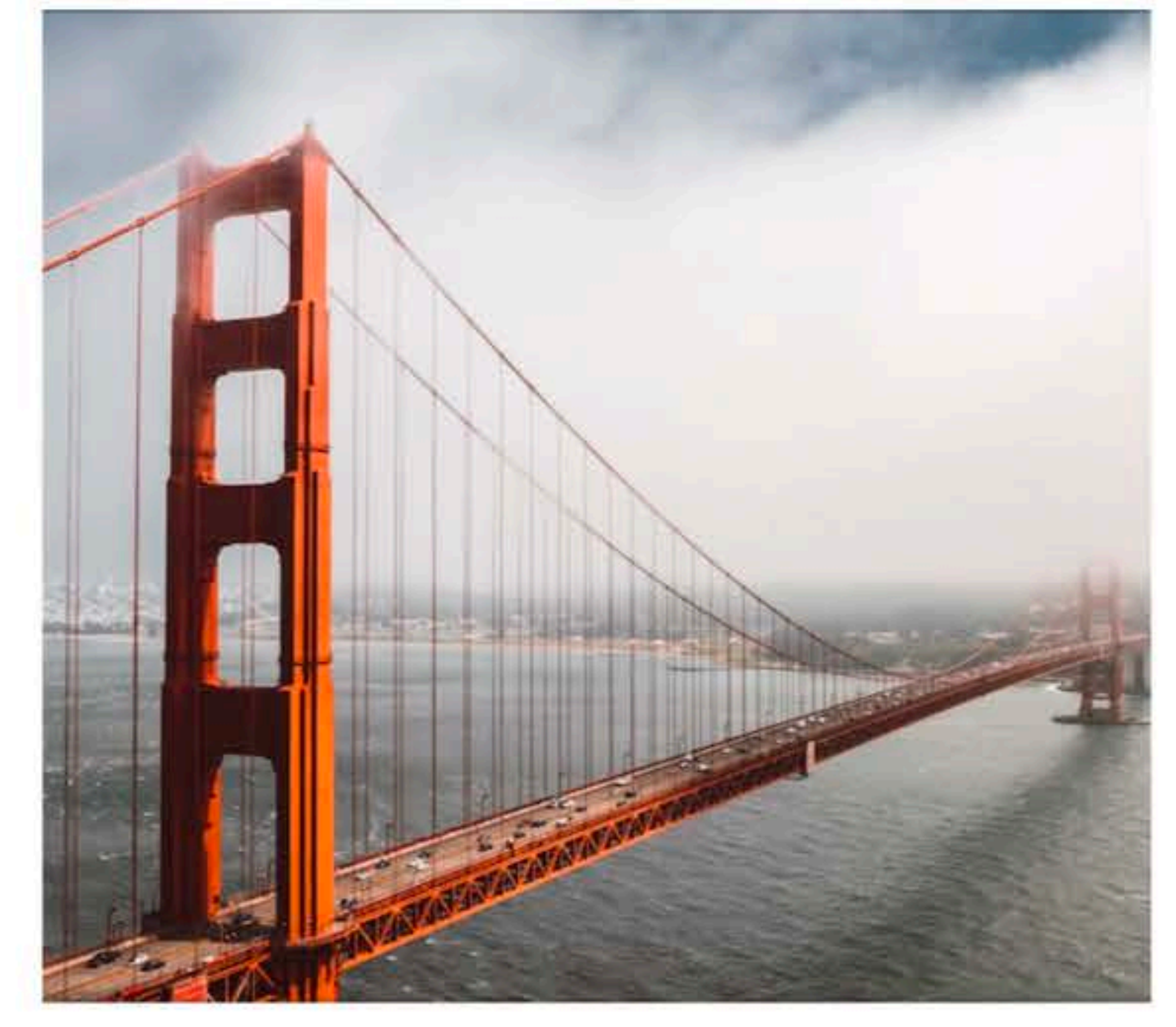


Table View

Prototype Content

View as: iPhone Xs Max (w C h R) - 75% +

Device Interface Style Orientation Vary for Traits

Image View

- Image heart.circle System
- Highlighted Highlighted Image
- State Highlighted
- Accessibility Adjusts Image Size

Symbol Configuration

- Configuration Font
- Scale Medium
- Font Body

View

- Content Mode Aspect Fit
- Semantic Unspecified
- Tag 0
- Interaction User Interaction Enabled Multiple Touch
- Alpha 1
- Background Default
- Tint Default
- Drawing Opaque Hidden Clears Graphics Context Clip to Bounds Autocomplete Subviews
- Stretching X: 0 Y: 0 Width: 1 Height: 1
- Installed

Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > iPhone Xs Max

Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > Travel > Jo...al > Jo...rd > Jo...ne > Jo...ail > Ta...ew > Jo...ier > C...iew > View > heart.circle

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Journal Detail

Prototype Cells

Golden Gate Bridge

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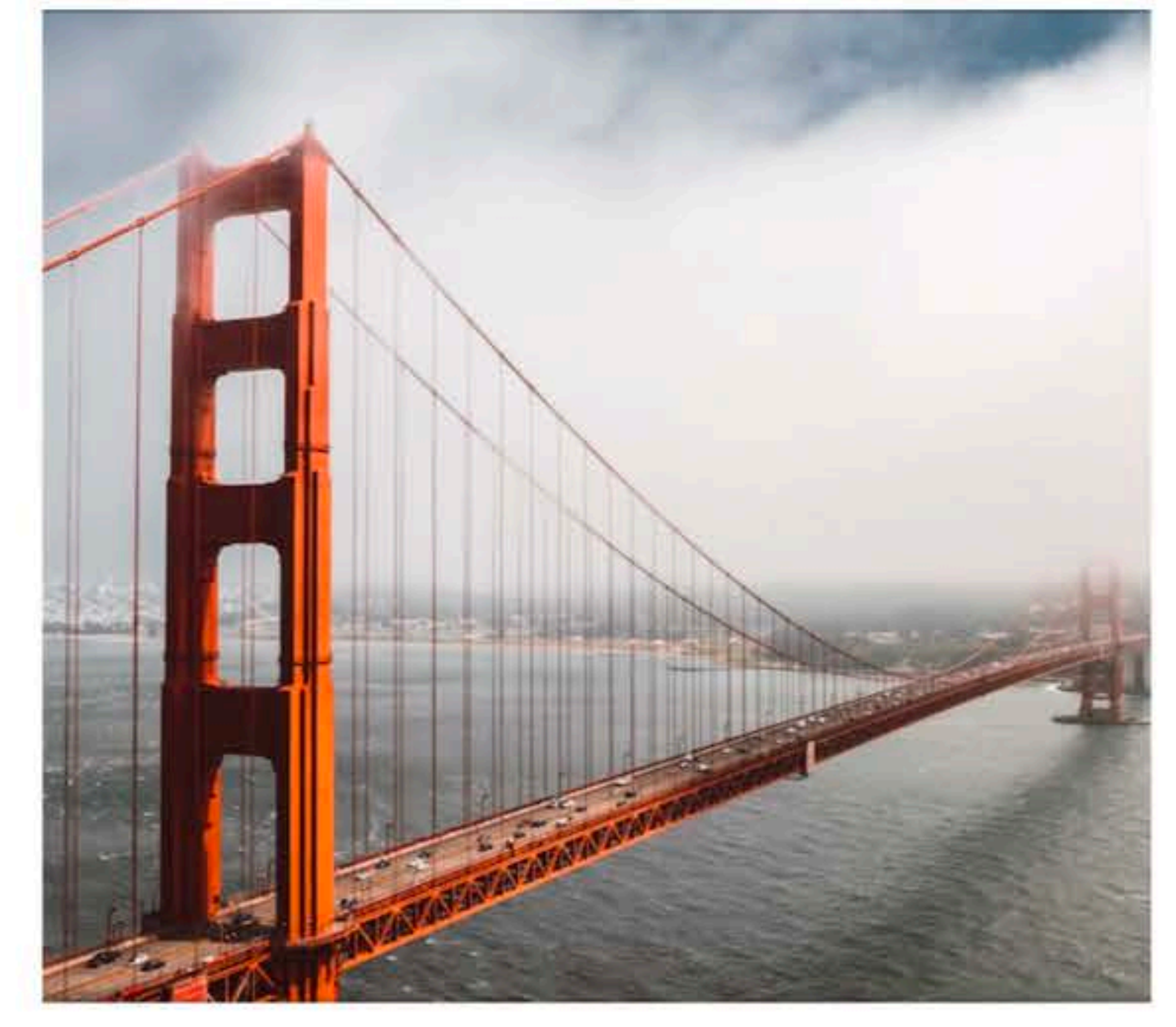


Table View

Prototype Content

View as: iPhone Xs Max (wC hR) - 75%

Device Interface Style Orientation Vary for Traits

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Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > iPhone Xs Max

Travel | Build Travel: Succeeded | Today at 1:52 PM

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Journal

Journal Detail

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Table View

Prototype Content

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Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > iPhone Xs Max

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Travel | Build Travel: Succeeded | Today at 1:52 PM

Travel > iPhone Xs Max

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Journal Detail

Prototype Cells

Golden Gate Bridge

Perfect weather to see the most beautiful bridge

Table View

Prototype Content

Image View

Image heart.circle System

Highlighted Highlighted Image

State Highlighted

Accessibility Adjusts Image Size

Symbol Configuration

Configuration Font

Scale Medium

Font Body

View

Content Mode Aspect Fit

Semantic Unspecified

Tag 0

Interaction User Interaction Enabled

Multiple Touch

Alpha 1

Background Default

Tint Custom

Drawing Opaque

Hidden

Clears Graphics Context

Clip to Bounds

Autocomplete Subviews

Stretching X 0 Y 0

Width 1 Height 1

Installed

View as: iPhone Xs Max (w C h R)

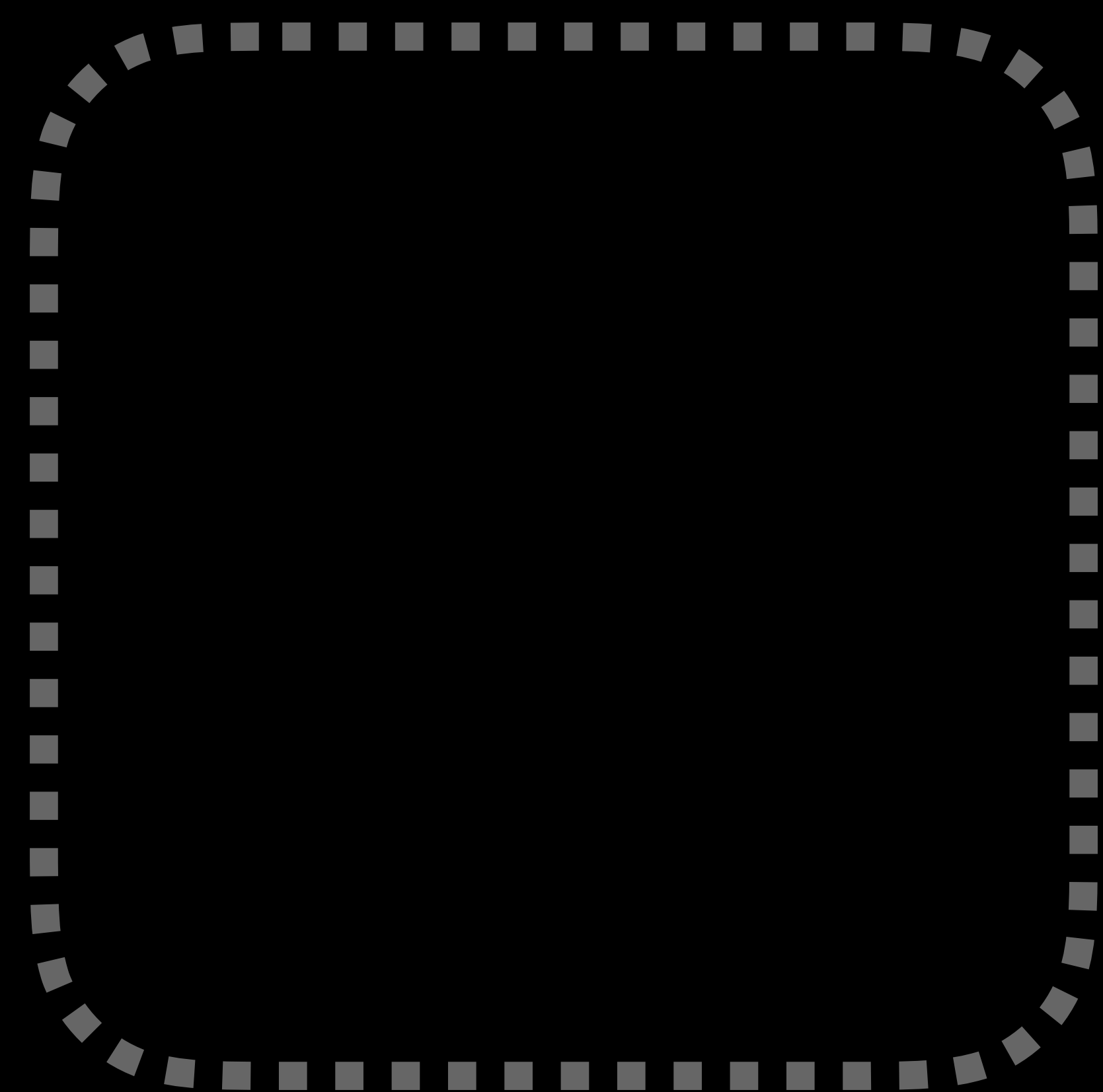
75%

Device

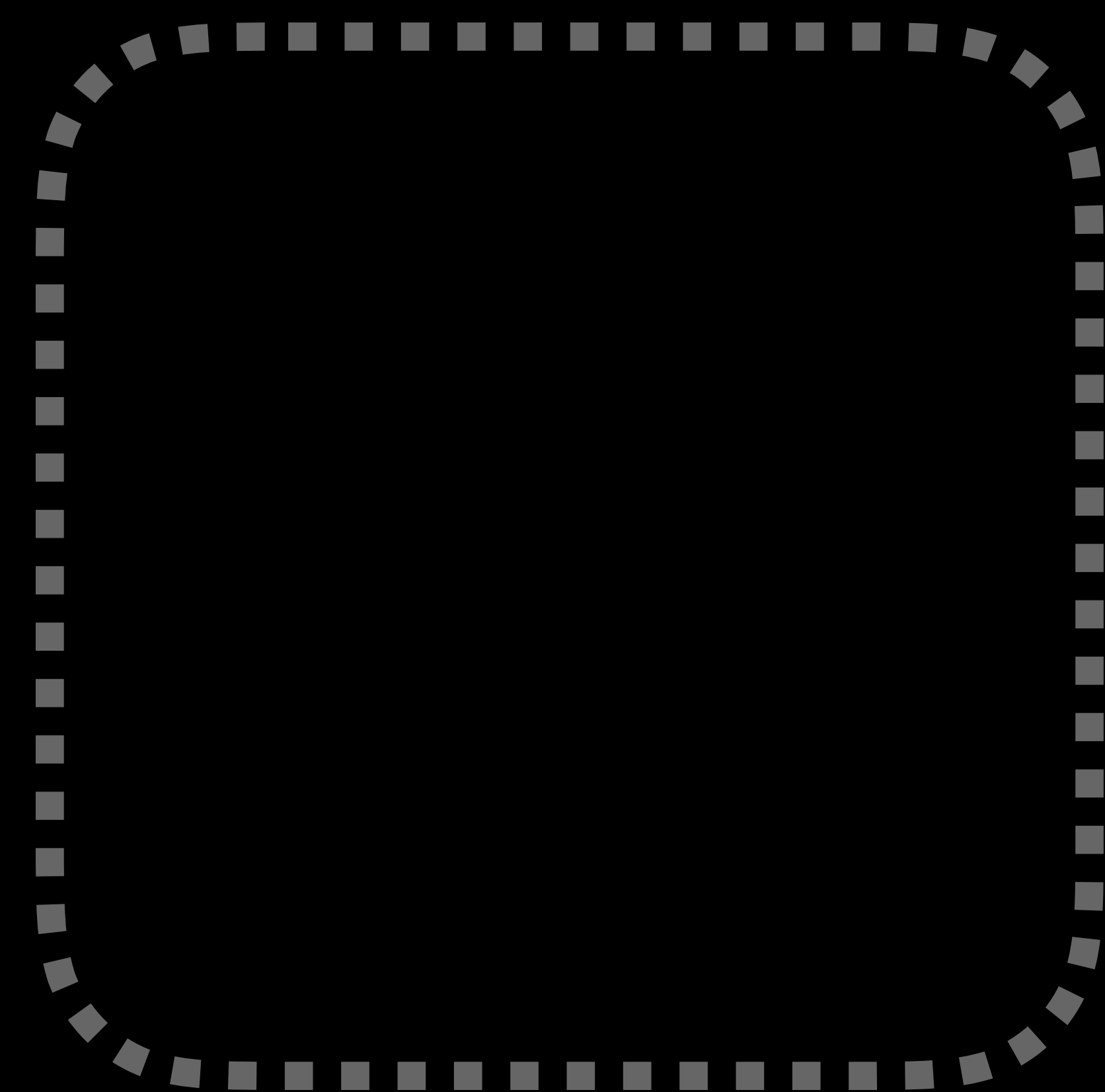
Interface Style

Orientation

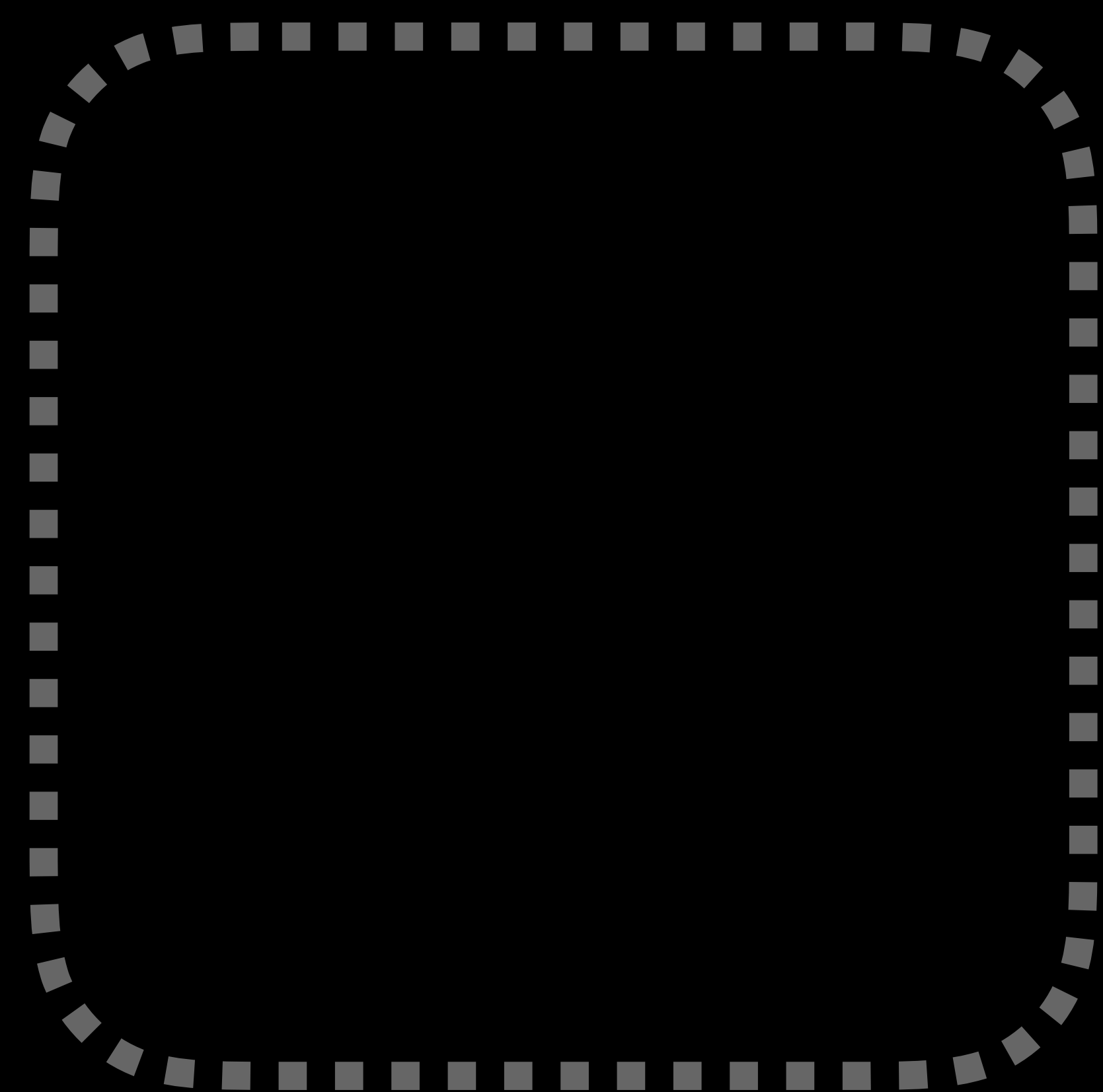
Vary for Traits



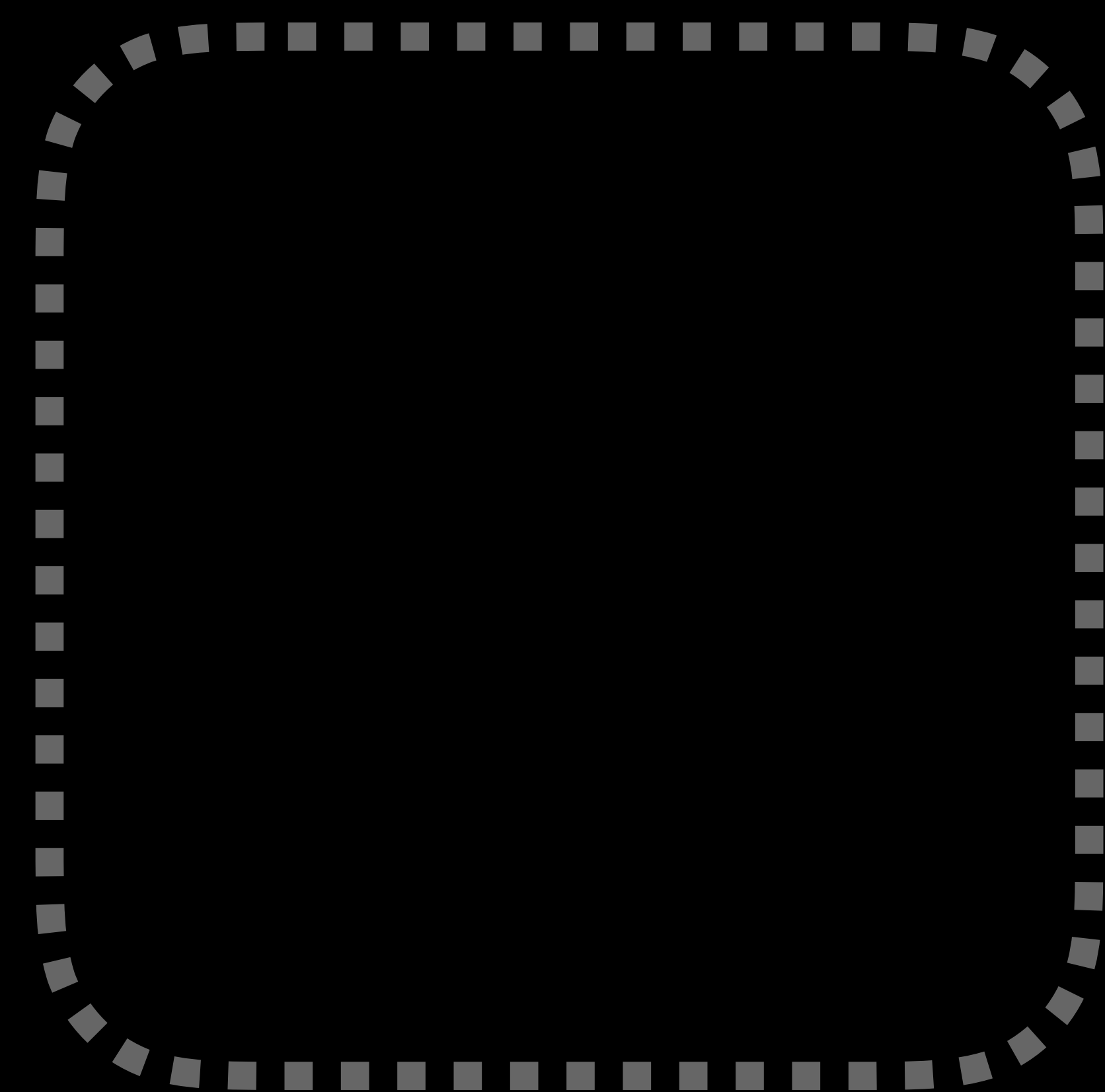
Colors



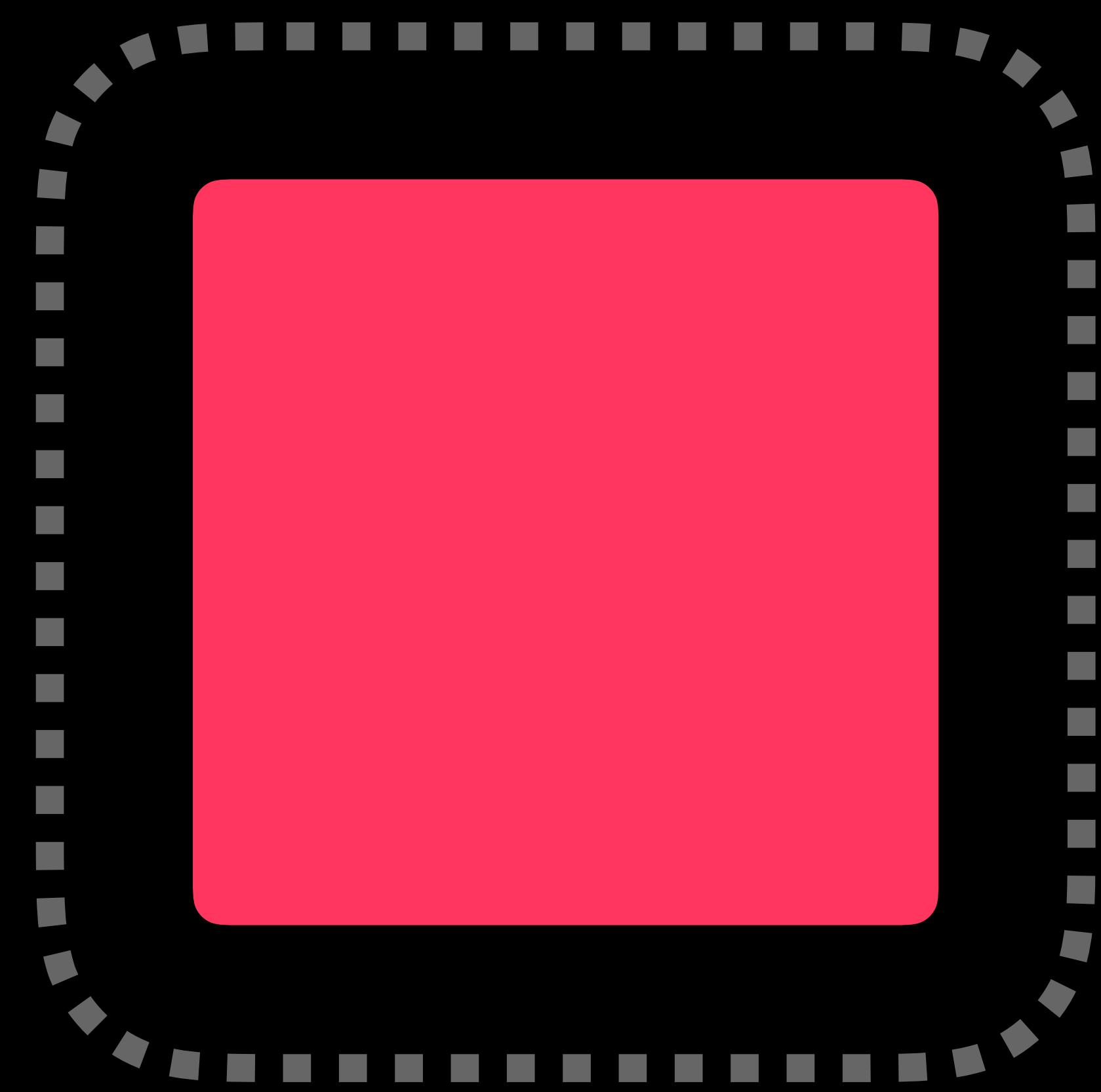
Images



Colors



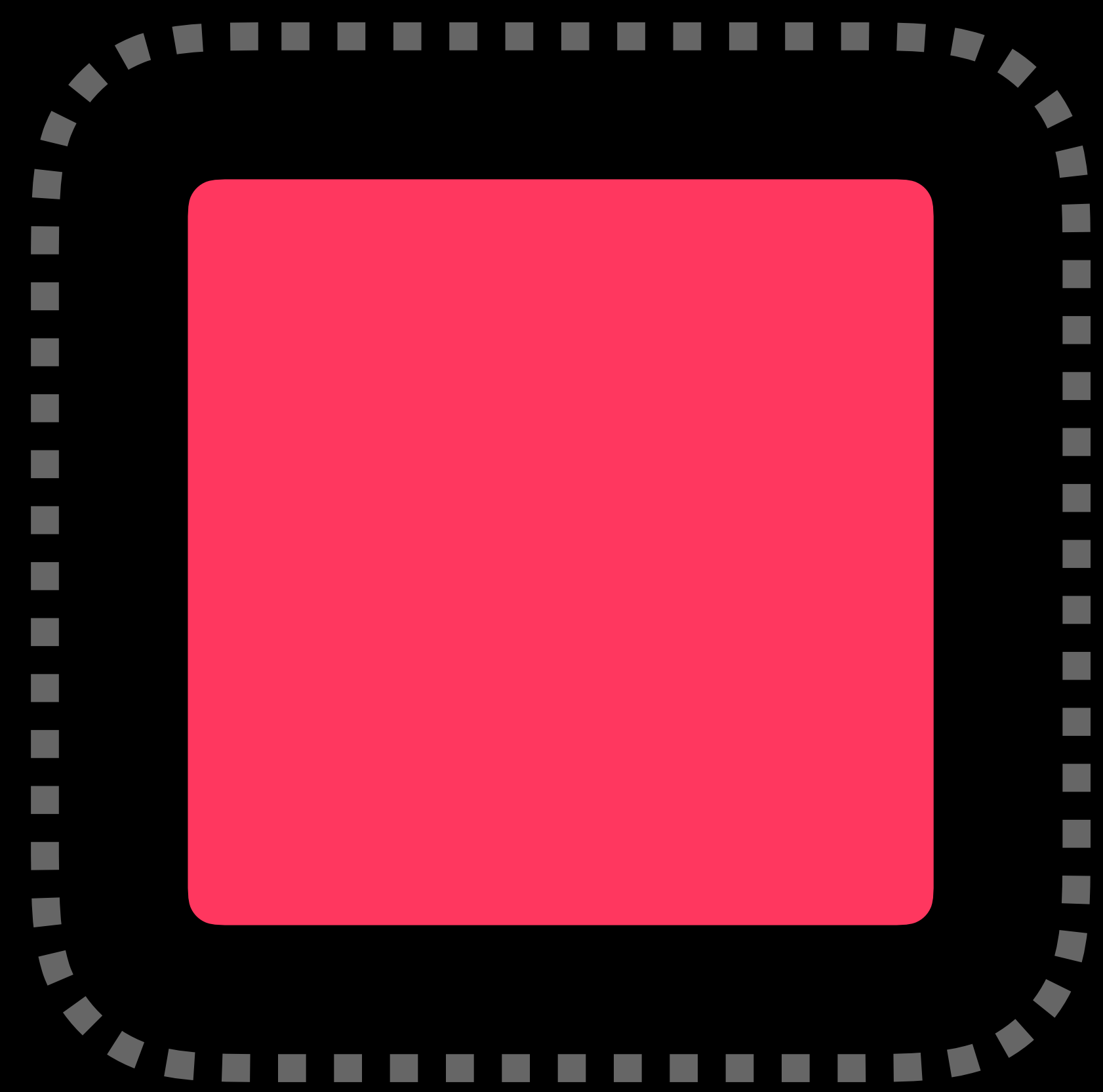
Images



Colors



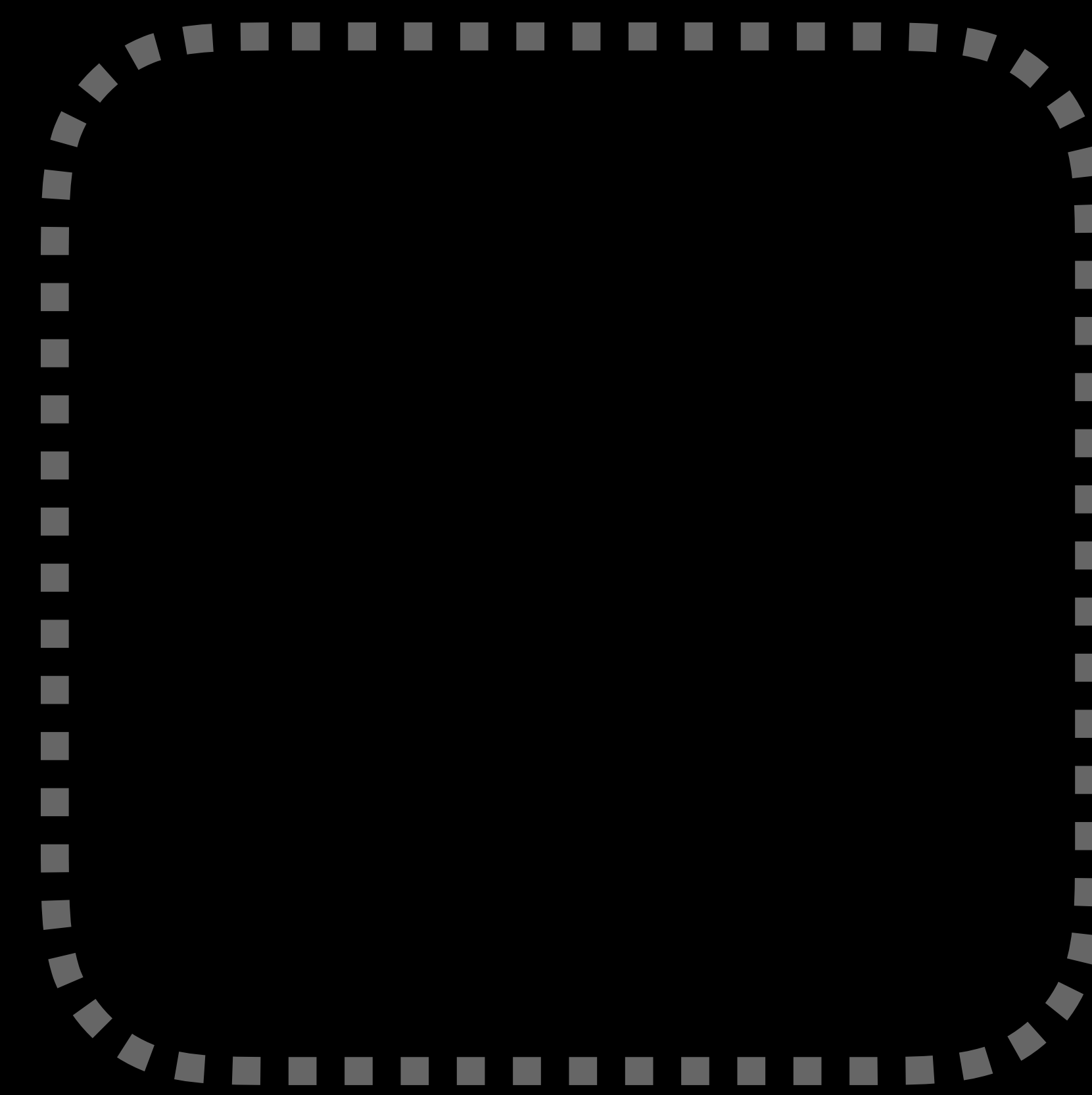
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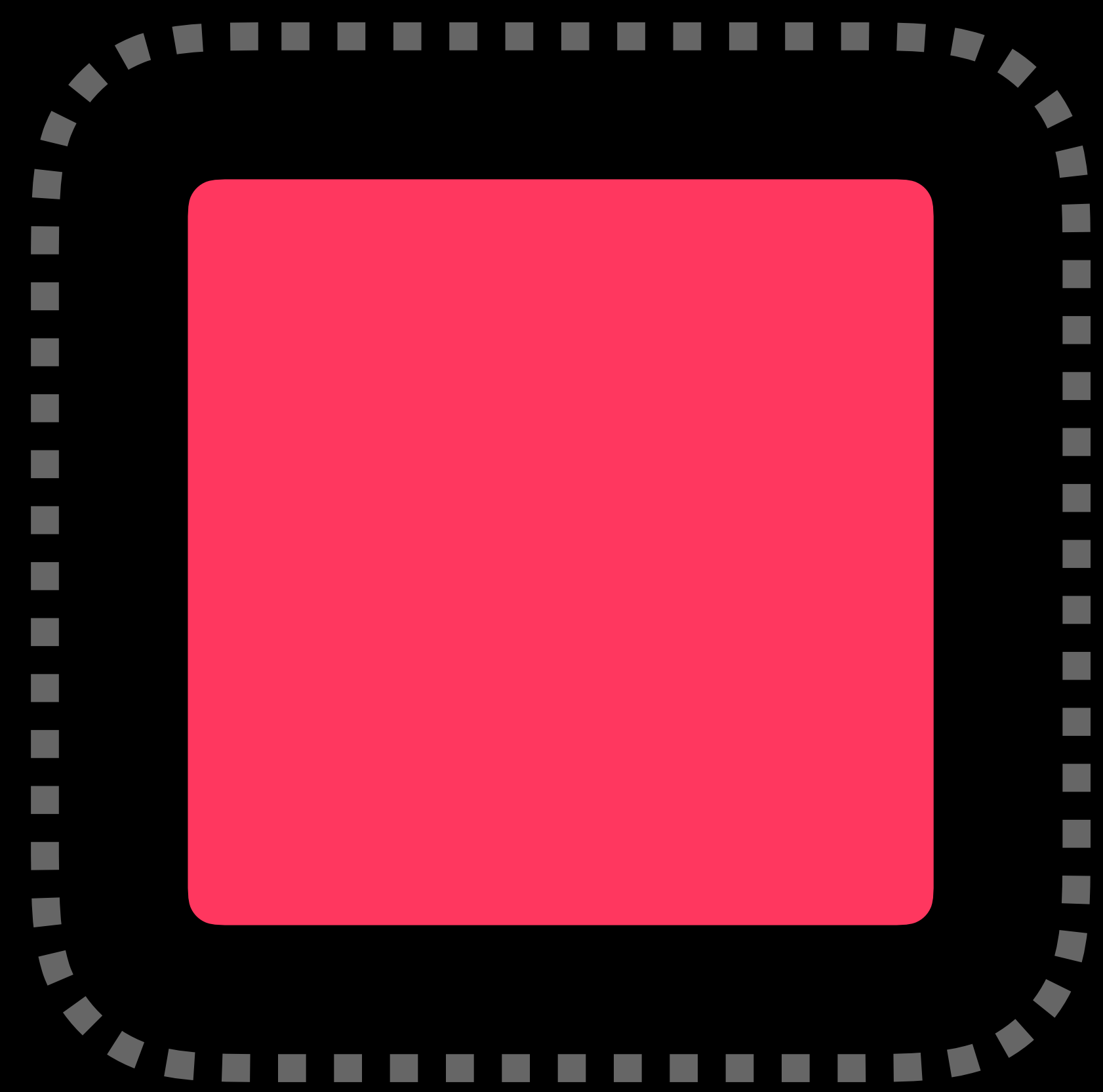
Colors



Images



Symbols



Colors



Images



Symbols

Ultralight

Thin

Light

Regular

Medium

Semibold

Bold

Heavy

Black

Small



Medium

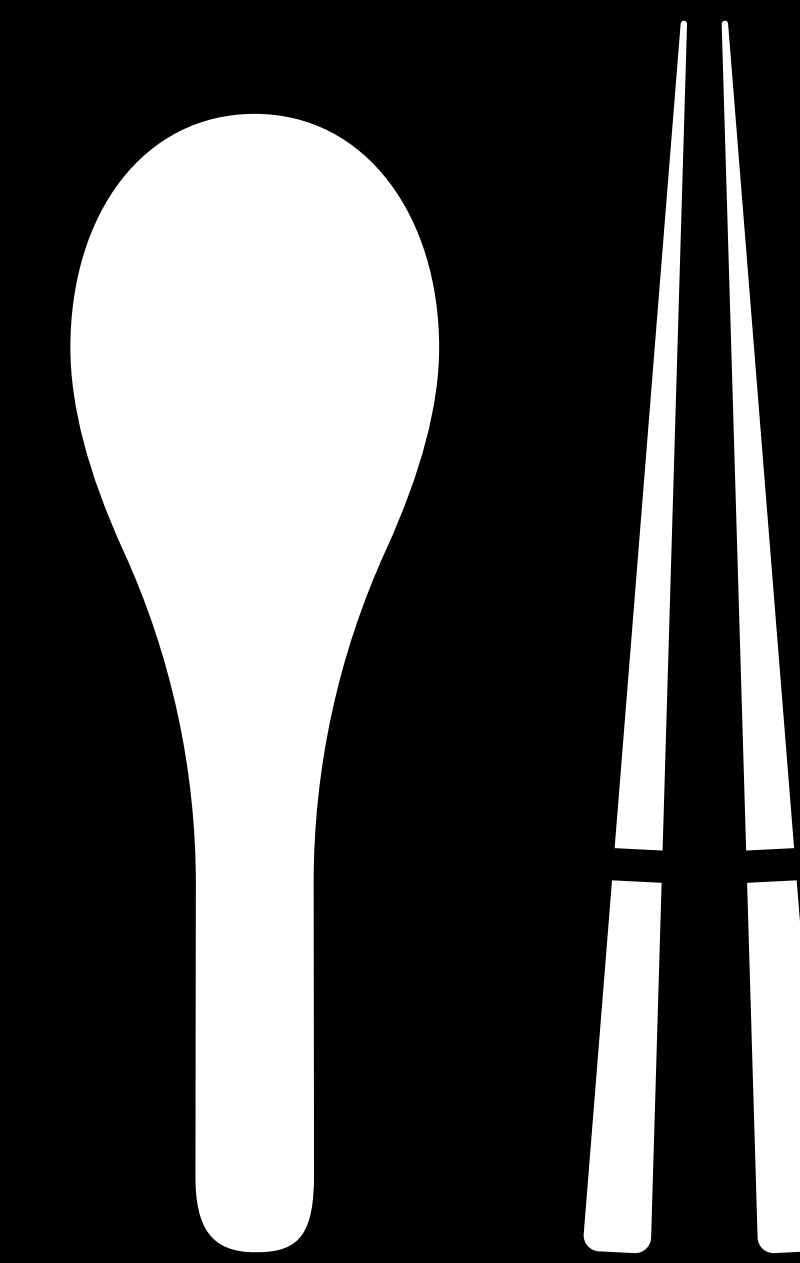


Large









Demo

Lisa Xiao, Developer Tools

Demo

Creating Great Localized Experiences with Xcode 11

Tuesday, 10:00AM

Introducing iPad Apps for Mac: Building Your First App

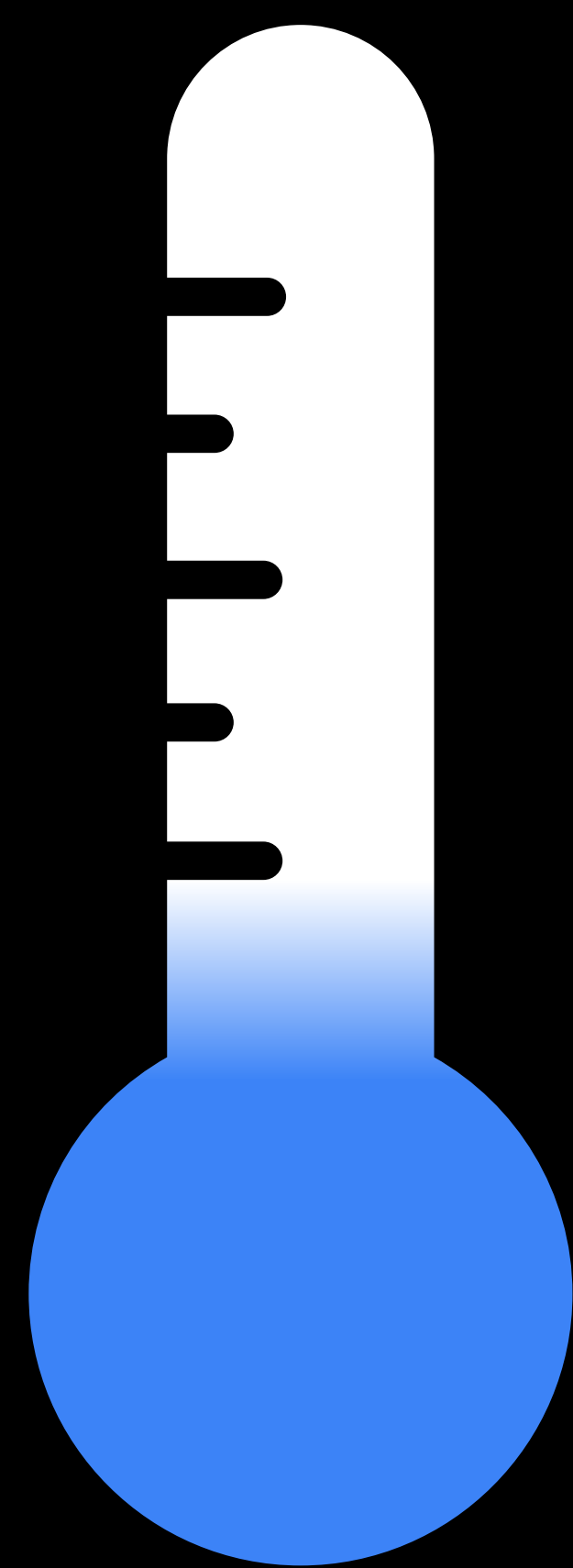
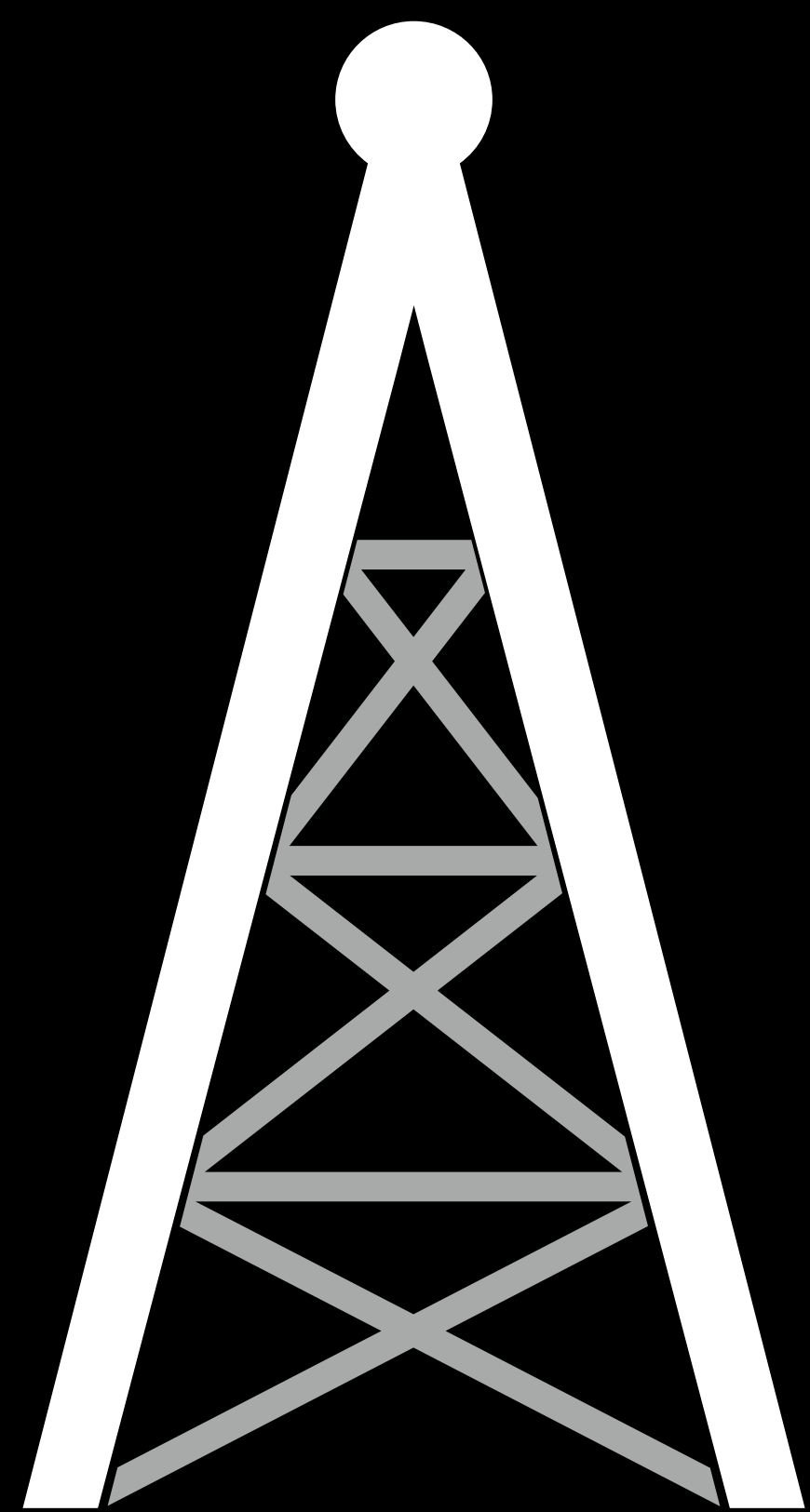
Tuesday, 2:00PM

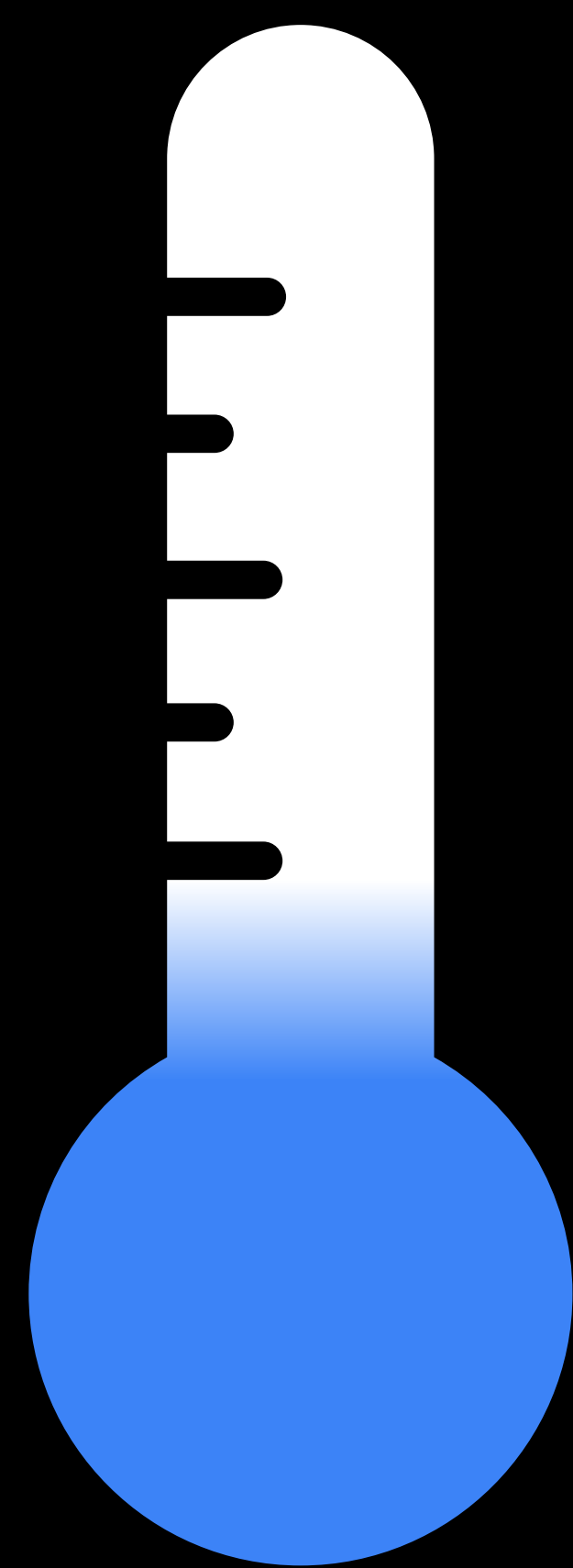
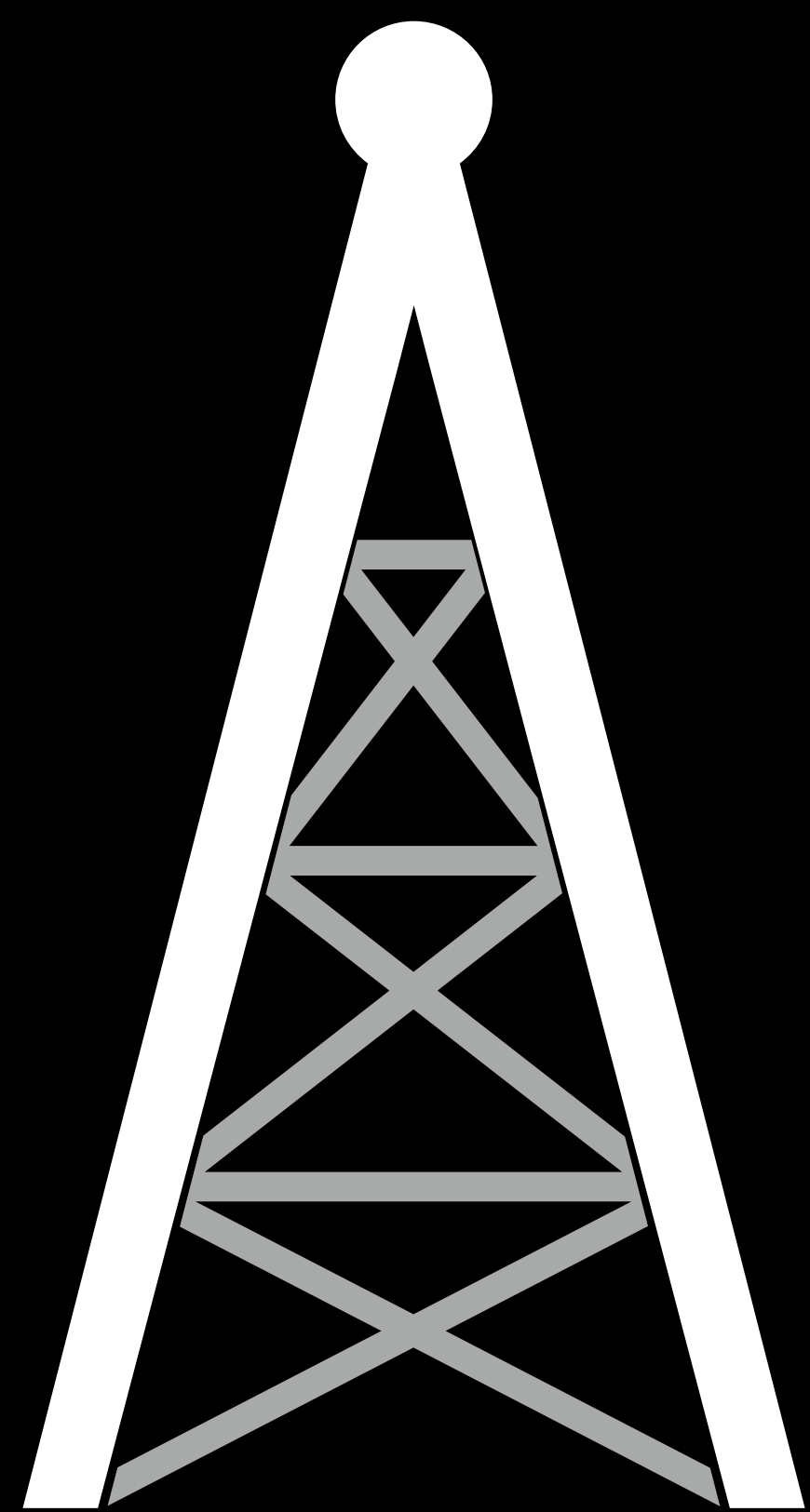
Taking iPad Apps for Mac to the Next Level

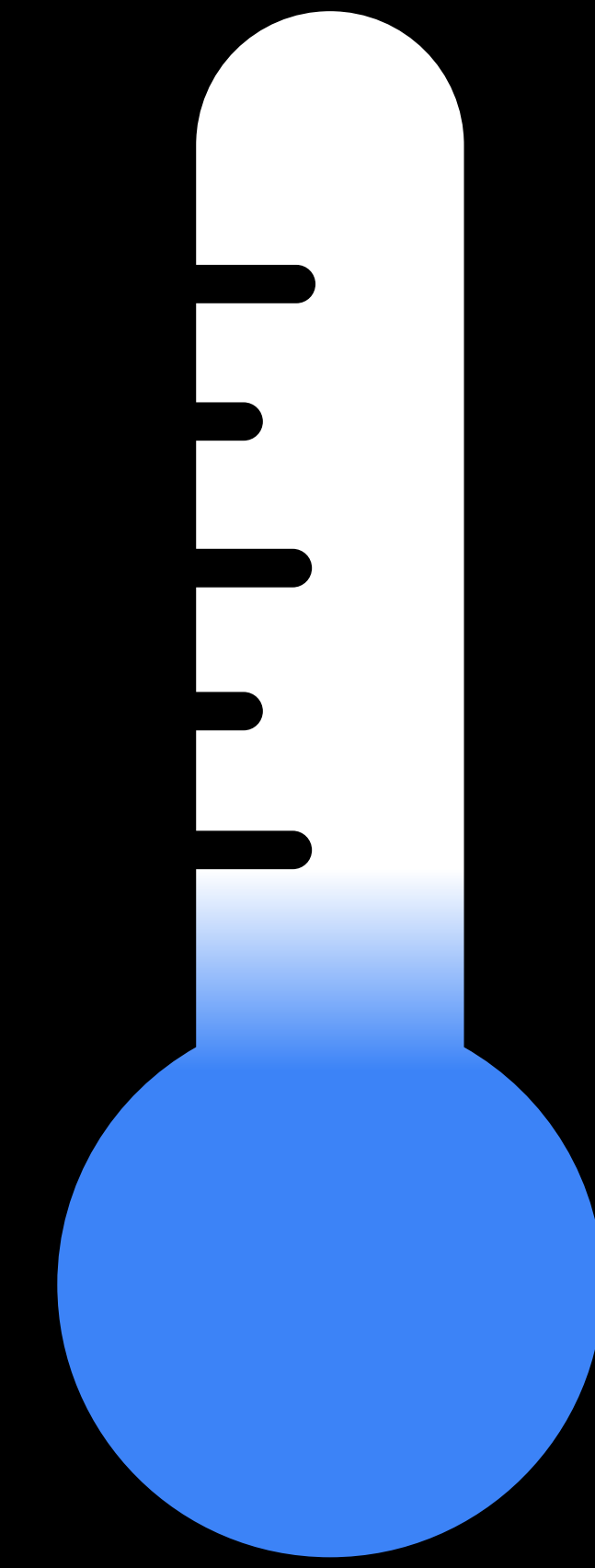
Friday, 5:00PM

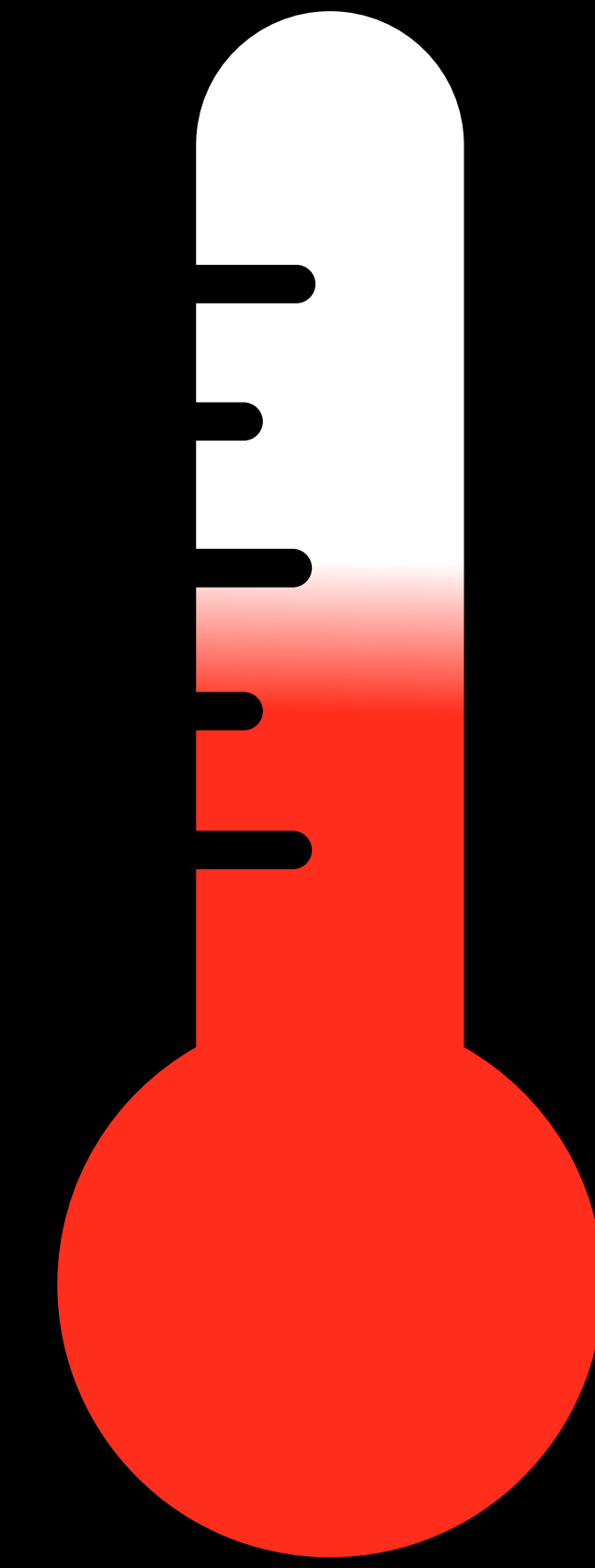


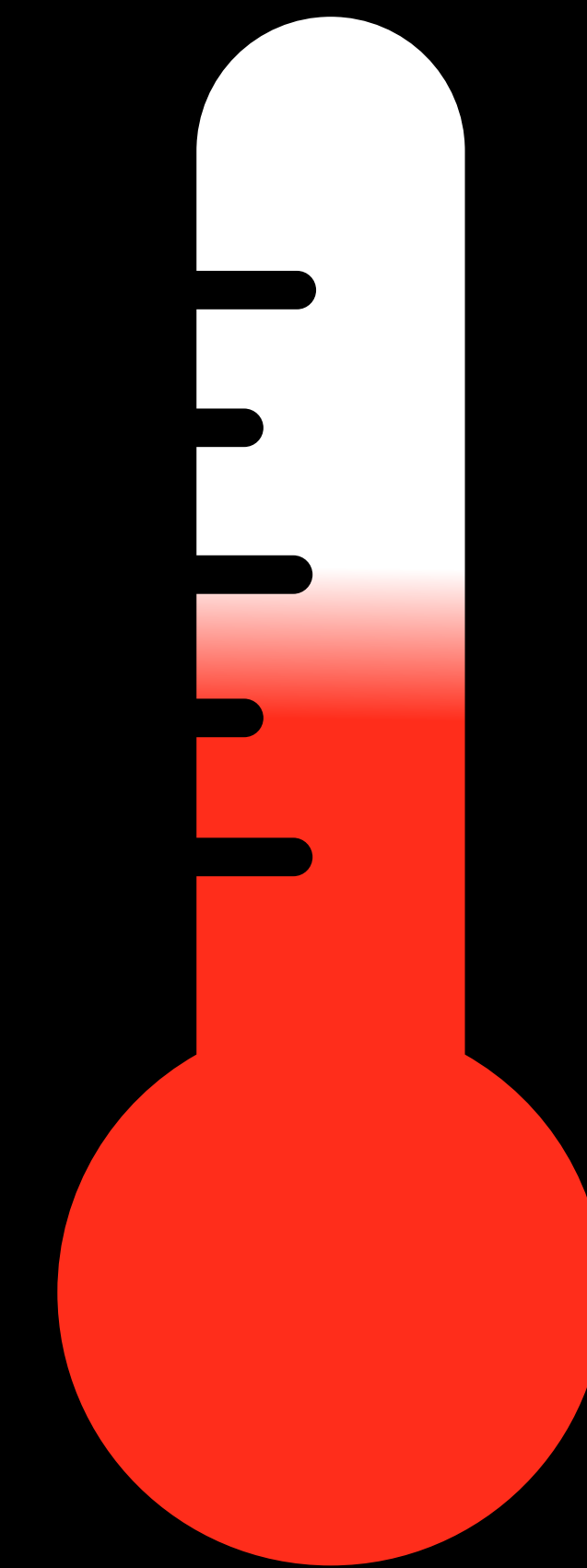
Debugging











Debugging in Xcode 11

Thursday, 10:00AM

Designing for Adverse Network and Temperature Conditions

Friday, 4:20PM

Connected

Devices Simulators

iPhone

iOS 13.0 (17A5492g) Show as run destination
 Connect via network
Take Screenshot
View Device Logs
Open Console

Model: iPhone X (Model A1865, A1901, A1902, A1903)
Capacity: 233.02 GB (230.72 GB available)
Serial Number: G6TVQ07VJF3C
Identifier: 22127fa8524853fb201f7dc0bb19a64e3b8b9114

PAIRED WATCHES

Name	Model	watchOS	Identifier
------	-------	---------	------------

INSTALLED APPS

Name	Version	Identifier
Travel	1	com.apple.dt.Travel

+ - ⚙️

DEVICE CONDITIONS


Condition

Profile

Select a condition.

Start

+ Filter



INSTALLED APPS

Name	Version	Identifier
 Travel	1	com.apple.dt.Trav



DEVICE CONDITIONS

Condition

Profile

Select a condition.

Start

+

INSTALLED APPS

Name	Version	Identifier
 Travel	1	com.apple.dt.Trav



DEVICE CONDITIONS

Condition

Profile 100% packet loss

- Very poor network
- Edge Network - poor
- Edge Network - average
- Edge Network - good
- Edge Network - best
- 2G Network - poor
- 2G Network - better
- 3G Network - average
- 3G Network - good
- 3G Network - best
- LTE Network
- WiFi Network
- WiFi Network (802.11ac)
- DSL Network
- High Latency DNS

+

INSTALLED APPS

Name	Version	Identifier
 Travel	1	com.apple.dt.Trav



DEVICE CONDITIONS

Condition Thermal State

- Profile
- ✓ Fair
 - Serious
 - Critical

ves as though under slightly elevated thermal state

Start



Filter

INSTALLED APPS

Name	Version	Identifier
 Travel	1	com.apple.dt.Trav



DEVICE CONDITIONS

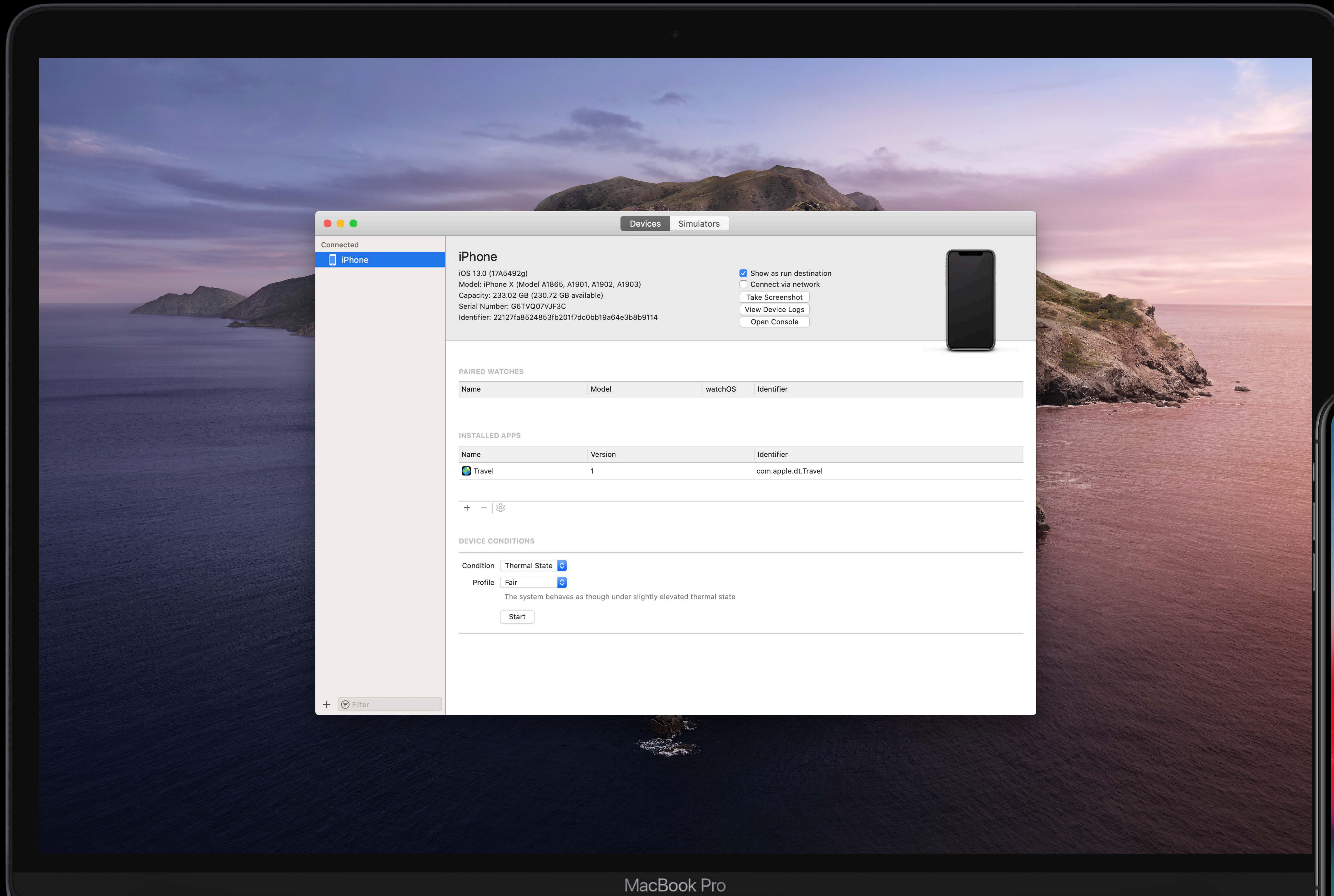
Condition

Profile

The system behaves as though under slightly elevated thermal state

Start

+



Connected

iPhone

iPhone

IOS 13.0 (17A5492g)
Model: iPhone X (Model A1865, A1901, A1902, A1903)
Capacity: 233.02 GB (230.72 GB available)
Serial Number: G6TVQ07VJF3C
Identifier: 22127fa8524853fb20117dc0bb19a64e3b8b9114

Show as run destination
 Connect via network
Take Screenshot
View Device Logs
Open Console

PAIRED WATCHES

Name	Model	watchOS	Identifier
------	-------	---------	------------

INSTALLED APPS

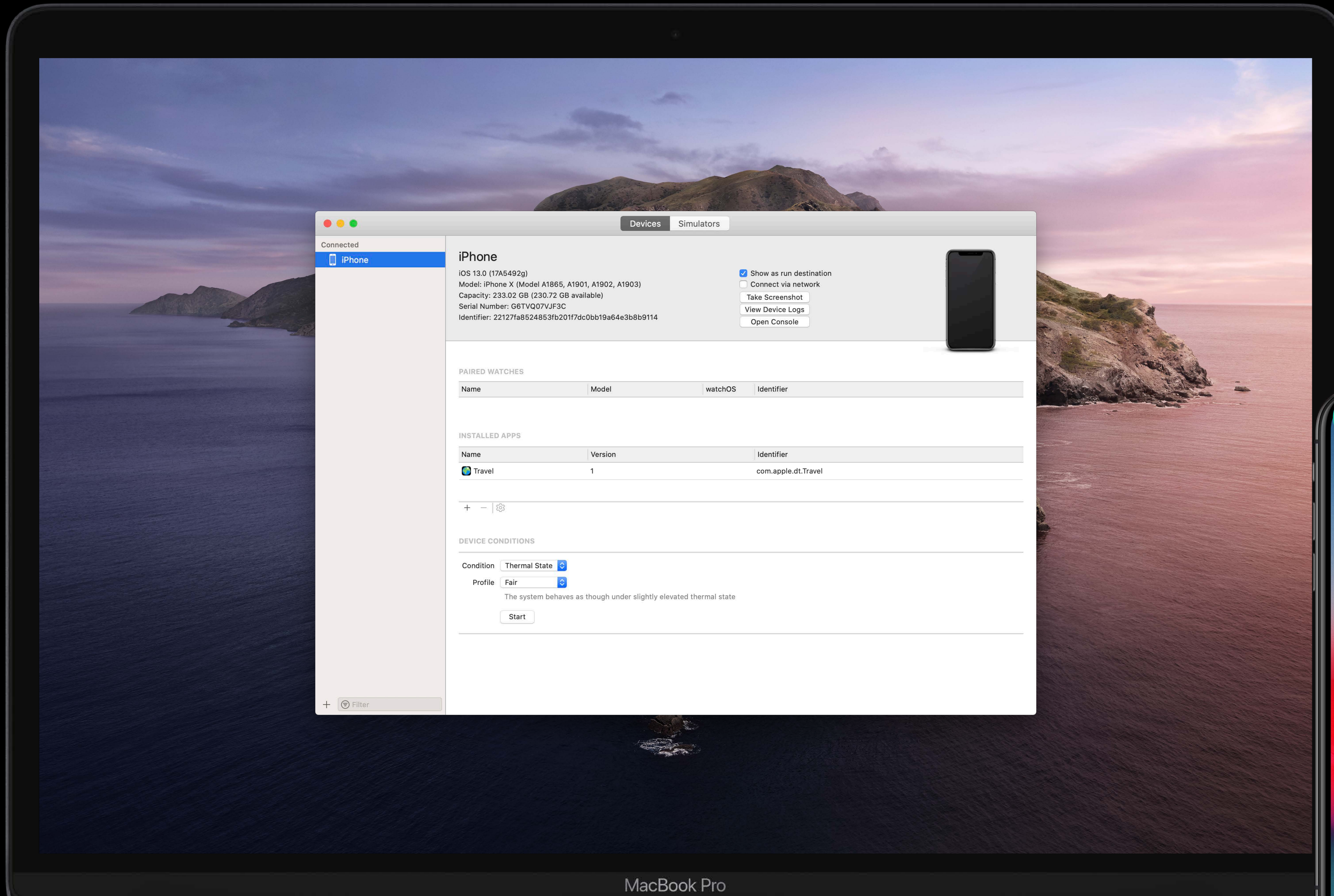
Name	Version	Identifier
Travel	1	com.apple.dt.Travel

DEVICE CONDITIONS

Condition: Thermal State
Profile: Fair
The system behaves as though under slightly elevated thermal state

Start





Connected

iPhone

iPhone

IOS 13.0 (17A5492g)
Model: iPhone X (Model A1865, A1901, A1902, A1903)
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PAIRED WATCHES

Name	Model	watchOS	Identifier
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INSTALLED APPS

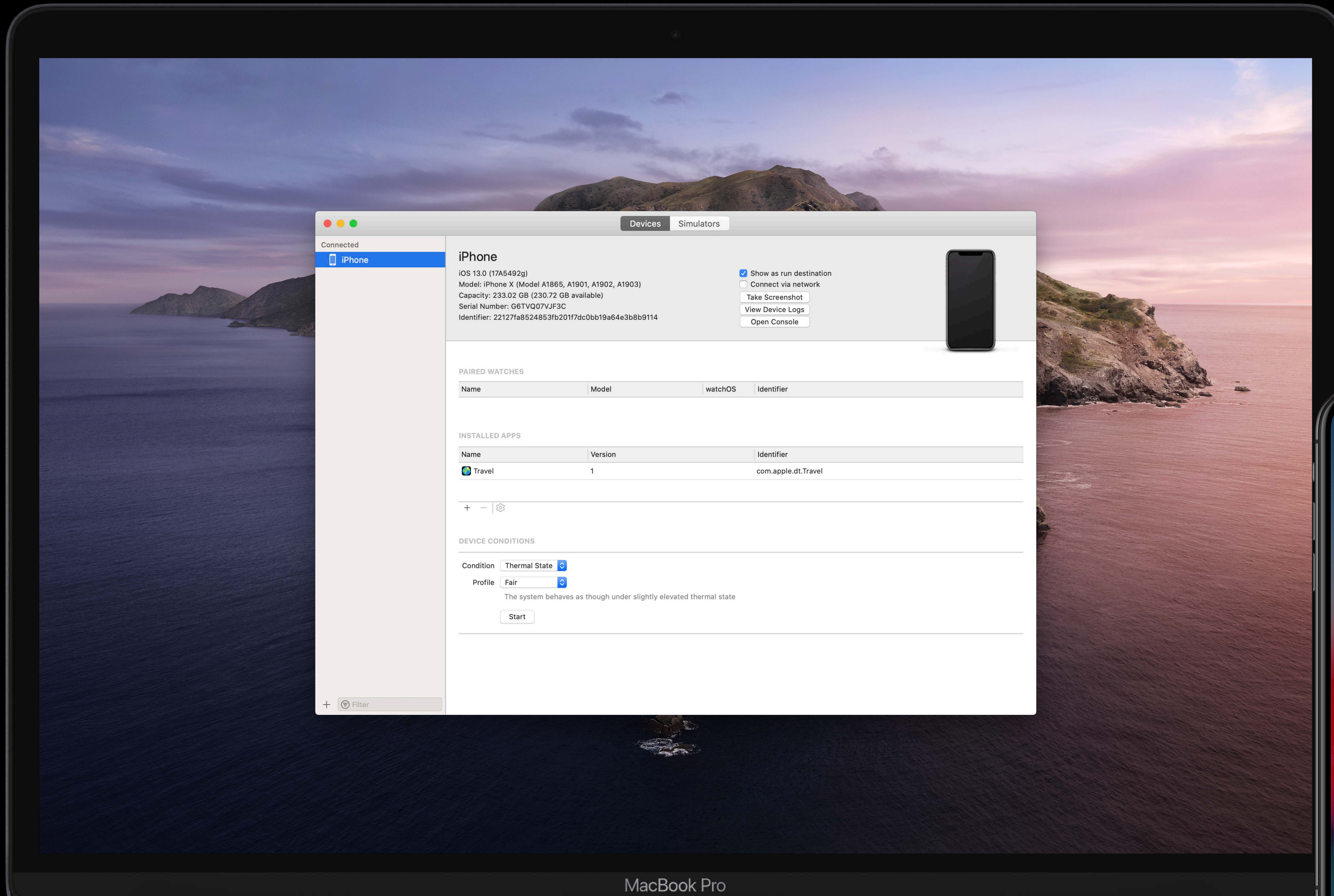
Name	Version	Identifier
Travel	1	com.apple.dt.Travel

DEVICE CONDITIONS

Condition: Thermal State
Profile: Fair
The system behaves as though under slightly elevated thermal state

Start





Connected

iPhone

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Name	Model	watchOS	Identifier
------	-------	---------	------------

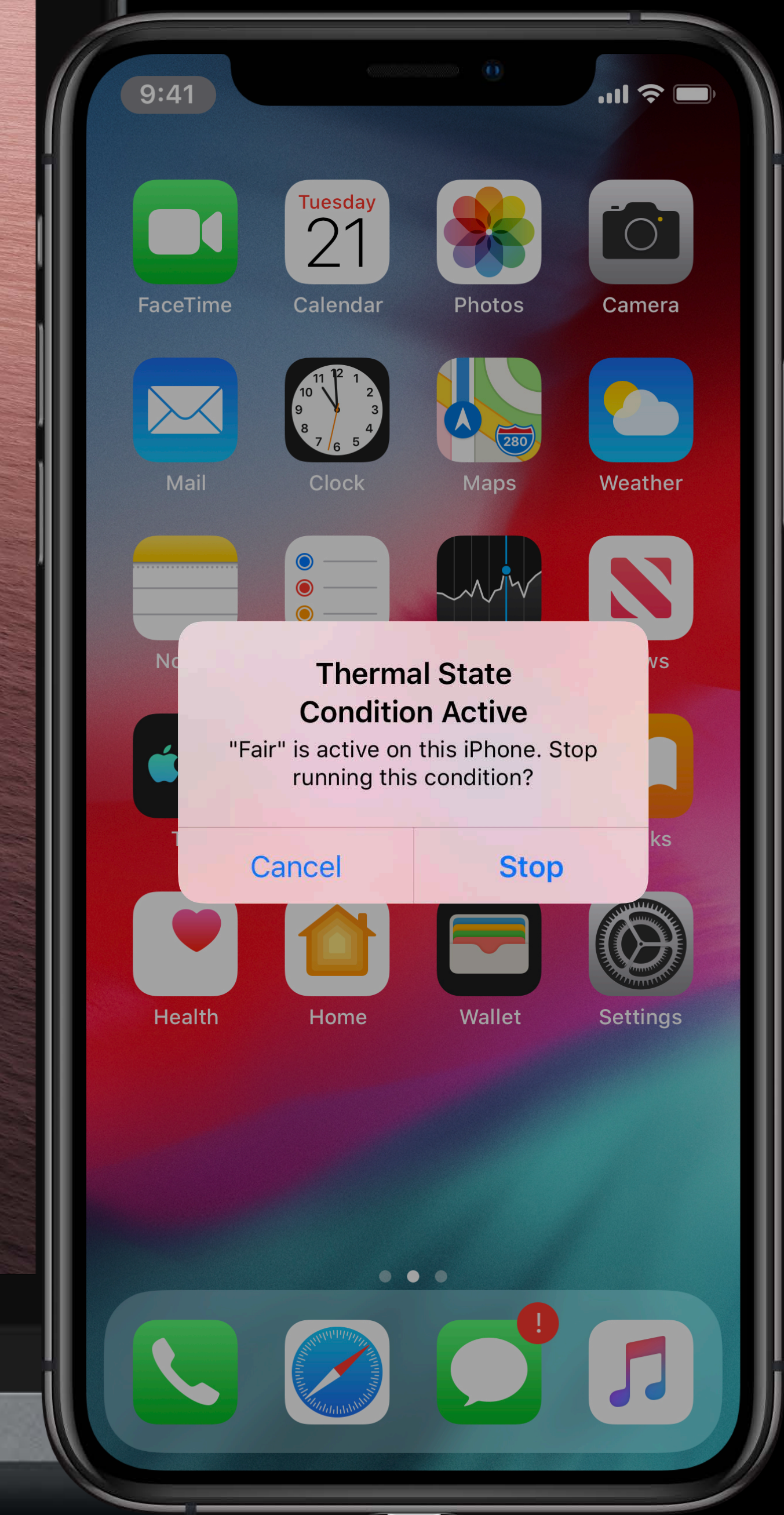
INSTALLED APPS

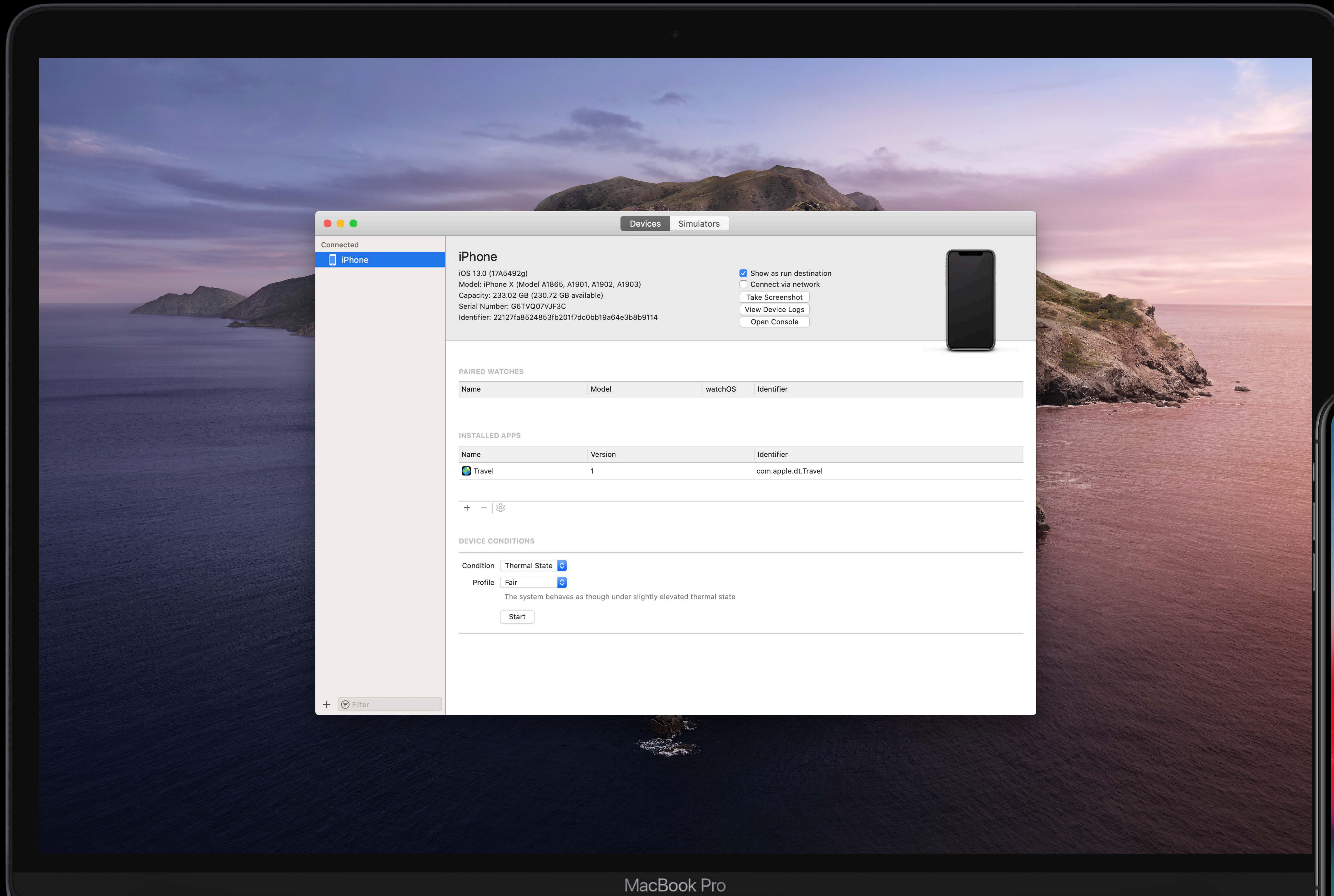
Name	Version	Identifier
Travel	1	com.apple.dt.Travel

DEVICE CONDITIONS

Condition: Thermal State
Profile: Fair
The system behaves as though under slightly elevated thermal state

Start





Connected

iPhone

iPhone

IOS 13.0 (17A5492g)
Model: iPhone X (Model A1865, A1901, A1902, A1903)
Capacity: 233.02 GB (230.72 GB available)
Serial Number: G6TVQ07VJF3C
Identifier: 22127fa8524853fb20117dc0bb19a64e3b8b9114

Show as run destination
 Connect via network
Take Screenshot
View Device Logs
Open Console

PAIRED WATCHES

Name	Model	watchOS	Identifier
------	-------	---------	------------

INSTALLED APPS

Name	Version	Identifier
Travel	1	com.apple.dt.Travel

DEVICE CONDITIONS

Condition: Thermal State
Profile: Fair
The system behaves as though under slightly elevated thermal state

Start





Testing

Testing

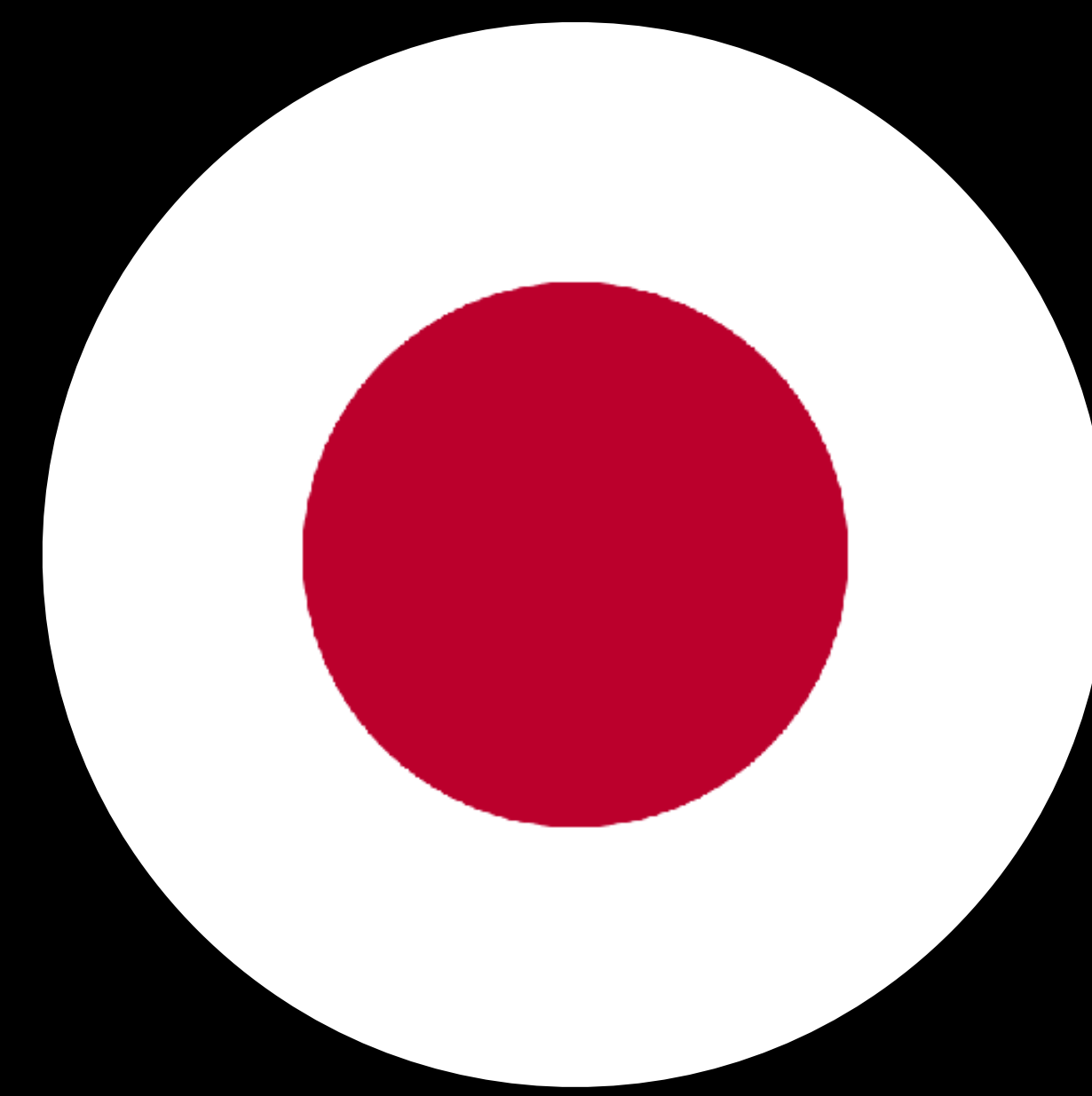
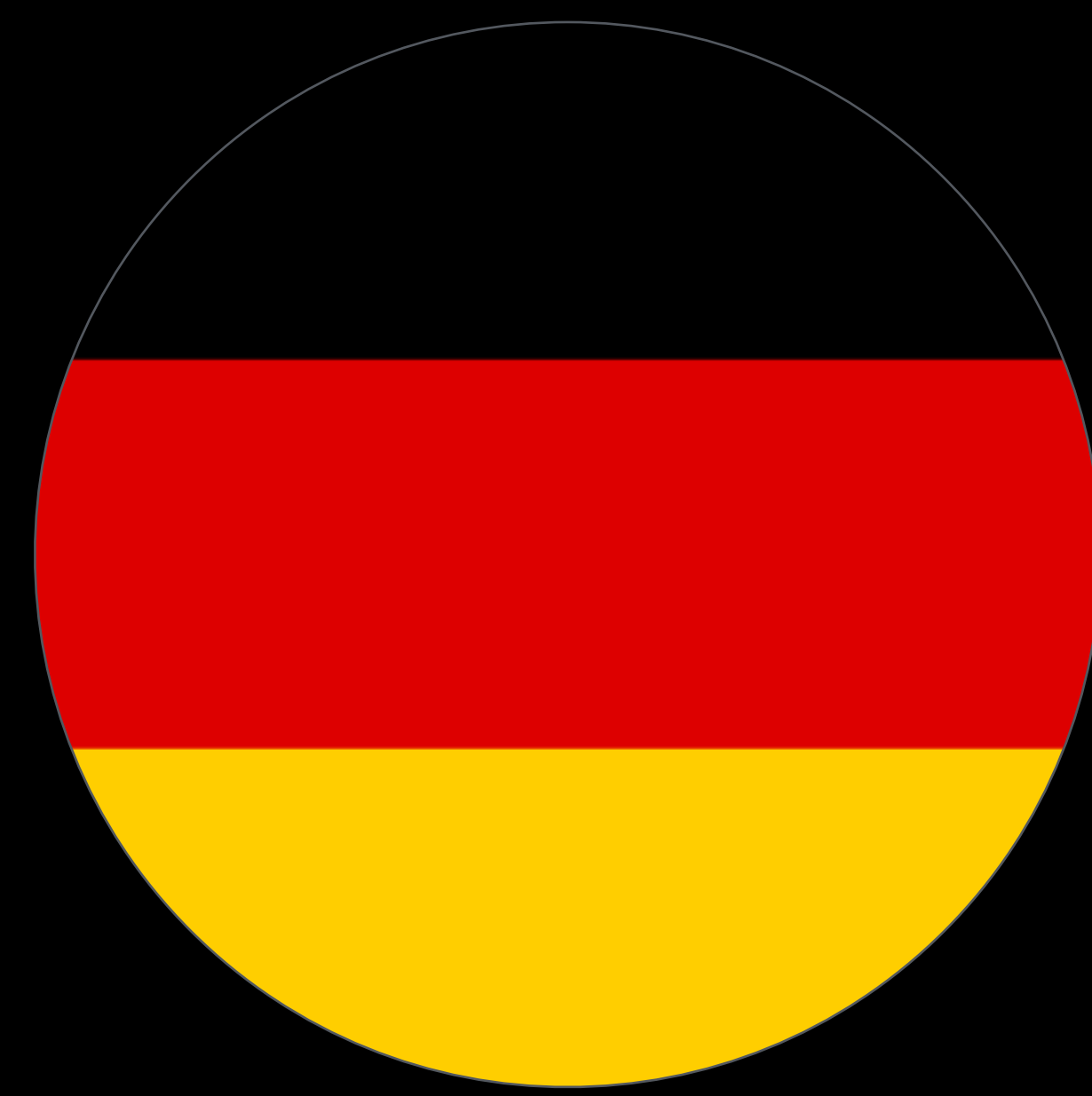
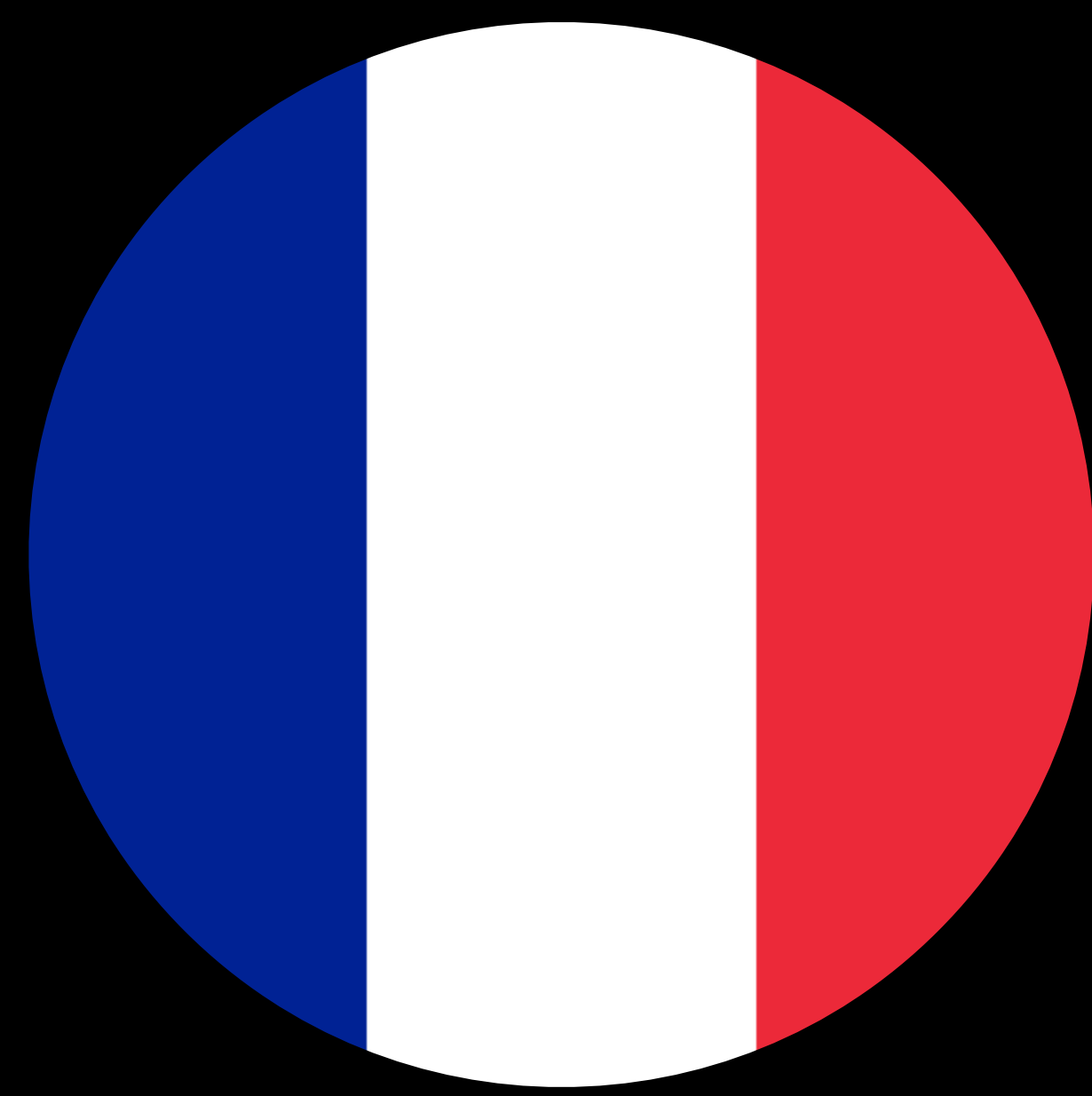
Reusable across schemes

Define what tests to include

Specify multiple configurations

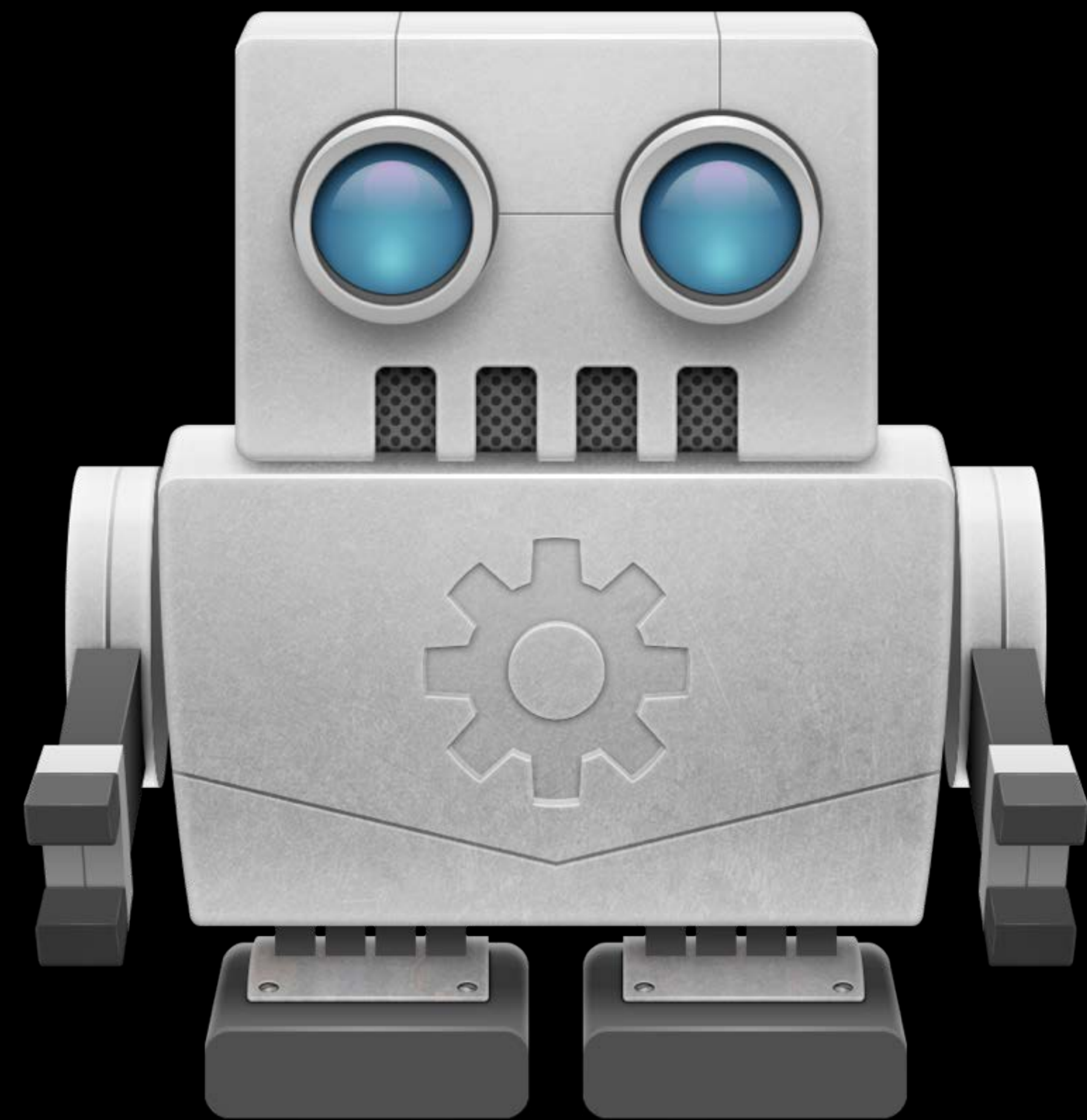






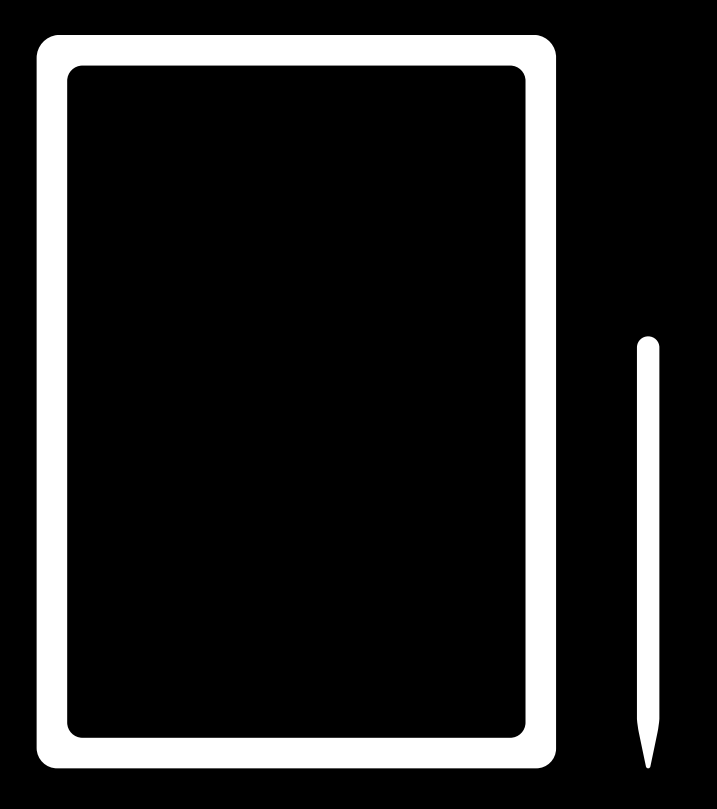
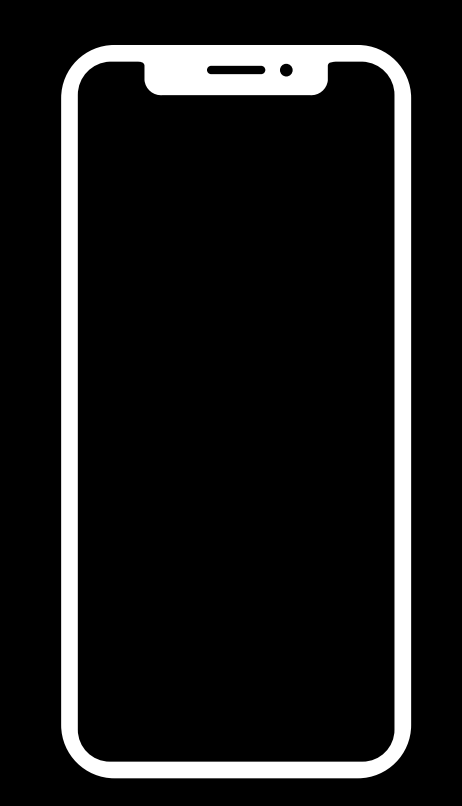
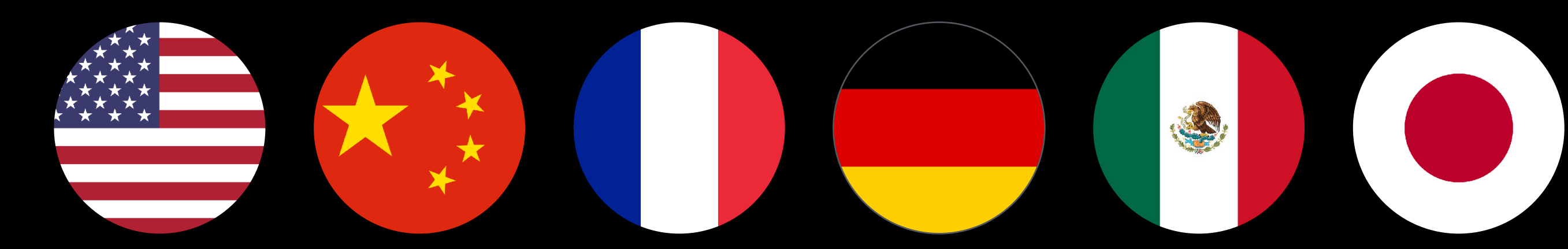
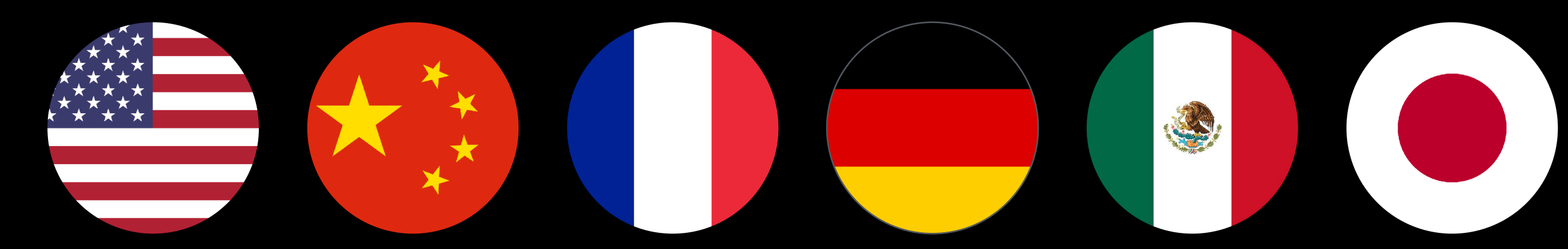
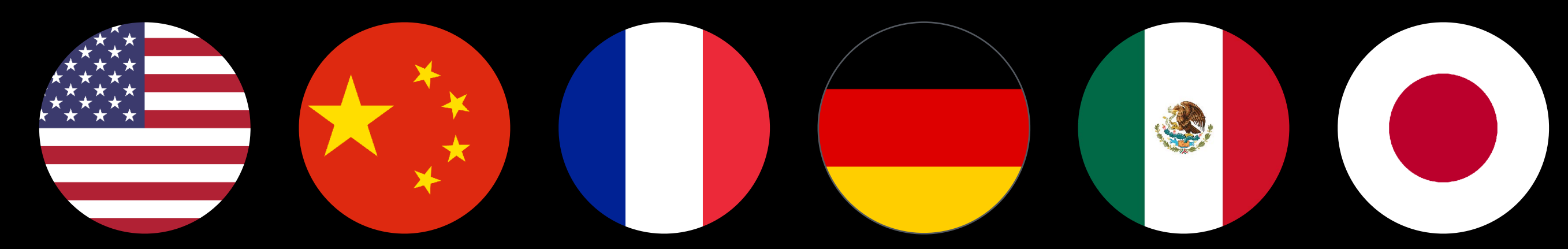
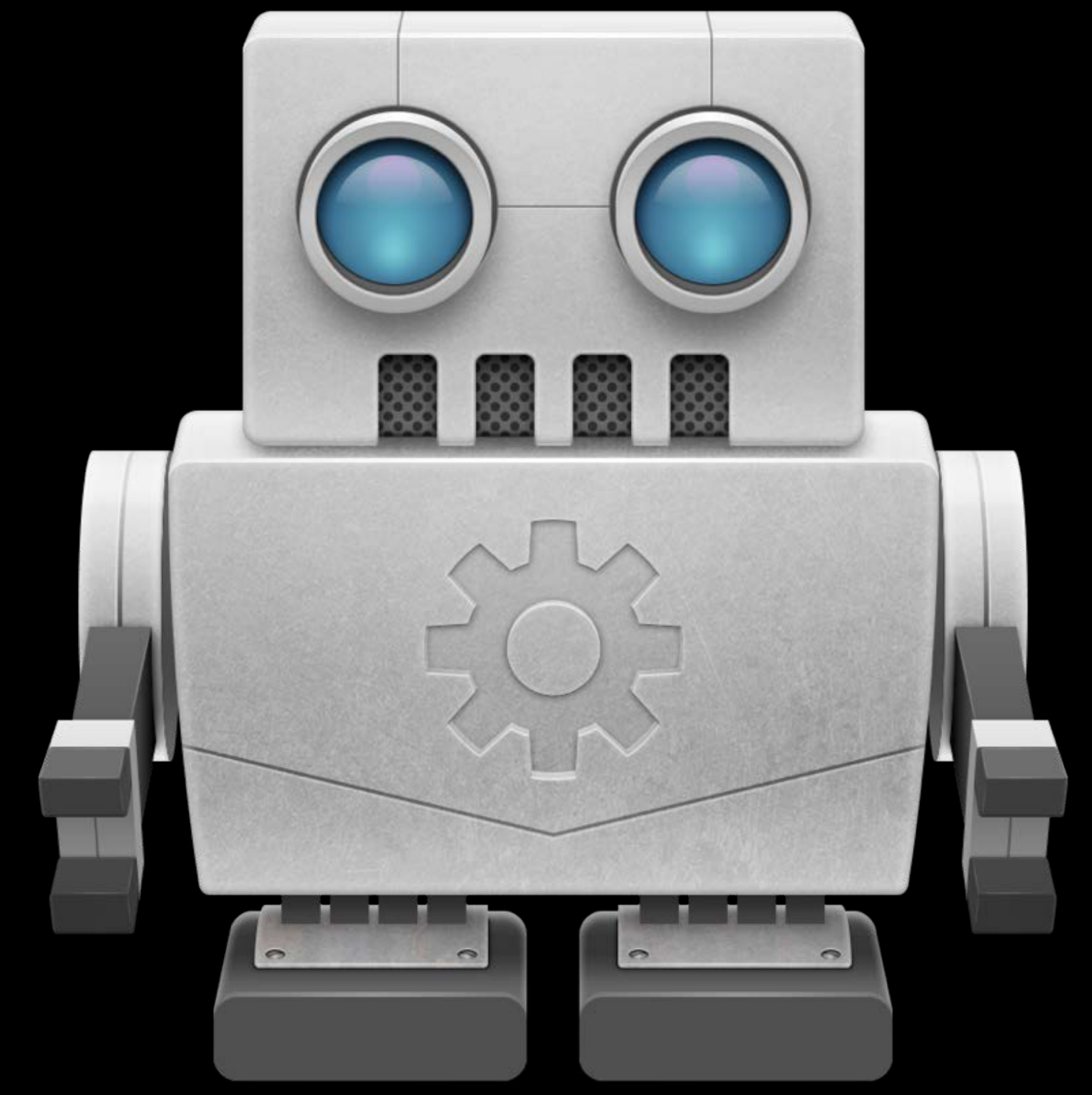


+





+





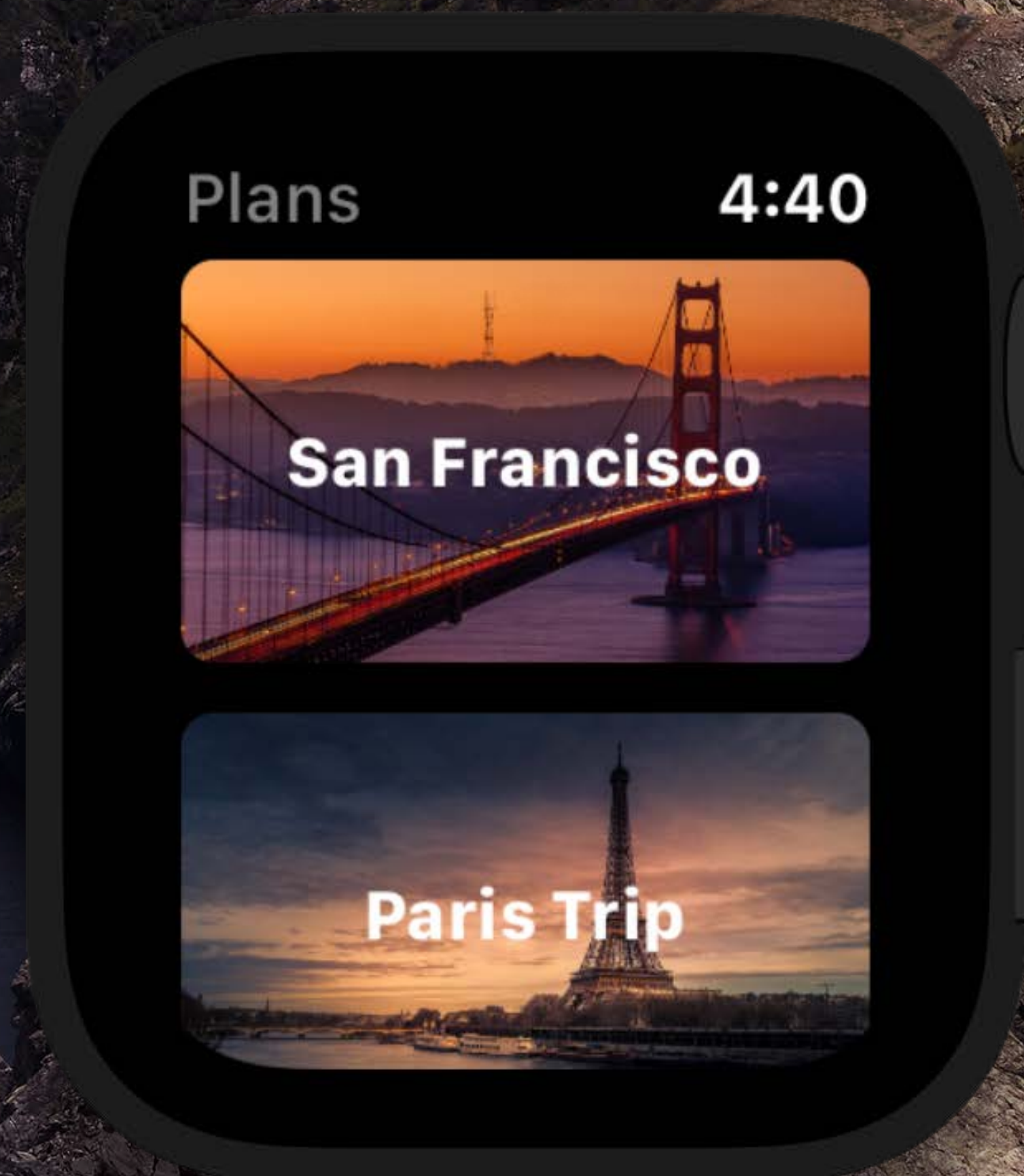
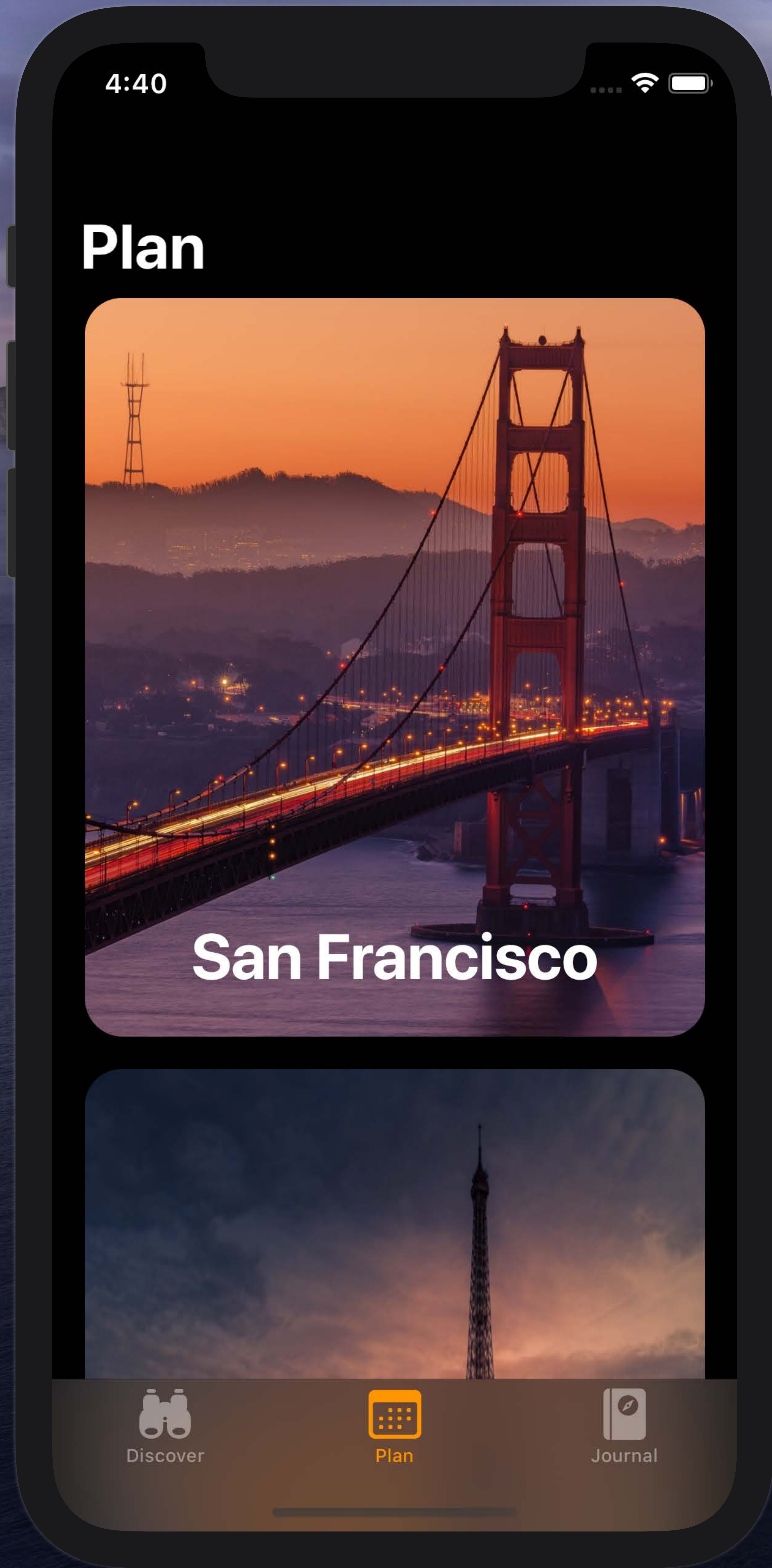
iPad Apps for Mac



SwiftUI



Simulator



Apple Watch Series 4



Plans 4:40

San Francisco

Paris Trip

Apple Watch Series 4





+

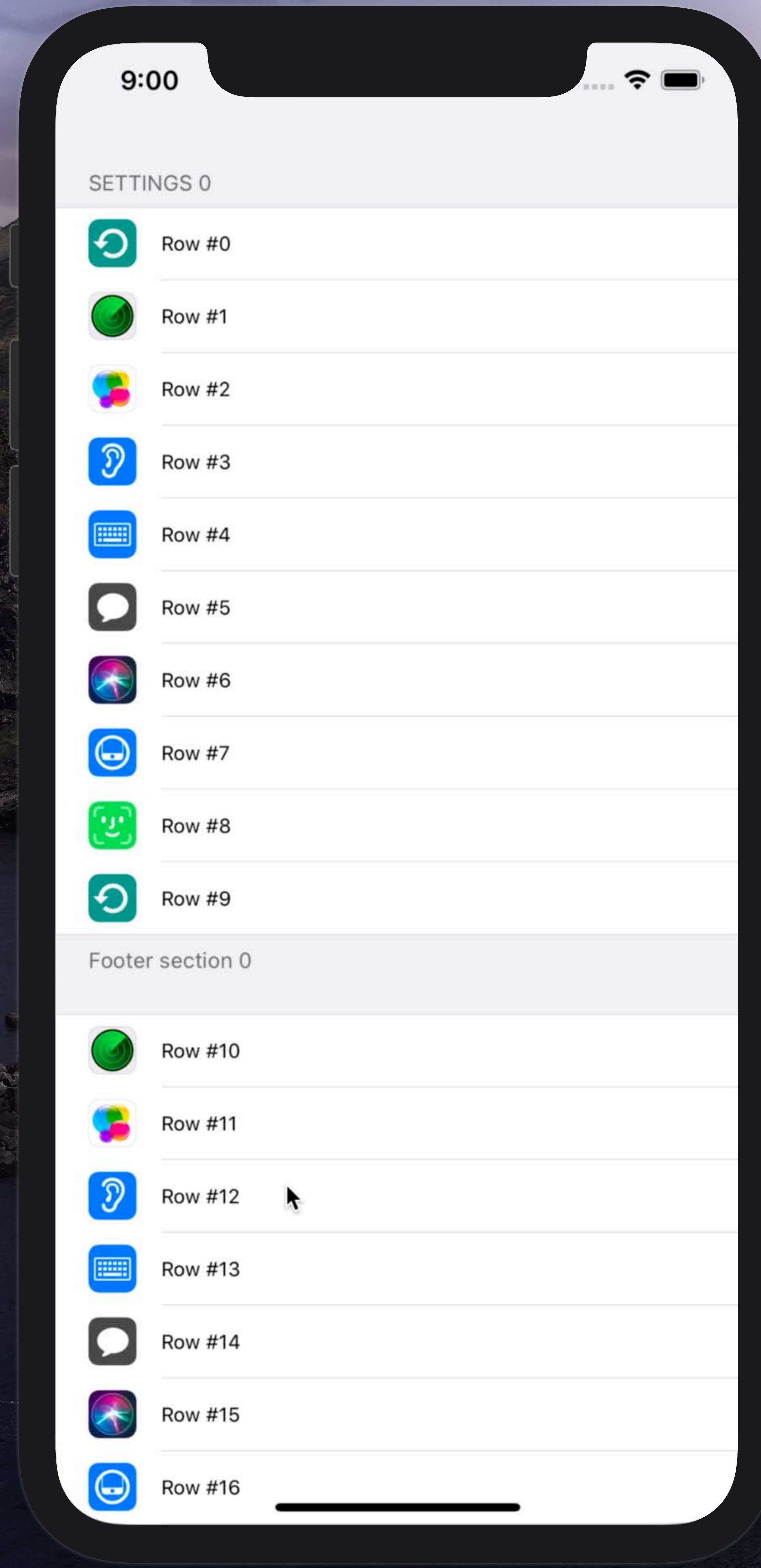


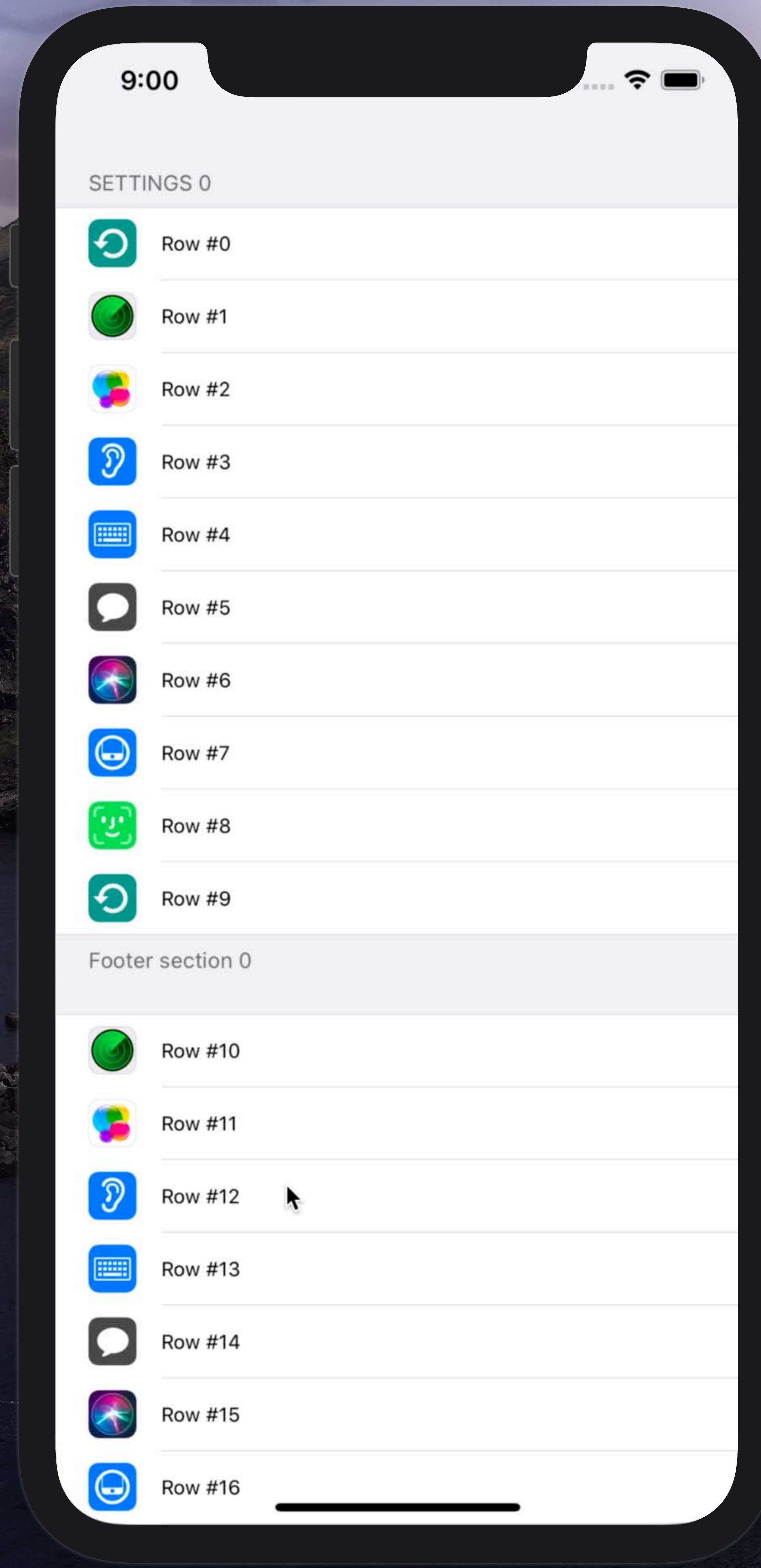


iPhone Xs — 13.0



iPhone Xs — 13.0





60 FPS

Efficient Drawing

UP TO
90%
LESS

CPU Use

60 FPS

Efficient Drawing

UP TO
90%
LESS

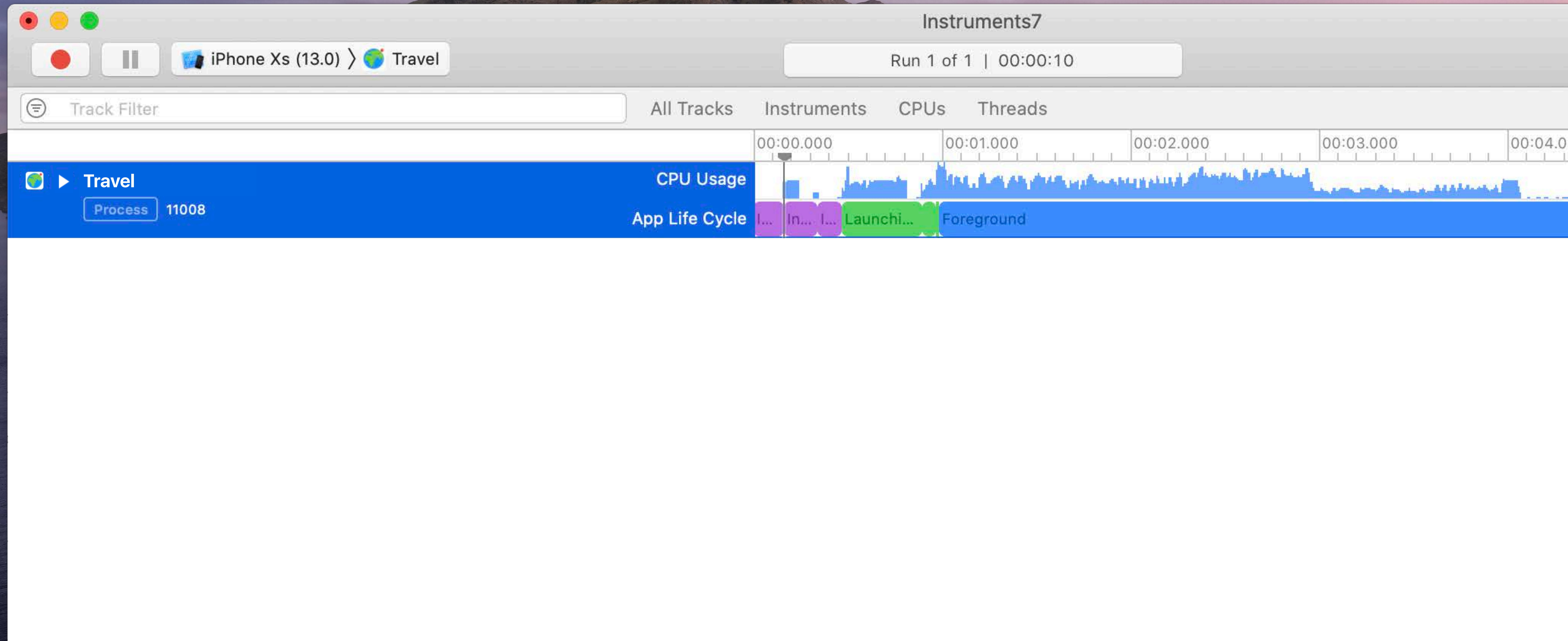
CPU Use

UP TO
2x
FASTER

Warm Boot

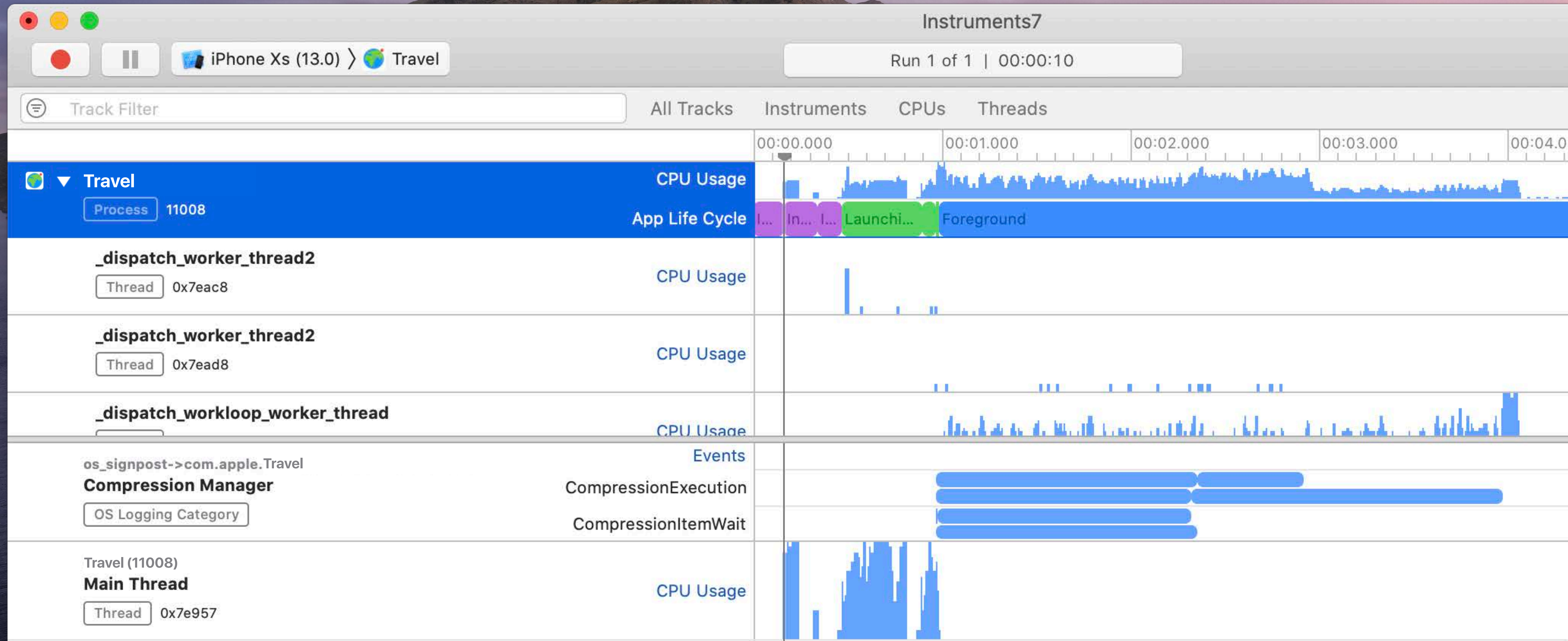


Instruments



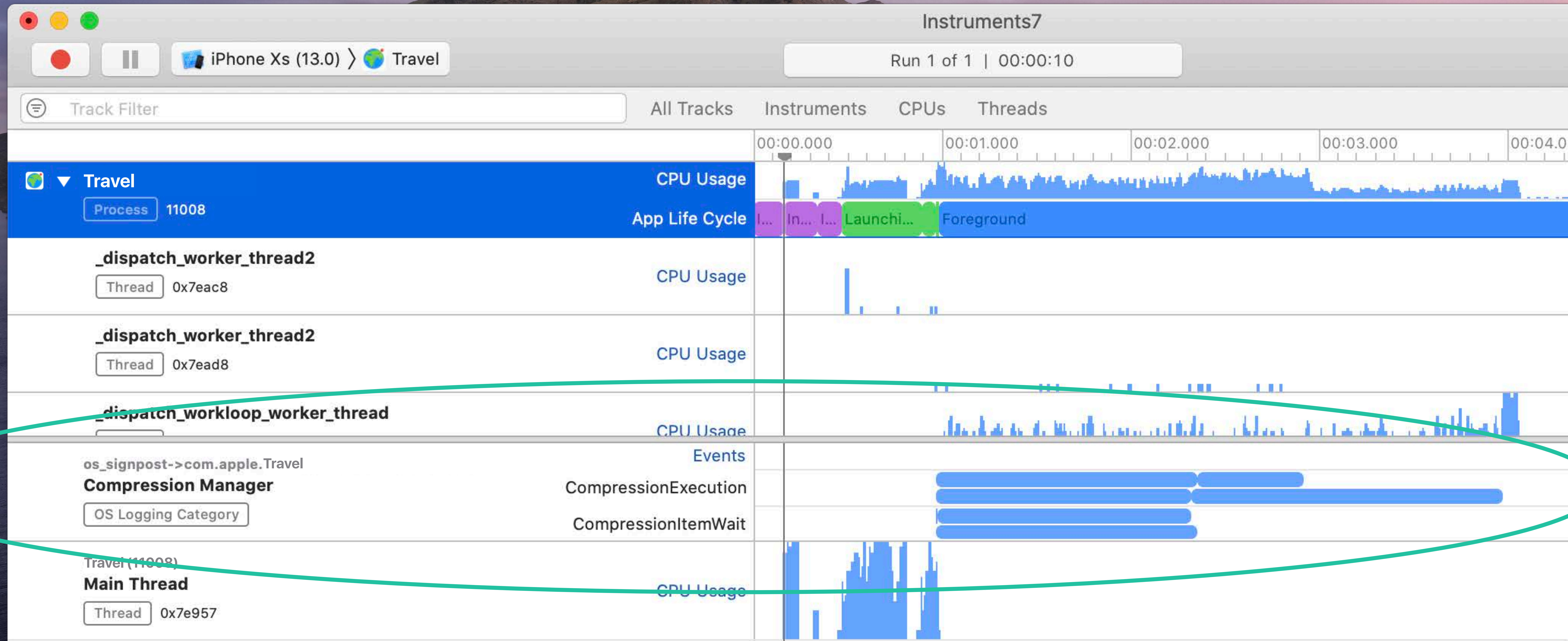
Travel > Profile > Root

Weight	Self Weight	Symbol Name
3.34 s 100.0%	0 s	▼Travel (11008)
152.00 ms 4.5%	0 s	▼thread_start libsystem_pthread.dylib
152.00 ms 4.5%	0 s	▼_pthread_start libsystem_pthread.dylib
151.00 ms 4.5%	0 s	▼CVDisplayLink::runIOThread() CoreVideo
2.00 ms 0.0%	0 s	▼CVDisplayLink::waitUntil(unsigned long long) CoreVideo
2.00 ms 0.0%	0 s	▼_pthread_cond_wait libsystem_pthread.dylib
2.00 ms 0.0%	1.00 ms	▼_psynch_cvwait libsystem_kernel.dylib
1.00 ms 0.0%	0 s	▼psynch_cvcontinue pthread_development
1.00 ms 0.0%	0 s	▼ksyn_wqrelease pthread_development



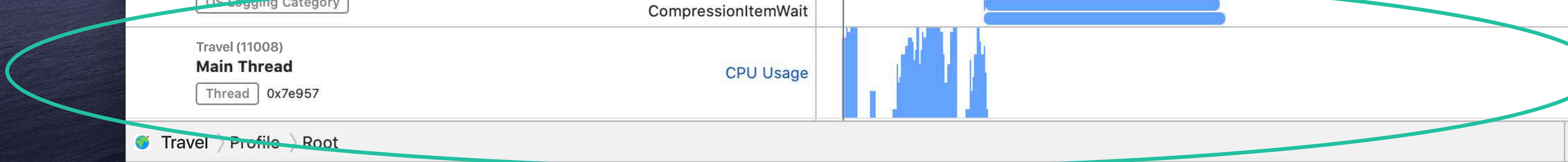
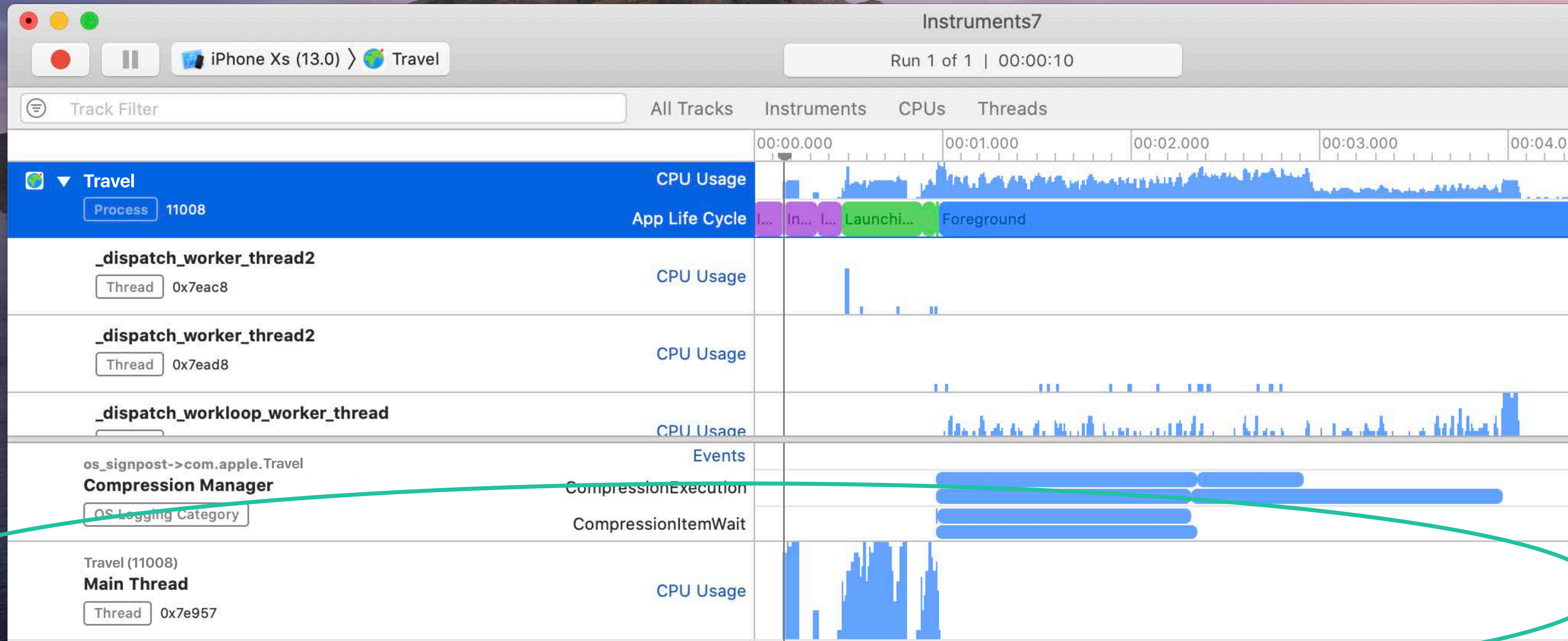
Travel > Profile > Root

Weight	Self Weight	Symbol Name
3.34 s 100.0%	0 s	▼Travel (11008)
152.00 ms 4.5%	0 s	▼thread_start libsystem_pthread.dylib
152.00 ms 4.5%	0 s	▼_pthread_start libsystem_pthread.dylib
151.00 ms 4.5%	0 s	▼CVDisplayLink::runIOThread() CoreVideo
2.00 ms 0.0%	0 s	▼CVDisplayLink::waitUntil(unsigned long long) CoreVideo
2.00 ms 0.0%	0 s	▼_pthread_cond_wait libsystem_pthread.dylib
2.00 ms 0.0%	1.00 ms	▼_psynch_cvwait libsystem_kernel.dylib
1.00 ms 0.0%	0 s	▼psynch_cvcontinue pthread_development
1.00 ms 0.0%	0 s	▼ksyn_wqrelease pthread_development



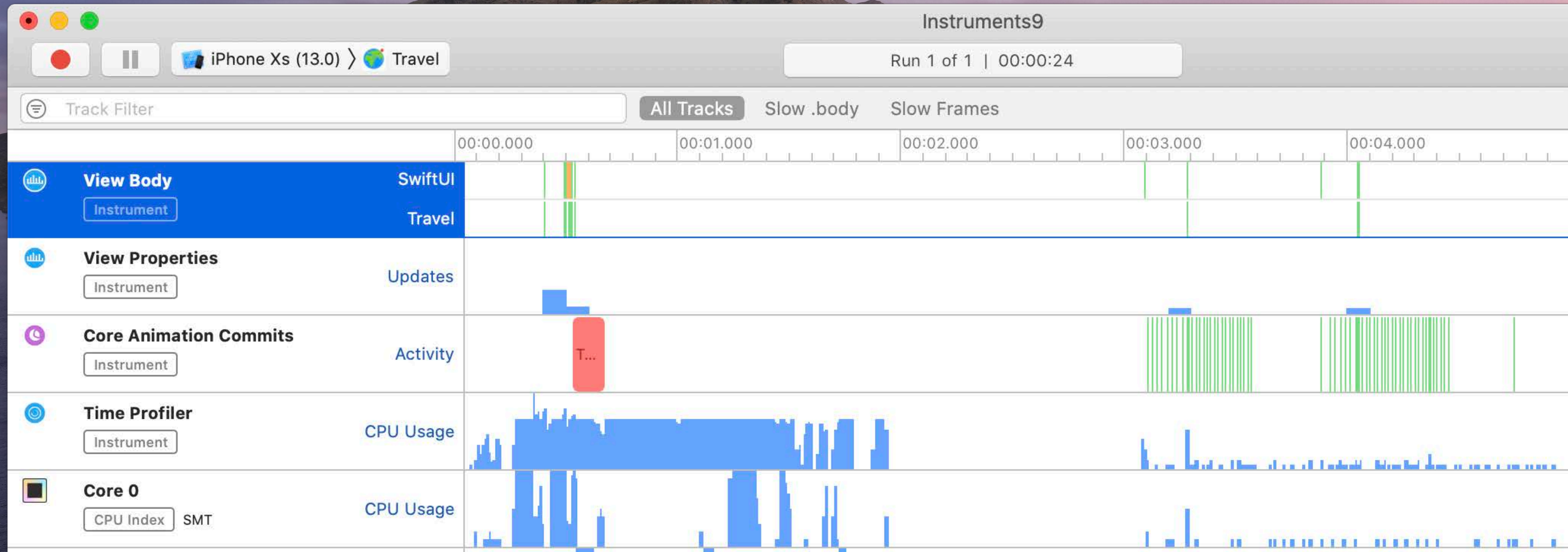
Travel > Profile > Root

Weight	Self Weight	Symbol Name
3.34 s 100.0%	0 s	▼Travel (11008)
152.00 ms 4.5%	0 s	▼thread_start libsystem_pthread.dylib
152.00 ms 4.5%	0 s	▼_pthread_start libsystem_pthread.dylib
151.00 ms 4.5%	0 s	▼CVDisplayLink::runIOThread() CoreVideo
2.00 ms 0.0%	0 s	▼CVDisplayLink::waitUntil(unsigned long long) CoreVideo
2.00 ms 0.0%	0 s	▼_pthread_cond_wait libsystem_pthread.dylib
2.00 ms 0.0%	1.00 ms	▼_psynch_cvwait libsystem_kernel.dylib
1.00 ms 0.0%	0 s	▼psynch_cvcontinue pthread_development
1.00 ms 0.0%	0 s	▼ksyn_wqrelease pthread_development



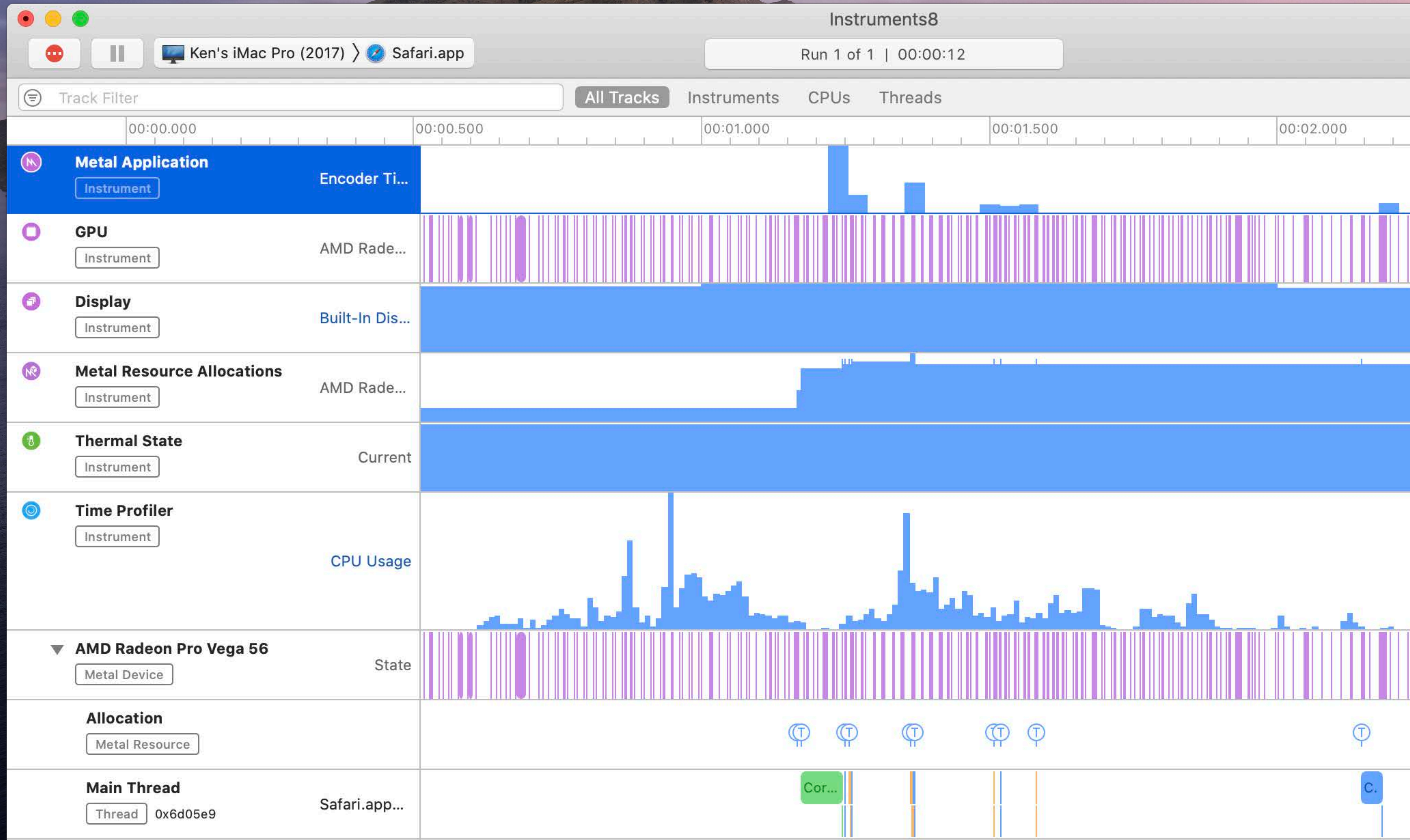
Travel > Profile > Root

Weight	Self Weight	Symbol Name
3.34 s 100.0%	0 s	▼Travel (11008)
152.00 ms 4.5%	0 s	▼thread_start libsystem_pthread.dylib
152.00 ms 4.5%	0 s	▼_pthread_start libsystem_pthread.dylib
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2.00 ms 0.0%	0 s	▼CVDisplayLink::waitUntil(unsigned long long) CoreVideo
2.00 ms 0.0%	0 s	▼_pthread_cond_wait libsystem_pthread.dylib
2.00 ms 0.0%	1.00 ms	▼_psynch_cvwait libsystem_kernel.dylib
1.00 ms 0.0%	0 s	▼psynch_cvcontinue pthread_development
1.00 ms 0.0%	0 s	▼ksyn_wqrelease pthread_development



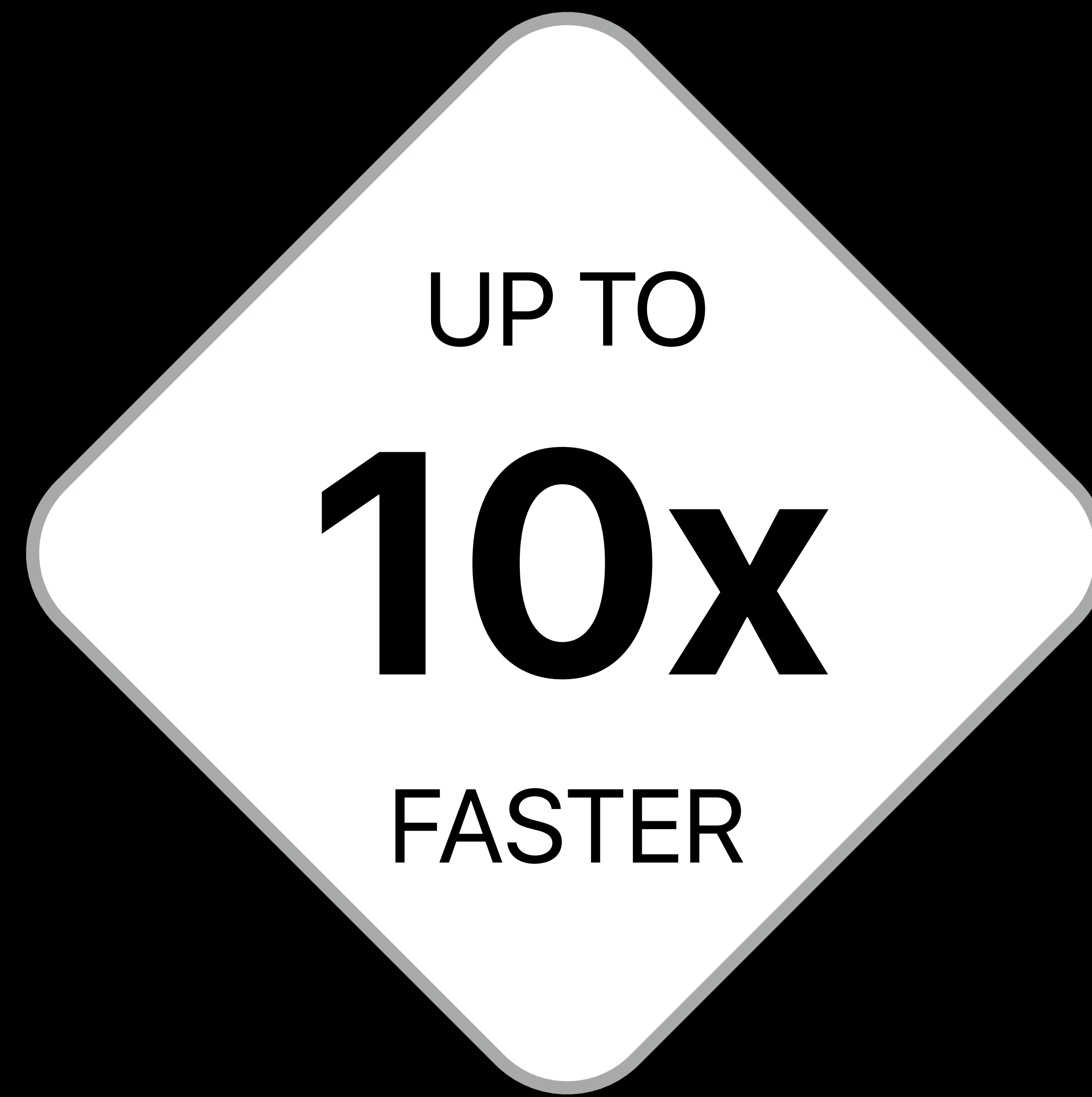
View Body > Timing Summary

Module / View Type	Count	Total Durat...	Min Duration	Avg Duration	Max Durati...	Std Dev Du...
▼ * All *	408	27.01 ms	2.32 μs	66.21 μs	8.97 ms	480.27 μs
▶ SwiftUI	315	25.57 ms	2.32 μs	81.16 μs	8.97 ms	545.81 μs
▶ Travel	93	1.45 ms	4.90 μs	15.58 μs	101.90 μs	16.48 μs



Getting Started with Instruments

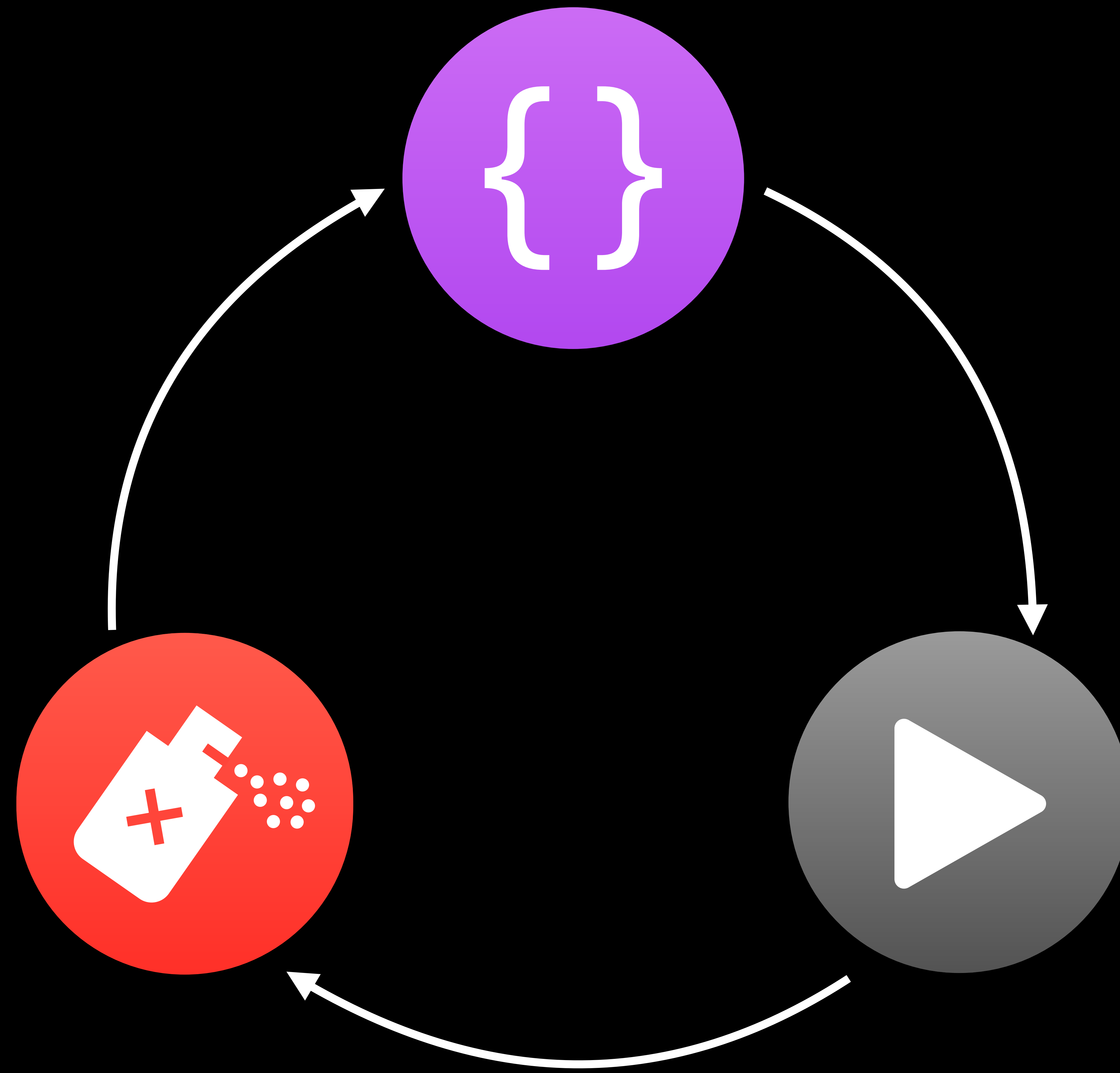
Thursday, 9:00AM

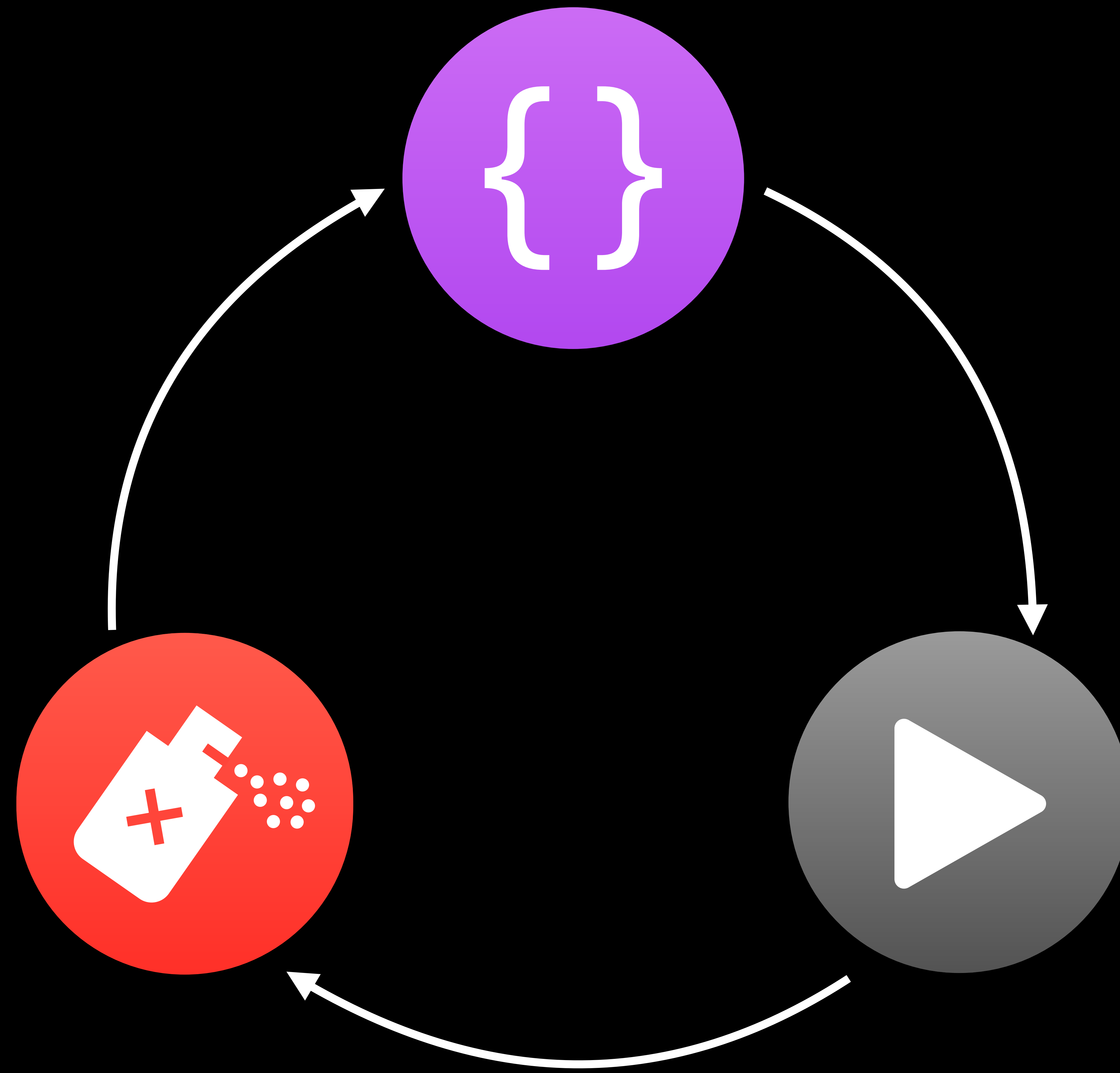


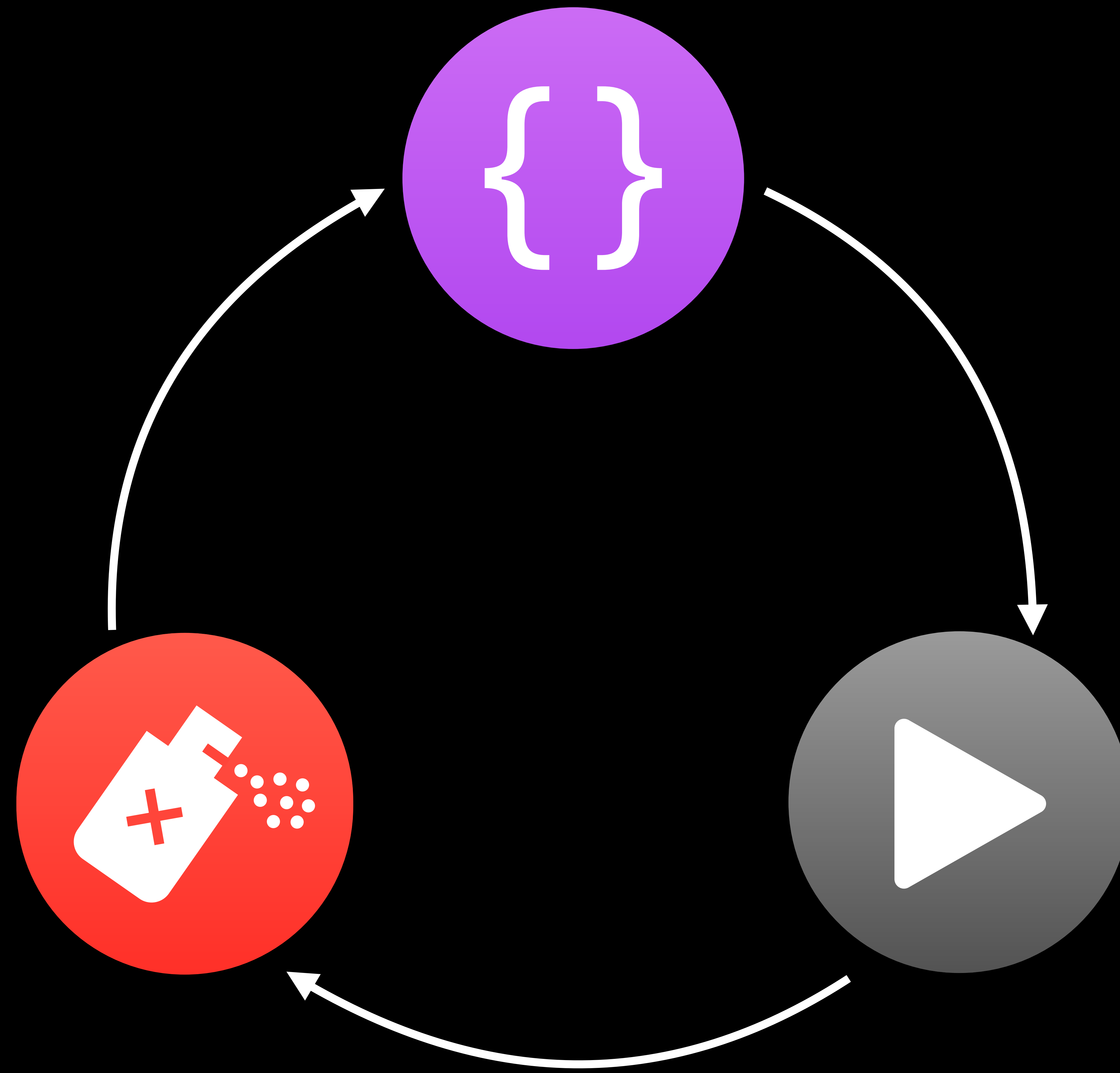
Metal System Trace Analyzing Data

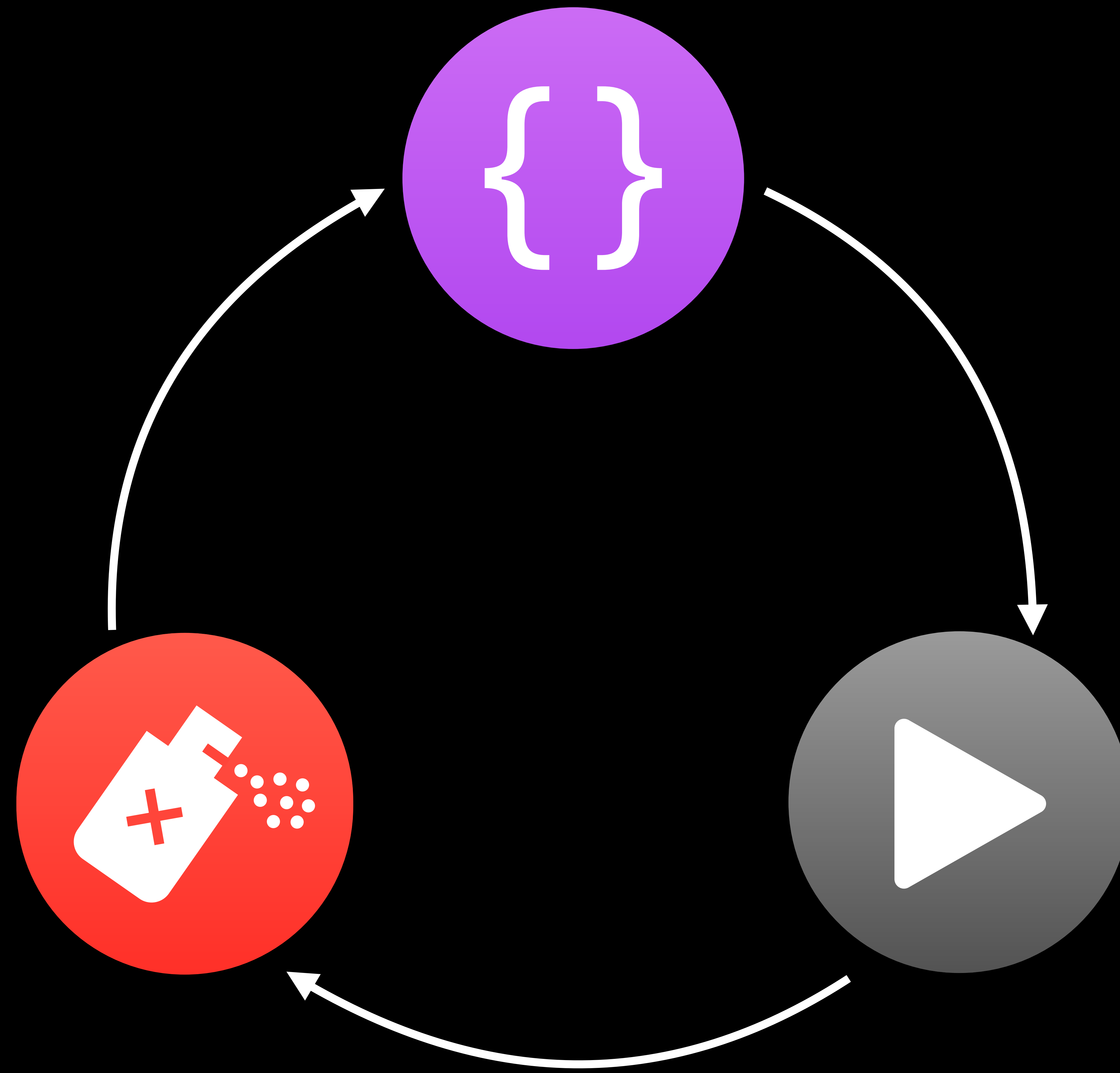


SwiftUI

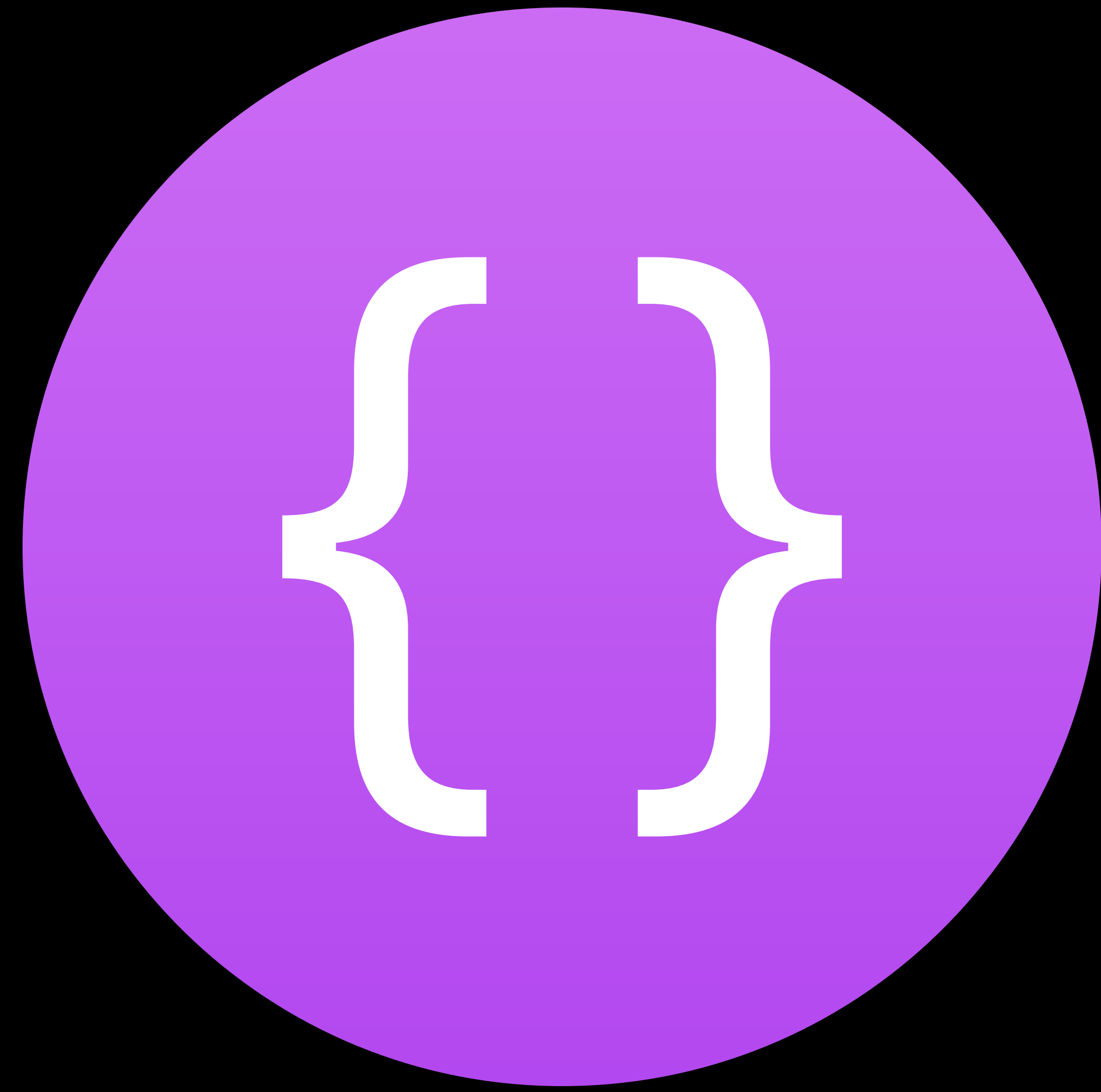


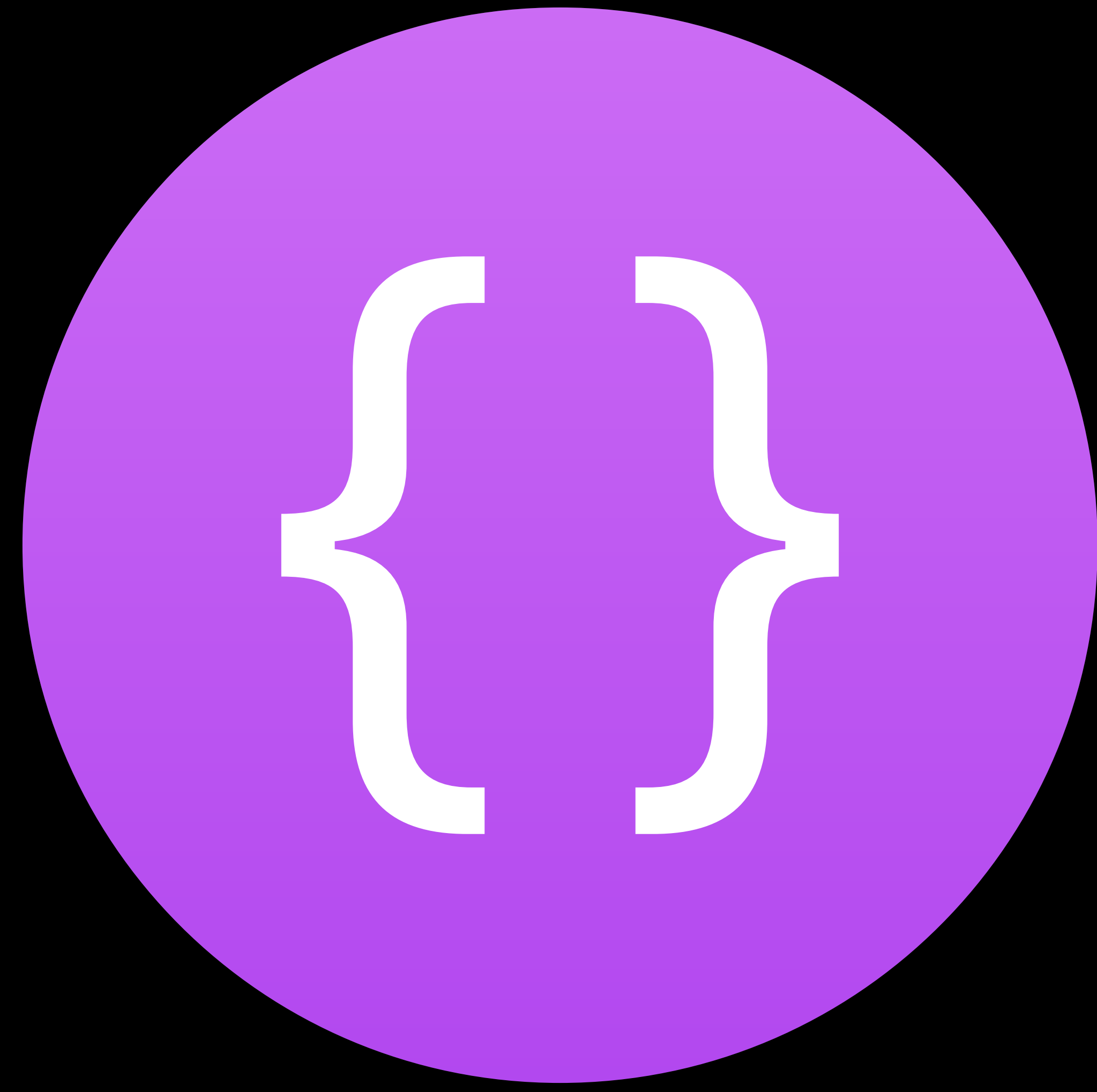












Editing





Canvas Previews

On-Device Previews

Code and Canvas Editors

Code Hot Swapping

Rich Preview API

Preview Pinning

Instruments Template



New Action Popover Actions

Library Views and Modifiers

Canvas Editor for Code

Preview Debugging

Development Time Assets

Travel | Preview Travel: **Succeeded** | Today at 3:39 PM

Travel | DiscoverView.swift | DiscoverView

Search documentation

SwiftUI | Learn to Make Apps Using SwiftUI | Drawing Paths and Shapes

Drawing and Animation


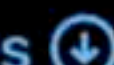
Drawing Paths and Shapes


Users receive a badge whenever they visit a landmark in their list. Of course, for a user to receive a badge, you'll need to create one. This tutorial takes you through the process of creating a badge by combining paths and shapes, which you then overlay with another shape that represents the location.

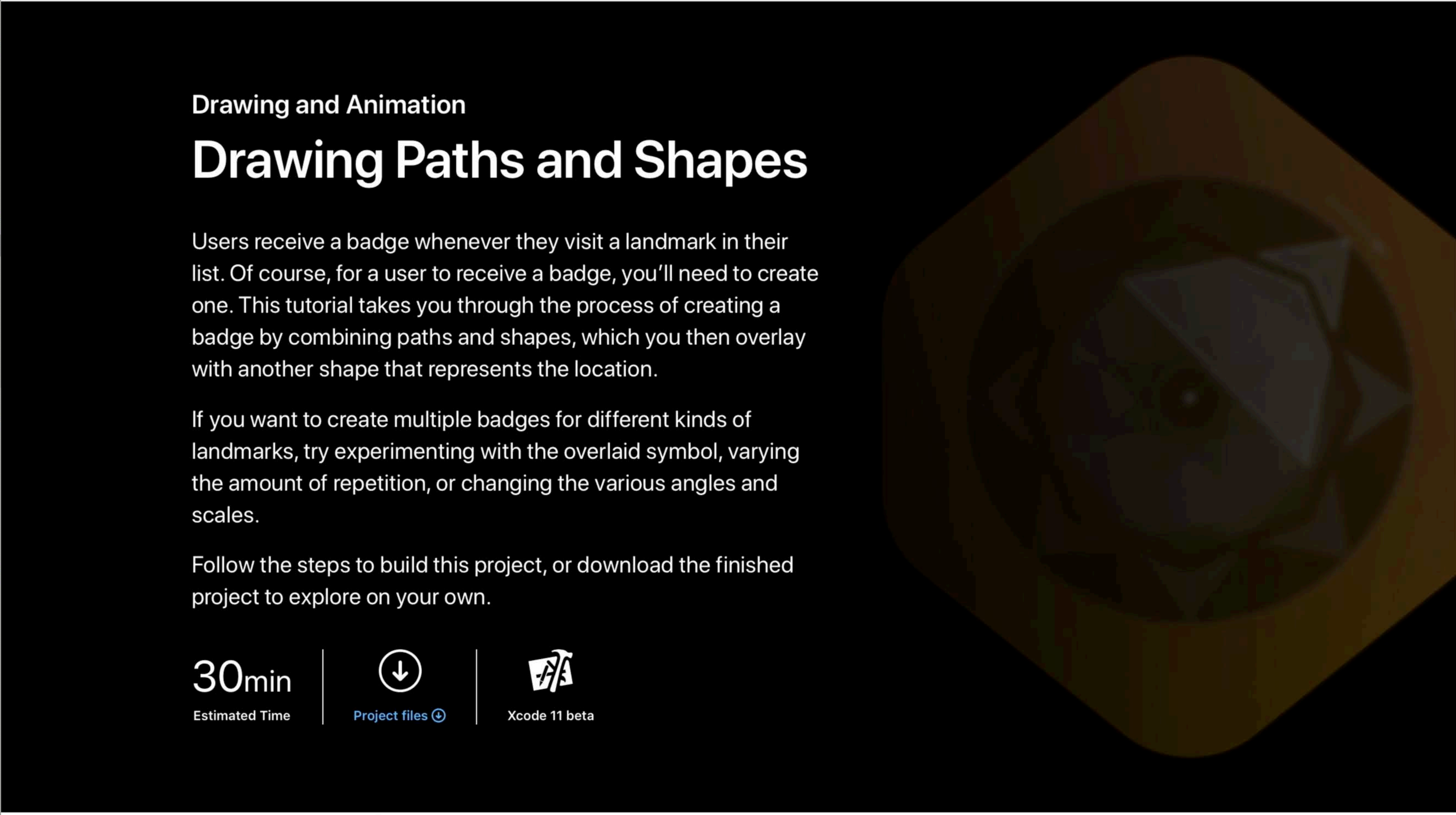
If you want to create multiple badges for different kinds of landmarks, try experimenting with the overlaid symbol, varying the amount of repetition, or changing the various angles and scales.

Follow the steps to build this project, or download the finished project to explore on your own.

30min
Estimated Time


Project files 


Xcode 11 beta



Travel | Preview Travel: **Succeeded** | Today at 3:39 PM

Travel | DiscoverView.swift | DiscoverView

SwiftUI | Learn to Make Apps Using SwiftUI | Drawing Paths and Shapes

Drawing and Animation


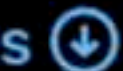
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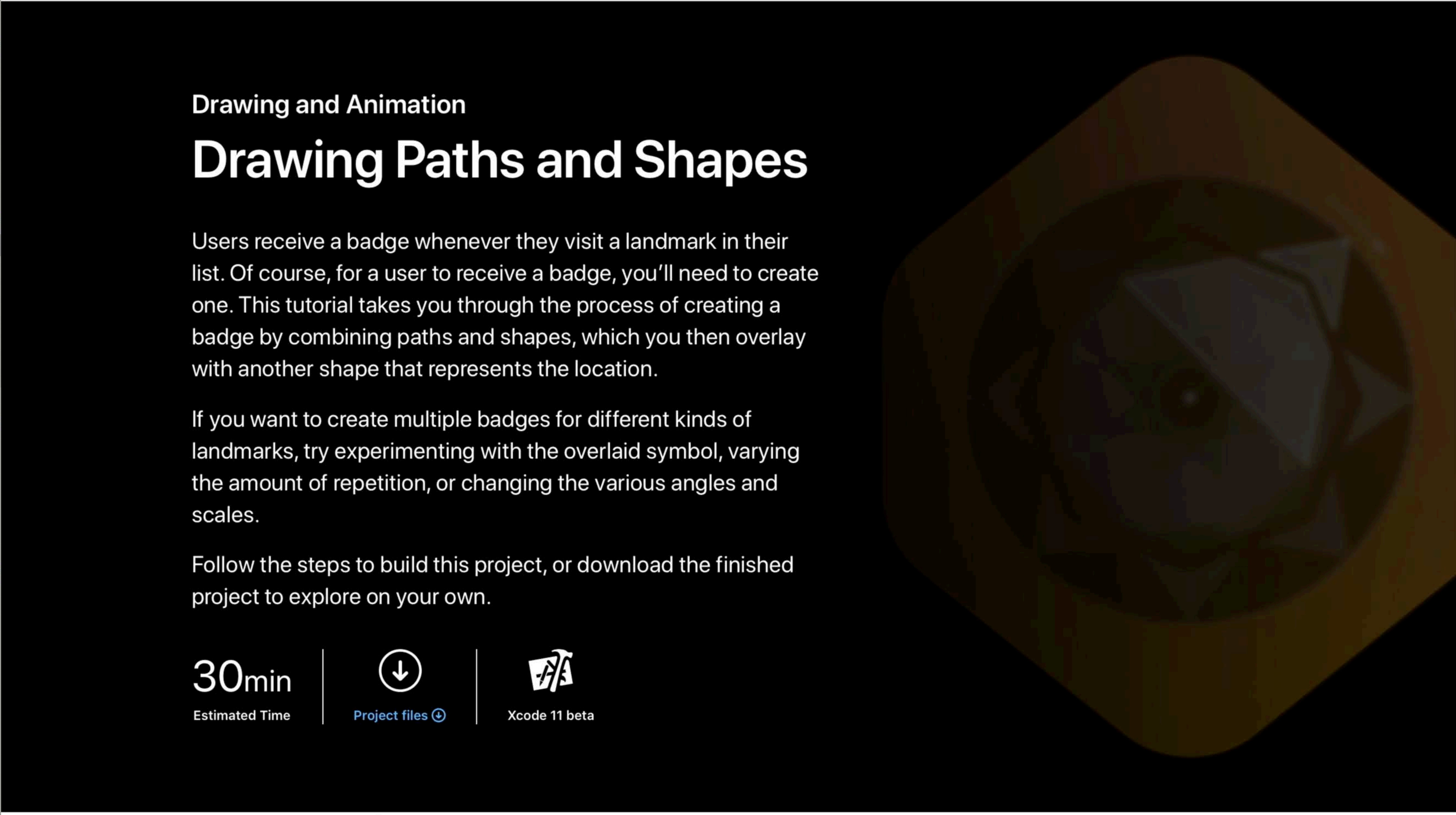
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30min
Estimated Time


Project files 


Xcode 11 beta




```
struct DiscoverSwiftUIView: UIViewRepresentable {  
  
    func makeUIView(context: Context) -> DiscoverView {  
        return DiscoverView(sceneController:  
            GlobeSceneController())  
    }  
  
    func updateUIView(  
        _ uiView: DiscoverView, context: Context) {  
        // your logic here.  
    }  
  
}
```




```
74 }
75
76 struct DiscoverSwiftUIView: UIViewRepresentable {
77
78     func makeUIView(context: Context) -> DiscoverView {
79         return DiscoverView(sceneController:
80             GlobeSceneController())
81     }
82
83     func updateUIView(
84         _ uiView: DiscoverView, context: Context) {
85         // your logic here.
86     }
87 }
88
```


Travel | Preview Travel: **Succeeded** | Today at 3:39 PM

Travel | iPhone Xs

Travel | DiscoverView.swift | DiscoverView

```
66 }
67
68 #if DEBUG
69
70 struct DiscoverView_Previews : PreviewProvider {
71     static var previews: some View {
72         return DiscoverSwiftUIView()
73     }
74 }
75
76 struct DiscoverSwiftUIView: UIViewRepresentable {
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80             GlobeSceneController())
81     }
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83     func updateUIView(
84         _ uiView: DiscoverView, context: Context) {
85         // your logic here.
86     }
87 }
88
89 #endif
```



San Francisco

Preview

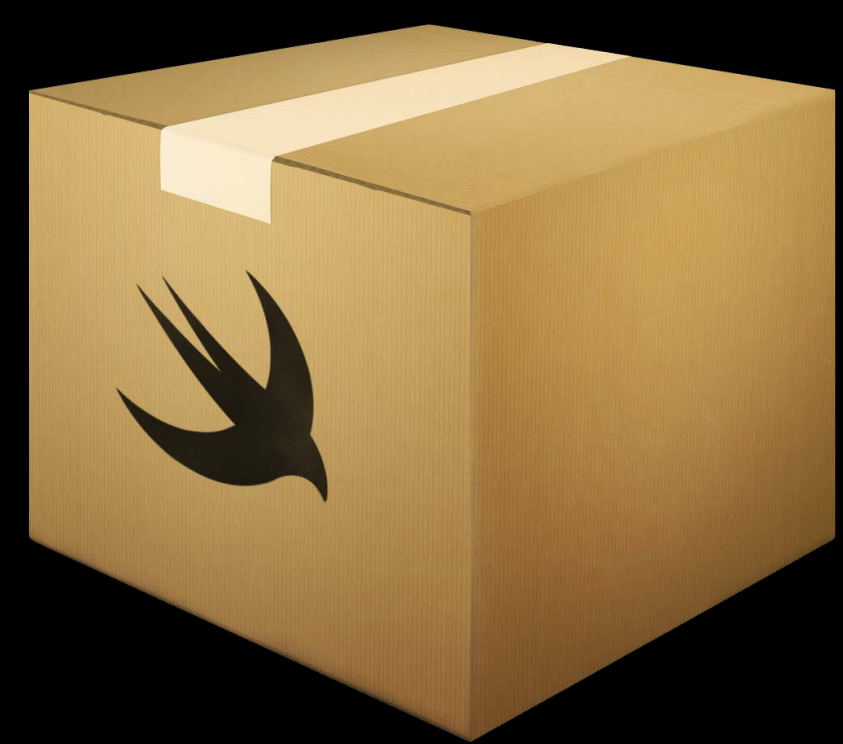
75%

Travel | Preview Travel: **Succeeded** | Today at 3:39 PM

Travel | iPhone Xs

Travel | DiscoverView.swift | DiscoverView

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66 }
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70 struct DiscoverView_Previews : PreviewProvider {
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89 #endif
```

More Information

developer.apple.com/wwdc19/401

Introducing SwiftUI: Building Your First App

Tuesday, 11:00AM

SwiftUI Essentials

Wednesday, 11:00AM

 WWDC19