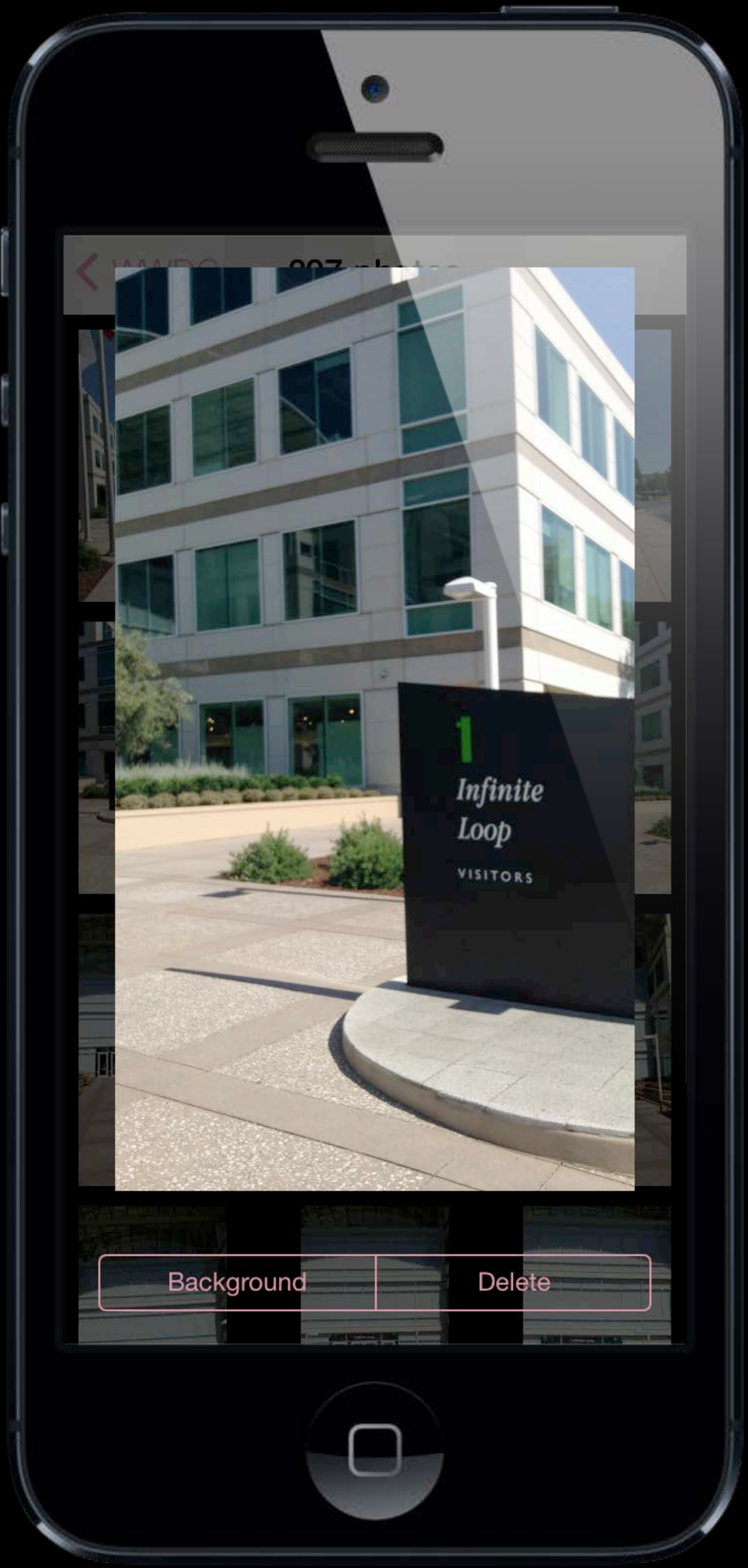
Implementing Engaging UI on iOS

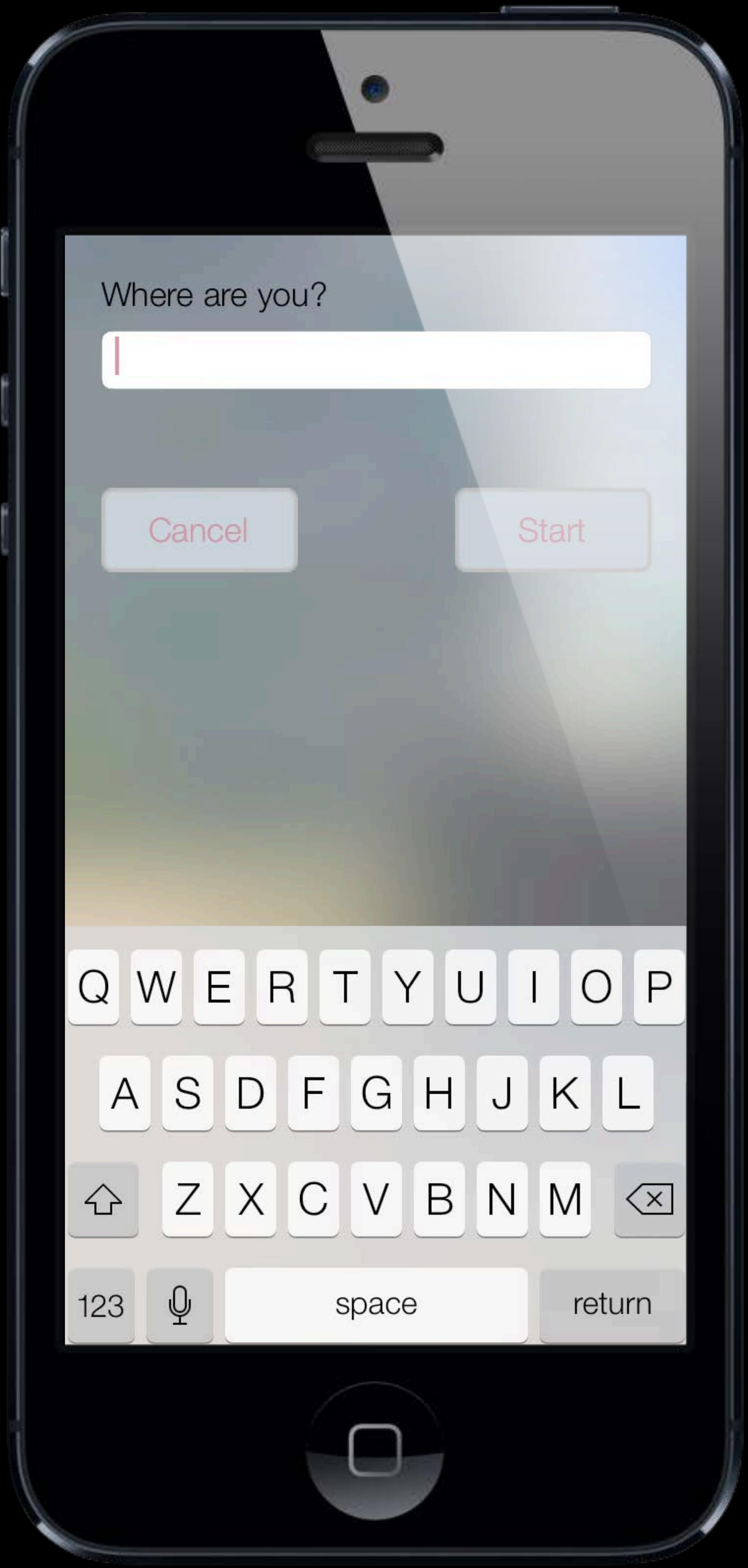
Make it so

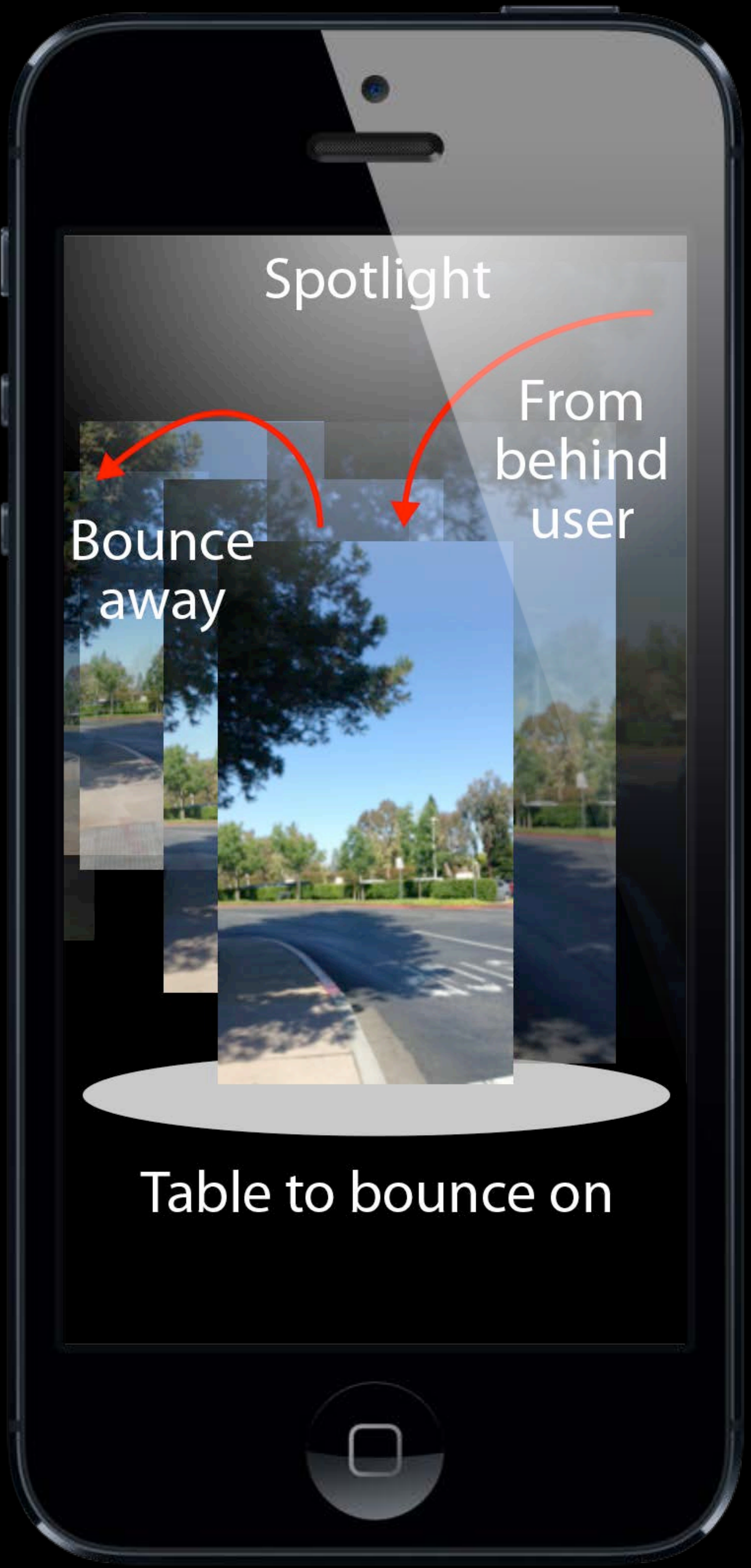
Session 226

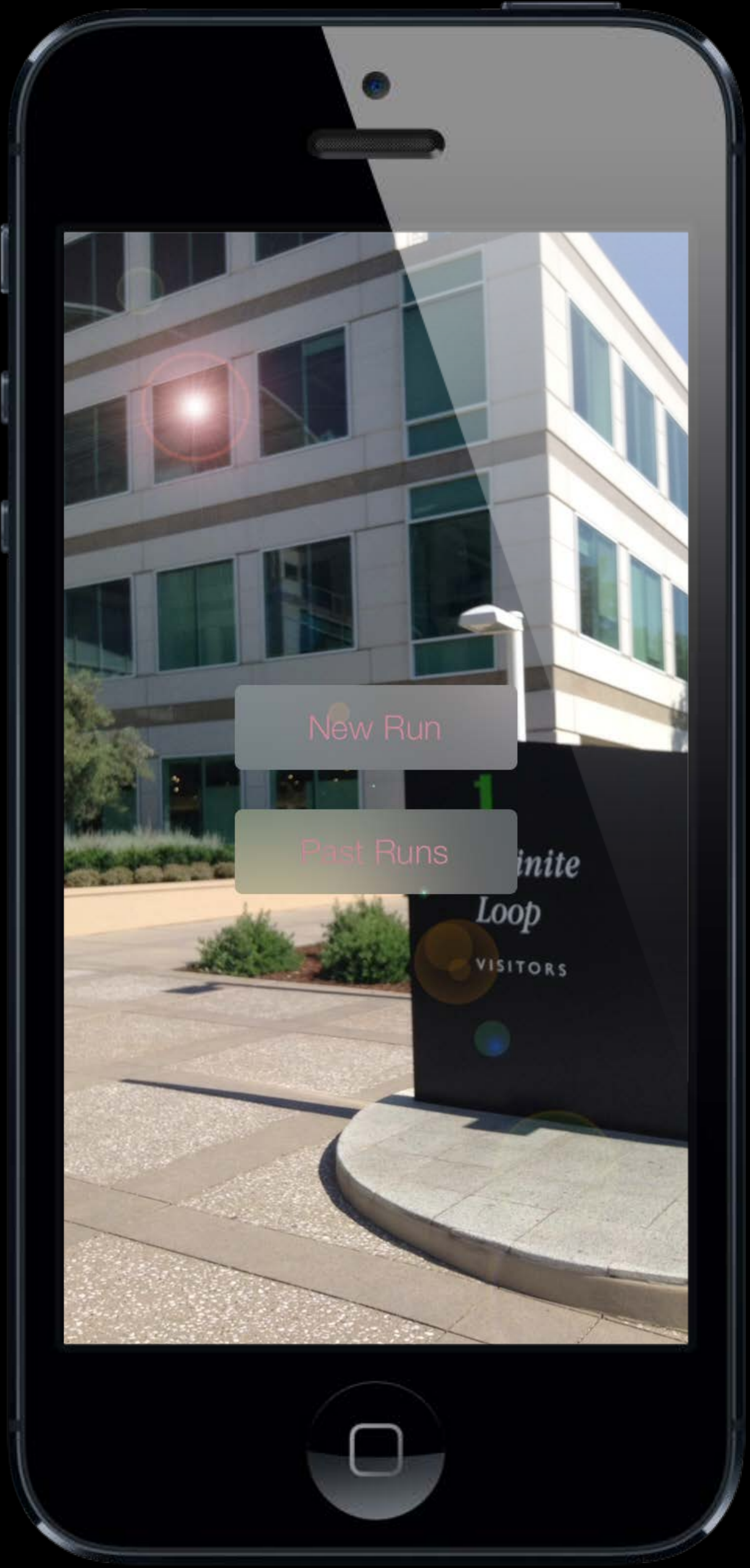
Brandon Newendorp
iOS Software Engineer

Jim Turner
iOS Software Engineer


1
Infinite
Loop
VISITORS
Background
Delete


Where are you?
Cancel
Start
Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M
123
space
return

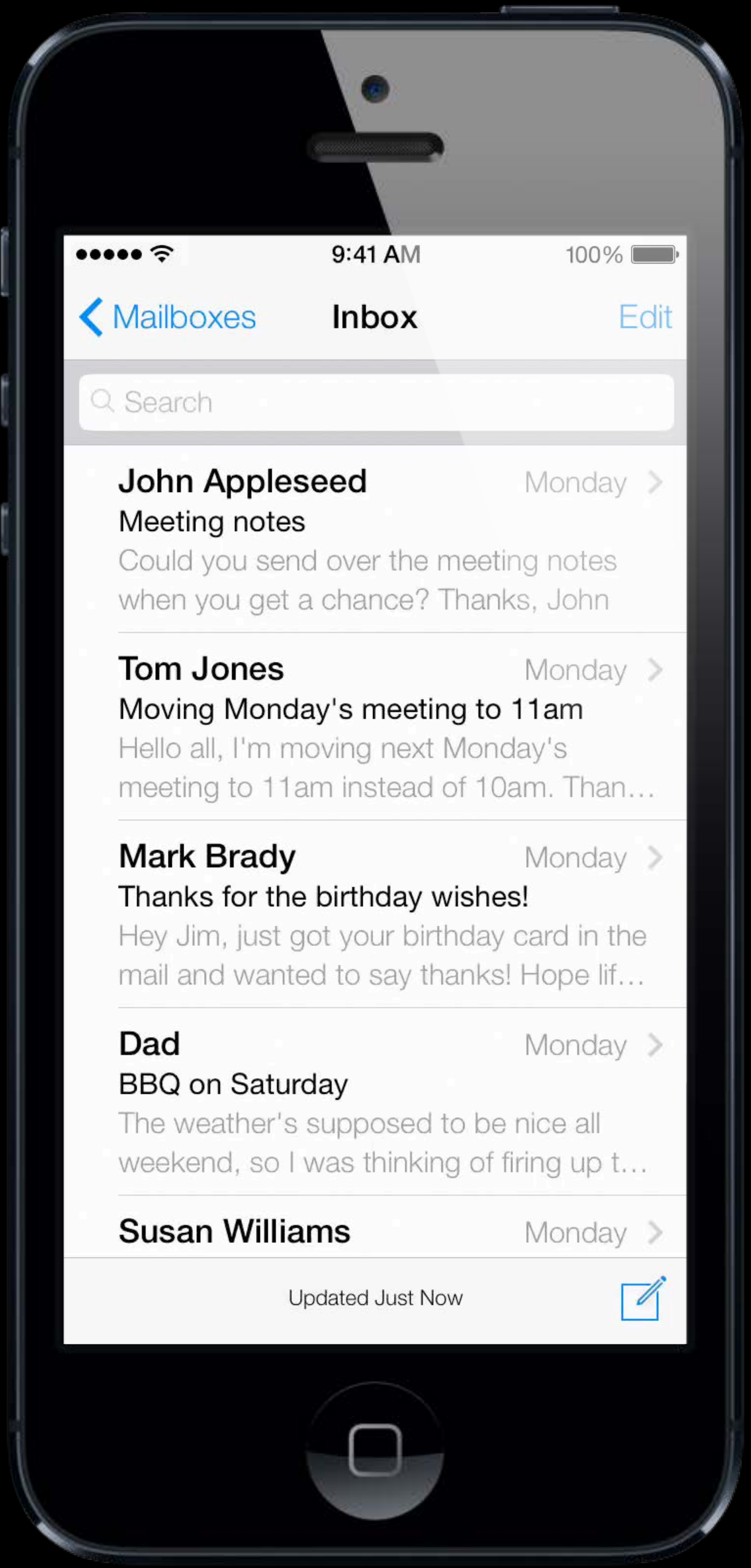

Spotlight
From behind user
Bounce away
Table to bounce on


New Run
Past Runs
1 Infinite
Loop
VISITORS

Agenda

- Transitions
- Custom appearance
- Realistic motion

Custom View Controller Transitions



Inbox

John Appleseed Monday
Meeting notes
Could you send over the meeting notes when you get a chance? Thanks, John

Tom Jones Monday
Moving Monday's meeting to 11am
Hello all, I'm moving next Monday's meeting to 11am instead of 10am. Than…

Mark Brady Monday
Thanks for the birthday wishes!
Hey Jim, just got your birthday card in the mail and wanted to say thanks! Hope lif…

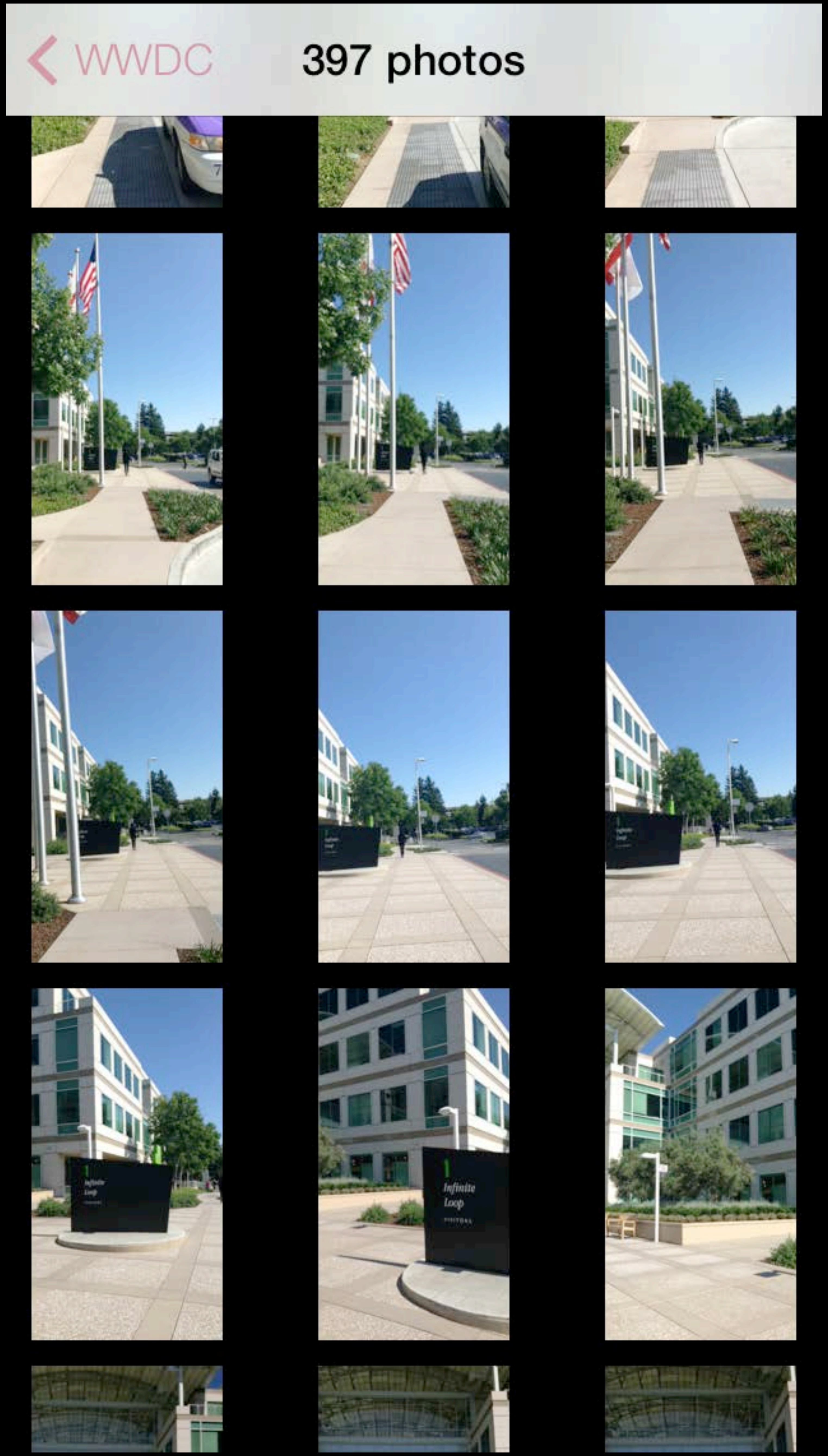
Dad Monday
BBQ on Saturday
The weather's supposed to be nice all weekend, so I was thinking of firing up t…

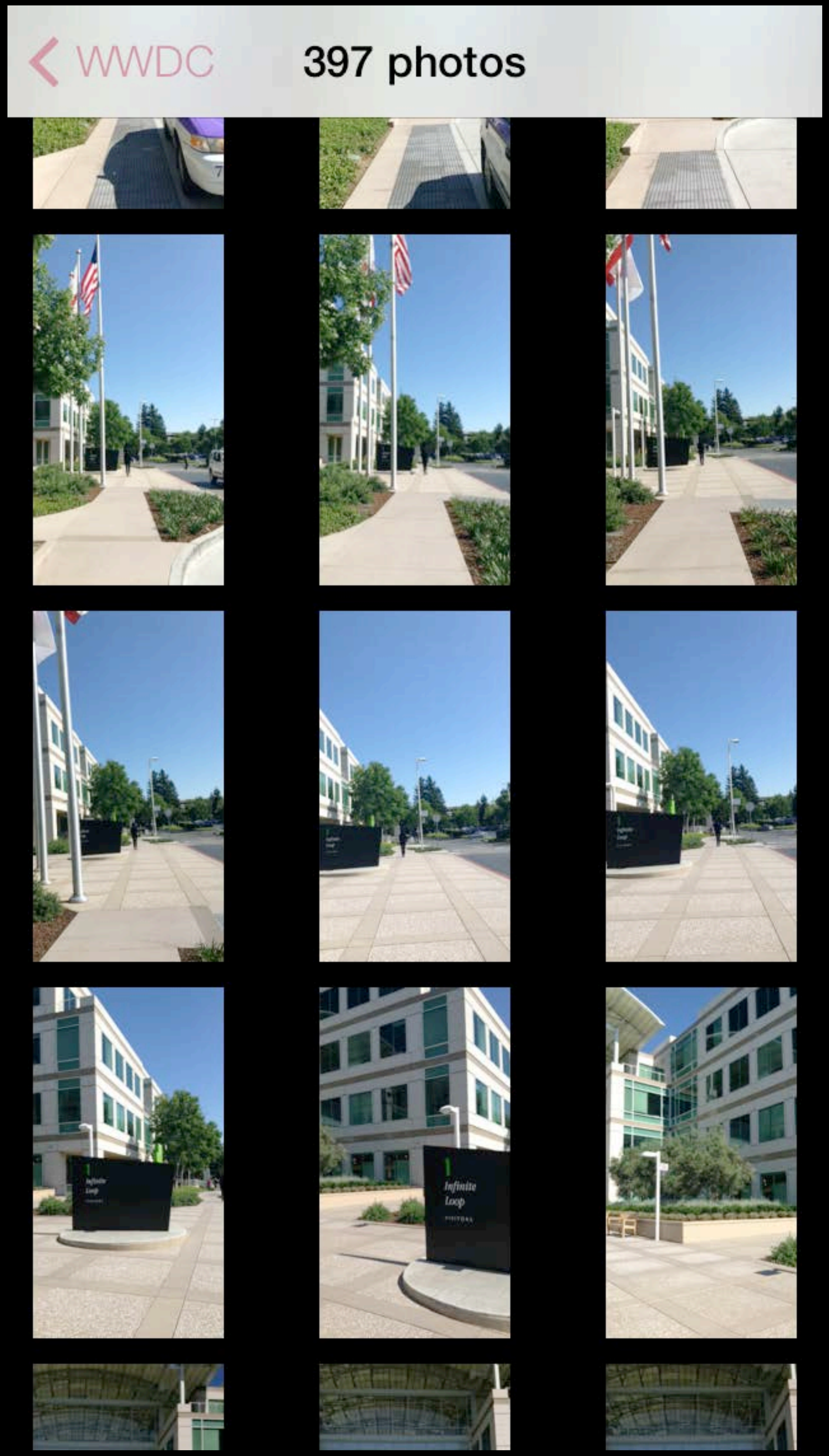
Susan Williams Monday

UIViewController Transitions

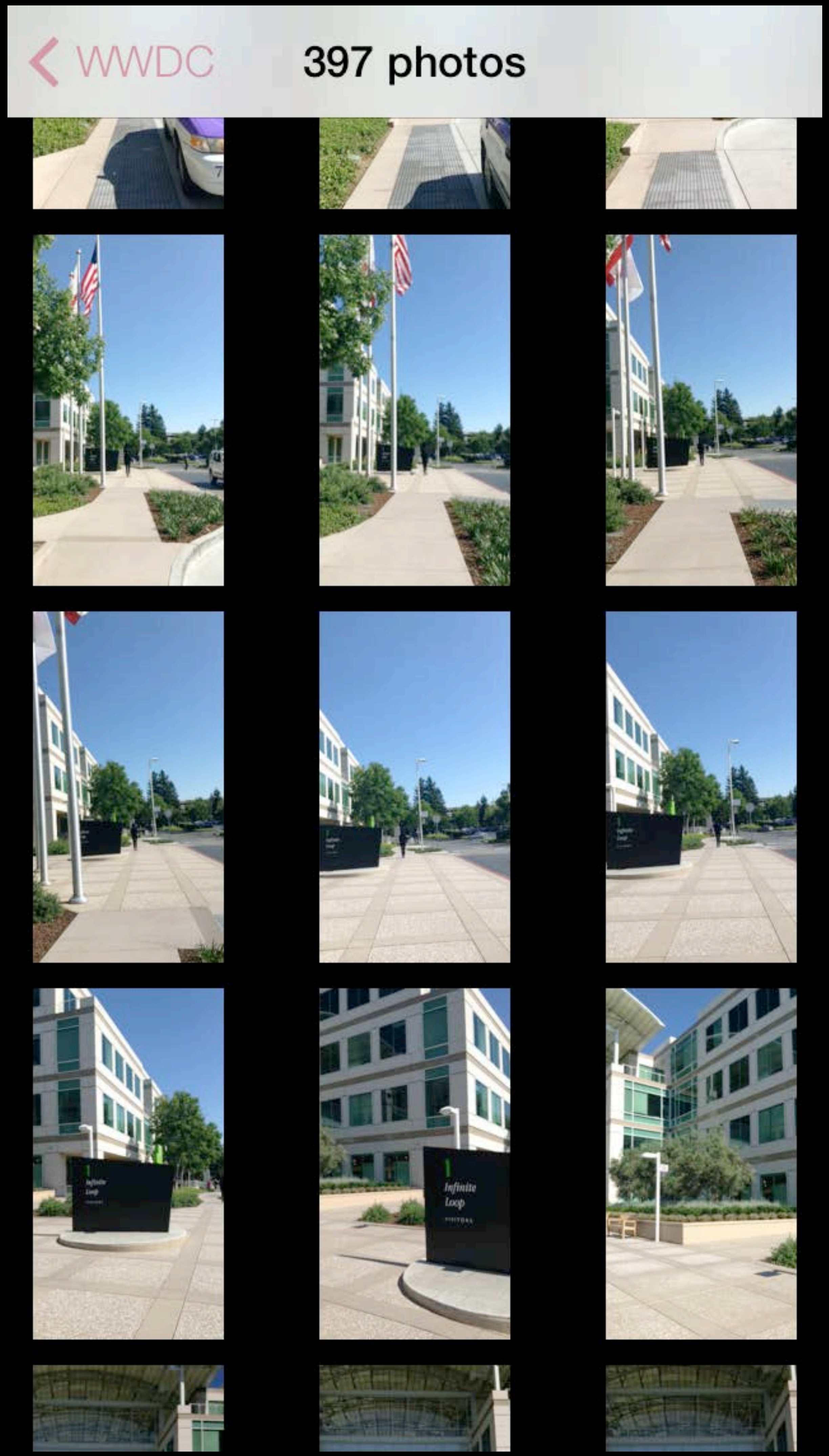
Going beyond animated:YES

- New API to customize view controller transitions
- UIViewController present and dismiss
- Navigation push/pop
- Interactive and non-interactive


WWDC
397 photos


WWDC
397 photos

```
toVC = [[PhotoDetailView alloc] init];
```



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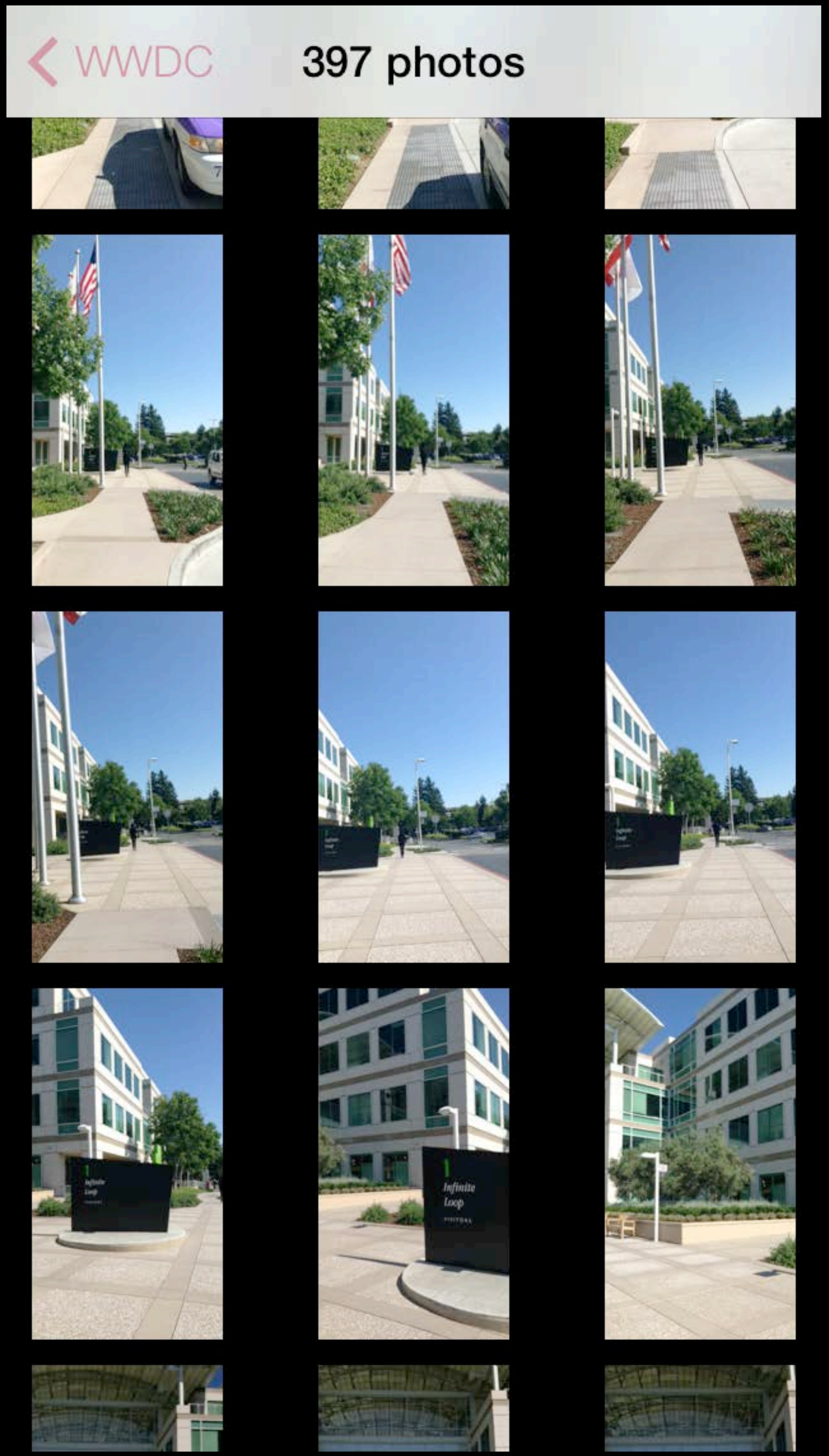
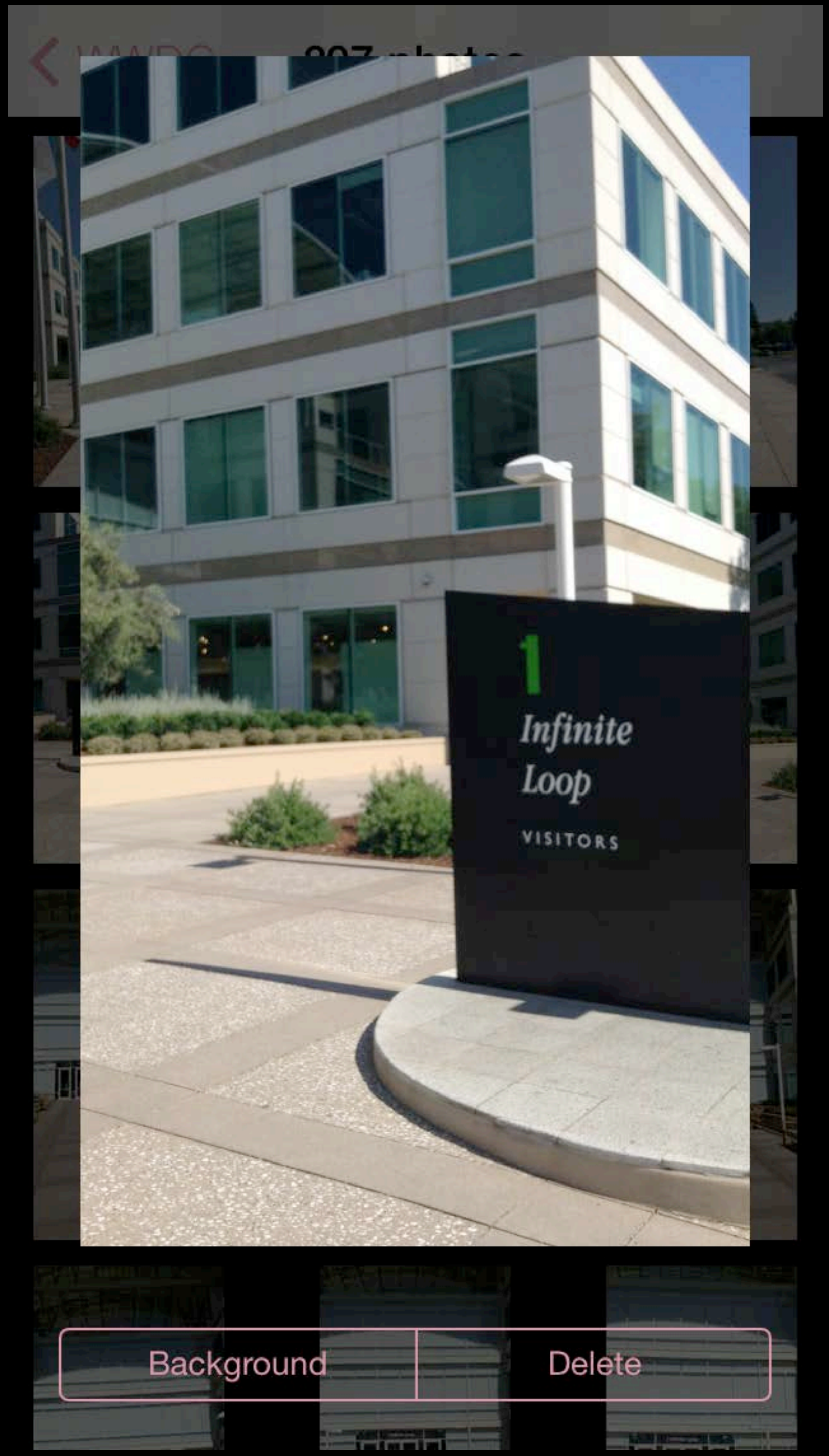
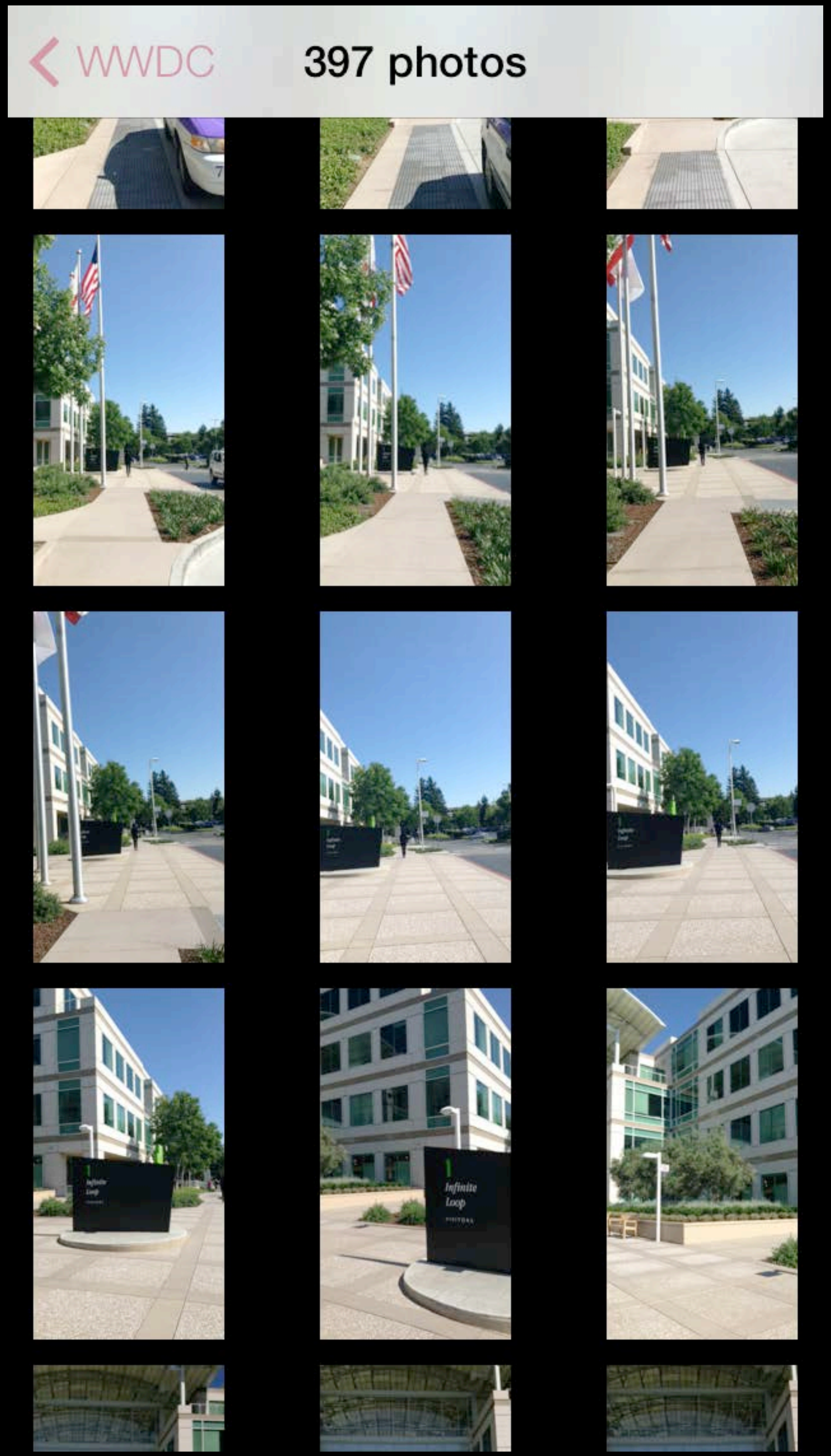
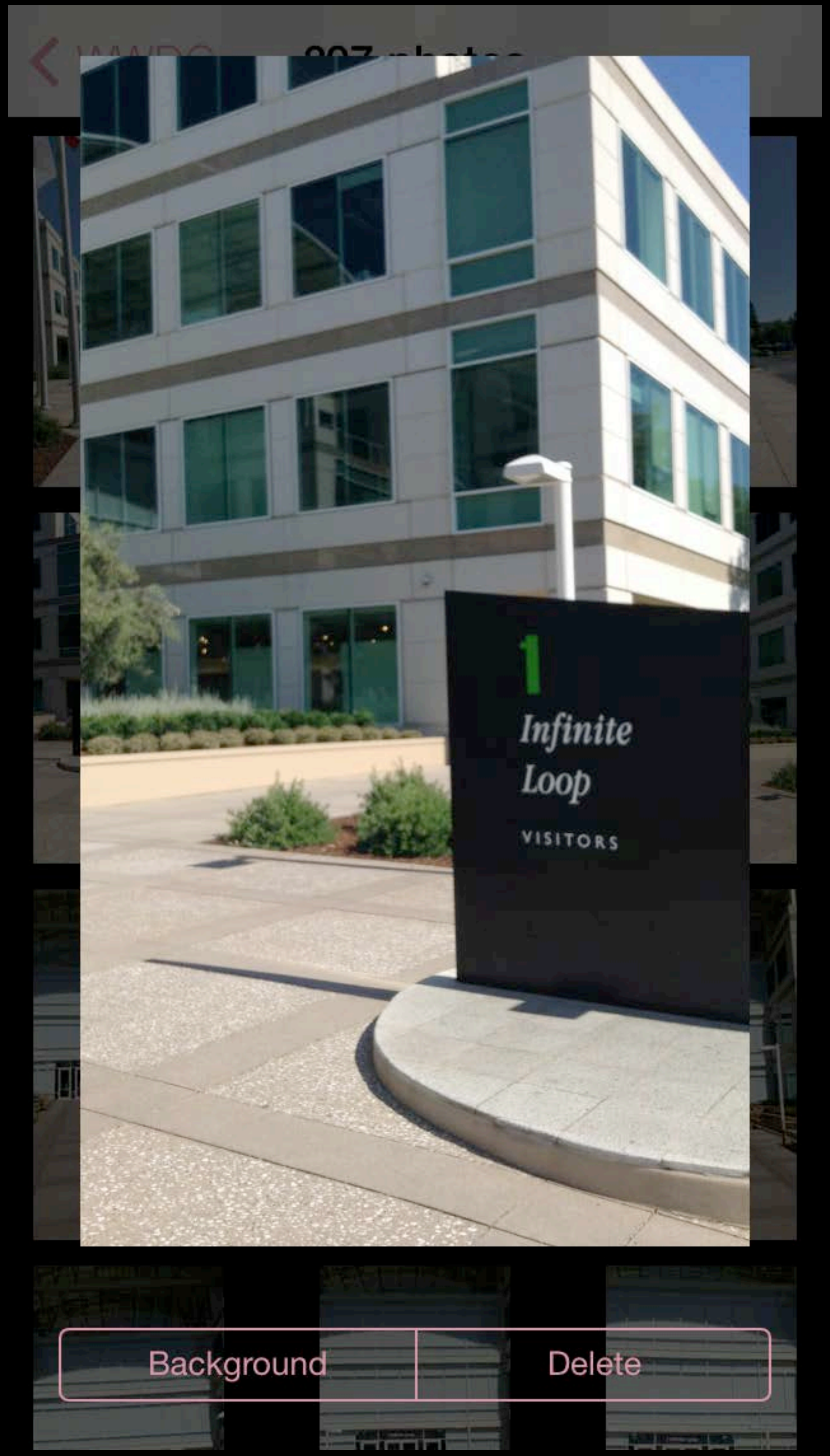
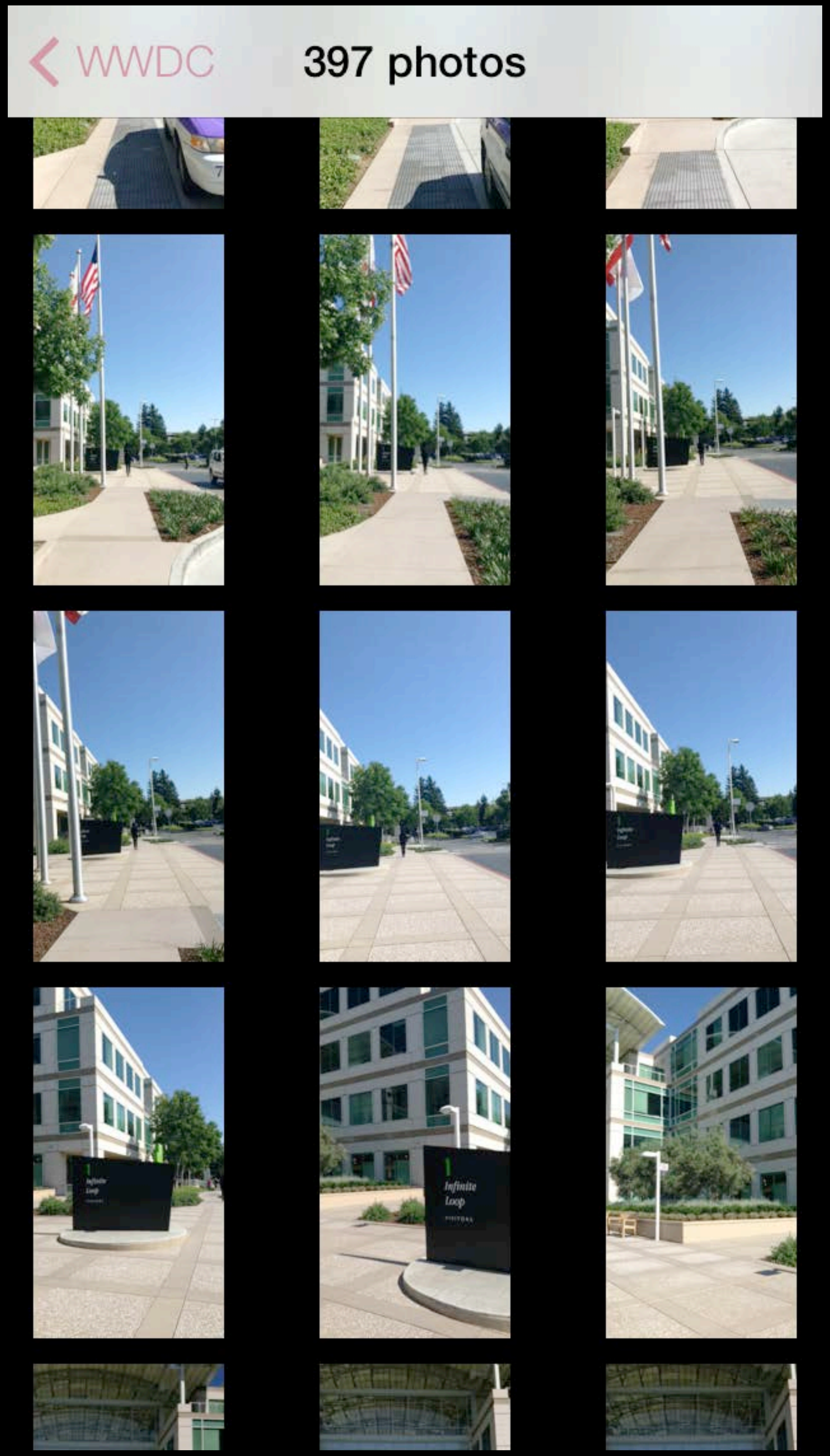


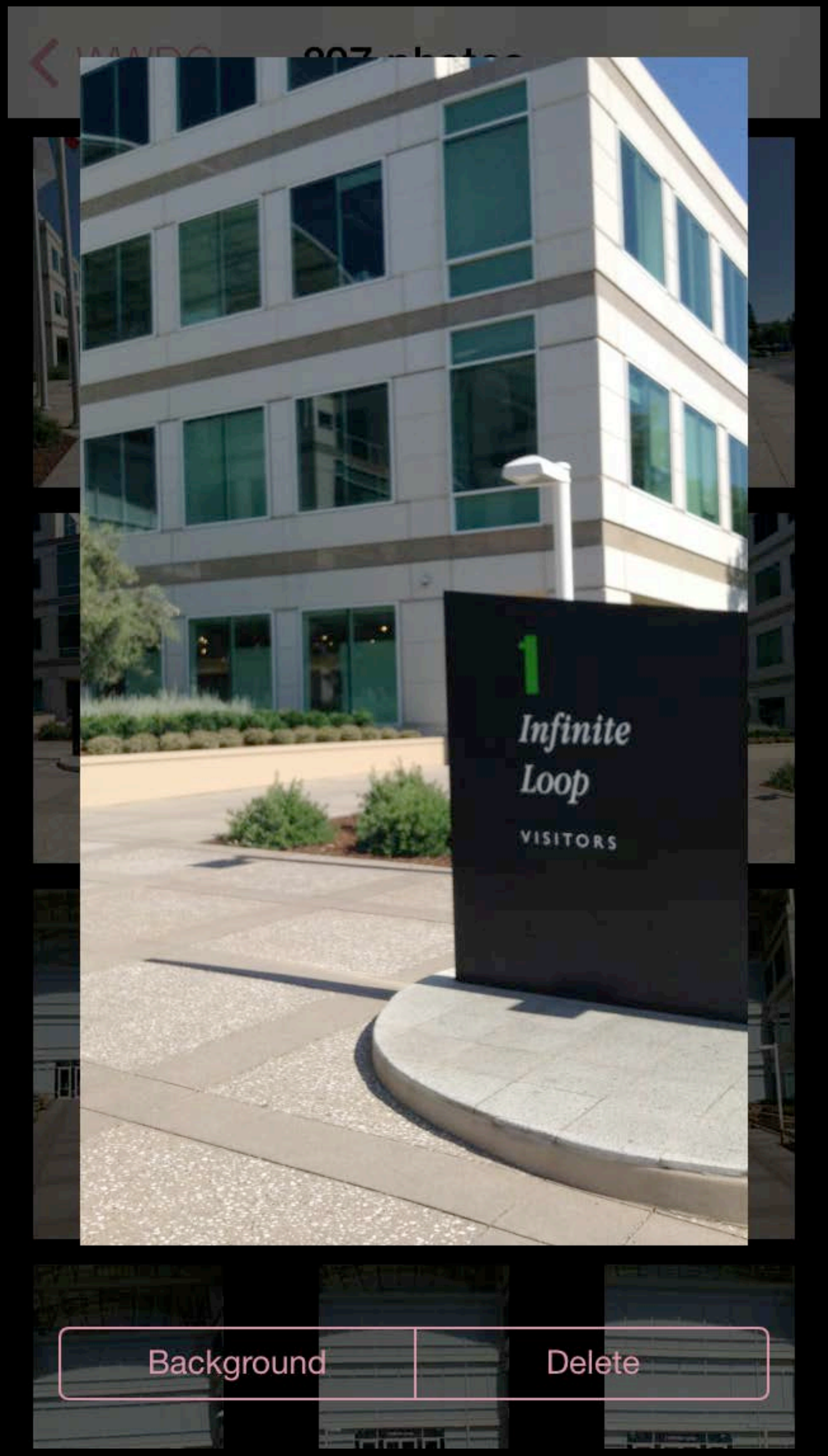


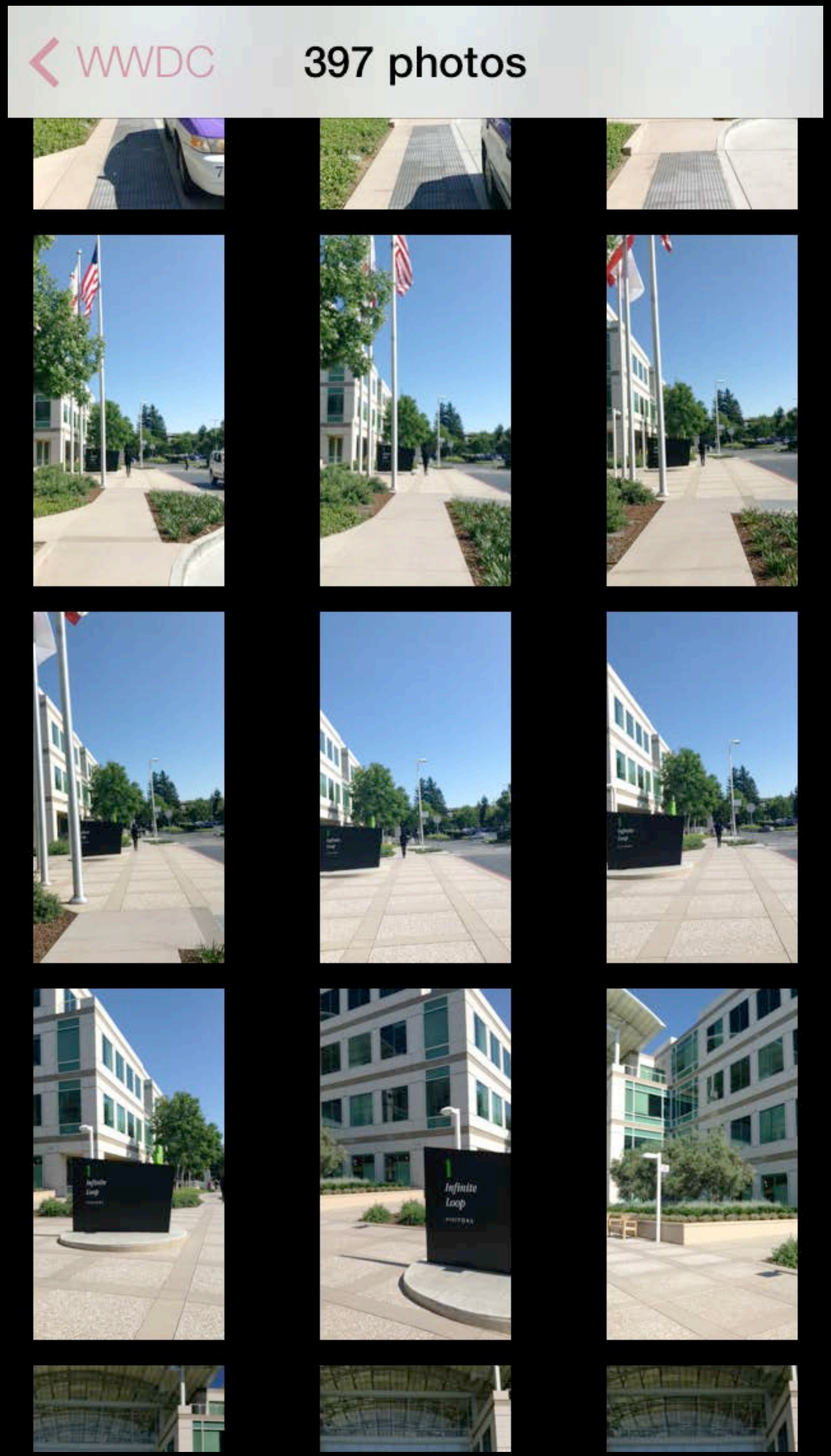

WWDC
397 photos
1 Infinite Loop VISITORS


1 Infinite Loop VISITORS
Background
Delete

```
toVC.transitioningDelegate = self
```



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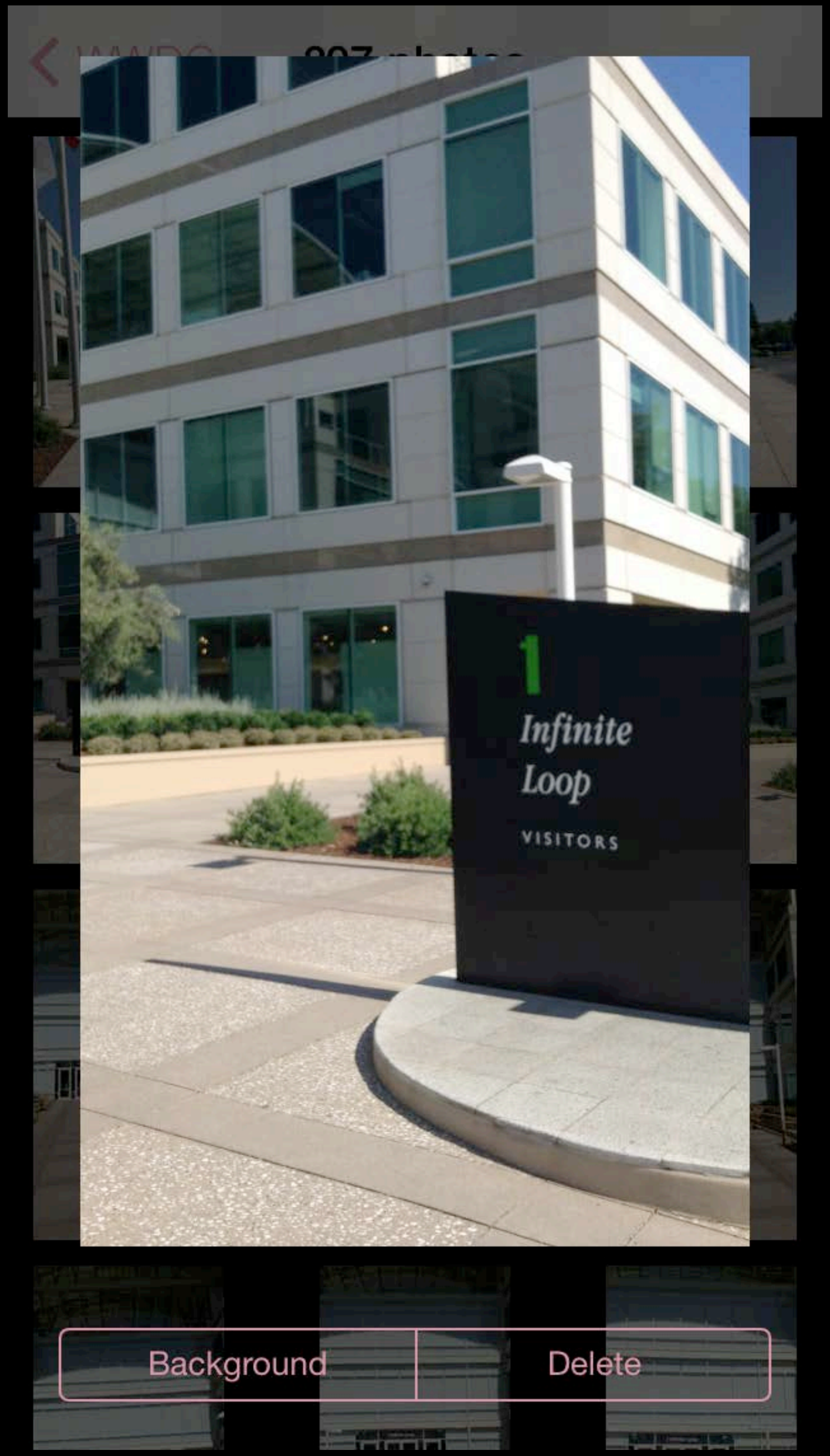
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VISITORS
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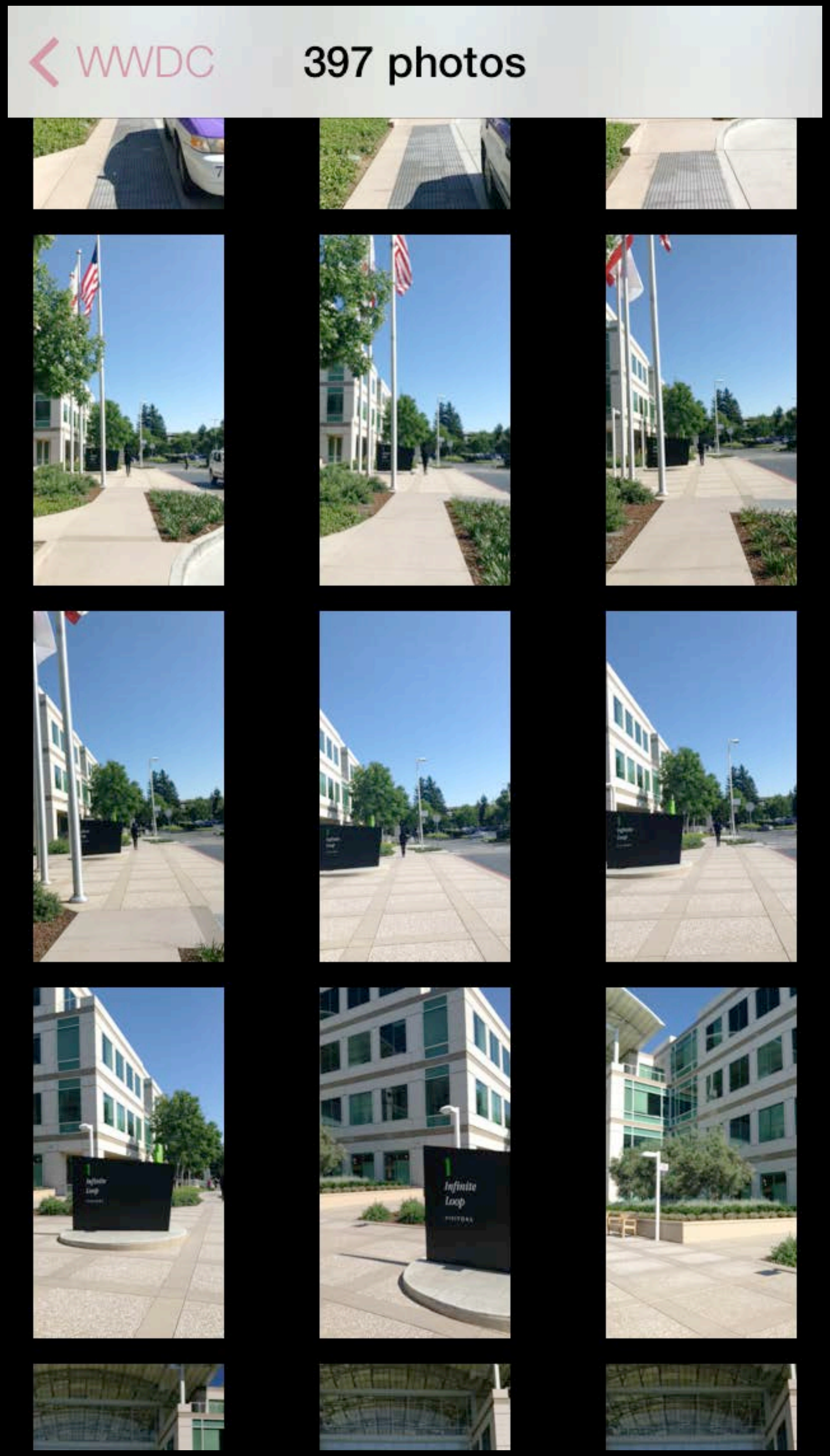
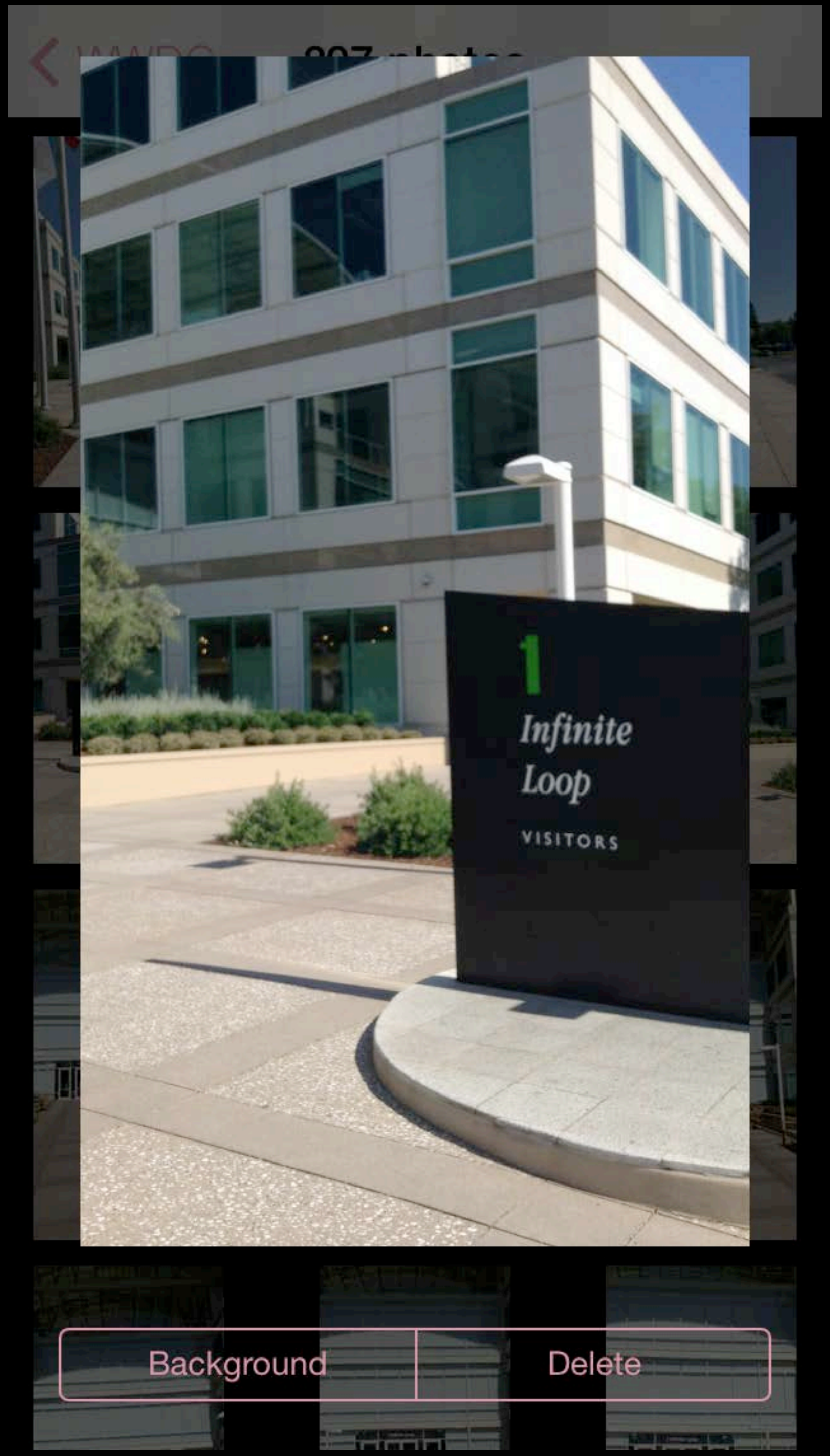
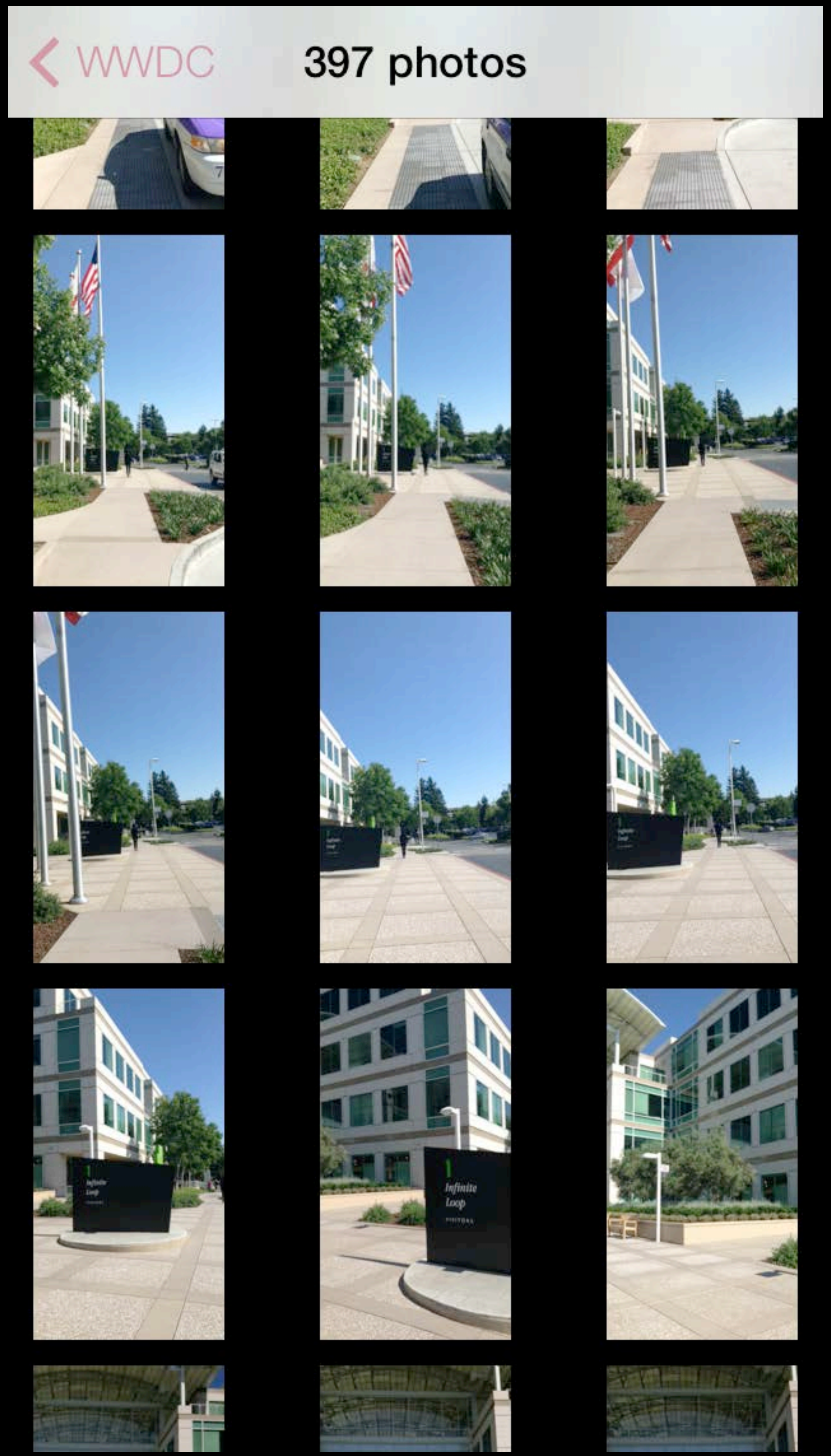


```
presentViewController:toVC
animated:YES
completion:nil
```

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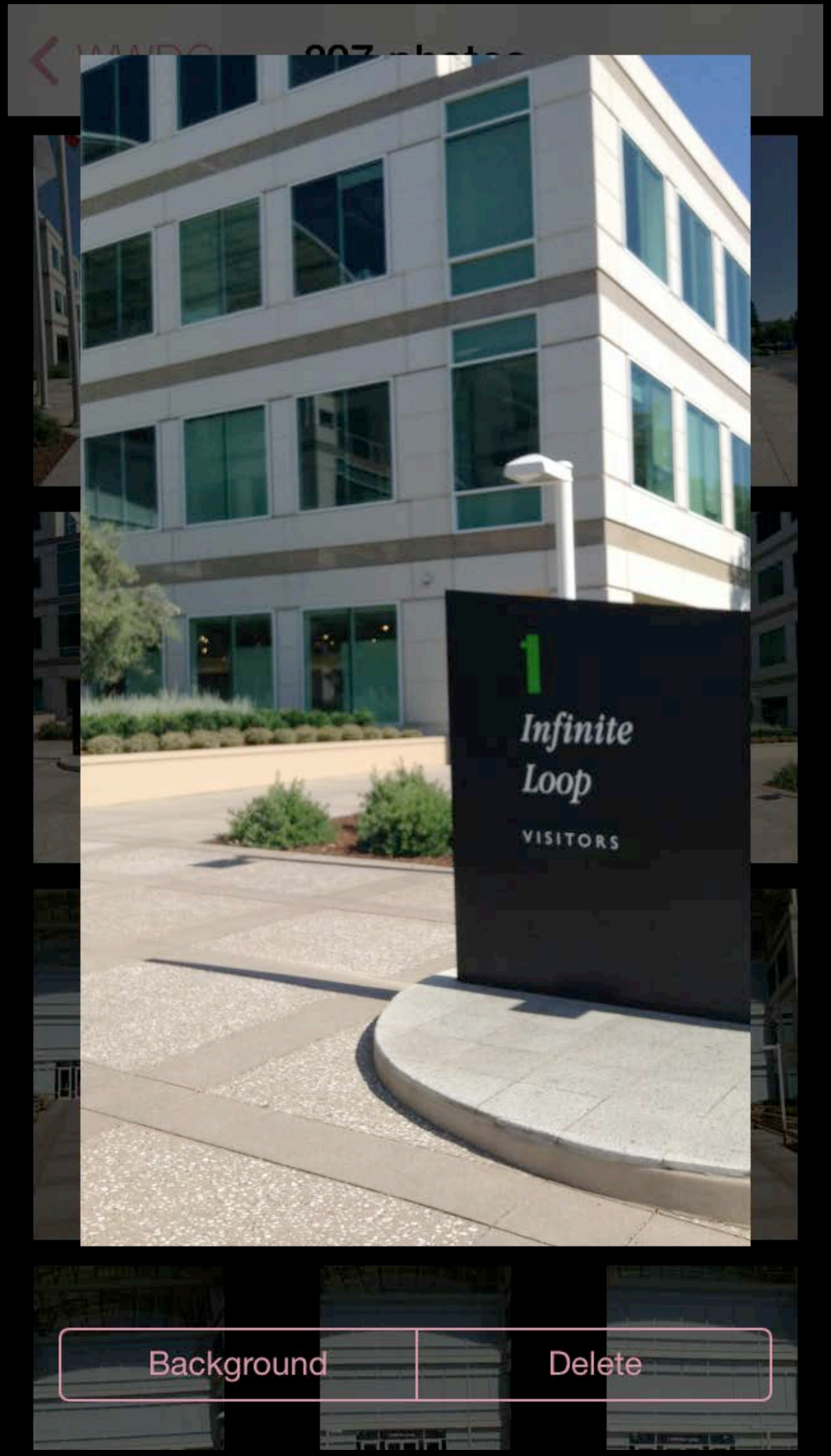
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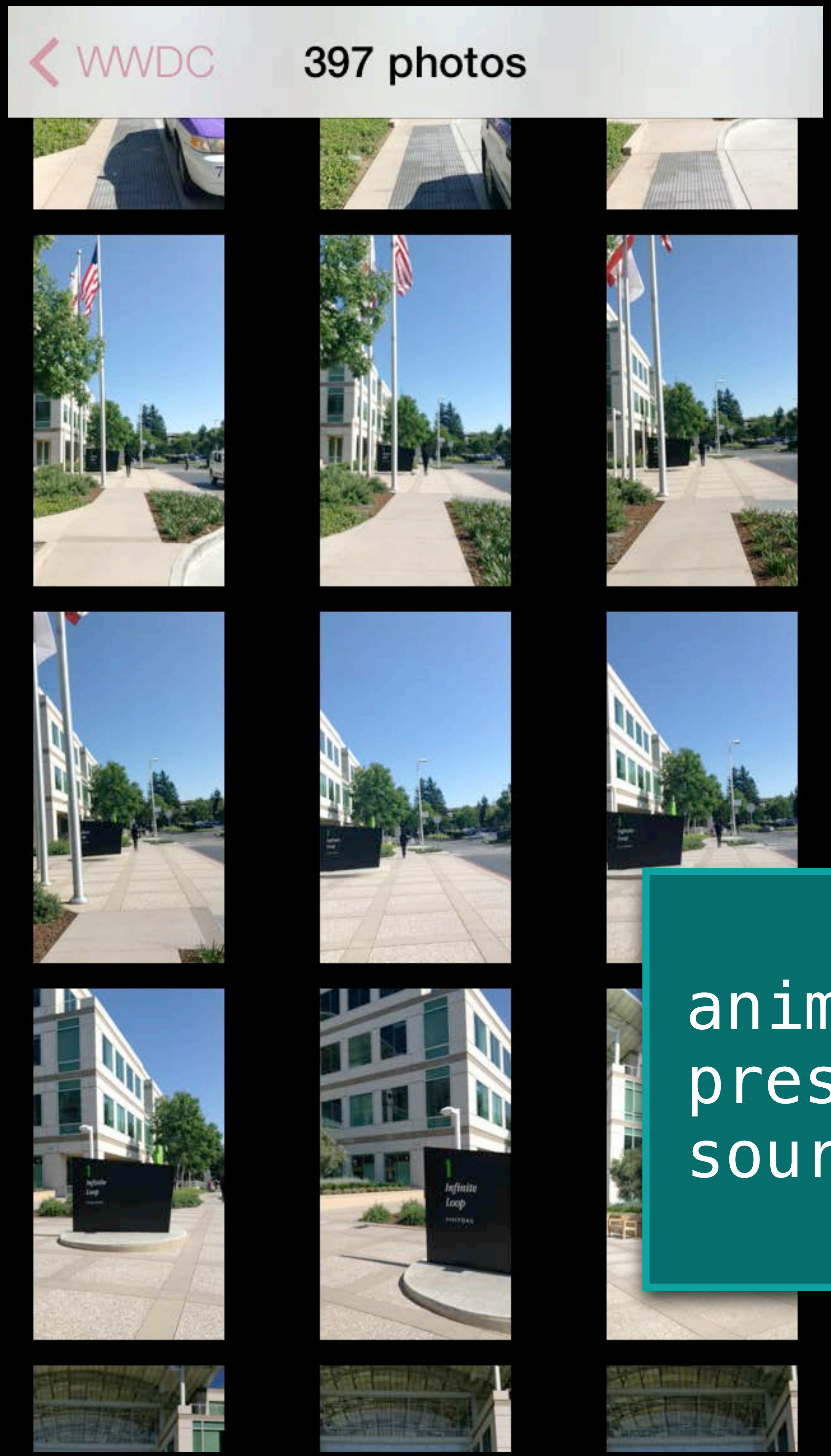
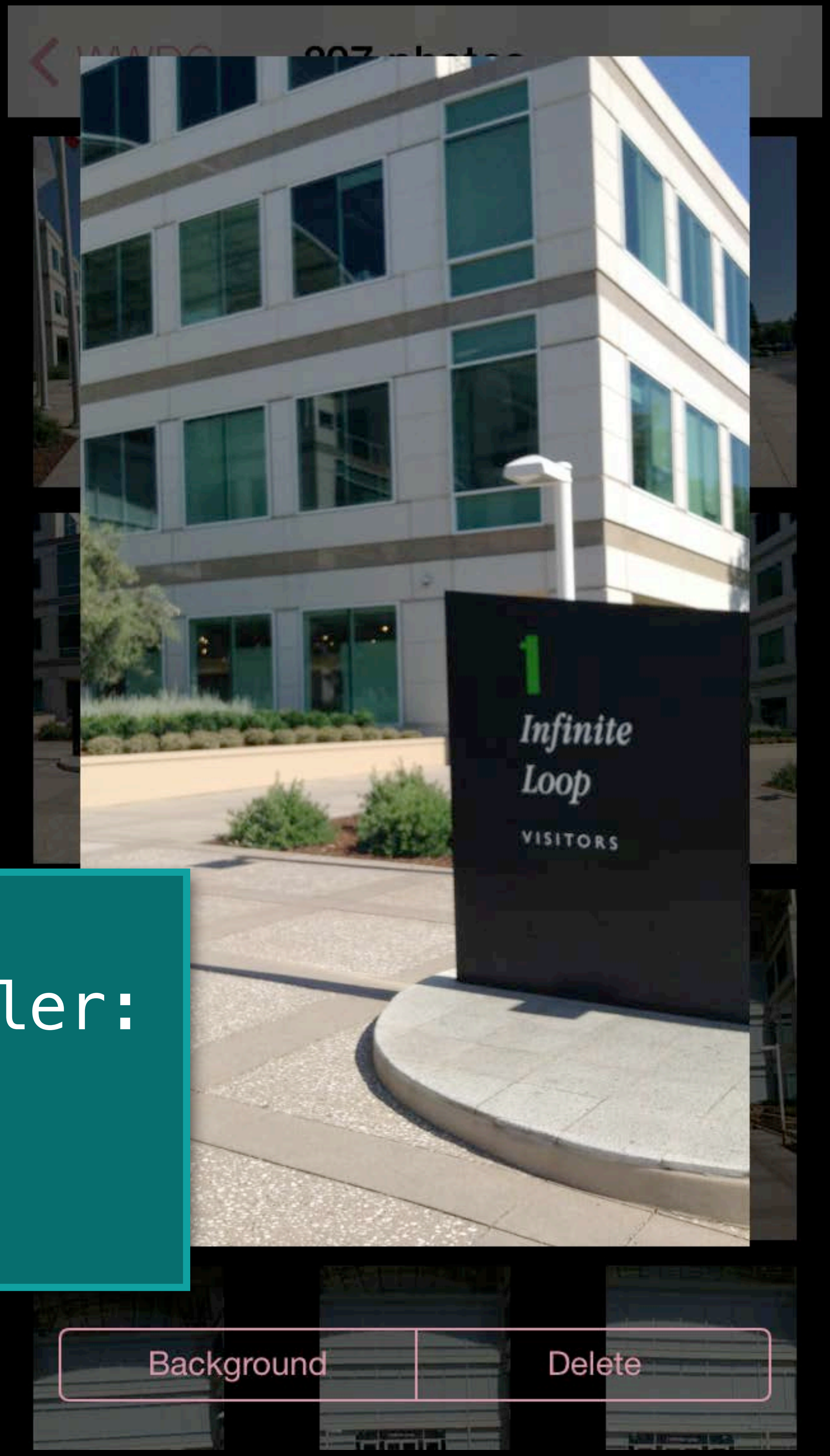
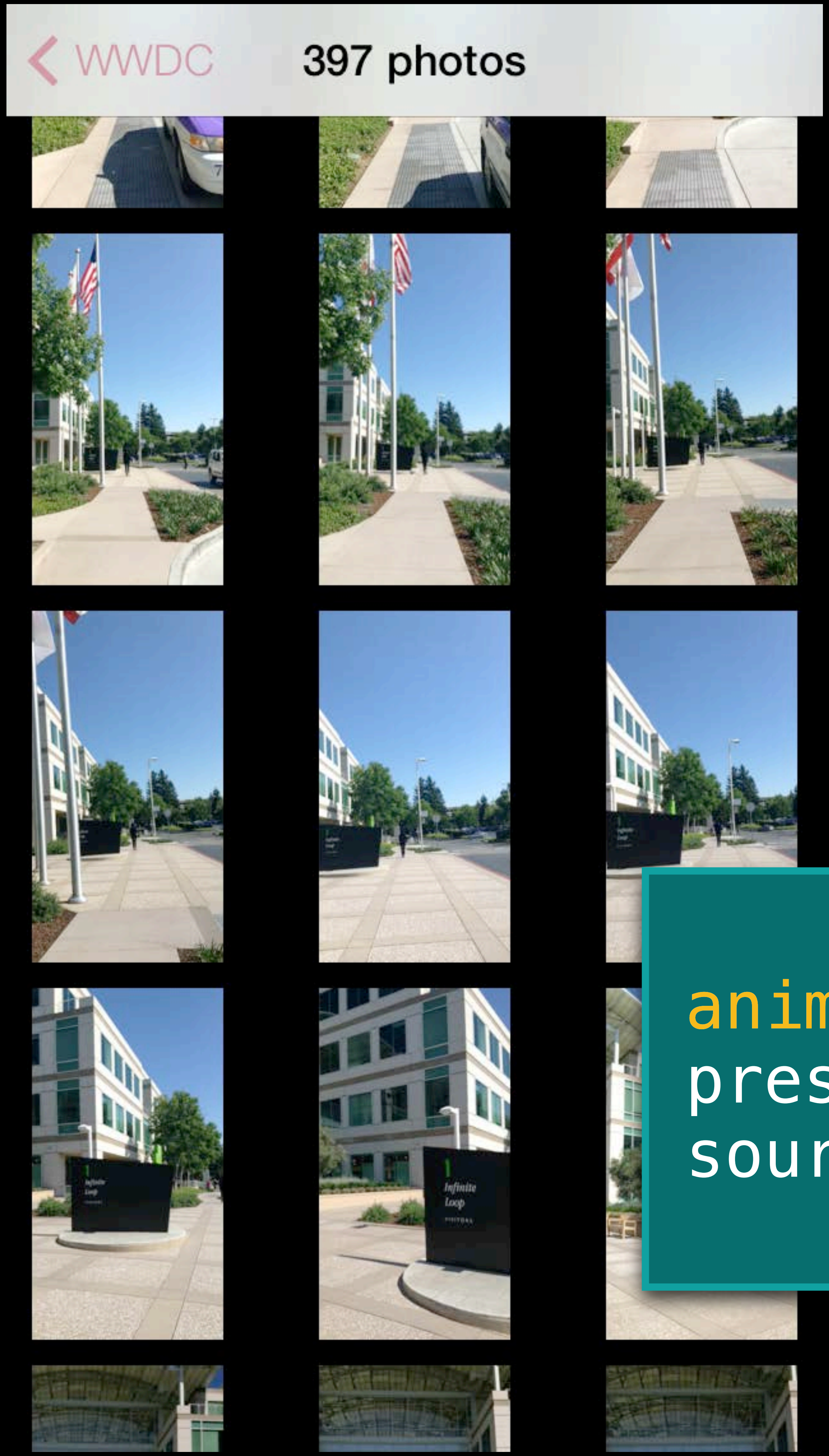
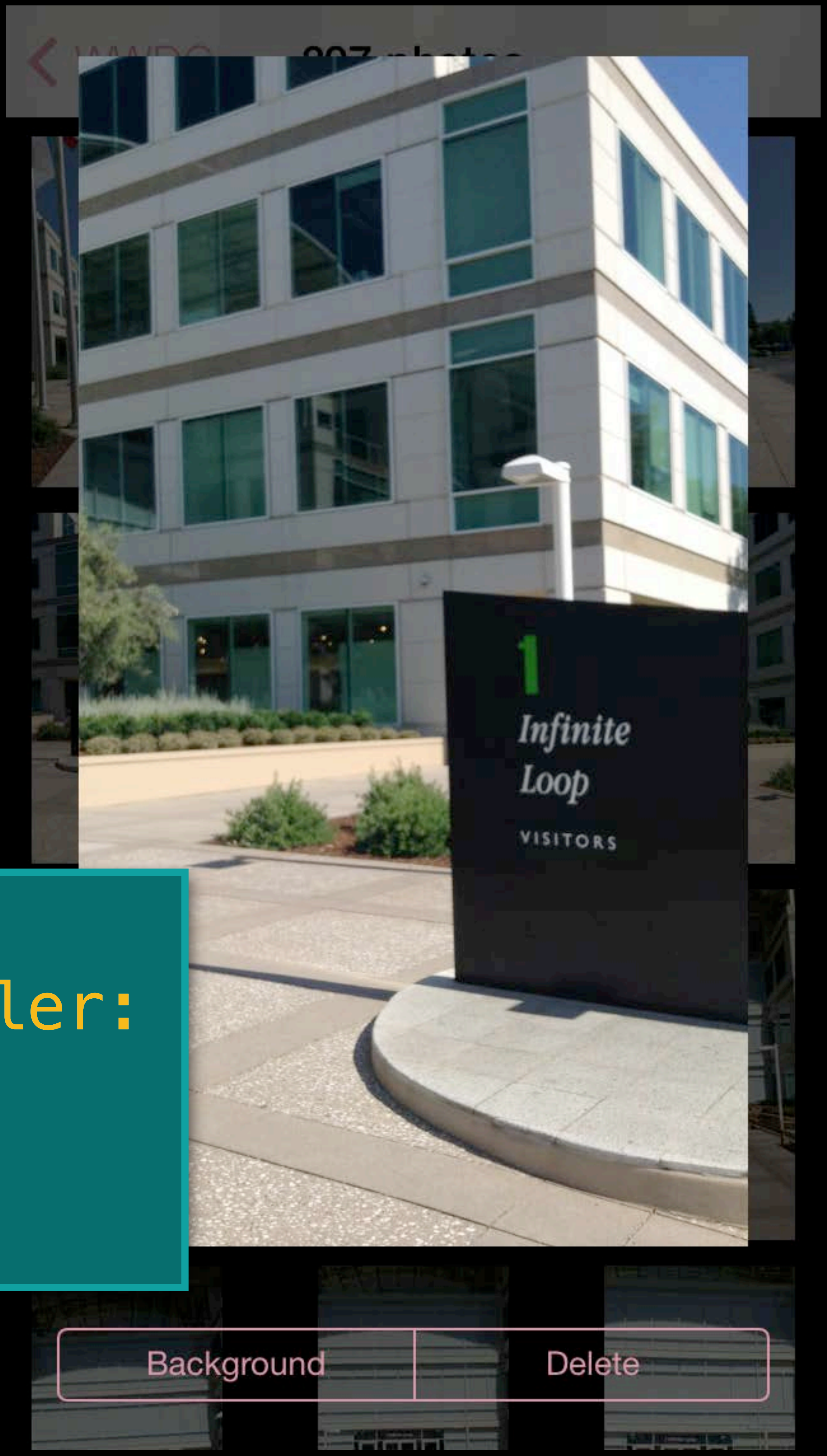




```
animationControllerForPresentedController:
presentingController:
sourceController:
```





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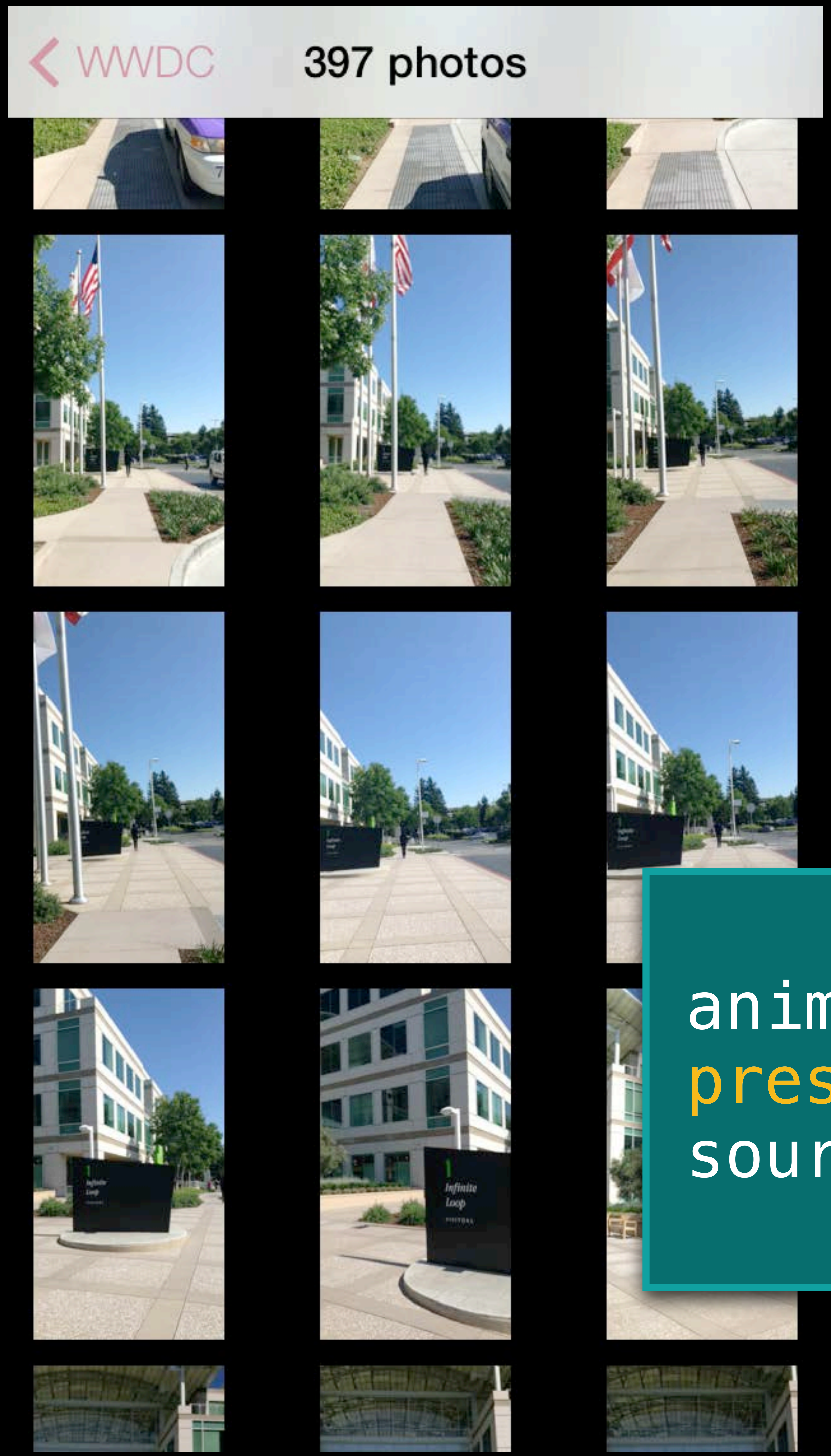
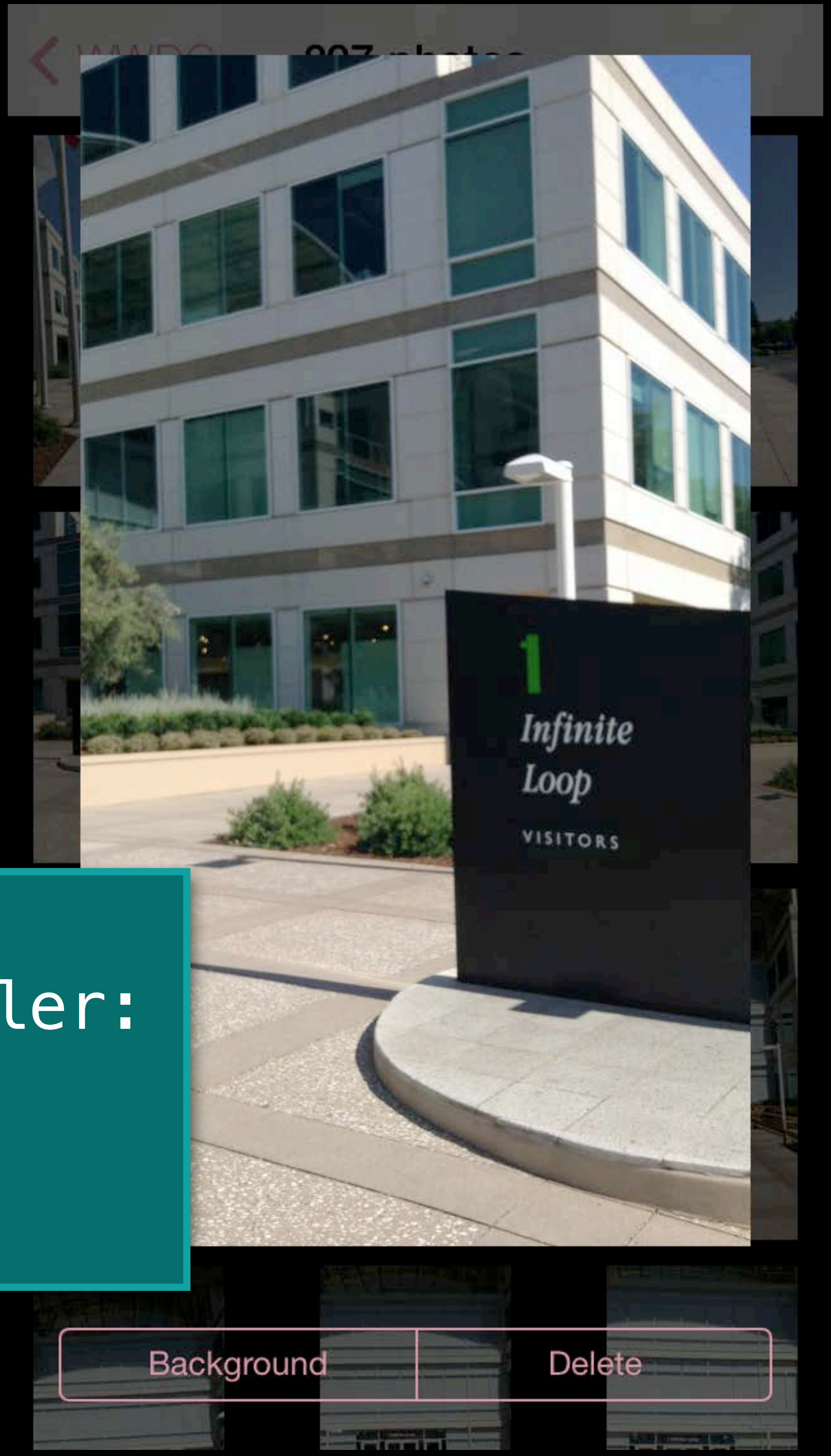
```





```
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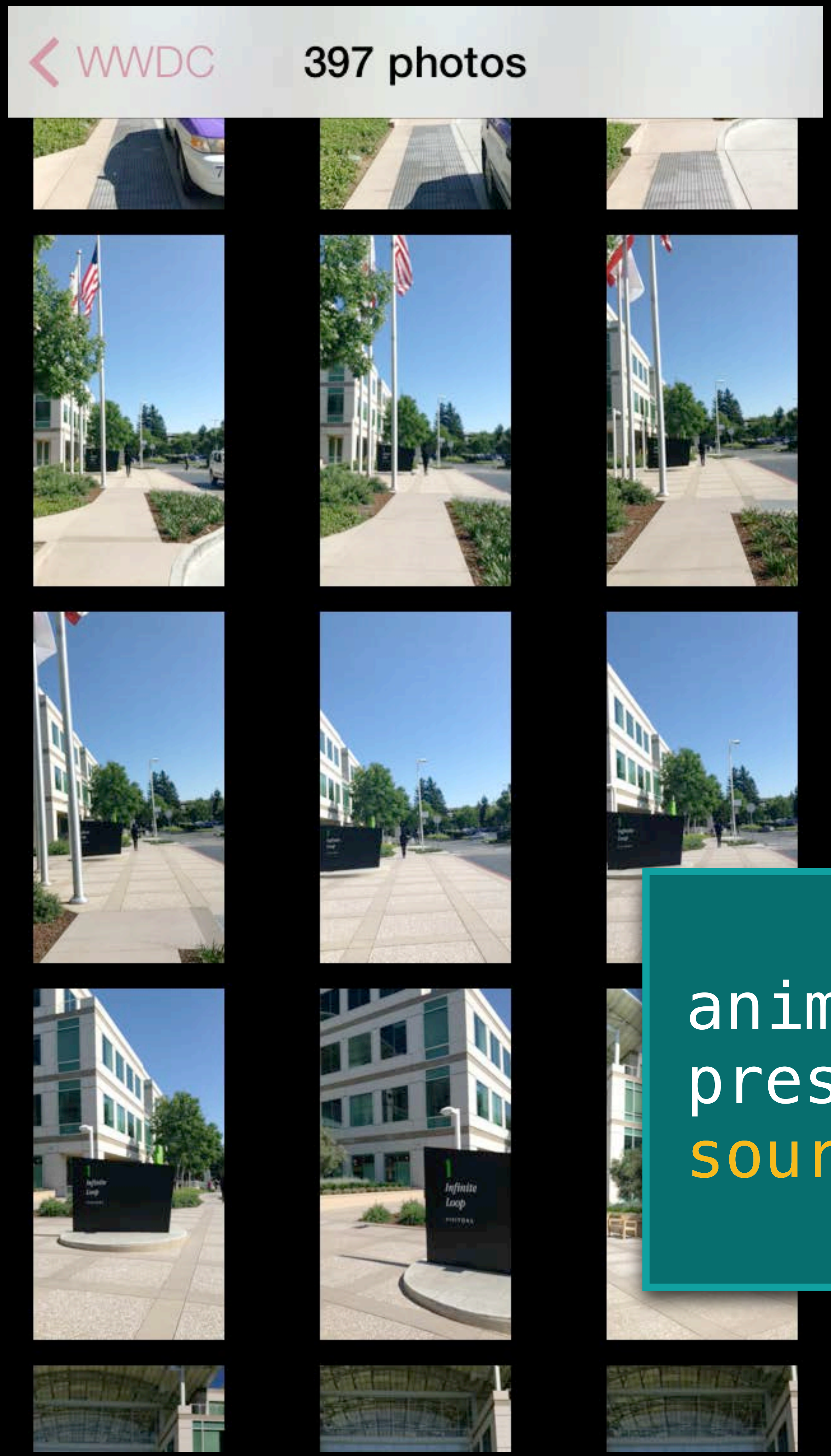
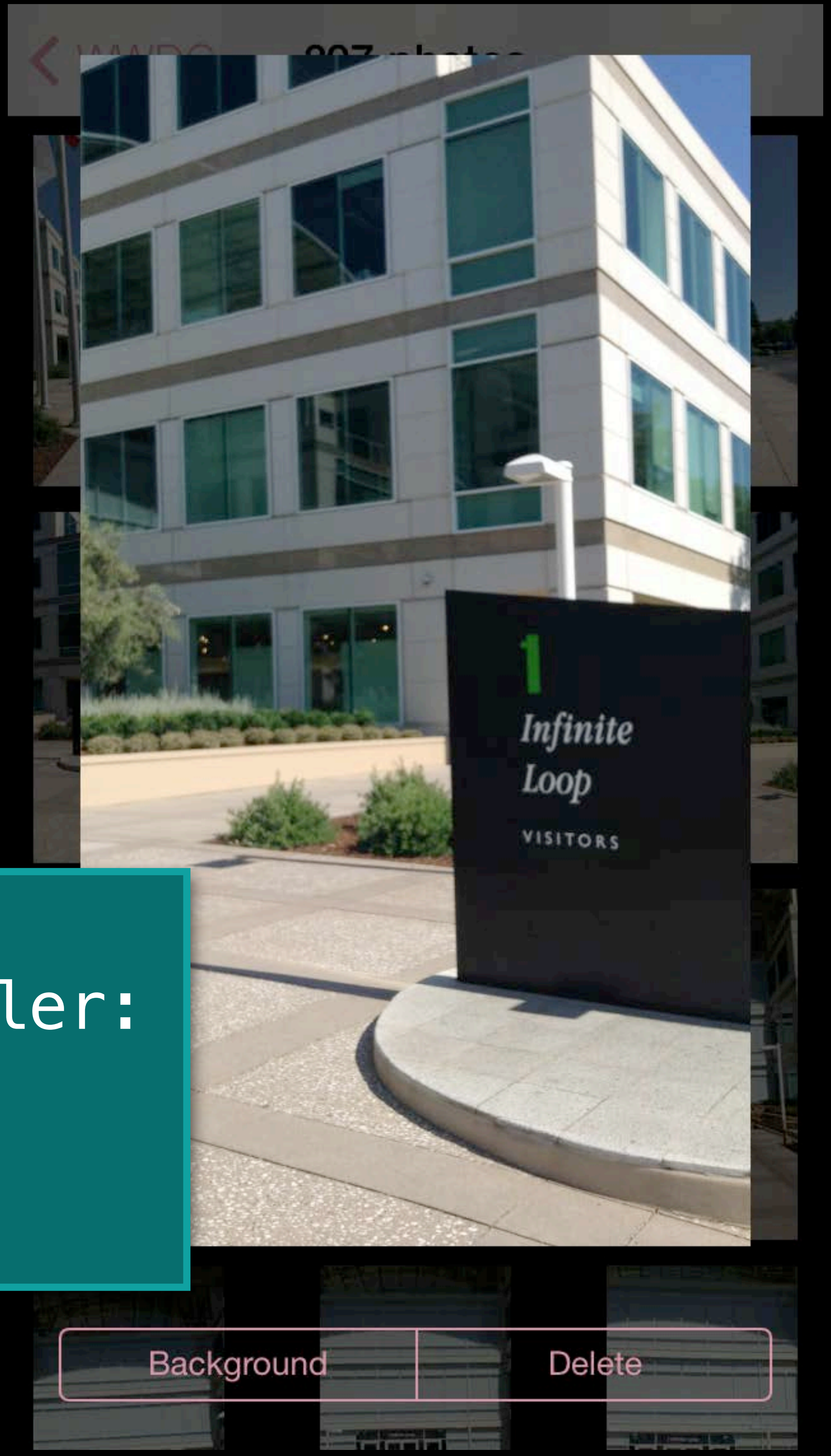
presentingController:
sourceController:
```





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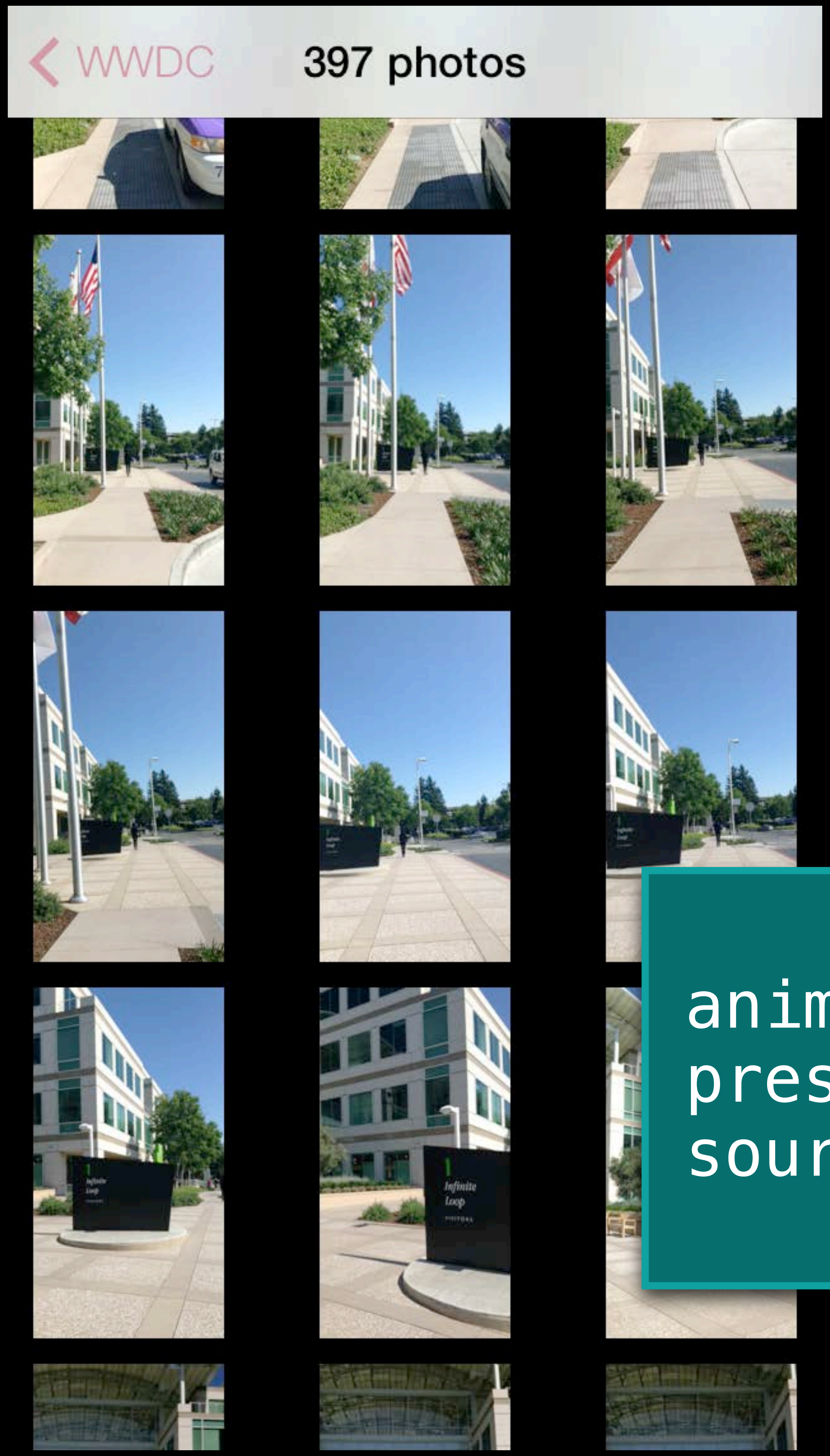

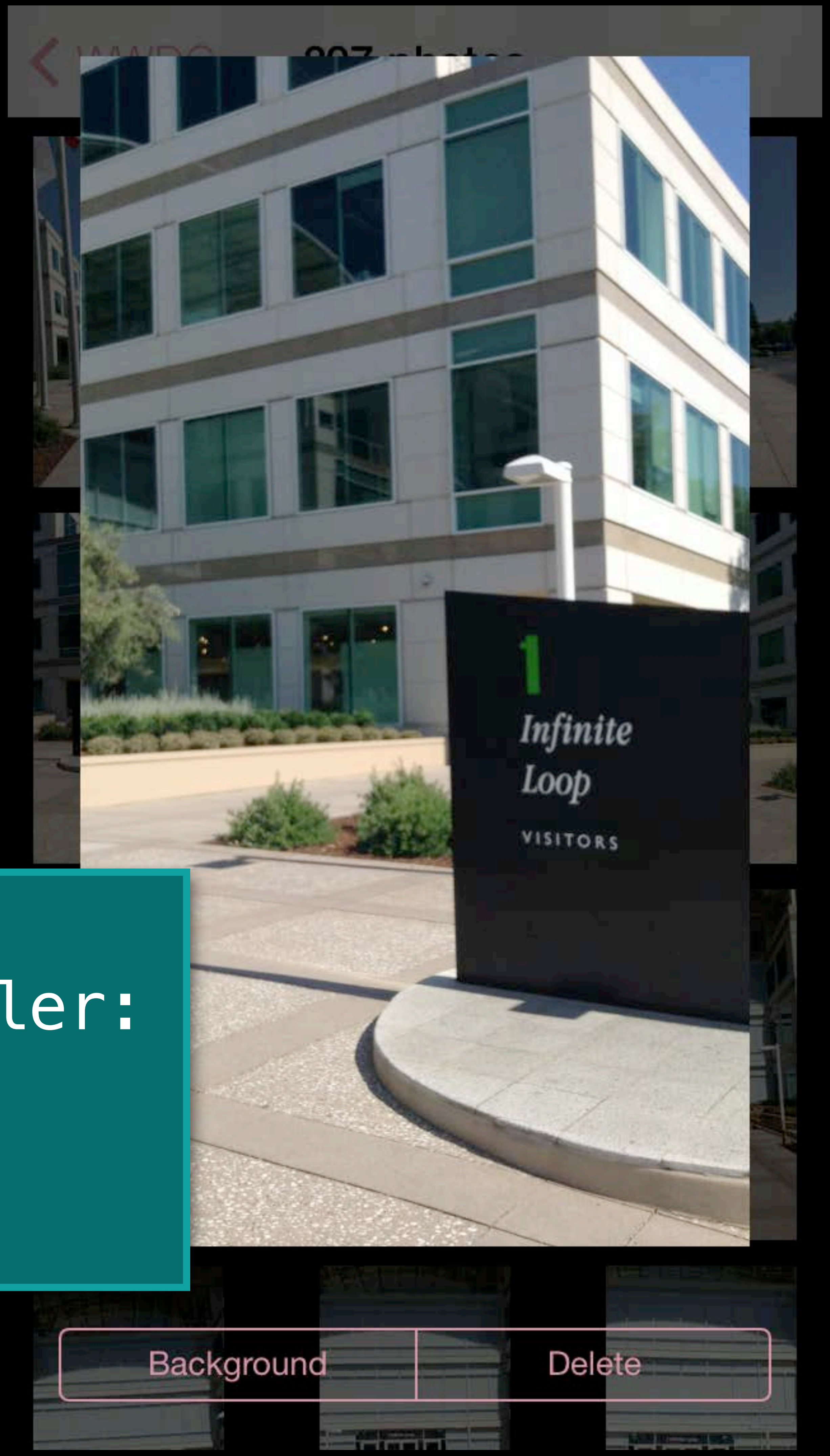

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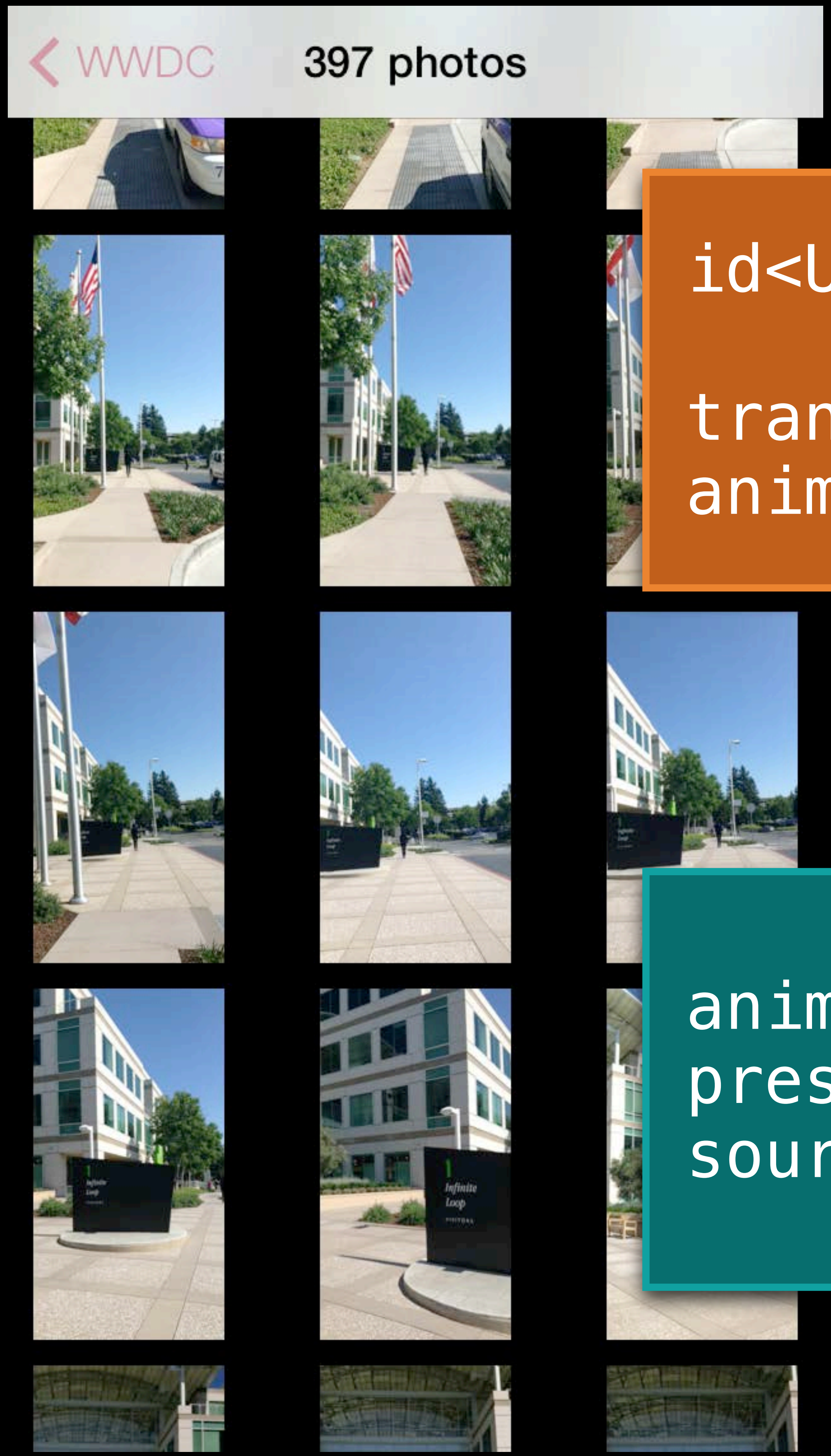
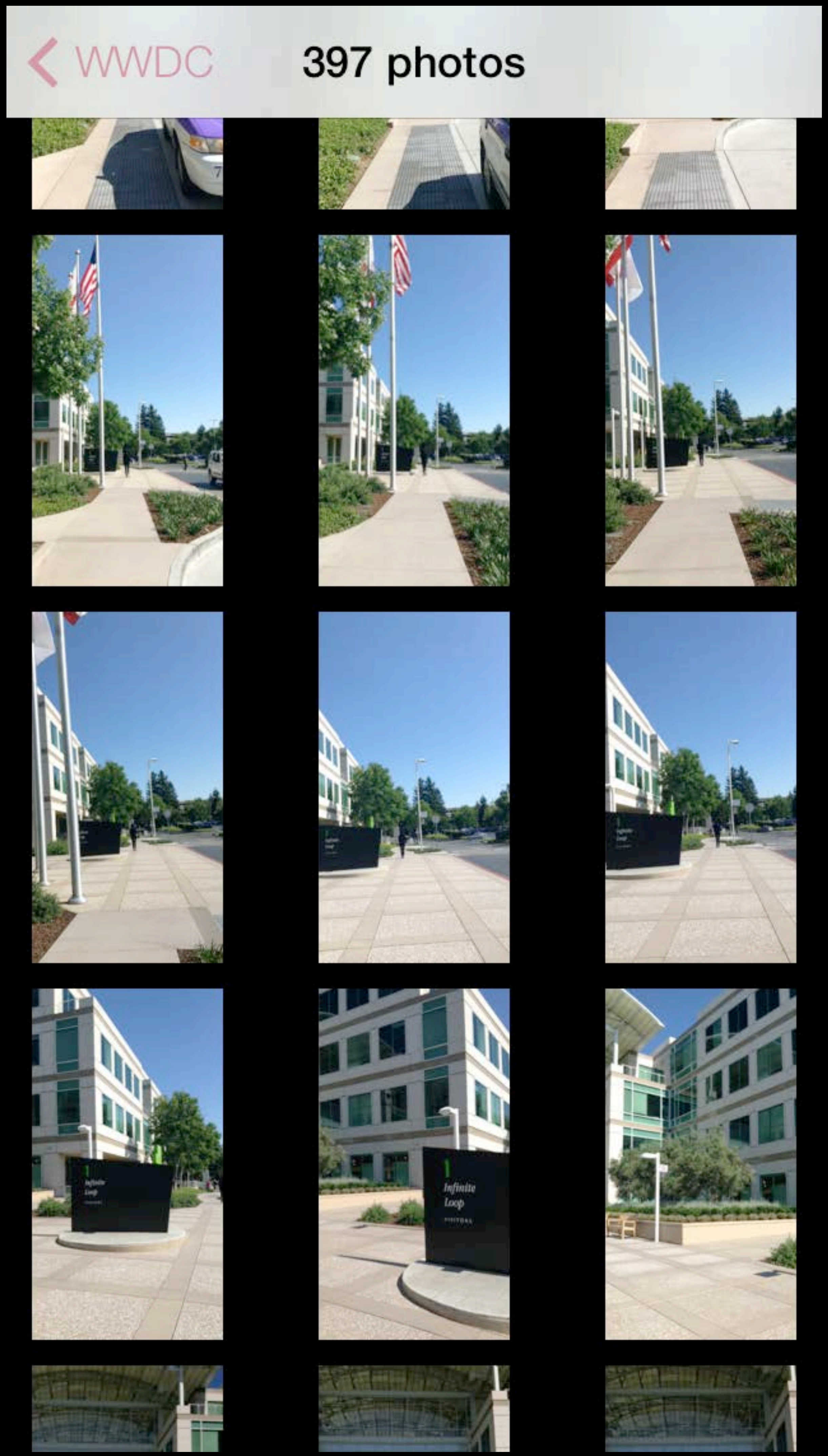


```
id<UIViewControllerAnimatedTransitioning>

transitionDuration:
animateTransition:
```

```
animationControllerForPresentedController:
presentingController:
sourceController:
```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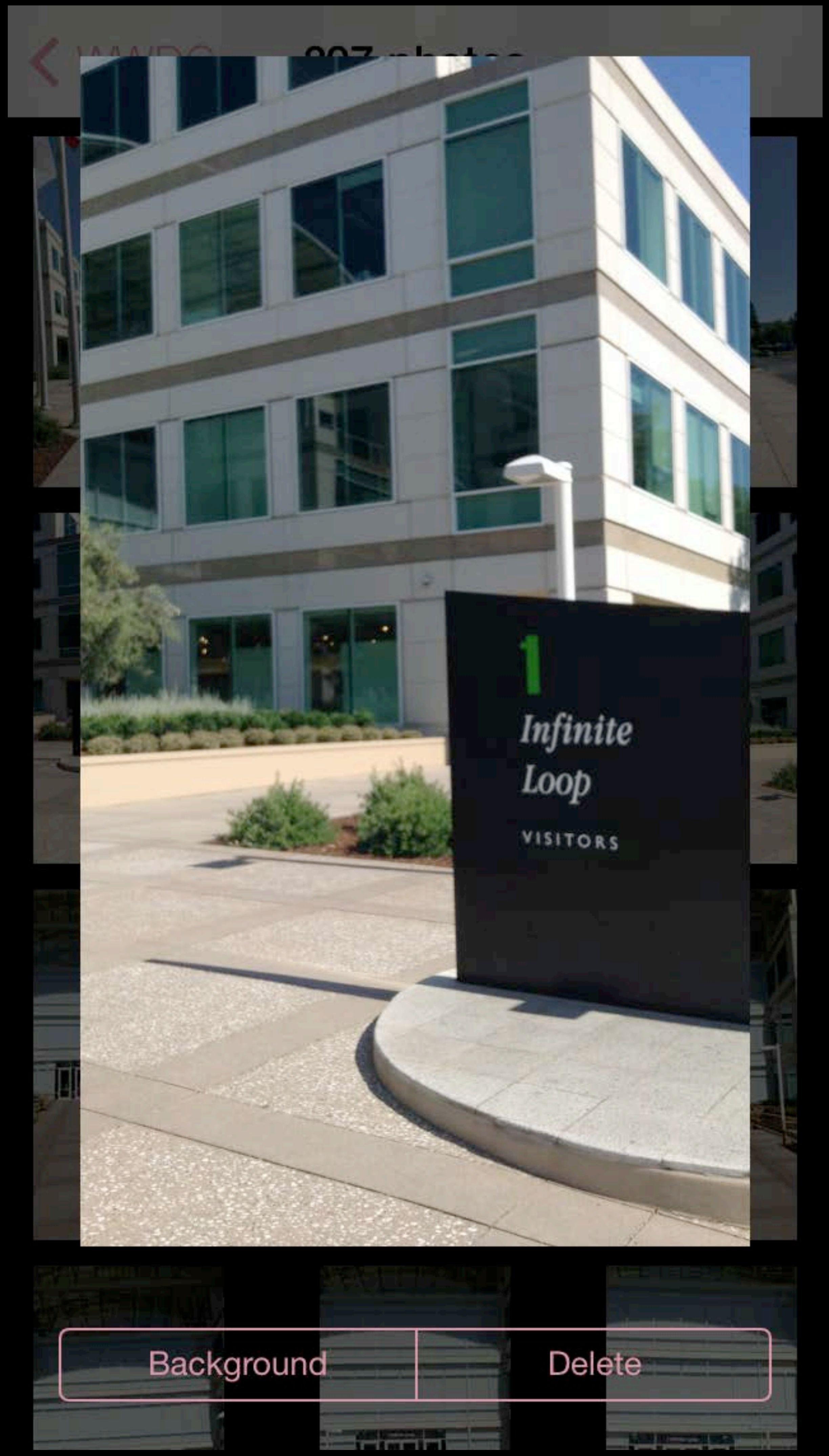
1
Infinite
Loop
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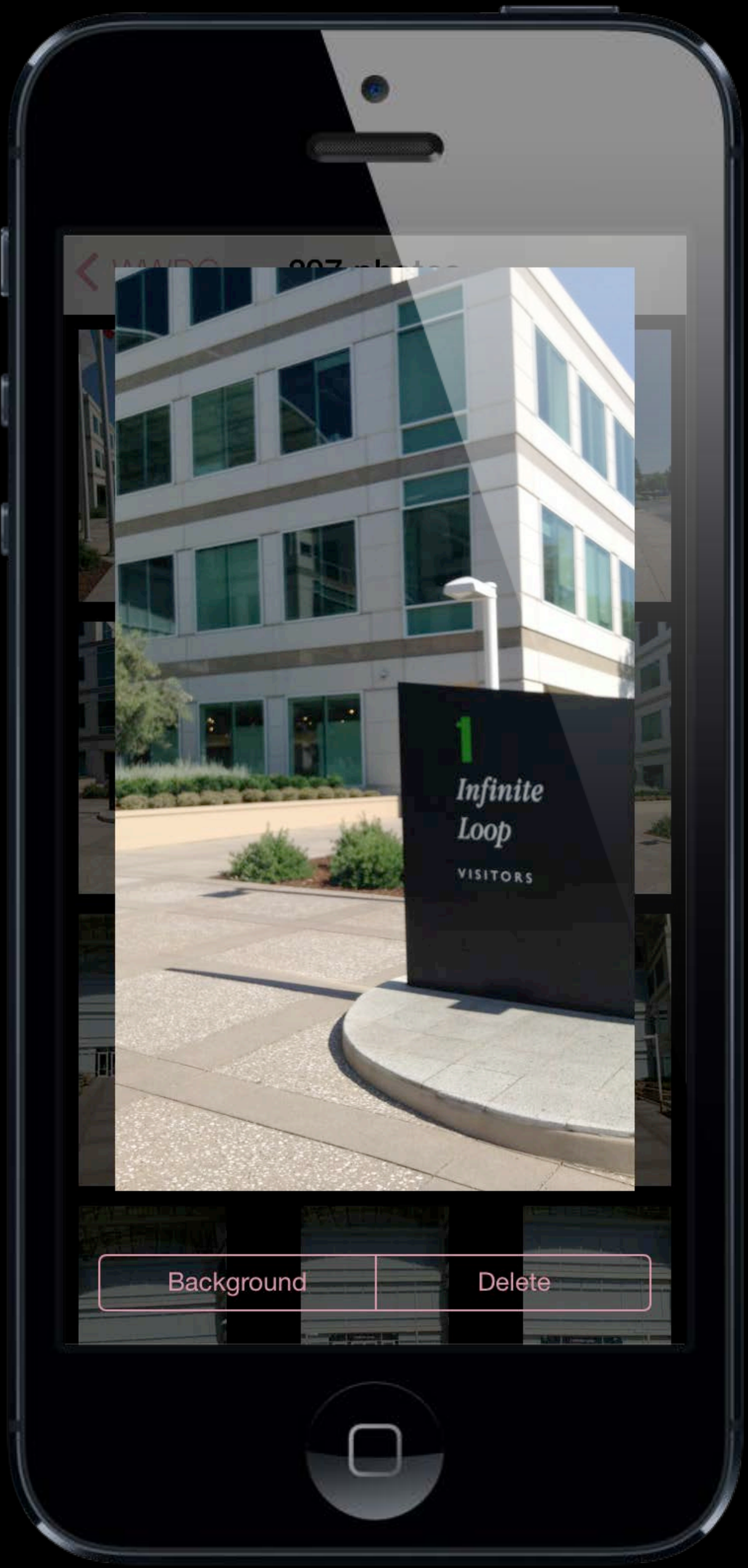
UIViewController Transitions

UIPercentDrivenInteractiveTransition

- Provided object for interactive transitions
- Update the transition based on touch or other input
- Vary completionSpeed and completionCurve to change behavior


1
Infinite
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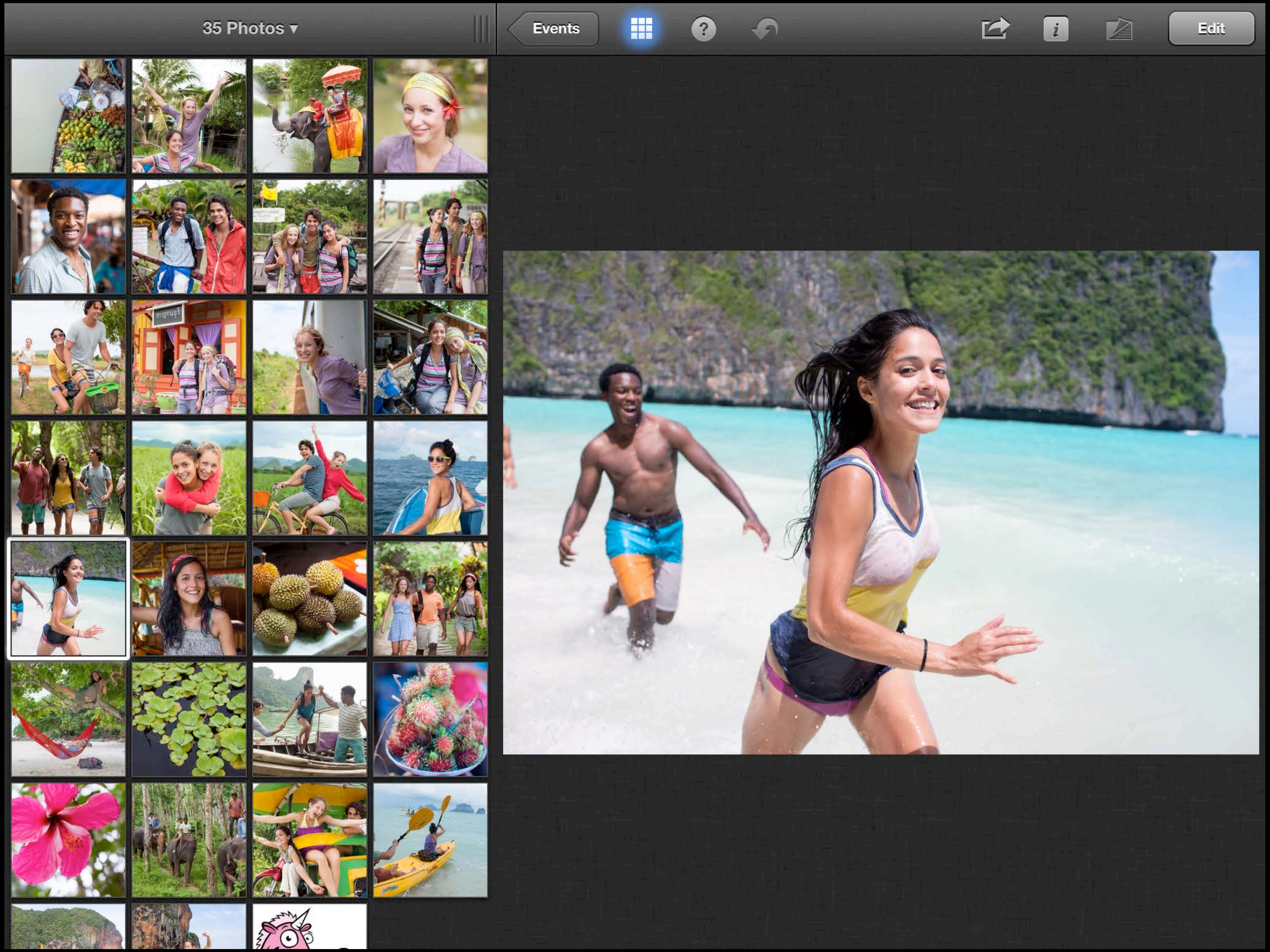
UISnapshotting

What it's good for

- Improvement on -[CALayer renderInContext:]
- Representation of a view's currently rendered contents
- Very fast
- Useful in animations
- Creating special effects

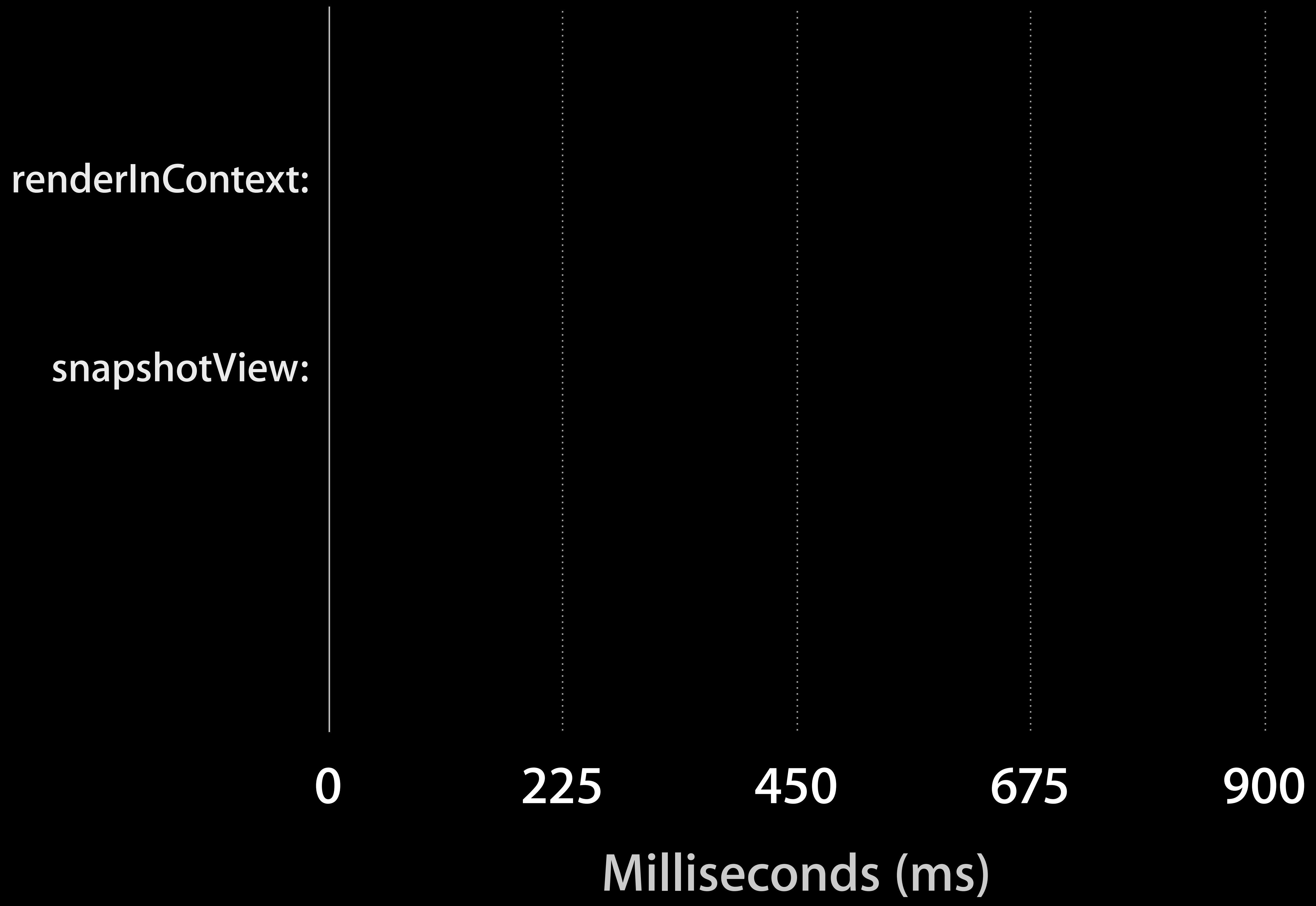
UISnapshotting

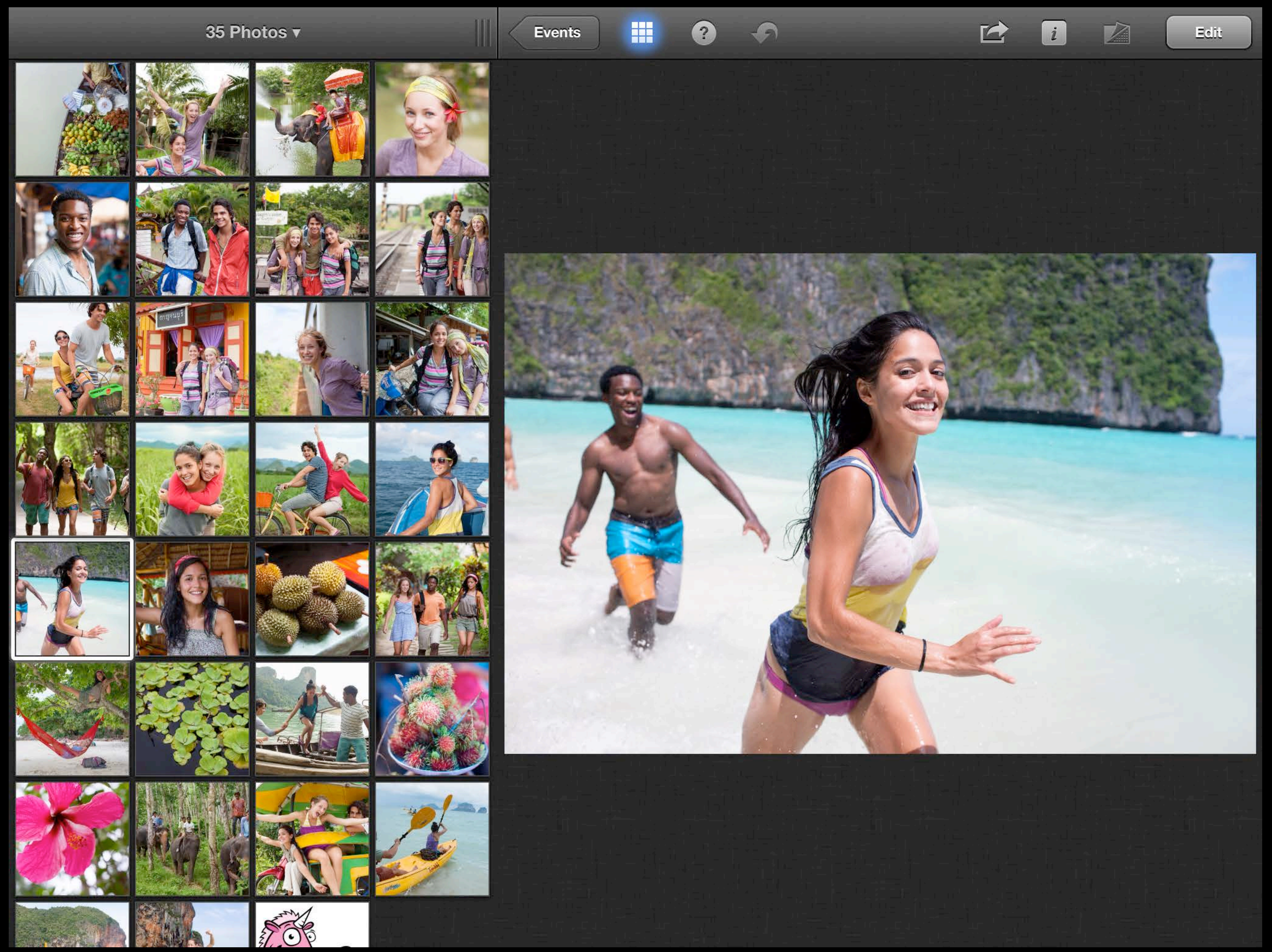


UISnapshotting

UISnapshotting

Faster and better





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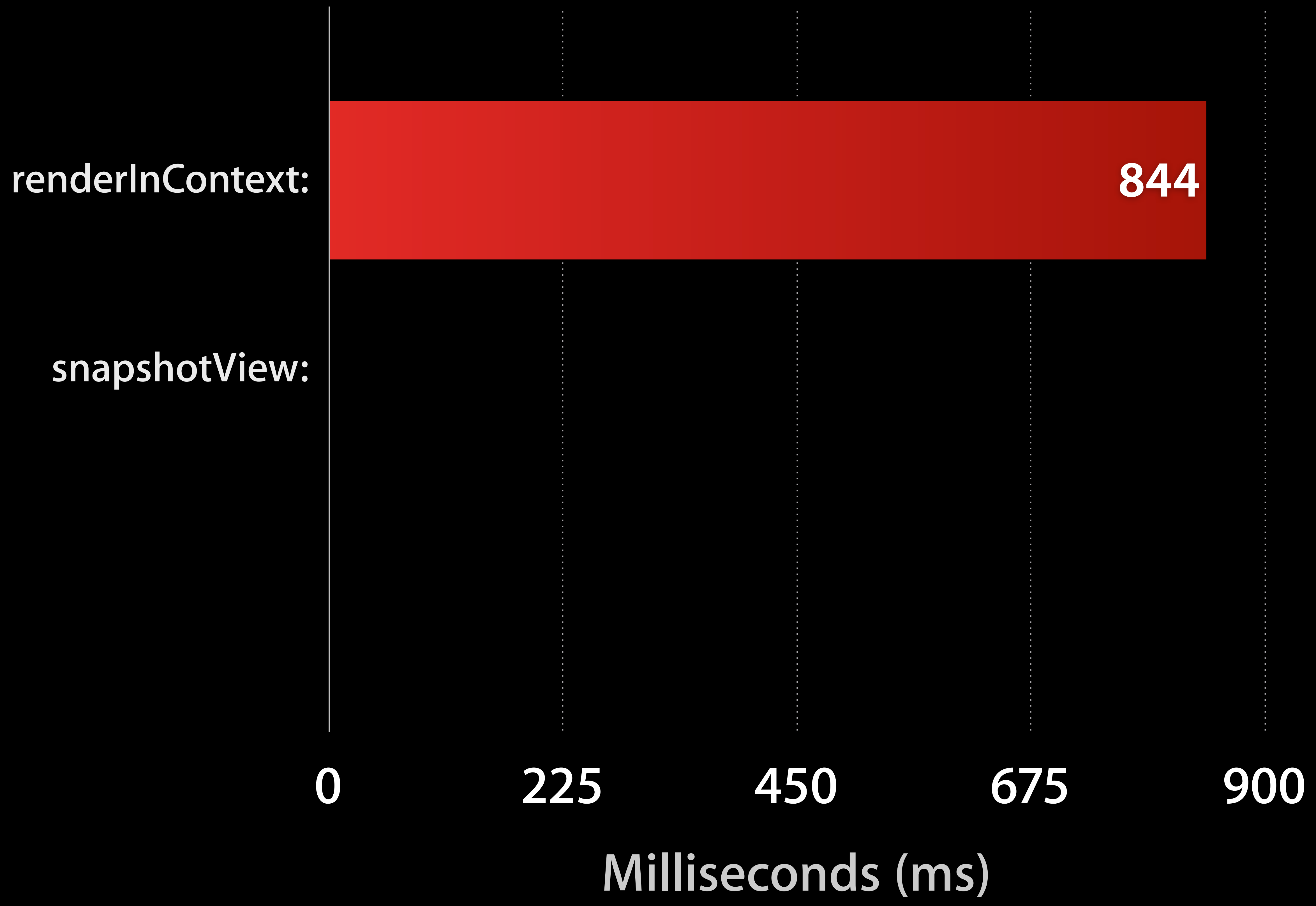

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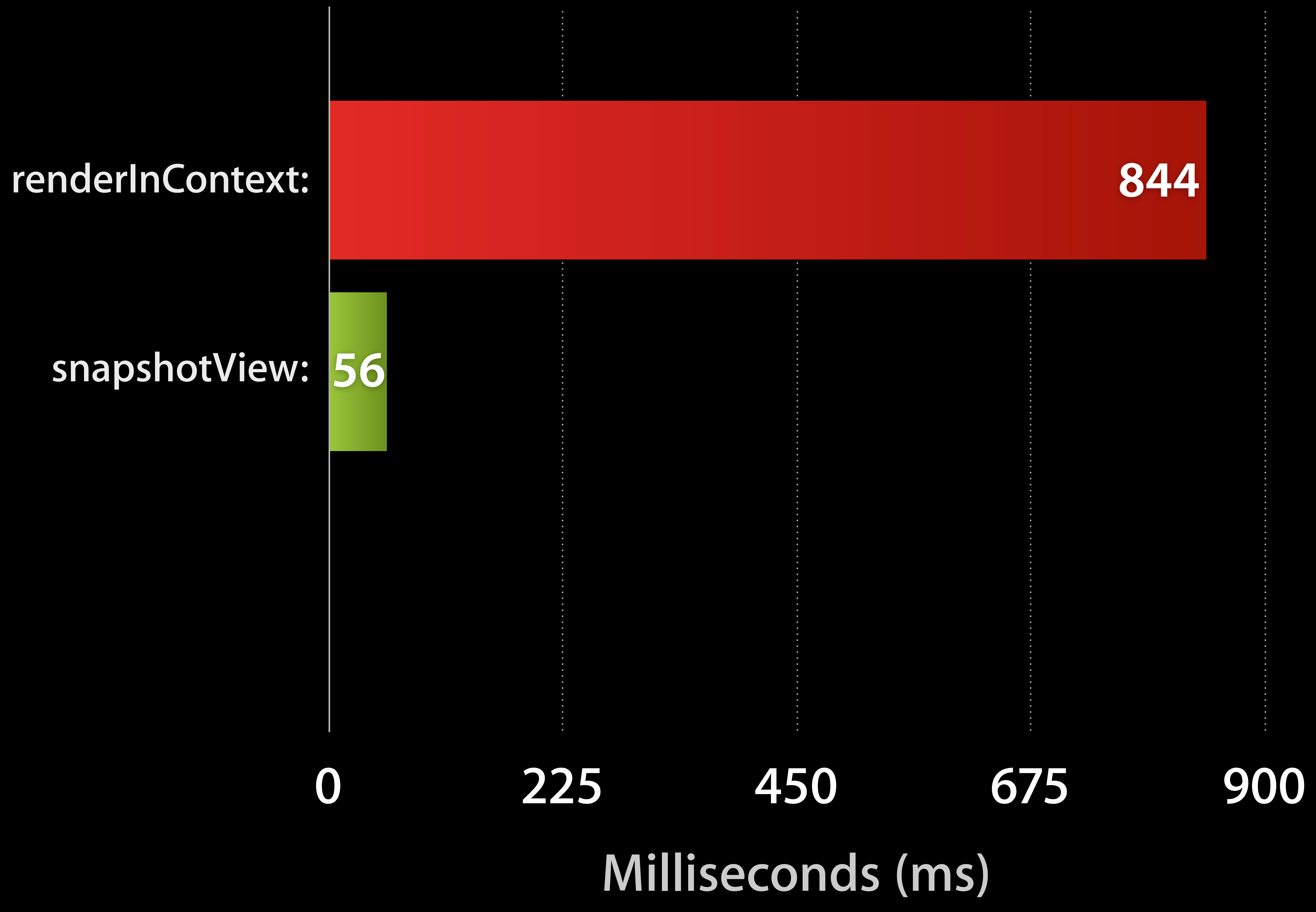


UISnapshotting

API

```
- (UIView *)snapshotView
- (UIView *)resizableSnapshotViewFromRect:(CGRect)rect
            withCapInsets:(UIEdgeInsets)capInsets
```

UISnapshotting

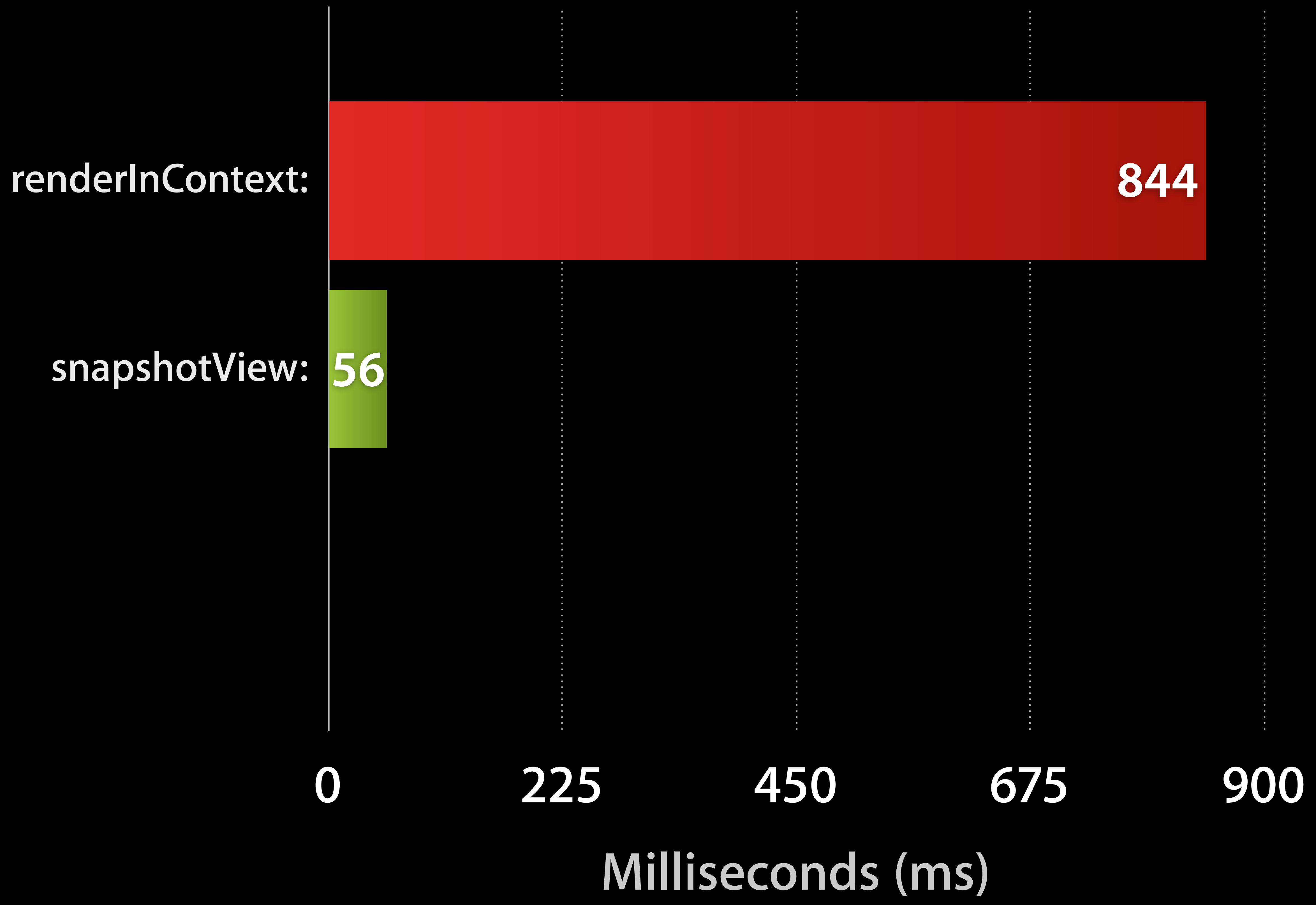
API

```
- (UIView *)snapshotView
- (UIView *)resizableSnapshotViewFromRect:(CGRect)rect
            withCapInsets:(UIEdgeInsets)capInsets

- (BOOL)drawViewHierarchyInRect:(CGRect)rect
```

UISnapshotting

Faster and better



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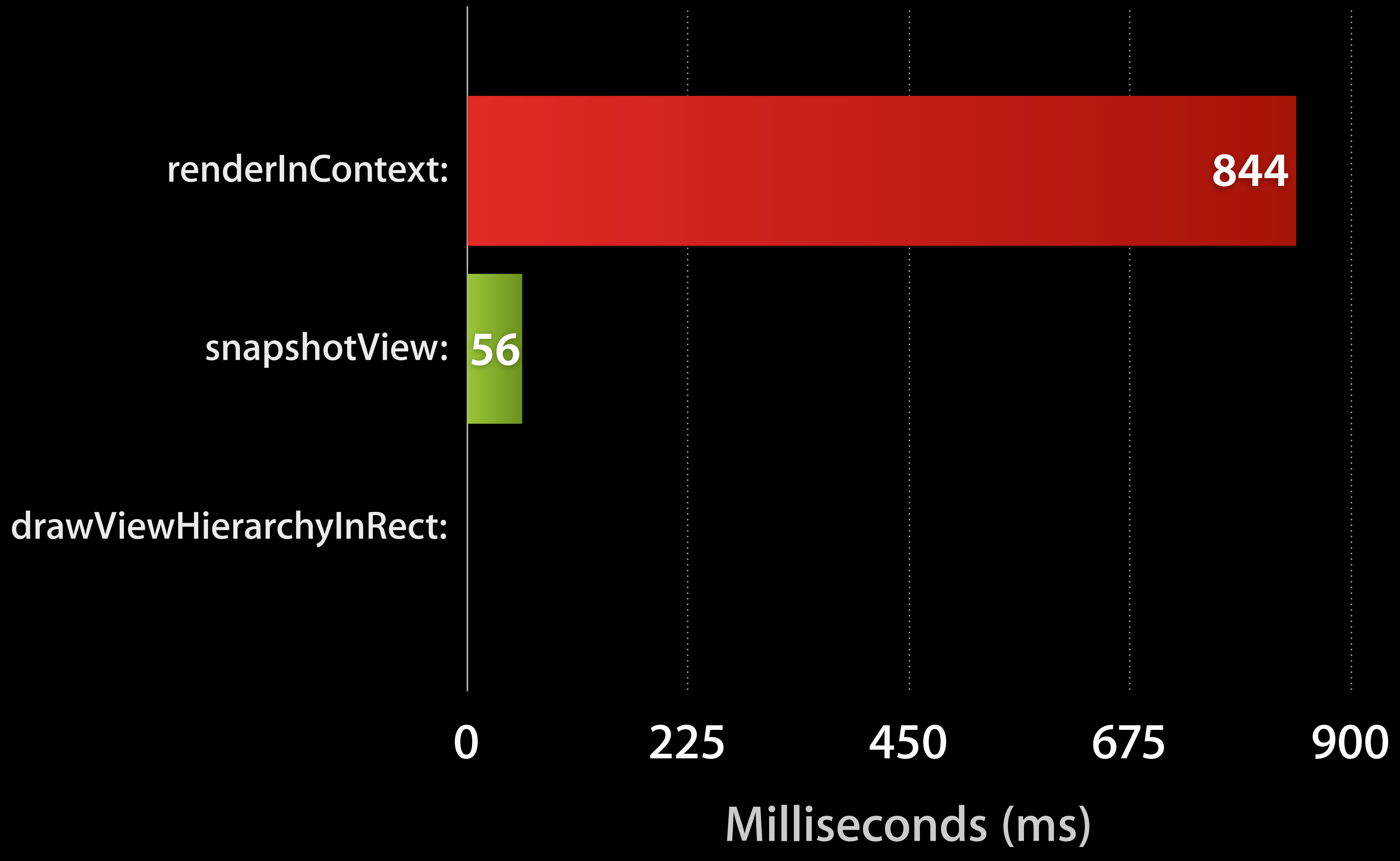

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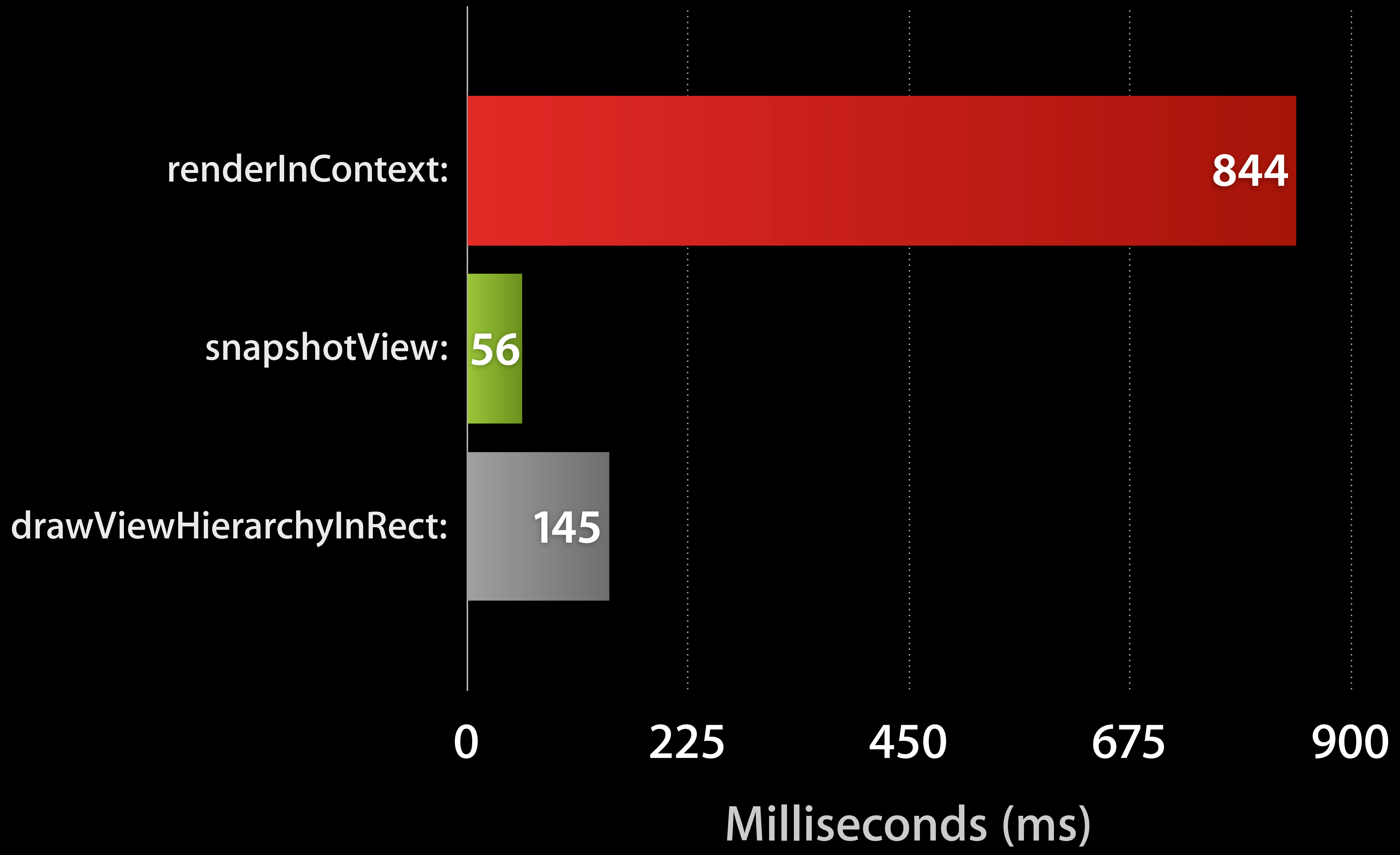

Making a Blurred Background

```
UIGraphicsBeginImageContextWithOptions(image.size,
NULL, 0);

[view drawViewHierarchyInRect:rect];

UIImage *newImage =
UIGraphicsGetImageFromCurrentImageContext();

UIGraphicsEndImageContext();

lightImage = [newImage applyLightEffect];
```

Making a Blurred Background

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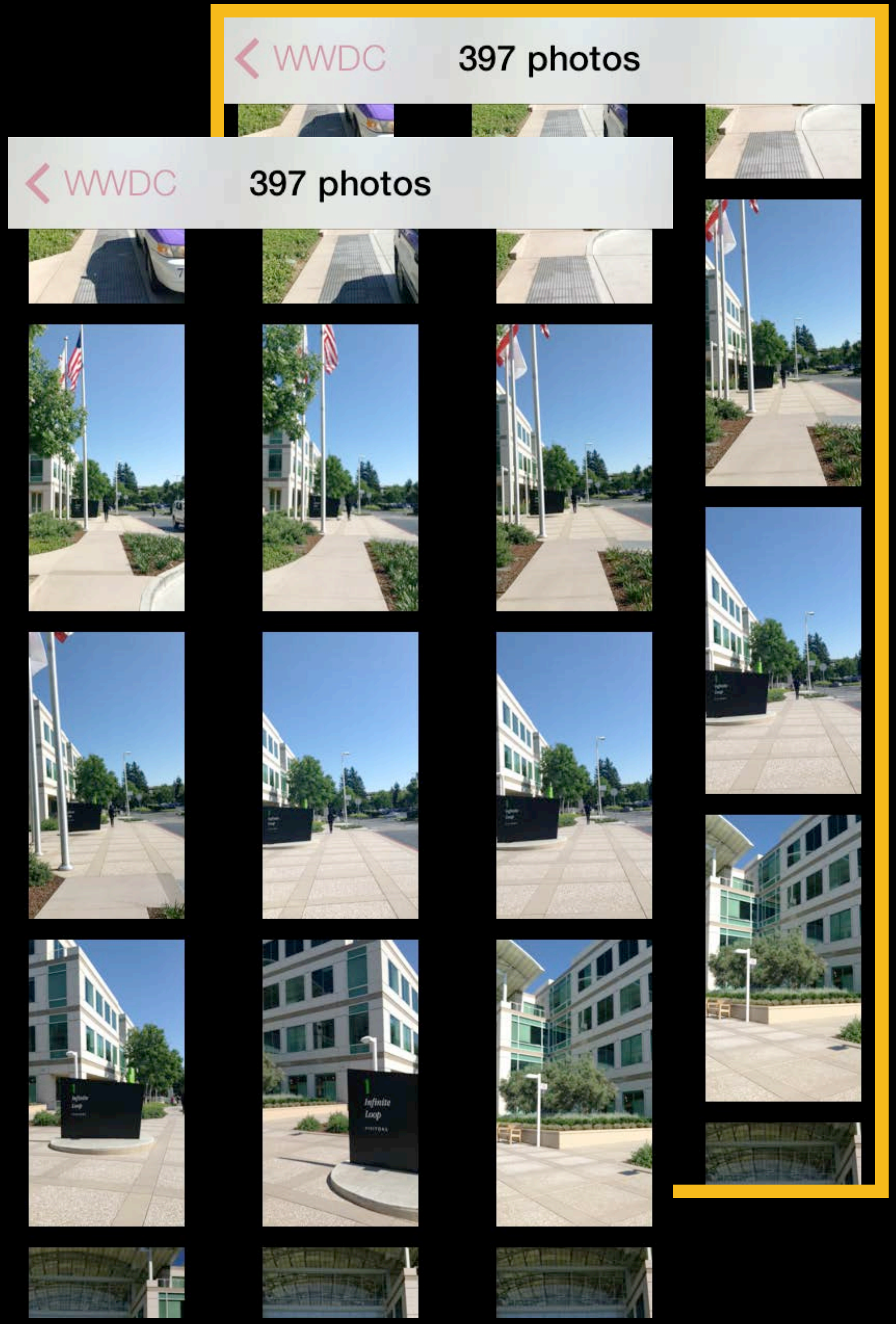

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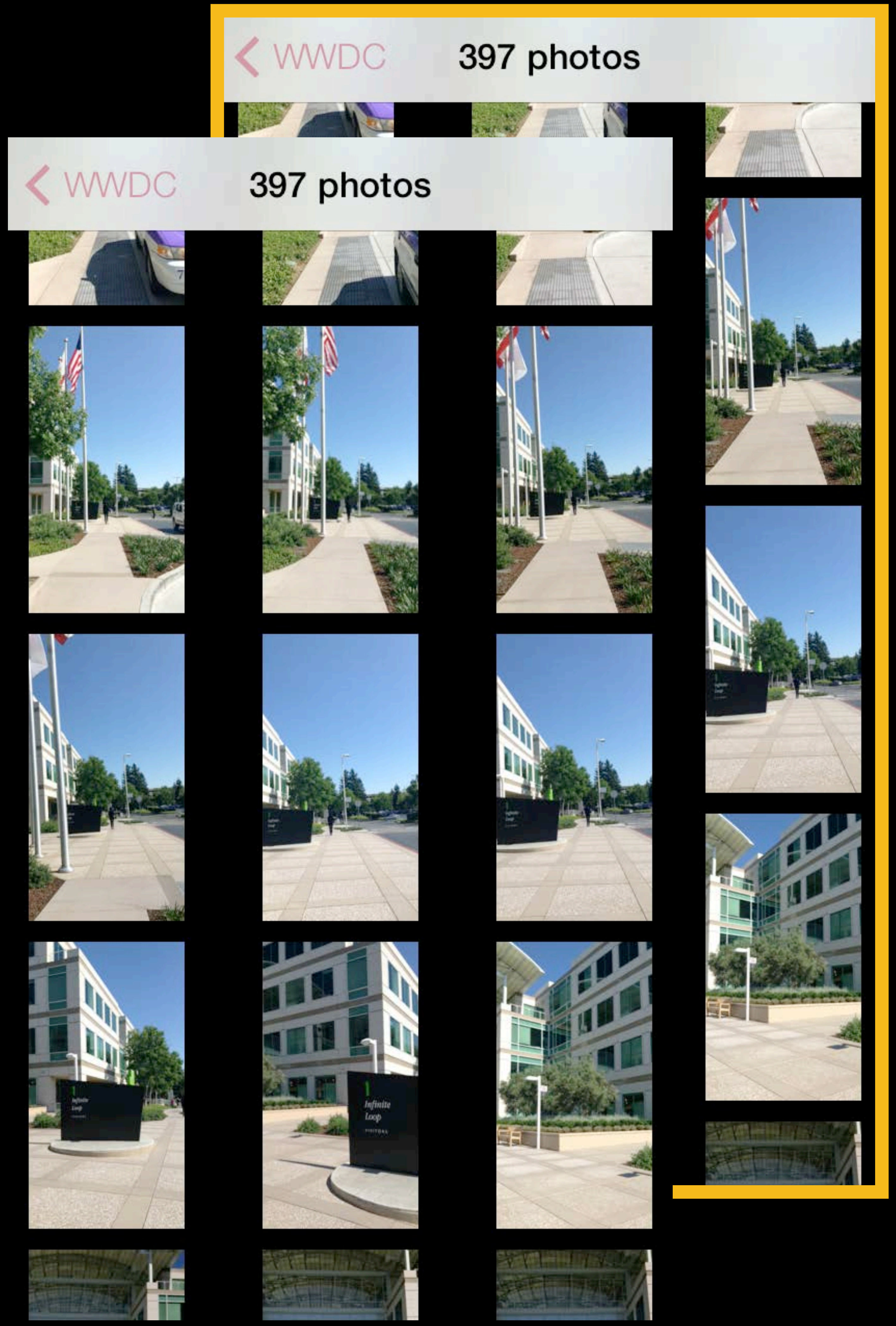

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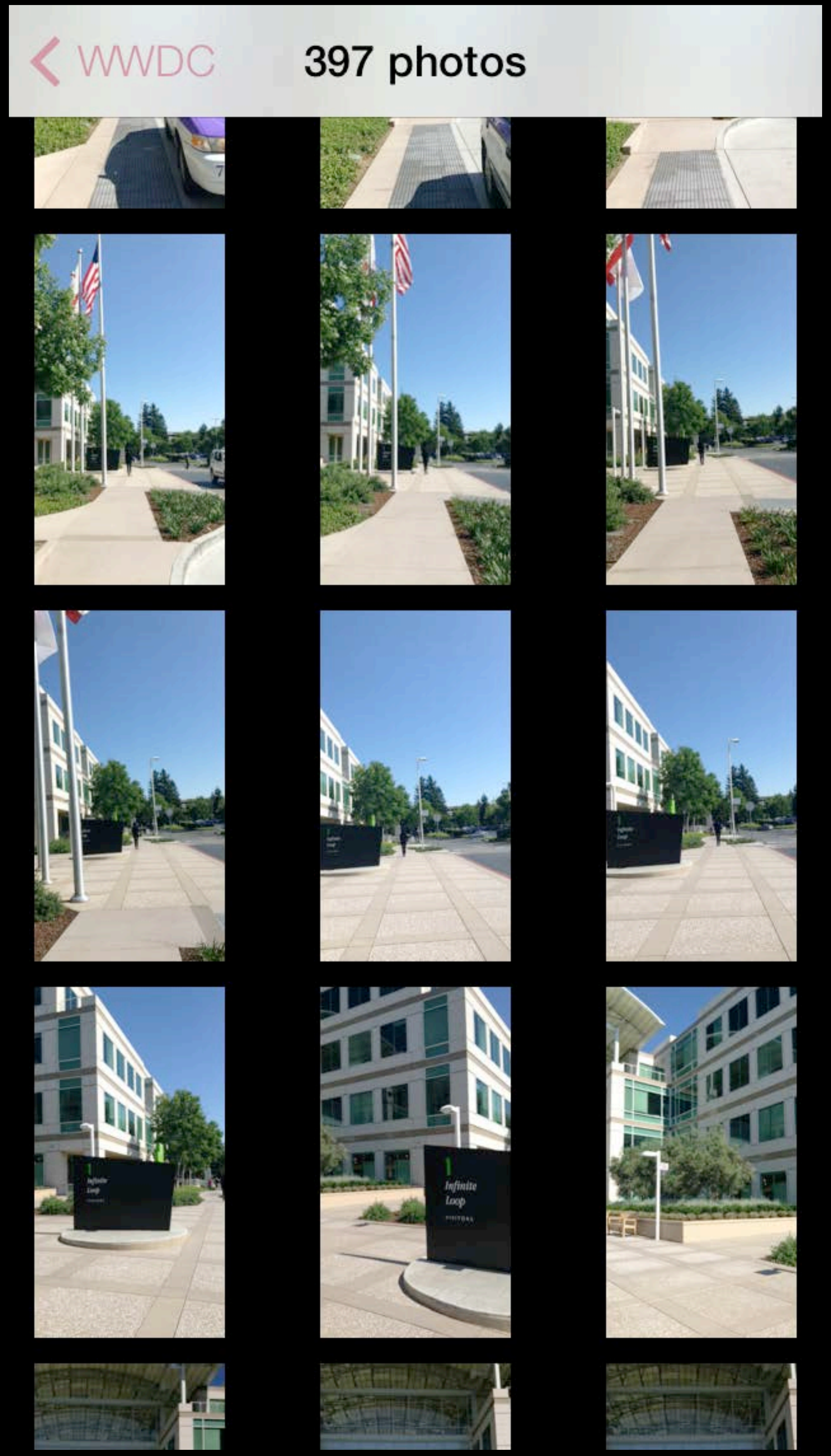

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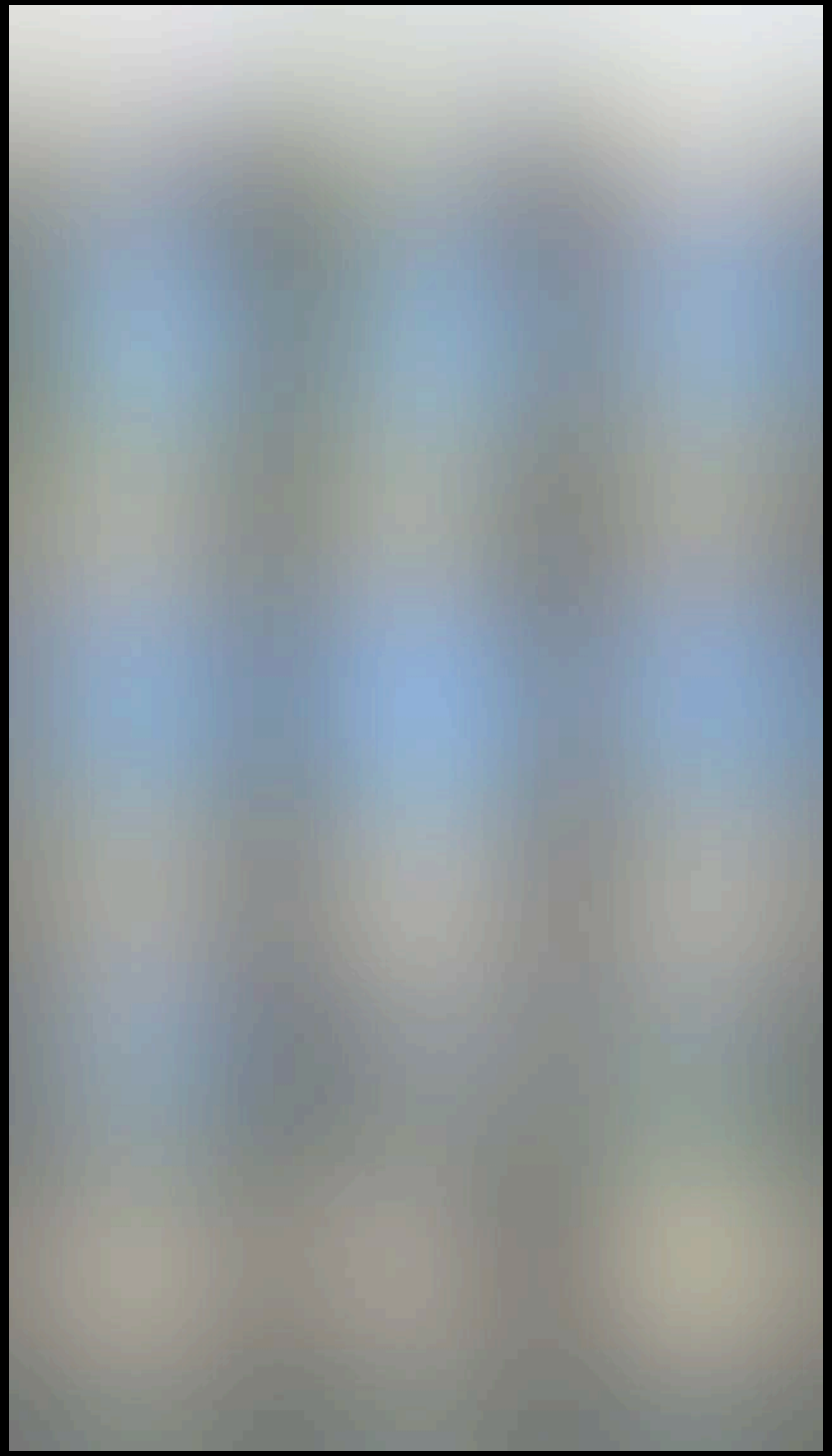
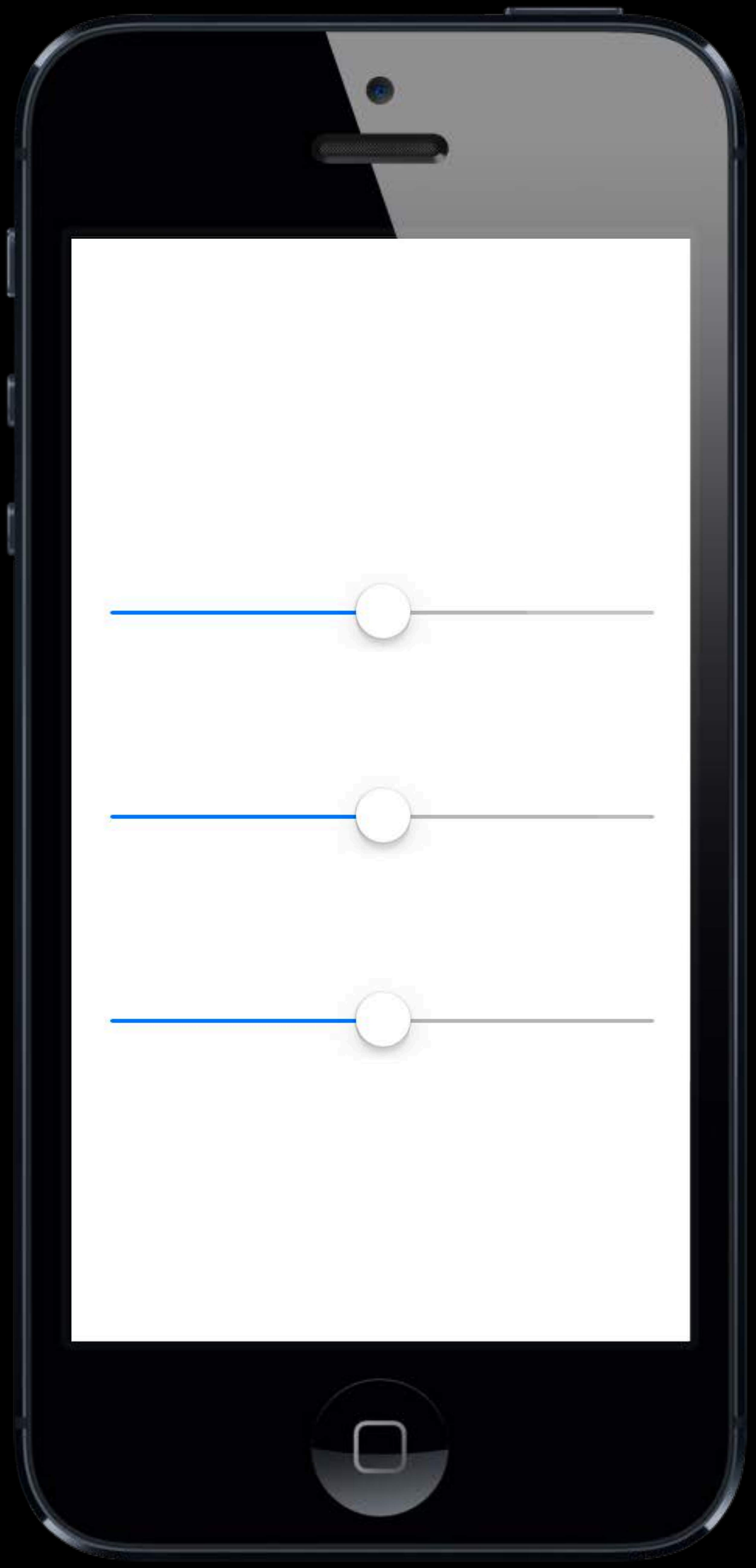
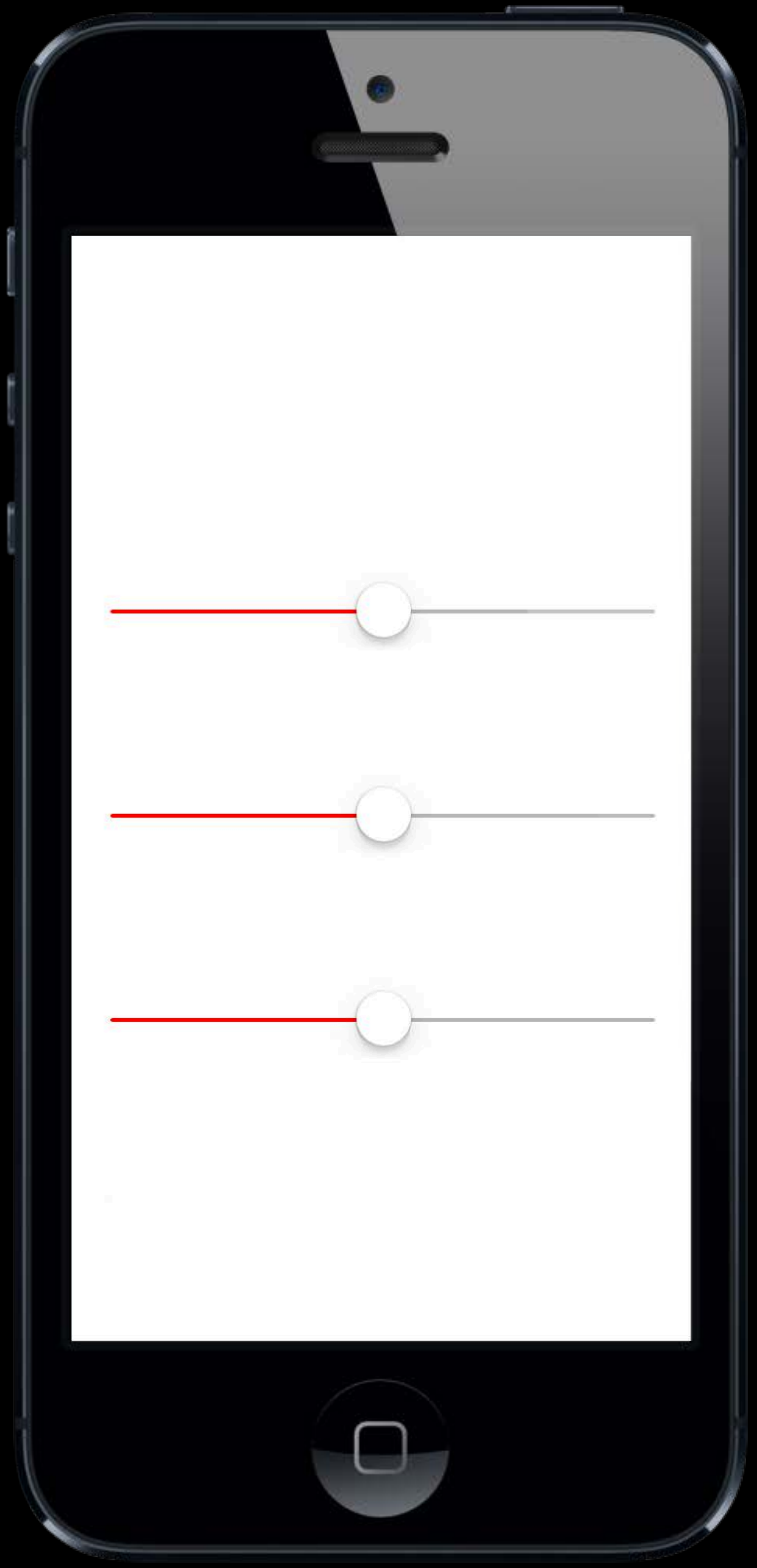


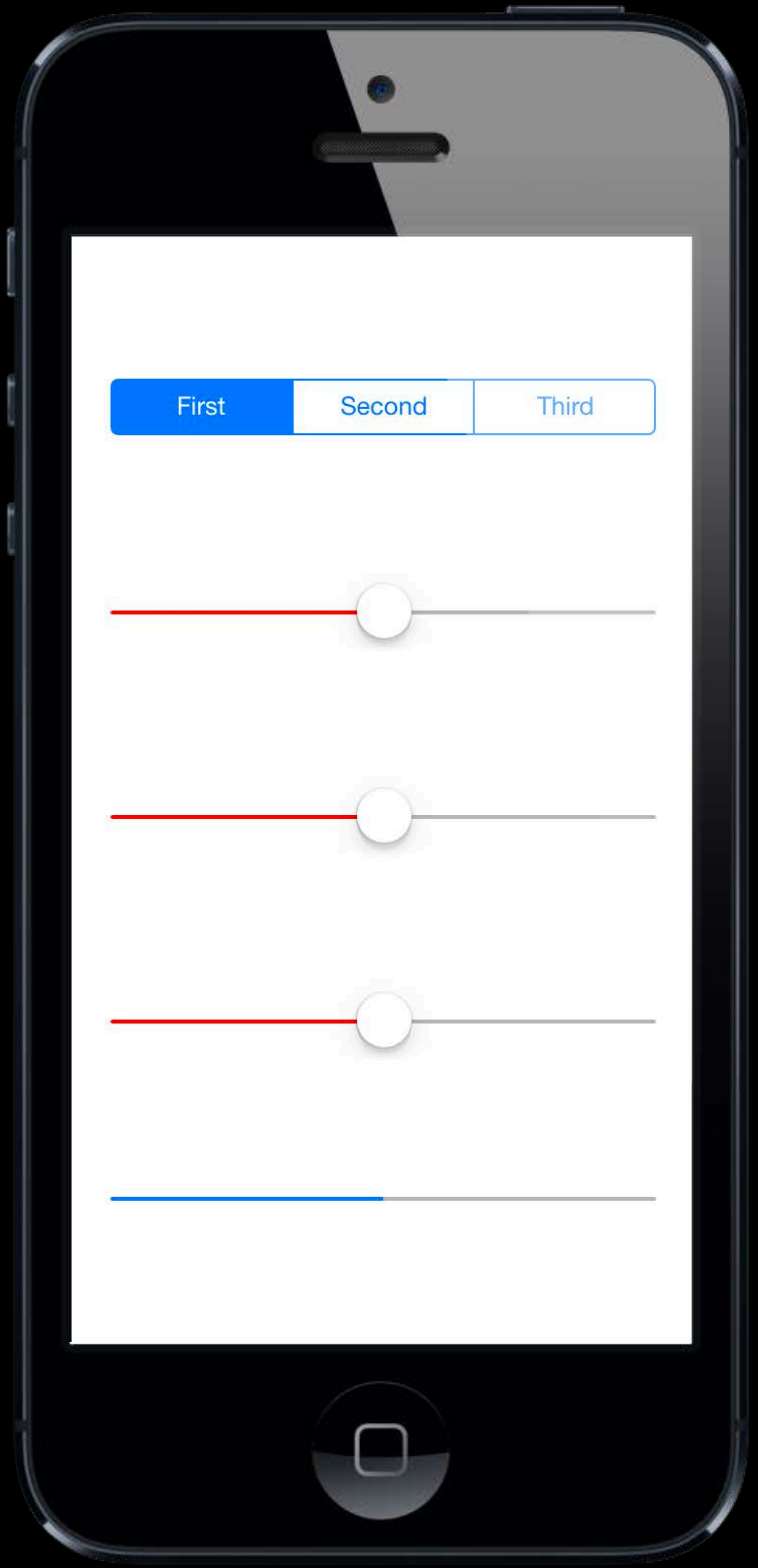
Appearance Customization

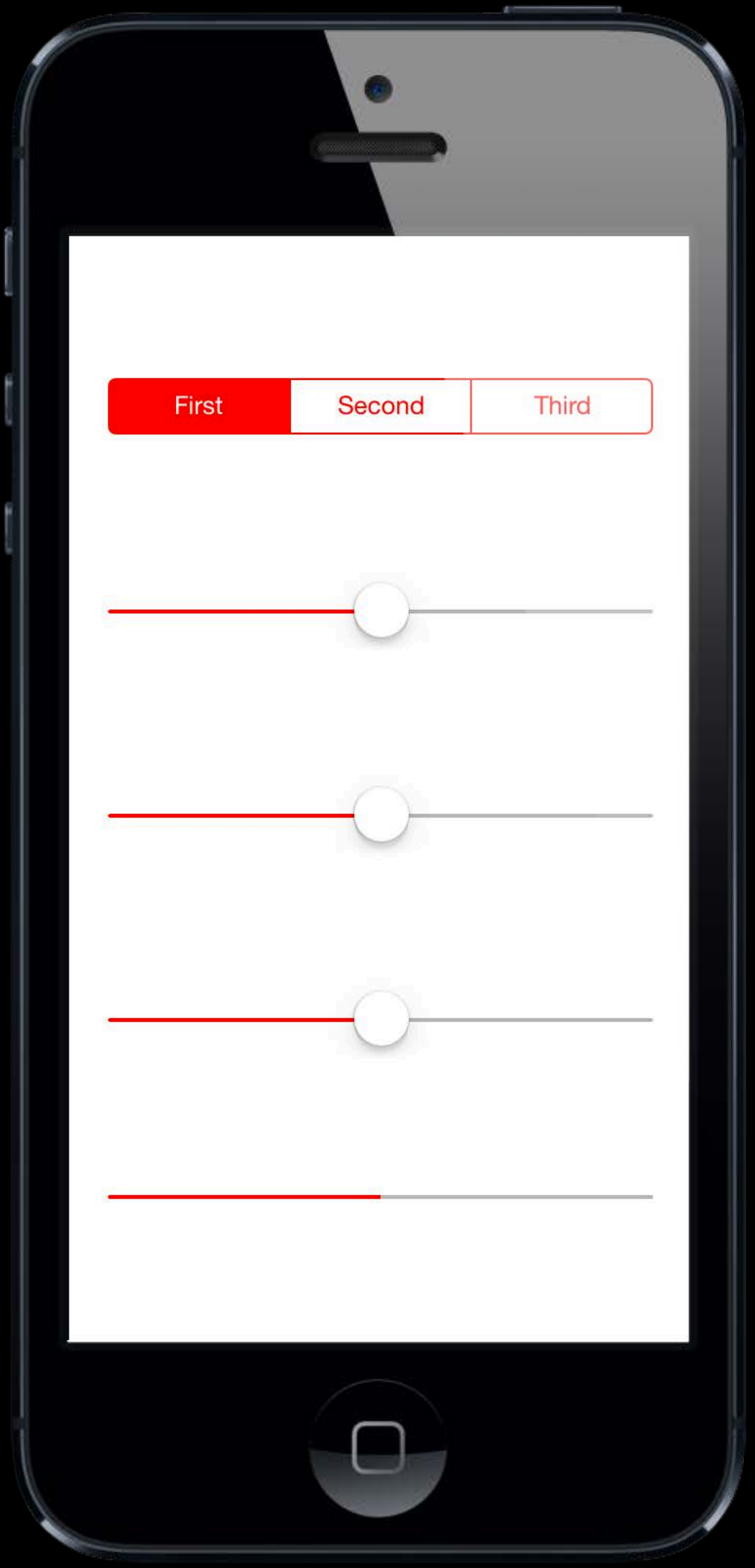
Better than ever





```
[[UISlider appearance] setTintColor:[UIColor redColor]]
```


First
Second
Third



```
[self.window setTintColor:[UIColor redColor]]
```

Appearance Customization

UIAppearance

```
+ (instancetype)appearance

+ (instancetype)appearanceWhenContainedIn:
```

Appearance Customization

```
+ (instancetype)appearance

+ (instancetype)appearanceWhenContainedIn:

- (UIColor *)tintColor

- (UIColor *)barTintColor
```

Appearance Customization

```
– [UIImage imageWithRenderingMode:]
```

Appearance Customization

```
– [UIImage imageWithRenderingMode:]
```

Appearance Customization

```
– [UIImage imageWithRenderingMode:]
```

```
UIImageRenderingModeAutomatic
```

Appearance Customization

```
– [UIImage imageWithRenderingMode:]
```

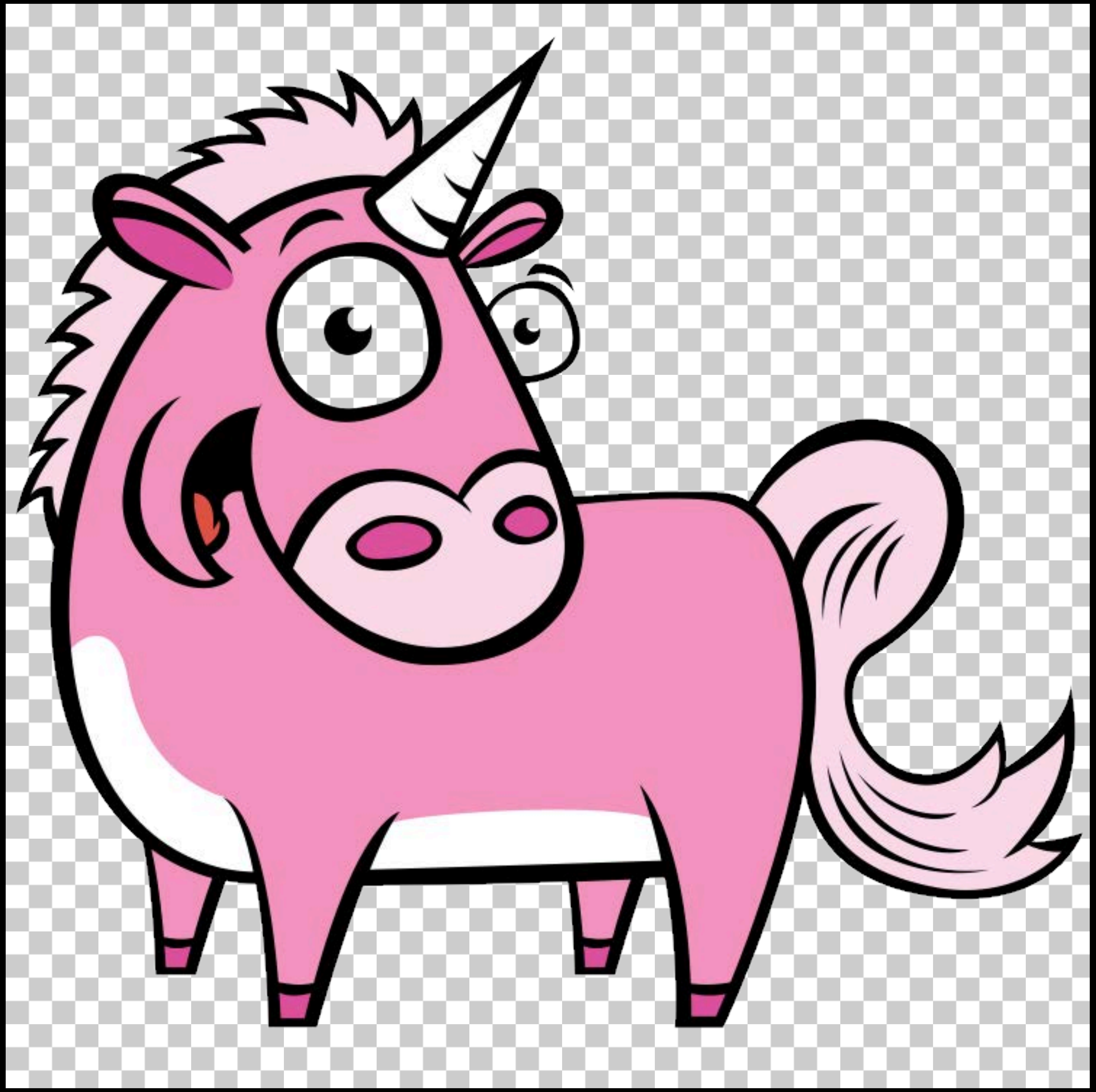
```
UIImageRenderingModeAutomatic

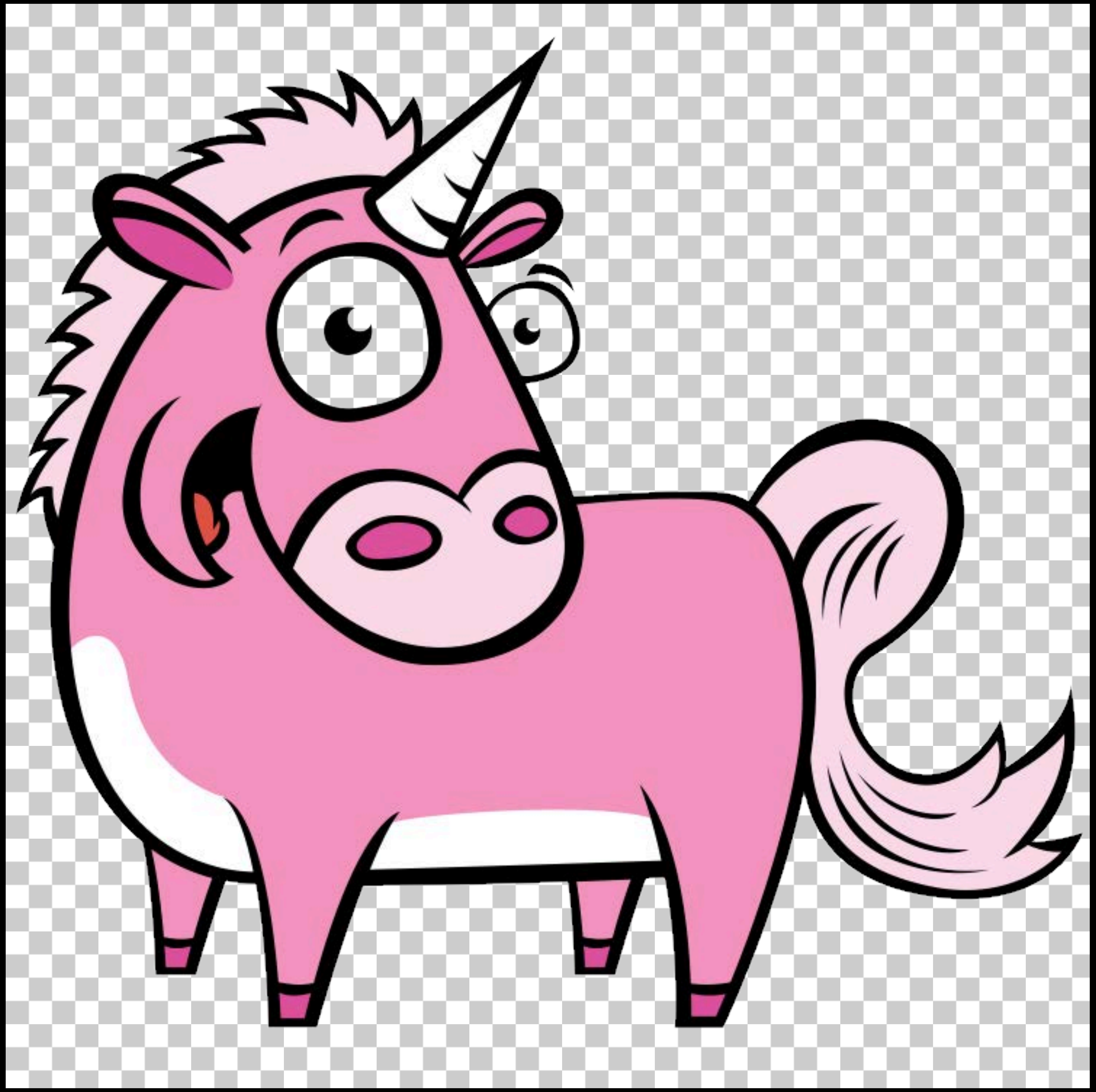
UIImageRenderingModeAlwaysOriginal
```

Appearance Customization

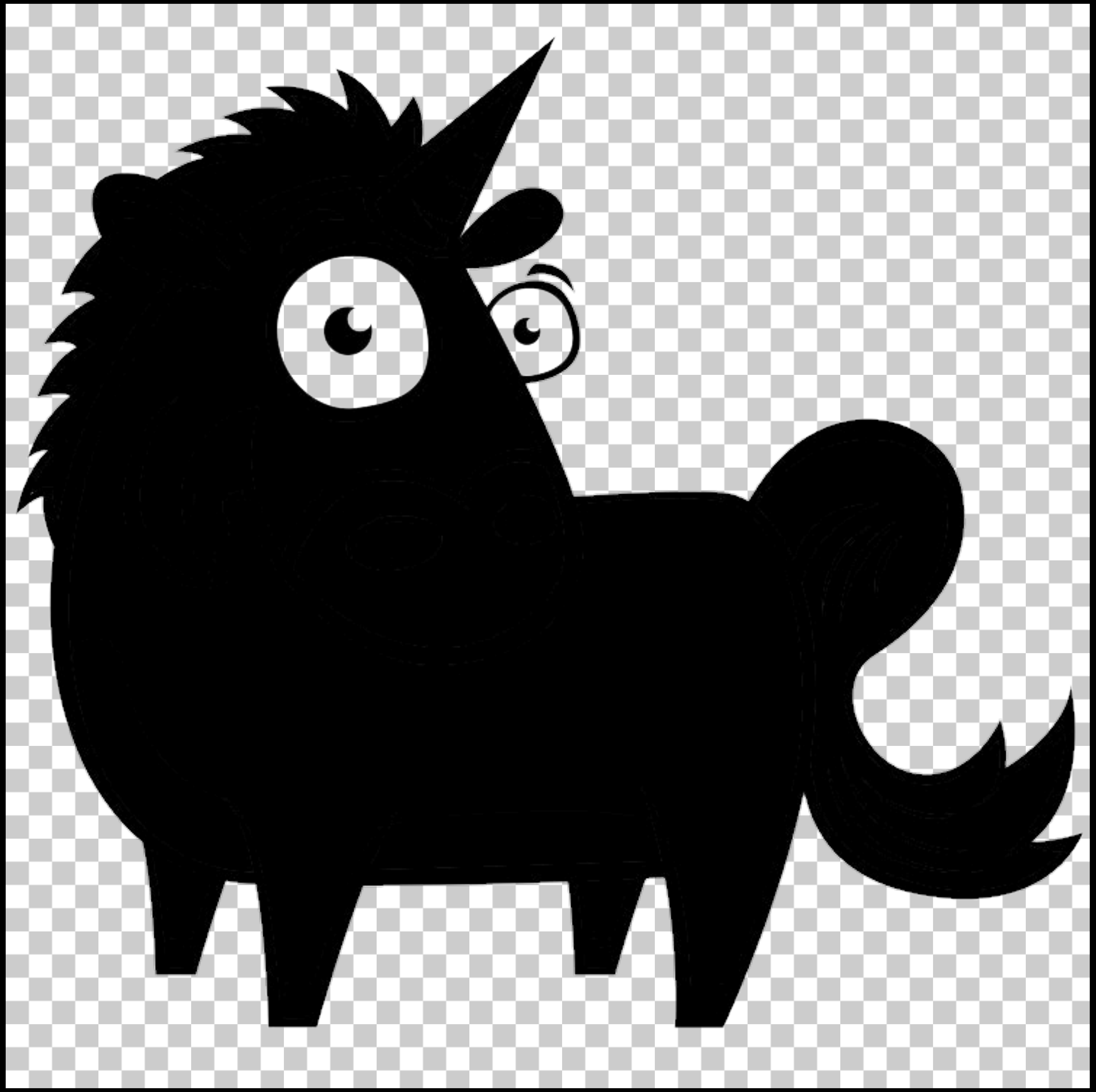
```
– [UIImage imageWithRenderingMode:]
```

```
UIImageRenderingModeAutomatic
UIImageRenderingModeAlwaysOriginal
UIImageRenderingModeAlwaysTemplate
```

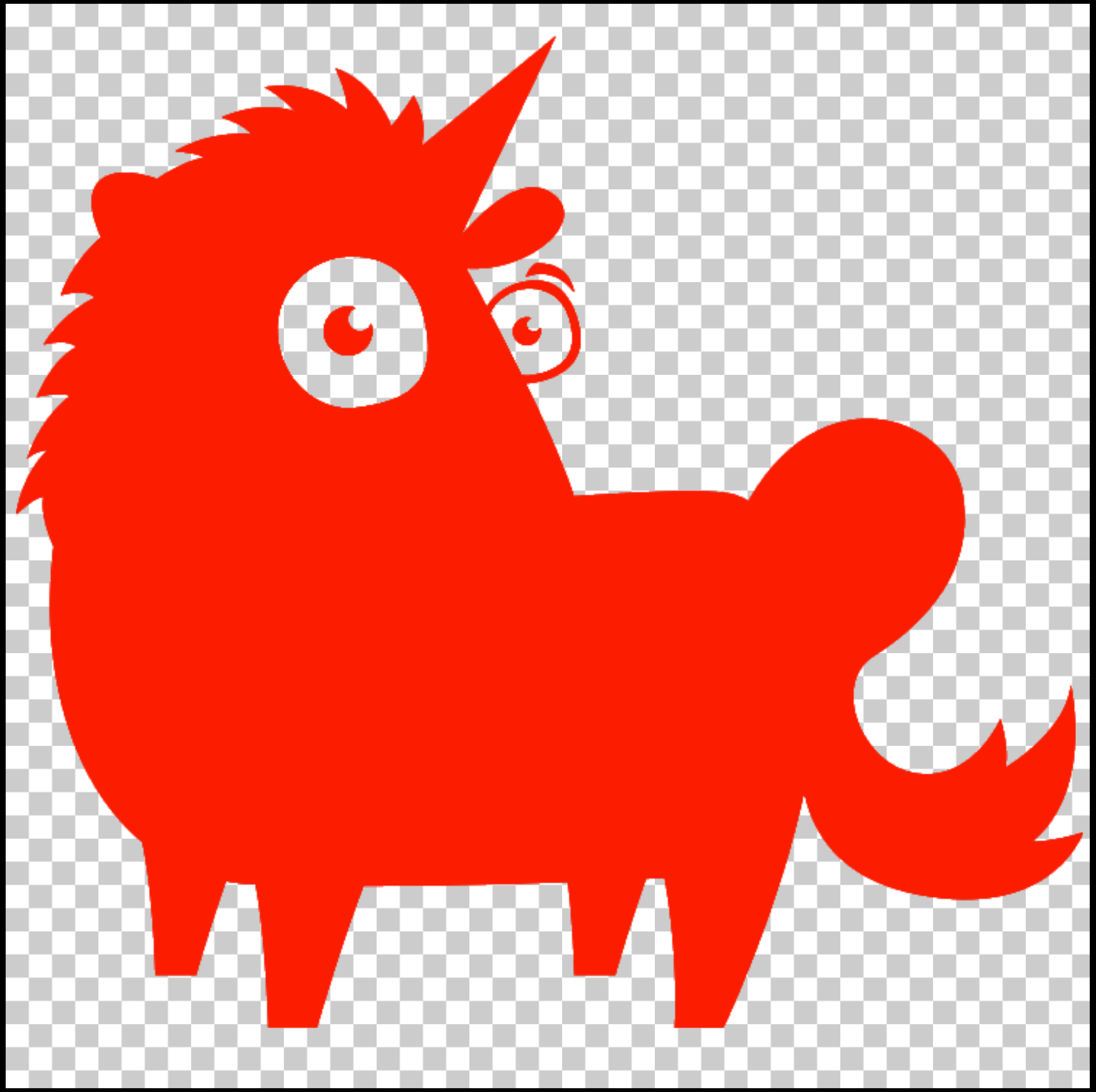

Original image



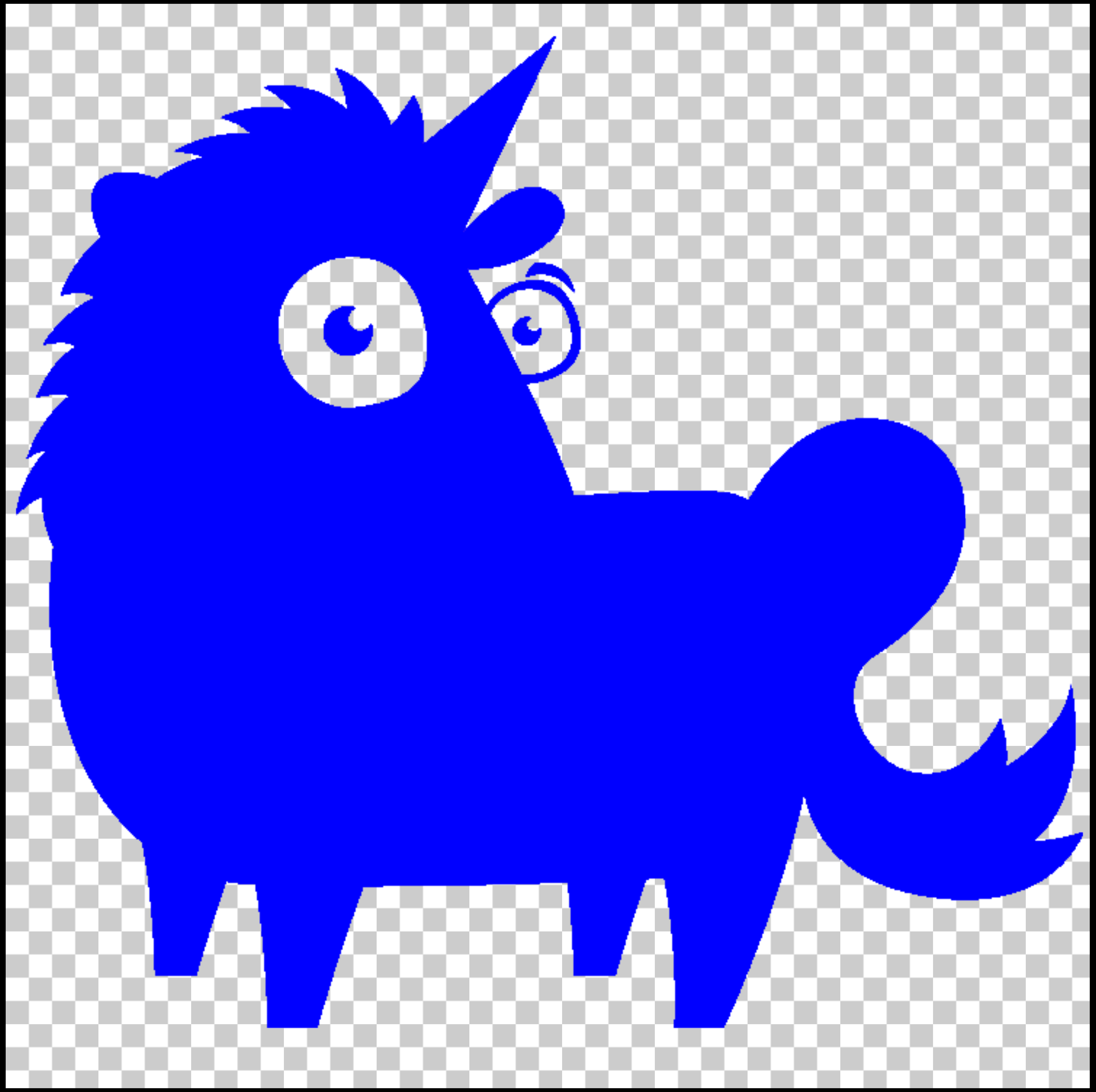
`imageWithRenderingMode:UIImageRenderingModeAlwaysOriginal`



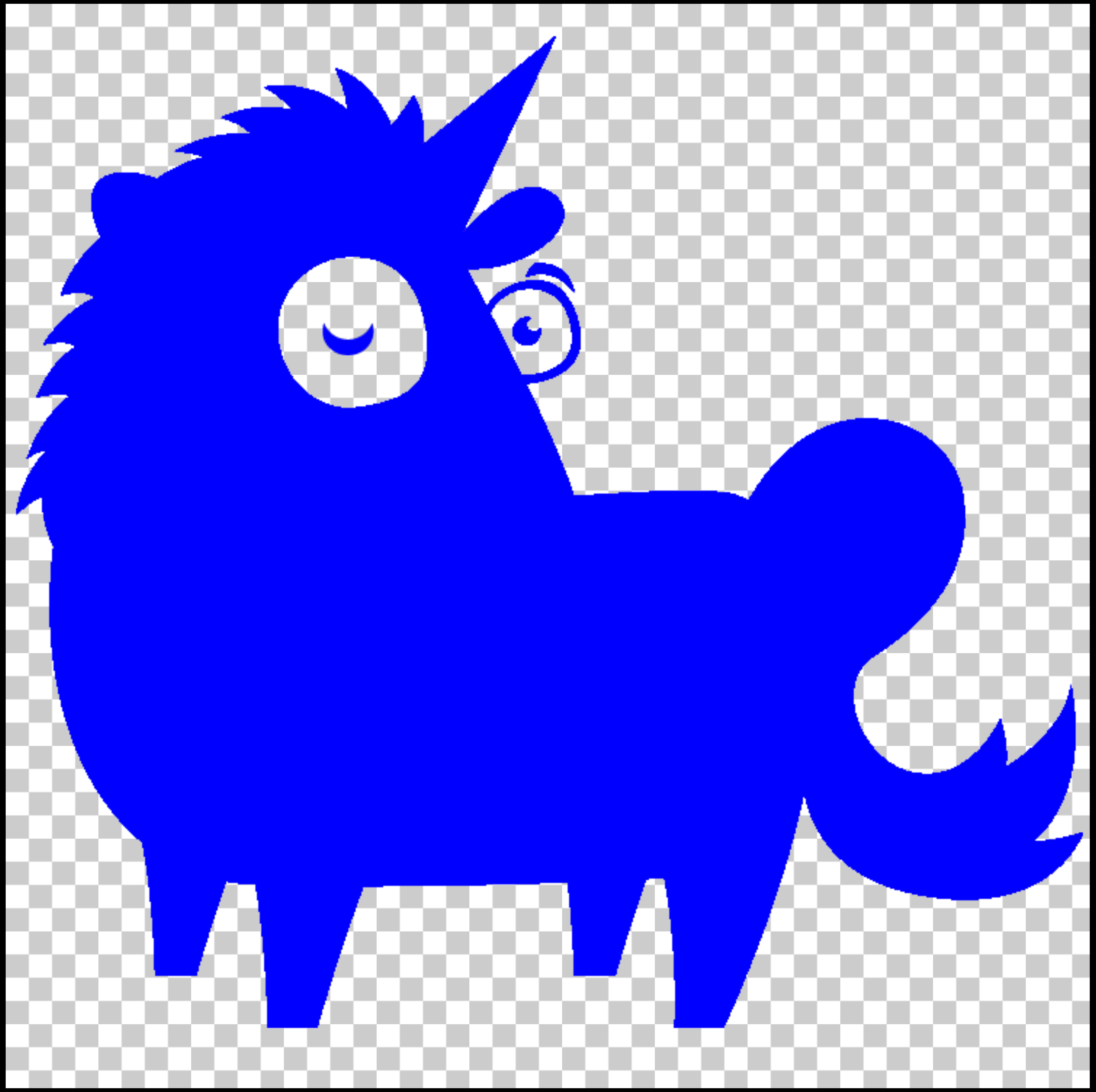
imageWithRenderingMode:UIImageRenderingModeAlwaysTemplate



```
imageWithRenderingMode:UIImageRenderingModeAlwaysTemplate
[window setTintColor:[UIColor redColor]];
```



```
imageWithRenderingMode:UIImageRenderingModeAlwaysTemplate
[window setTintColor:[UIColor blueColor]];
```



```
imageWithRenderingMode:UIImageRenderingModeAlwaysTemplate
```

```
[window setTintColor:[UIColor blueColor]];
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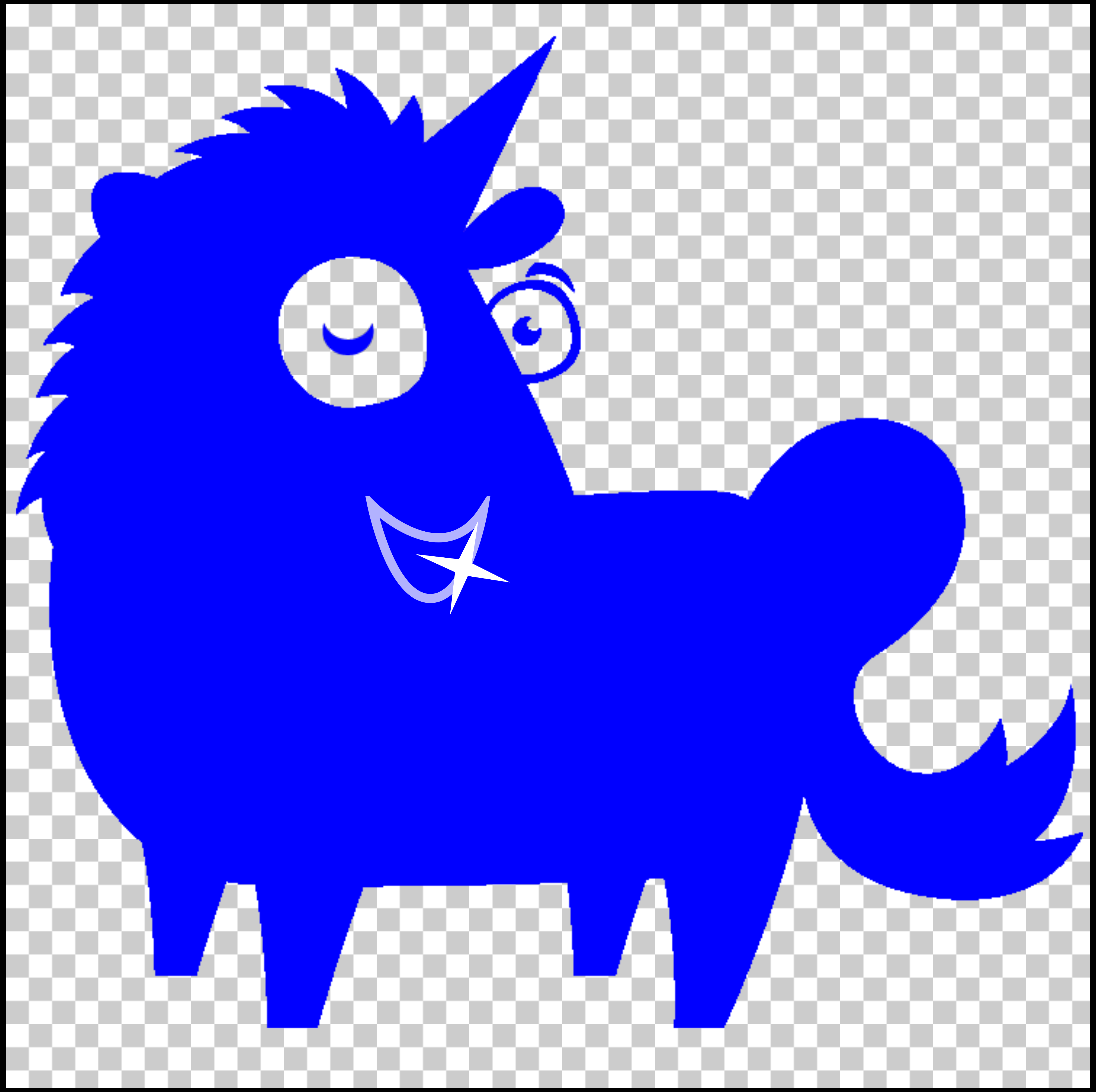

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imageWithRenderingMode:UIImageRenderingModeAlwaysTemplate
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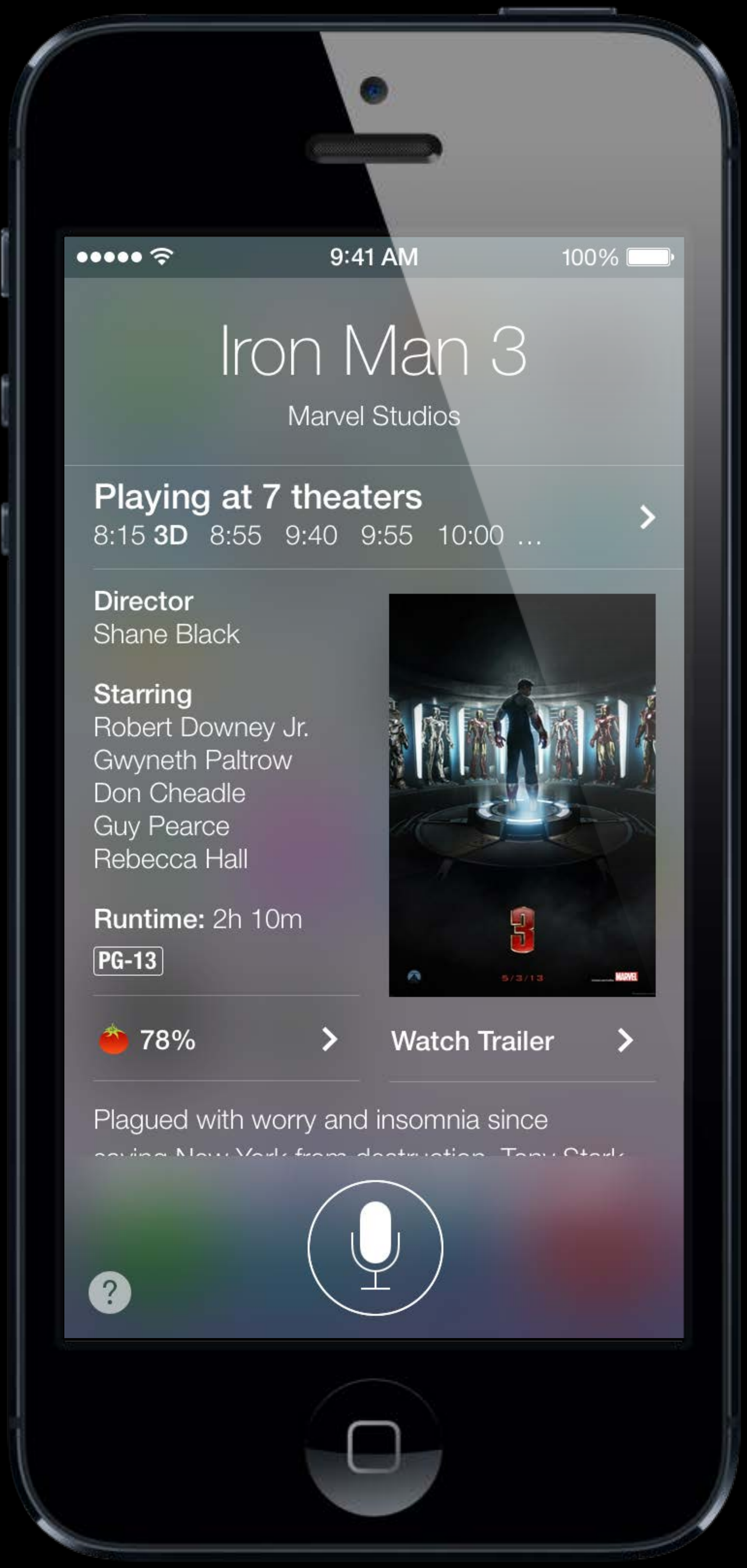
```



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Iron Man 3

Marvel Studios

Playing at 7 theaters

8:15 **3D** 8:55 9:40 9:55 10:00 …

Director
Shane Black

Starring
Robert Downey Jr.
Gwyneth Paltrow
Don Cheadle
Guy Pearce
Rebecca Hall

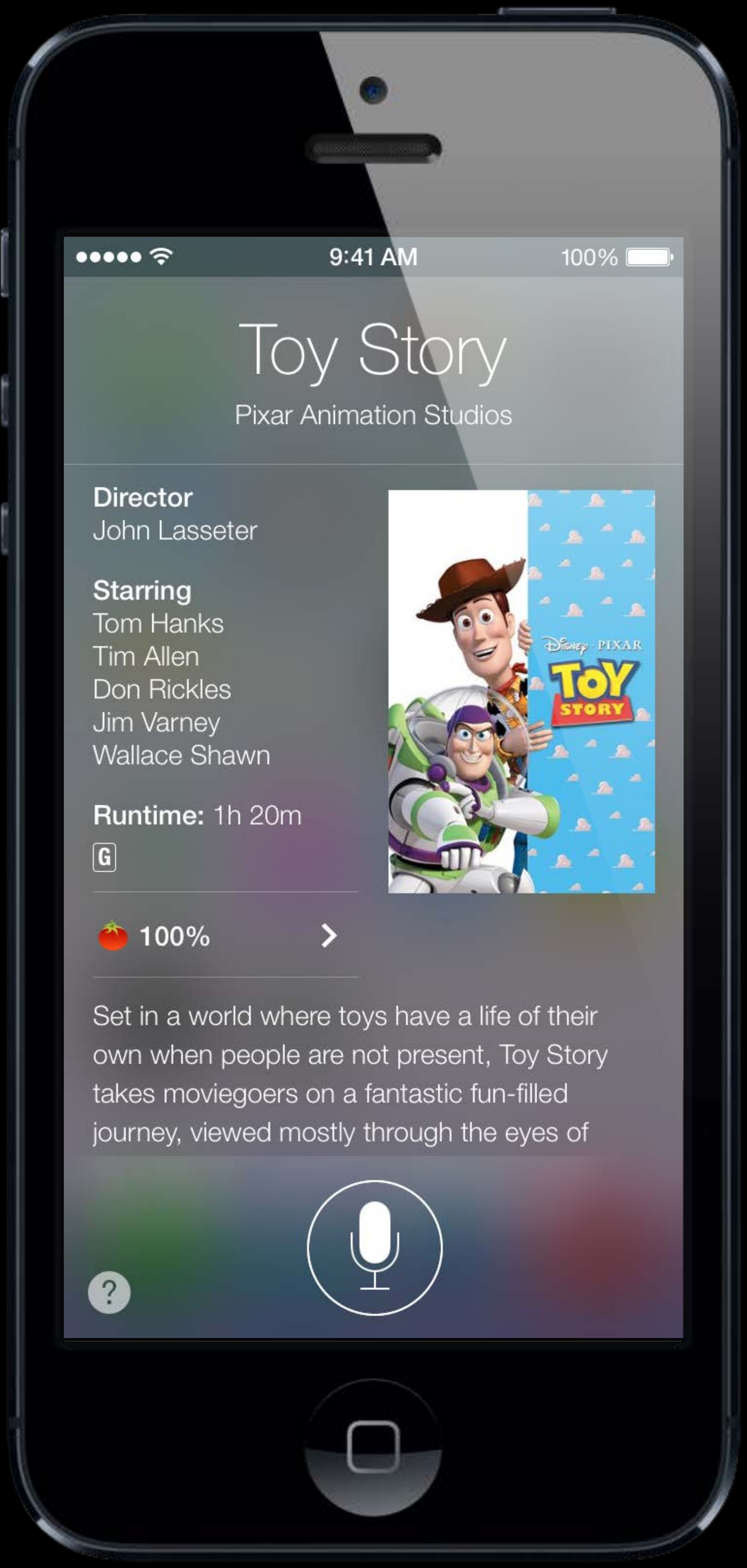
Runtime: 2h 10m

PG-13

78%

Watch Trailer

Plagued with worry and insomnia since
saving New York from destruction, Tony Stark



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Toy Story

Pixar Animation Studios

Director
John Lasseter

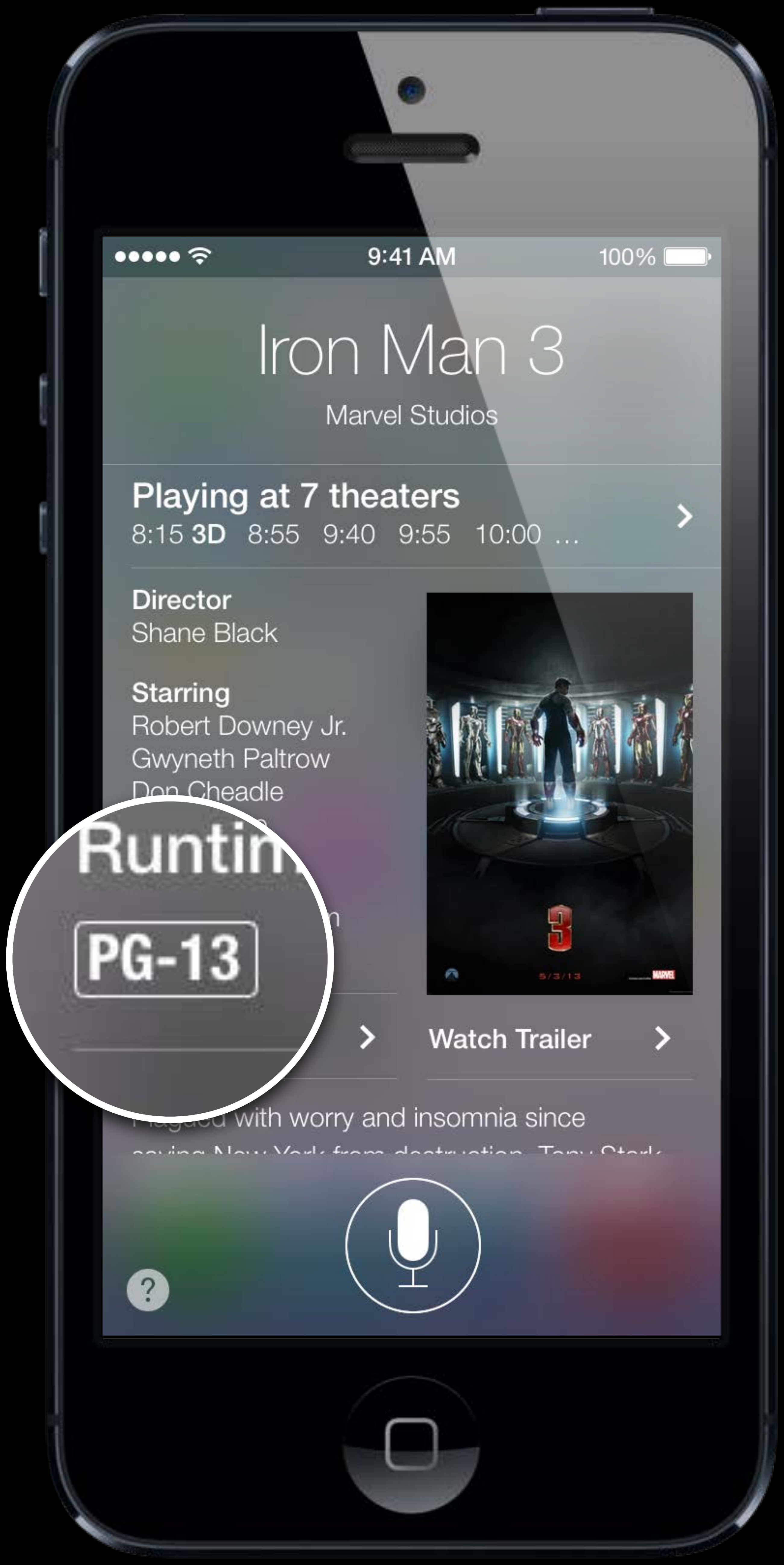
Starring
Tom Hanks
Tim Allen
Don Rickles
Jim Varney
Wallace Shawn

Runtime: 1h 20m

G

100%

Set in a world where toys have a life of their own when people are not present, Toy Story takes moviegoers on a fantastic fun-filled journey, viewed mostly through the eyes of


9:41 AM 100%

Iron Man 3

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8:15 **3D** 8:55 9:40 9:55 10:00 …

Director
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Starring
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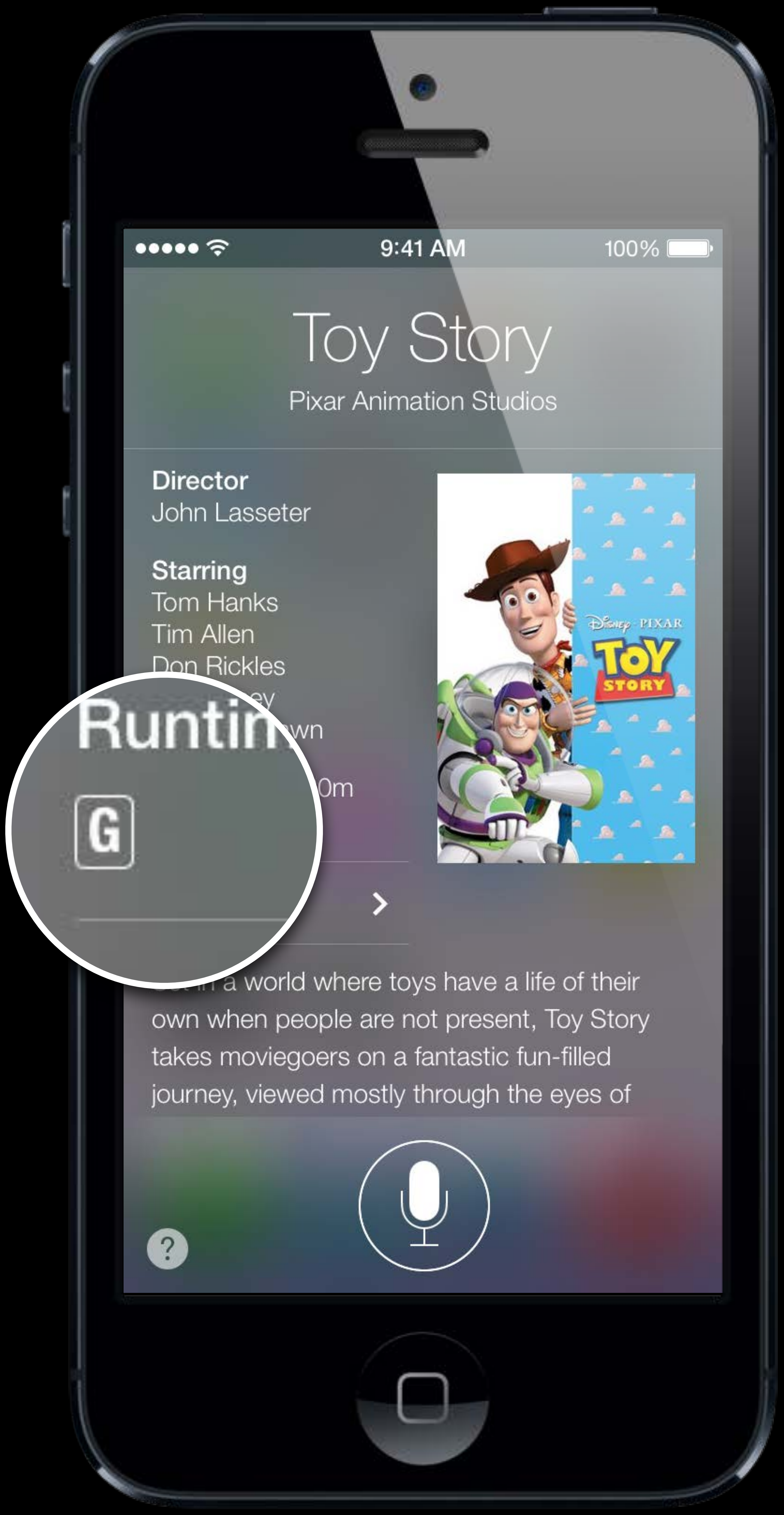
Don Cheadle

Runtin

PG-13

Watch Trailer

with worry and insomnia since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Toy Story

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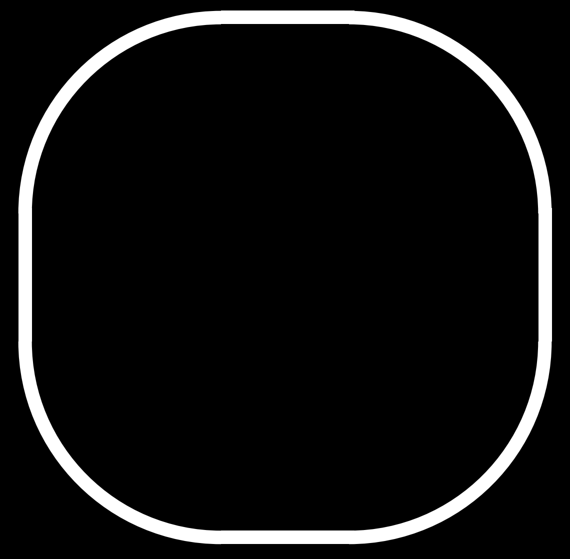
- [UIImage resizableImageWithCapInsets:]



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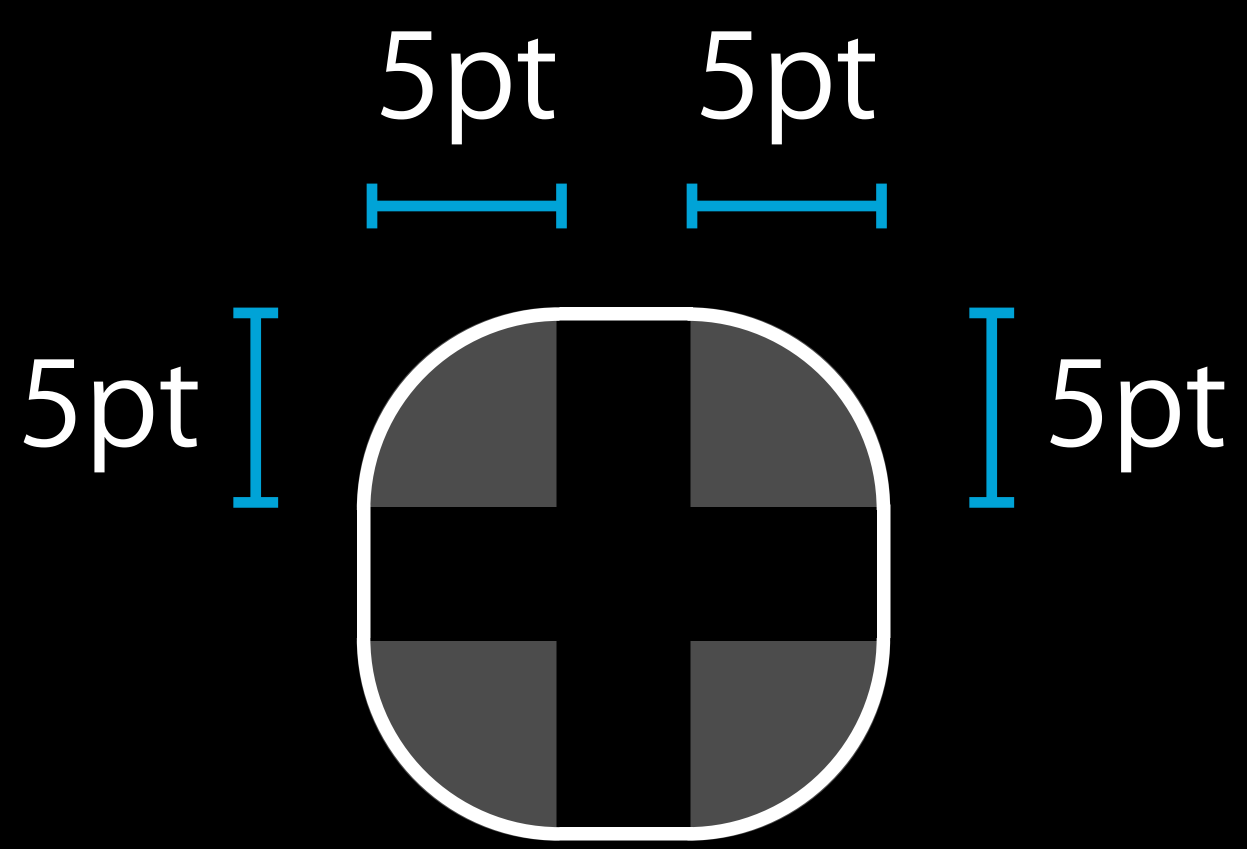

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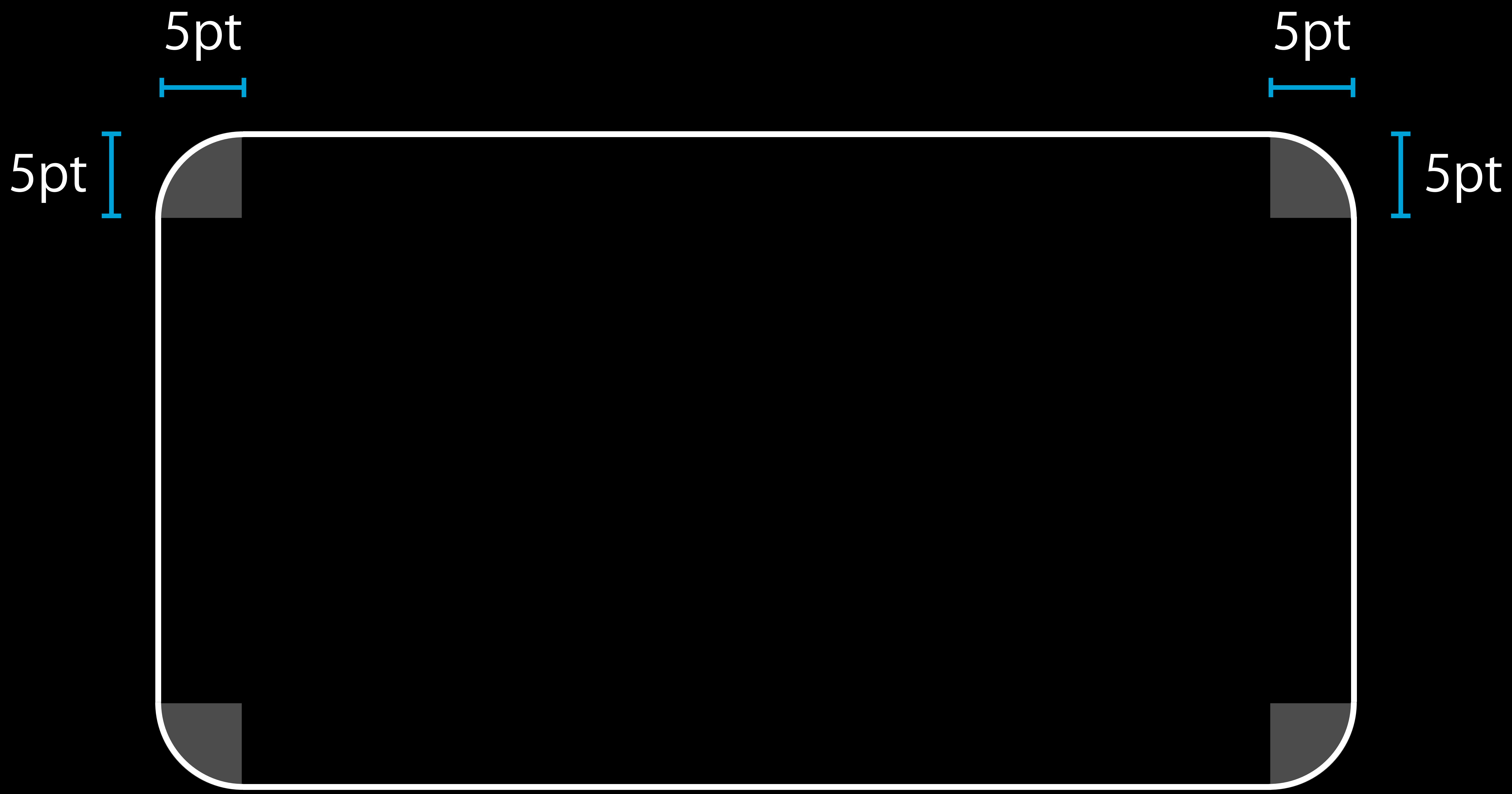

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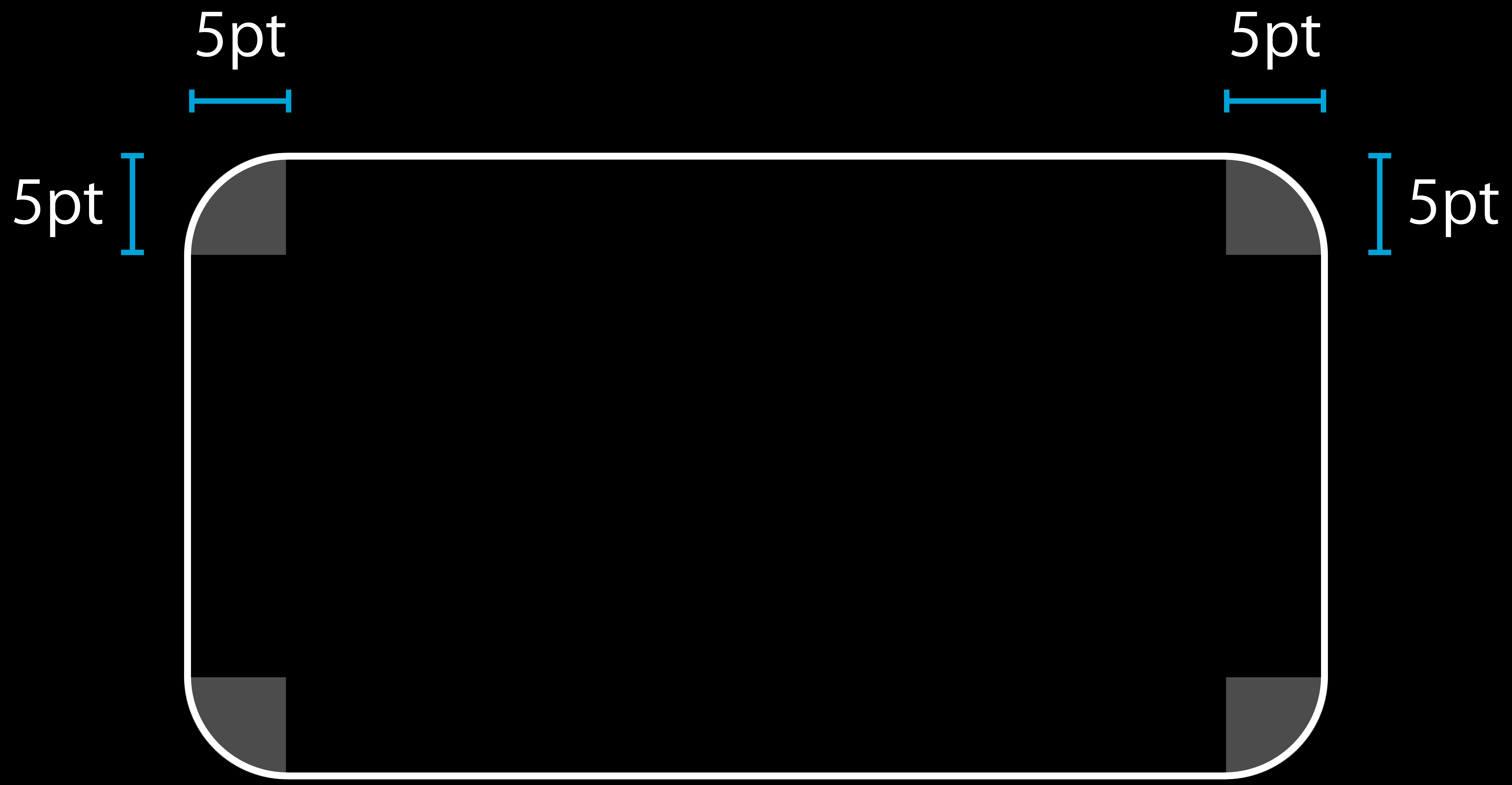

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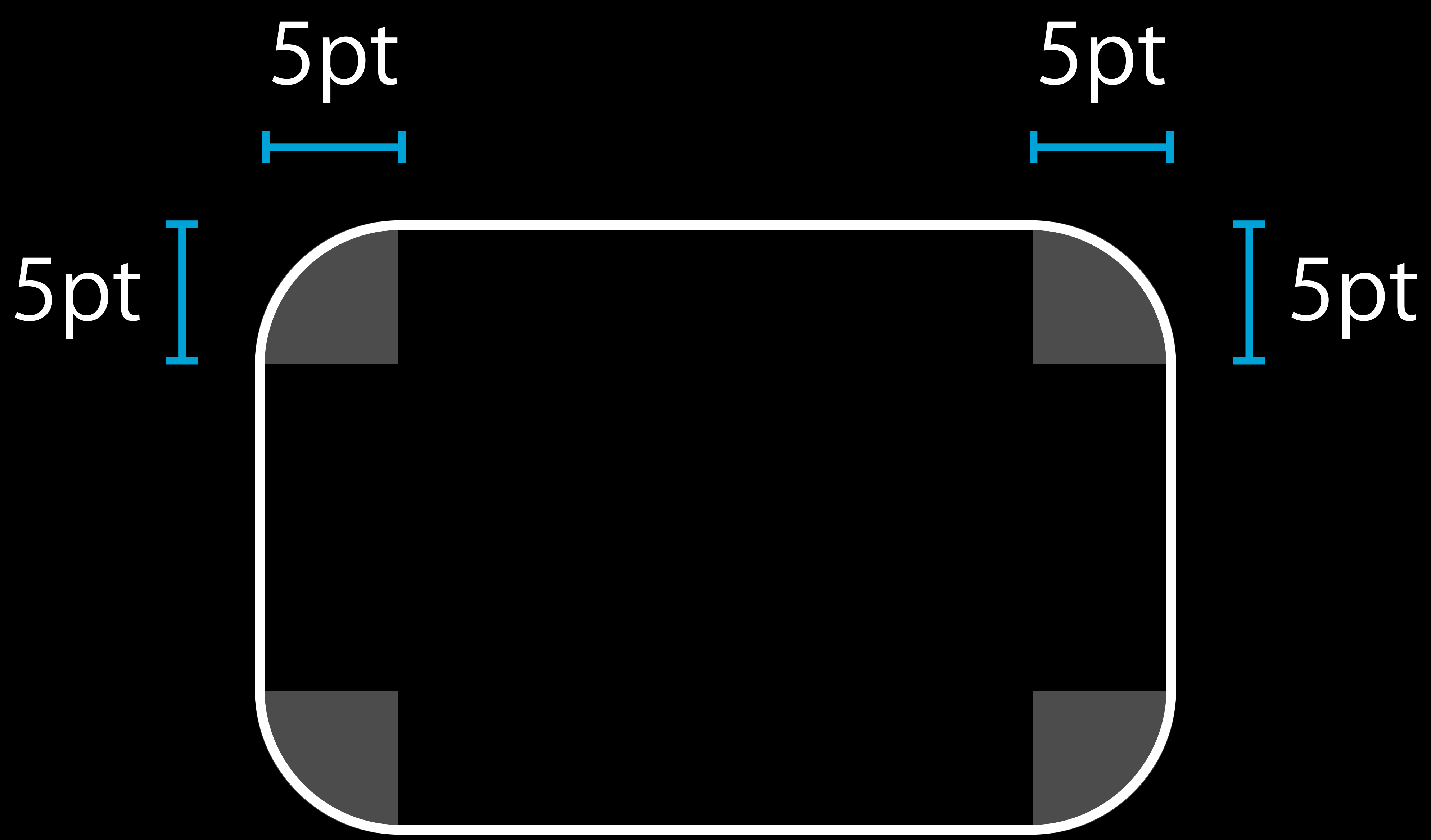

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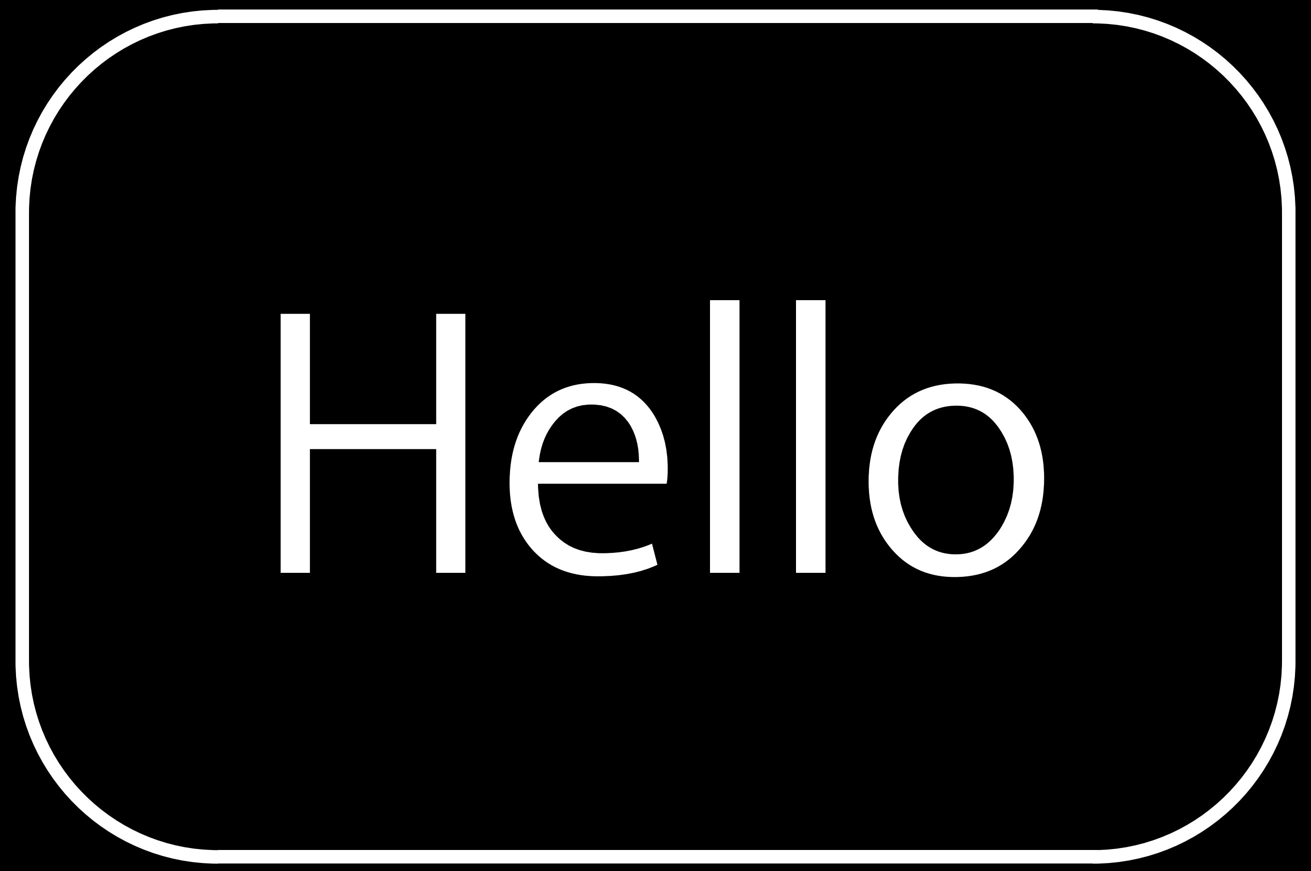

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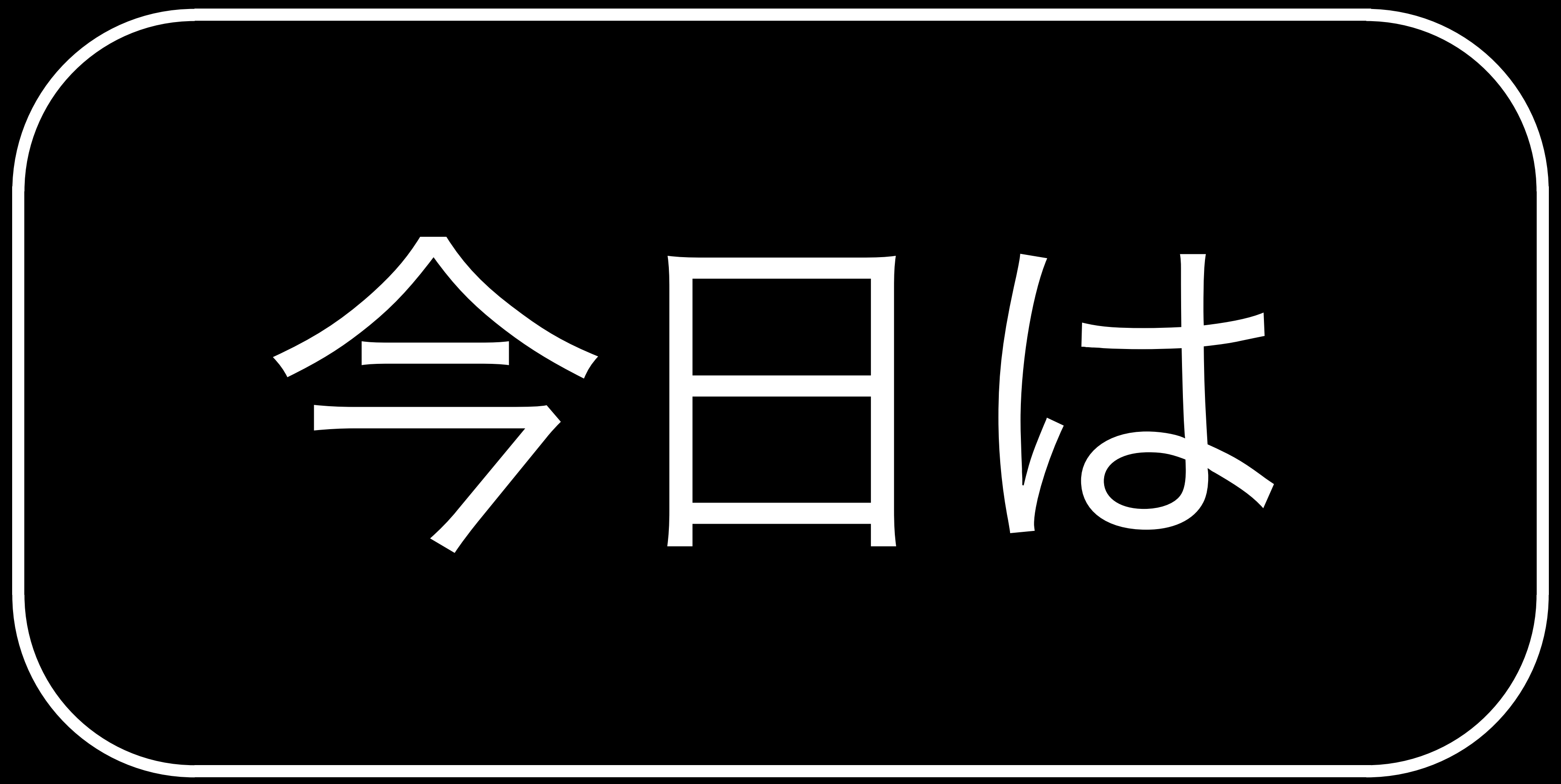

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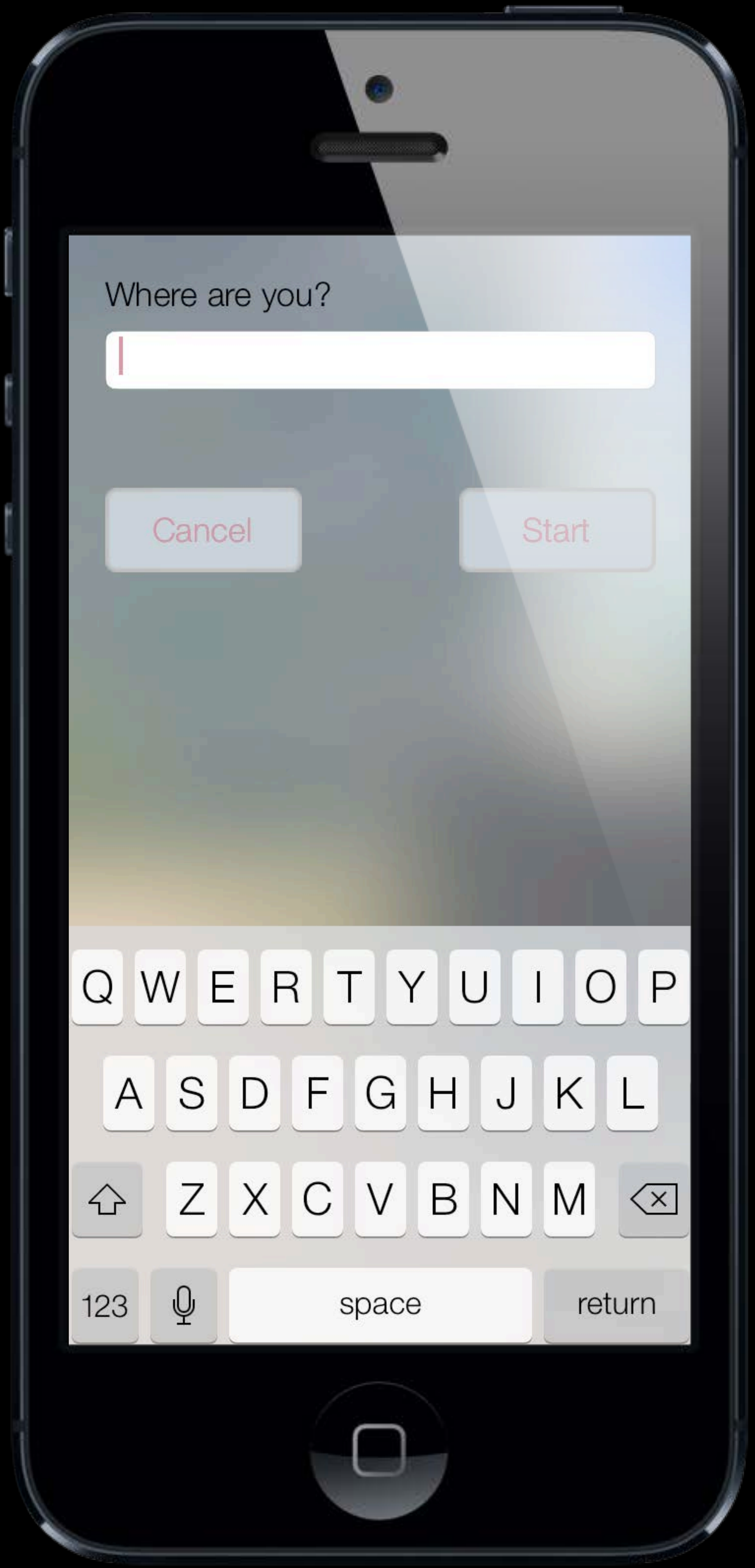

Where are you?
Cancel
Start
Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M
123
space
return

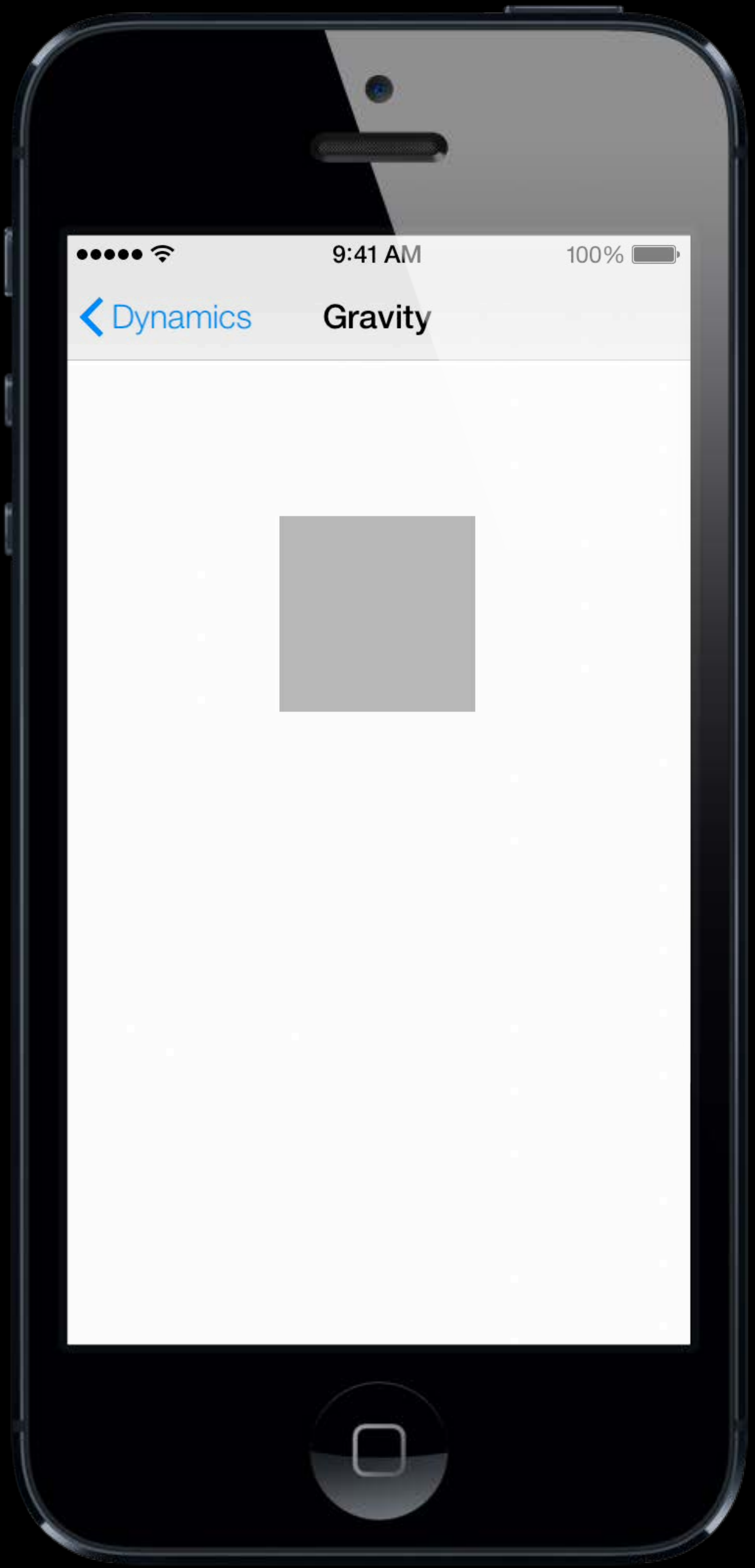
Realistic Motion

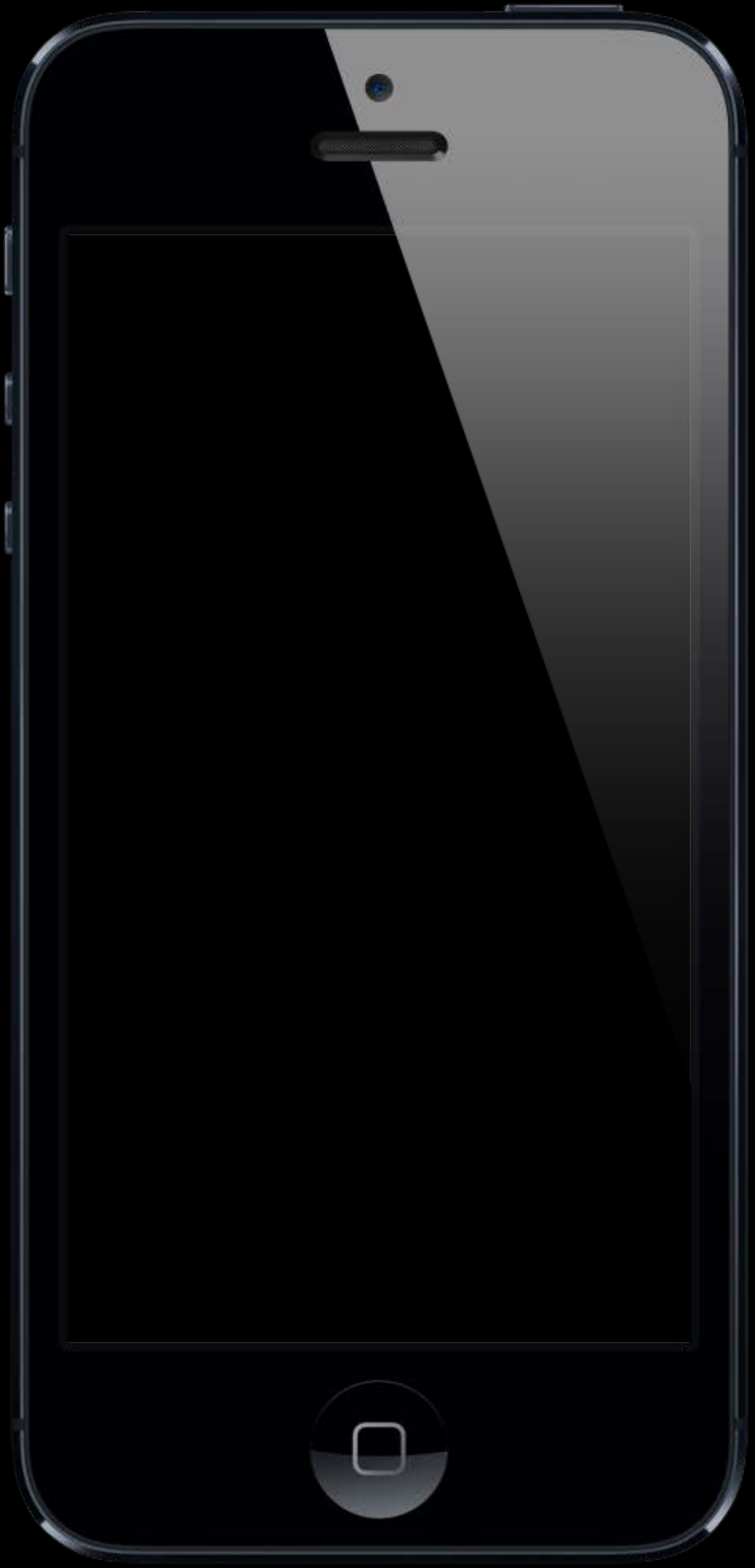
UIKit Dynamics and Motion Effects

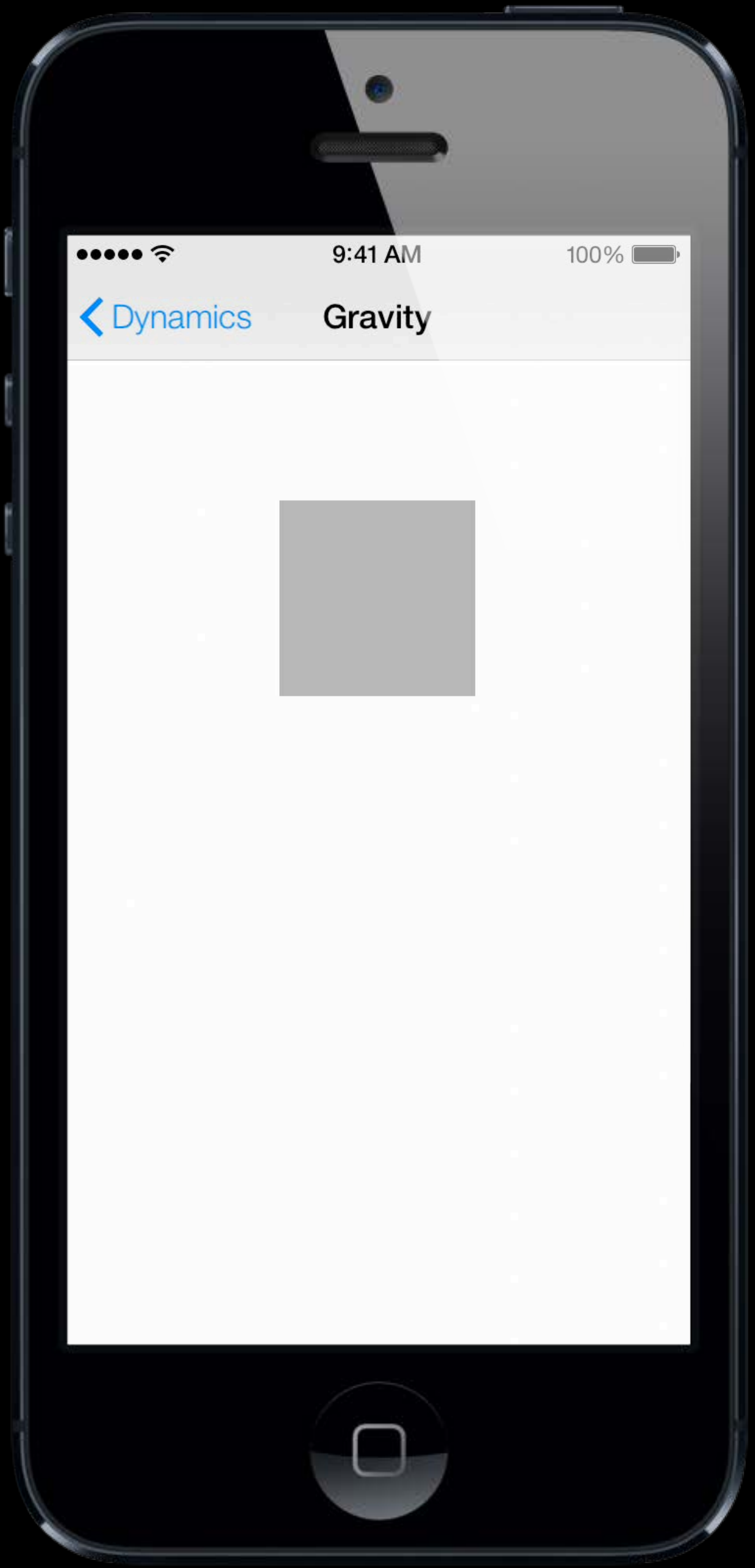
UIKit Dynamics

With great power comes great responsibility

- Model real world physical behaviors
- Not a physics engine
- Most effective when used in moderation


9:41 AM
100%
Dynamics
Gravity

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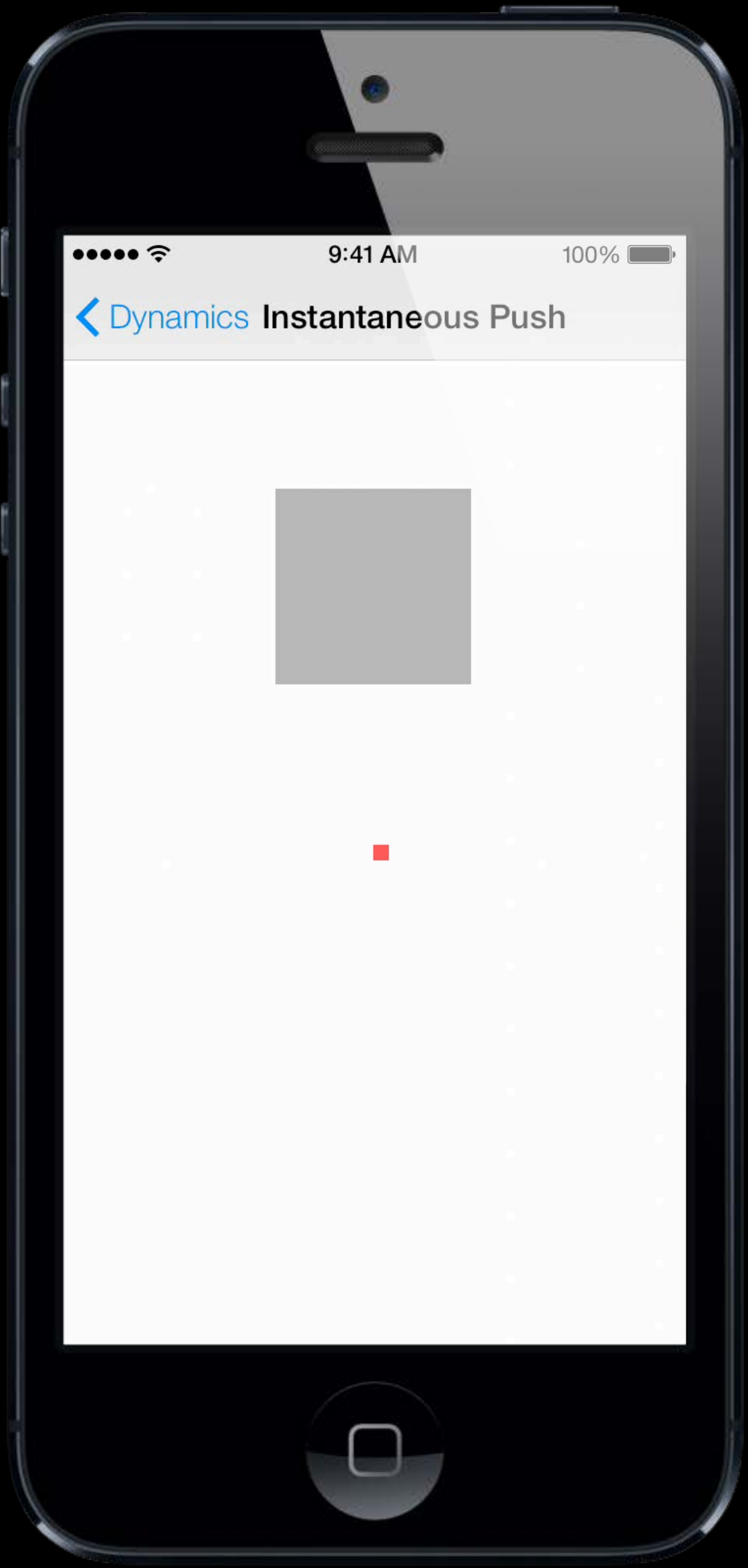
Dynamics
Gravity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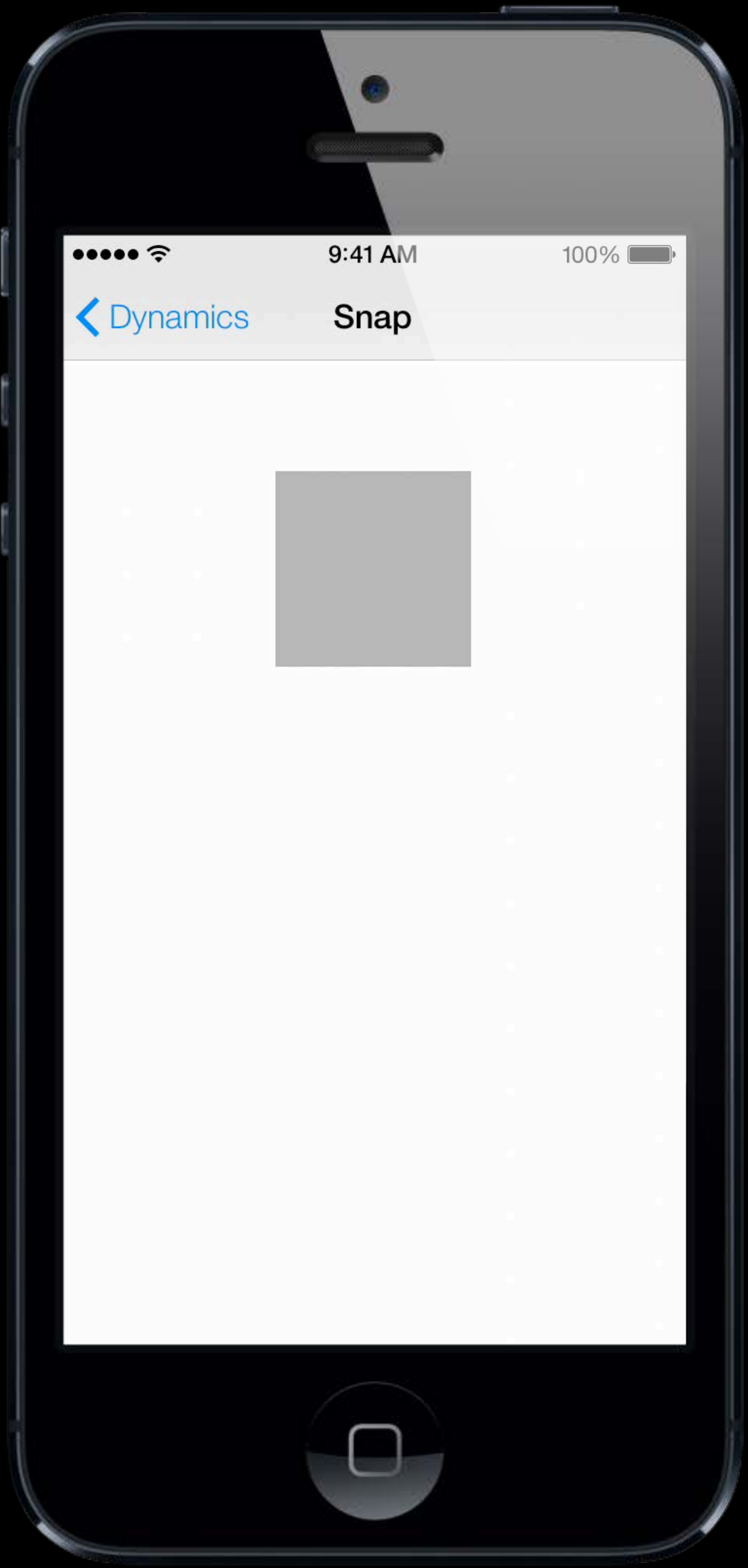
Dynamics
Instantaneous Push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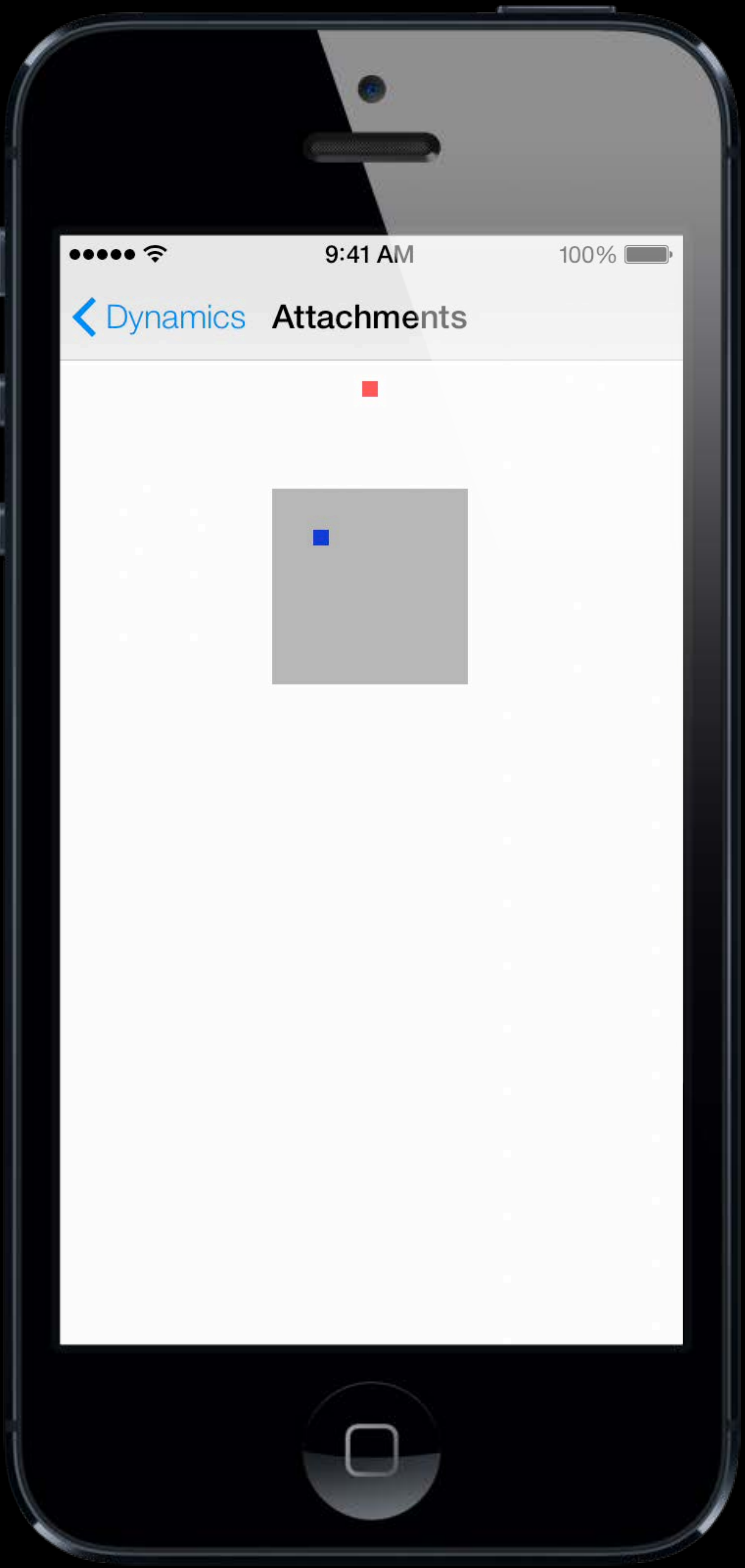
Dynamics
Snap



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100%
Dynamics
Attachments

UIKit Dynamics

The basics

```
animator = [[UIDynamicAnimator alloc]
initWithReferenceView:self.view];

gravityBehavior = [[UIGravityBehavior alloc]
initWithItems:@[itemToAnimate]];

[animator addBehavior:gravityBehavior];
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UIKit Dynamics

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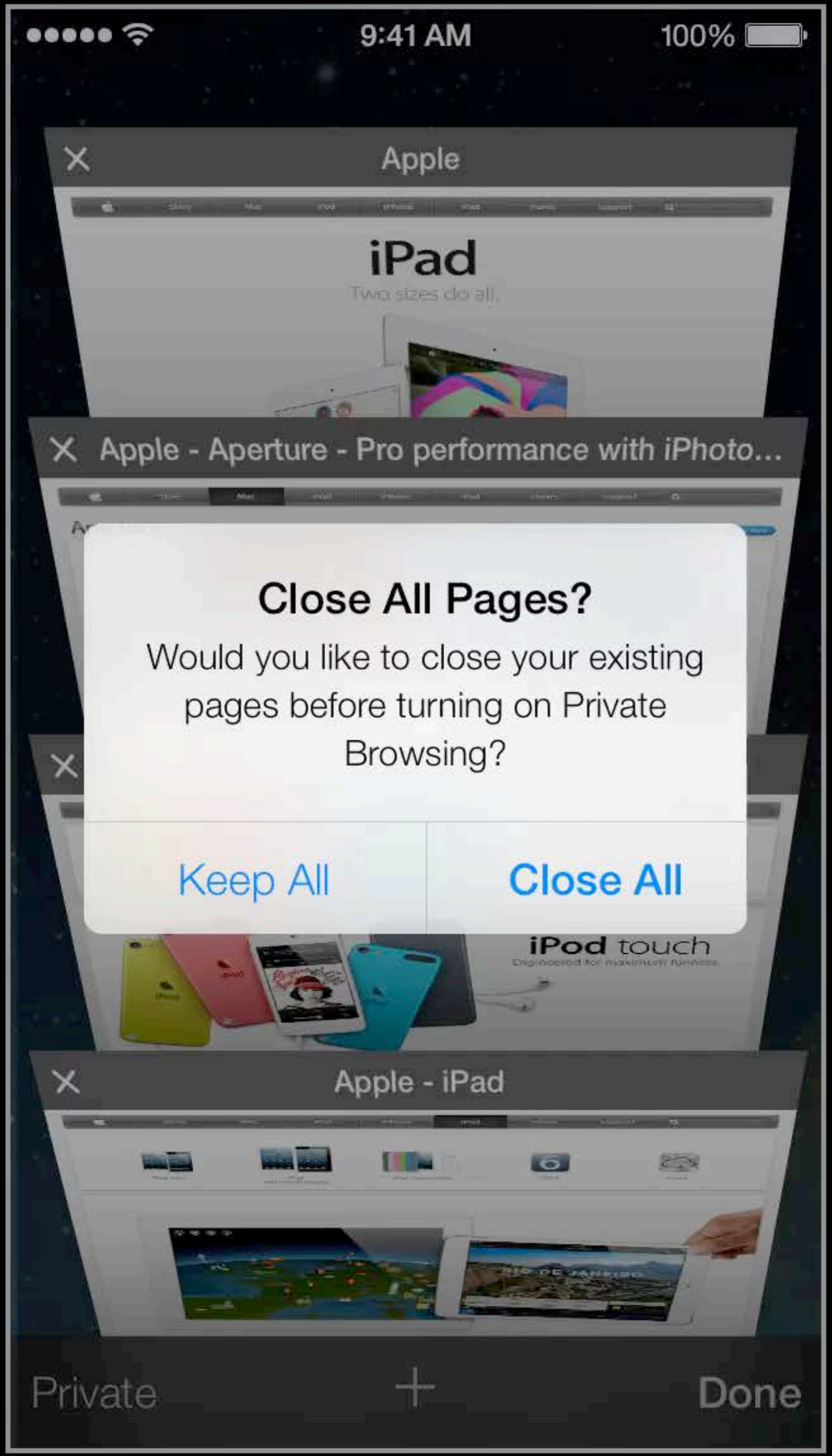
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Apple

Apple - Aperture - Pro performance with iPhoto...

Apple - iPad

Close All Pages?

Would you like to close your existing pages before turning on Private Browsing?

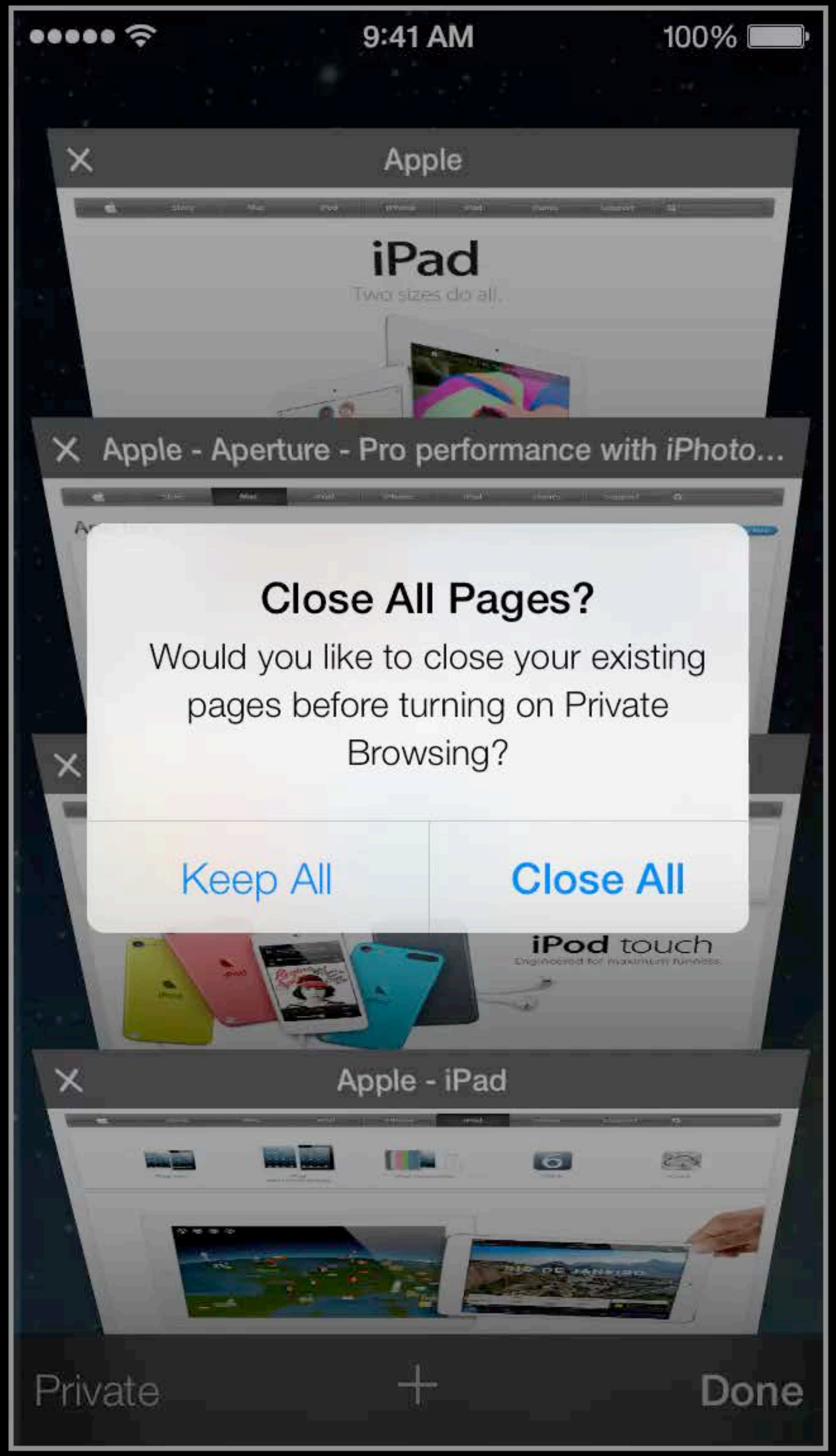
Keep All | Close All

Private + Done

Motion Effects

UIMotionEffect

- Create effects like the home screen or action sheets
- Device motion is the input
- Optimized for power efficiency
- Don't roll your own

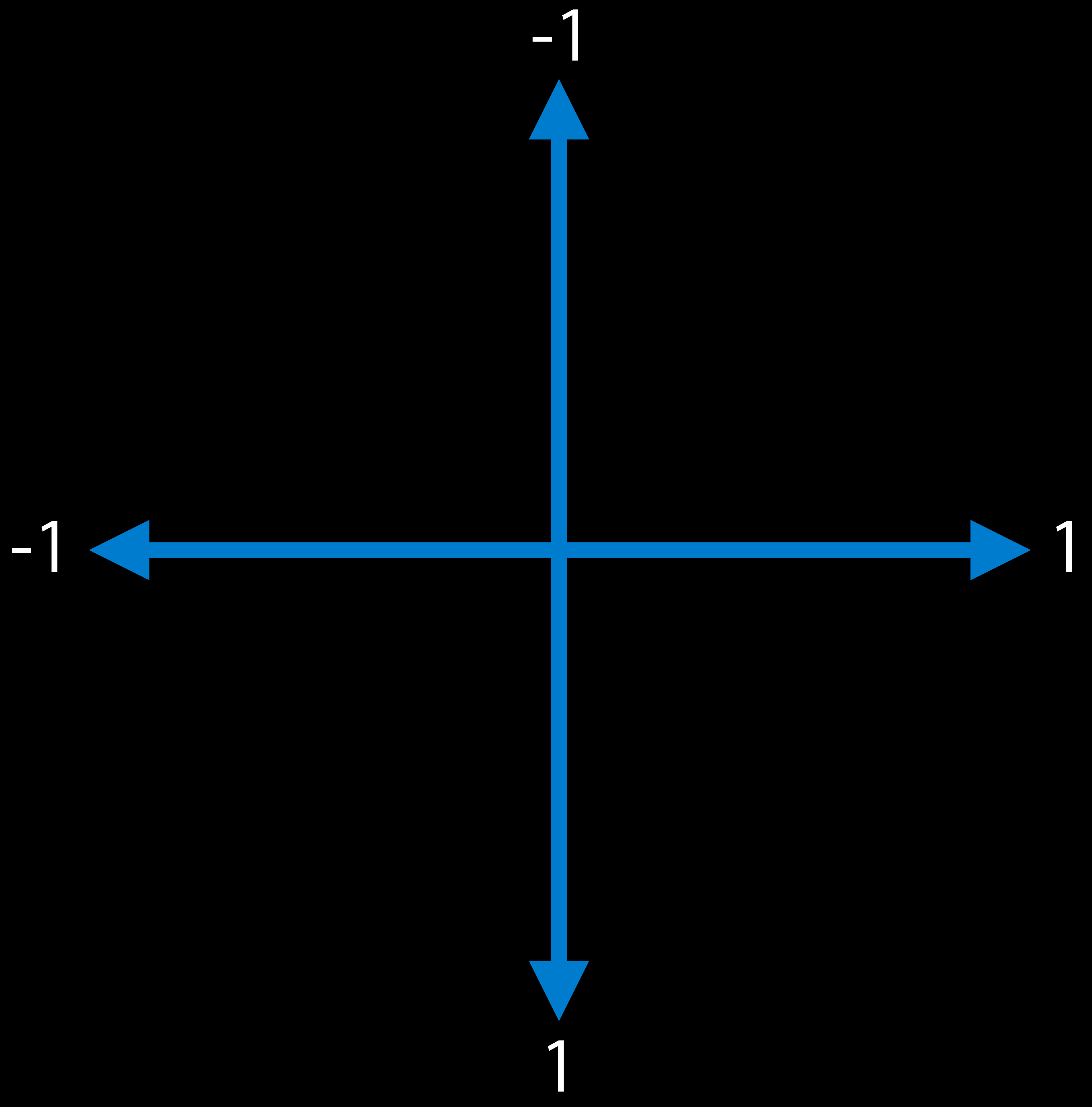


Close All Pages?
Would you like to close your existing pages before turning on Private Browsing?

Keep All | Close All

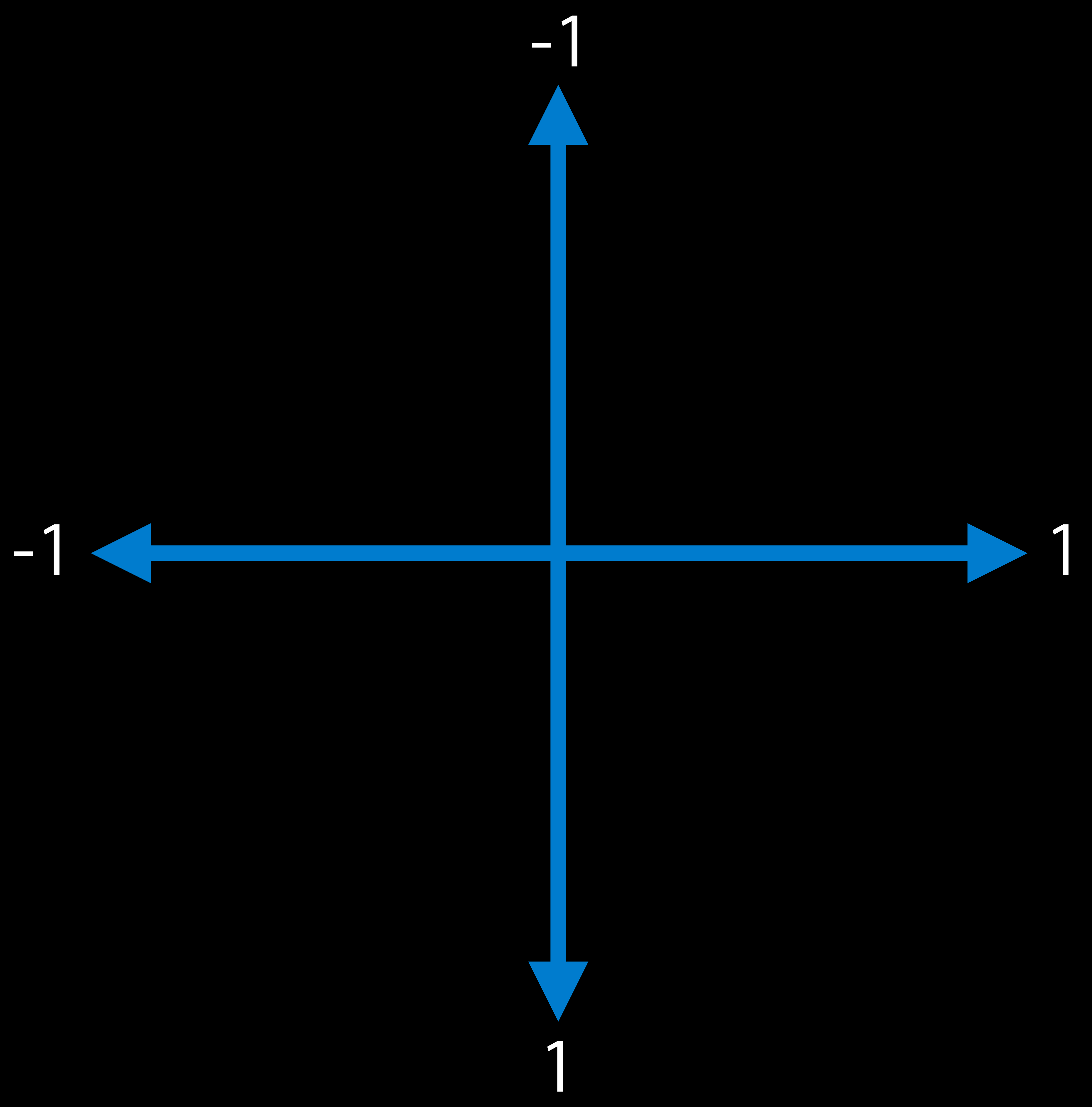
Motion Effects

Understanding directions



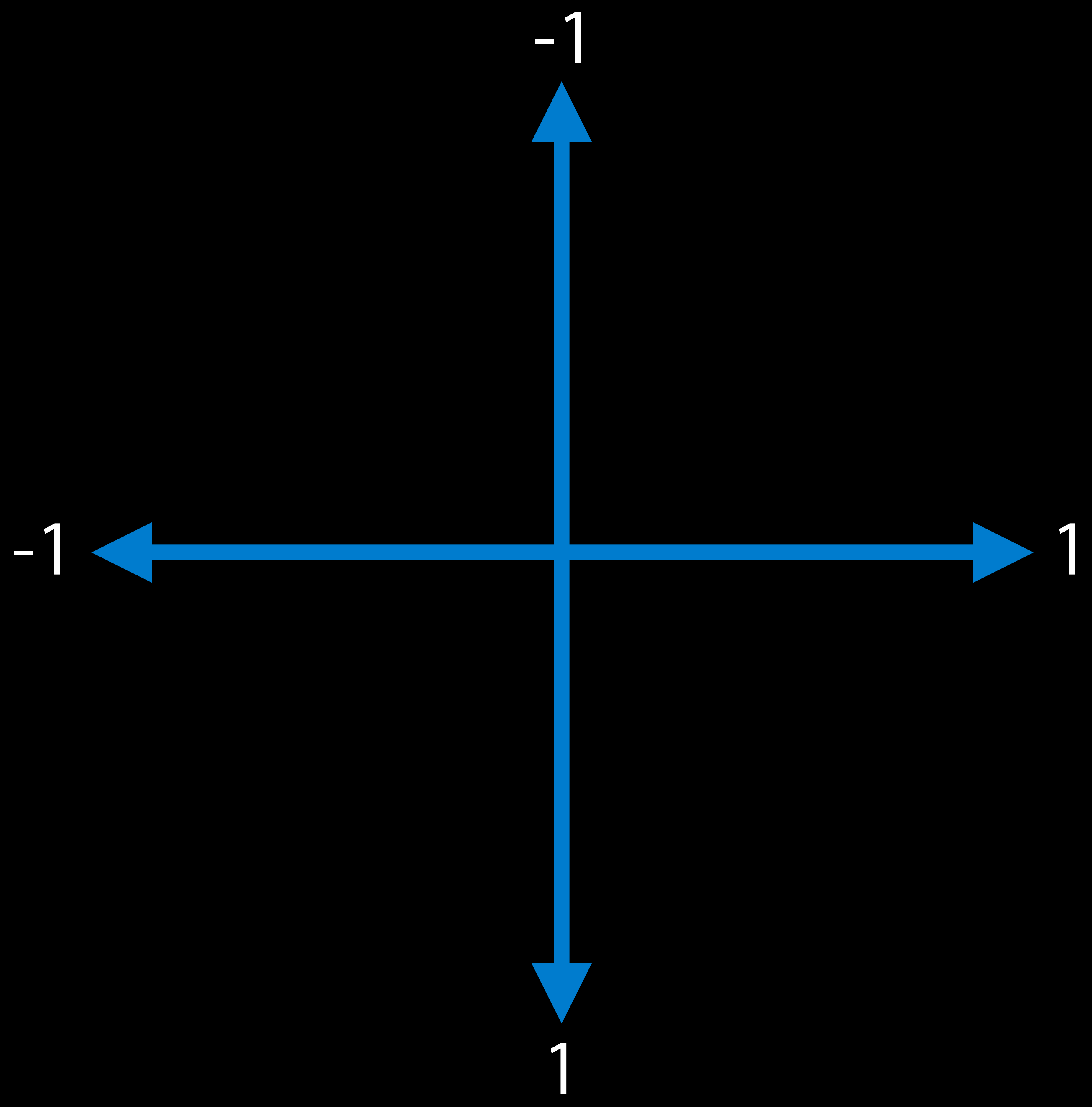
Motion Effects

Understanding directions



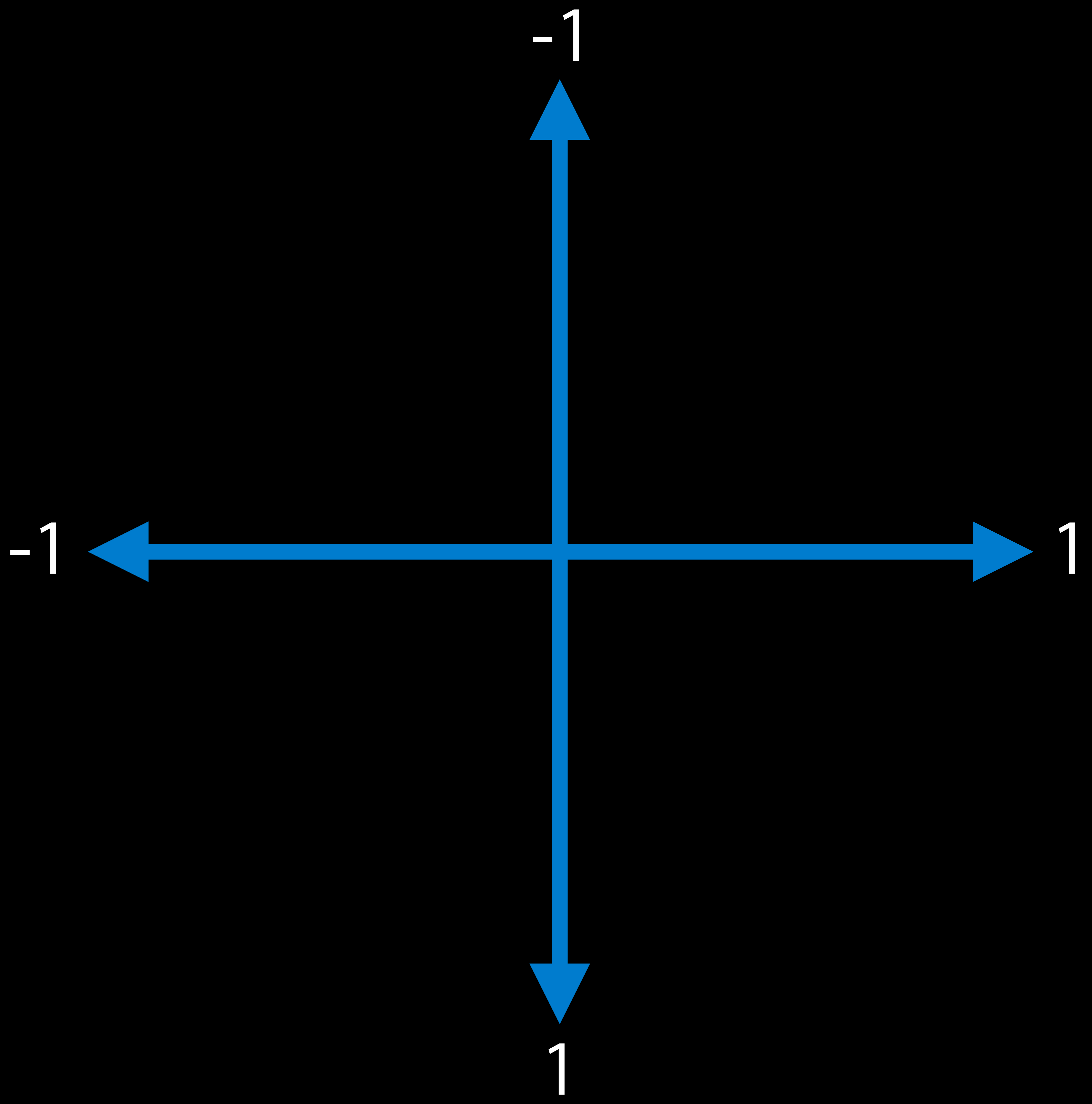
Motion Effects

Understanding directions



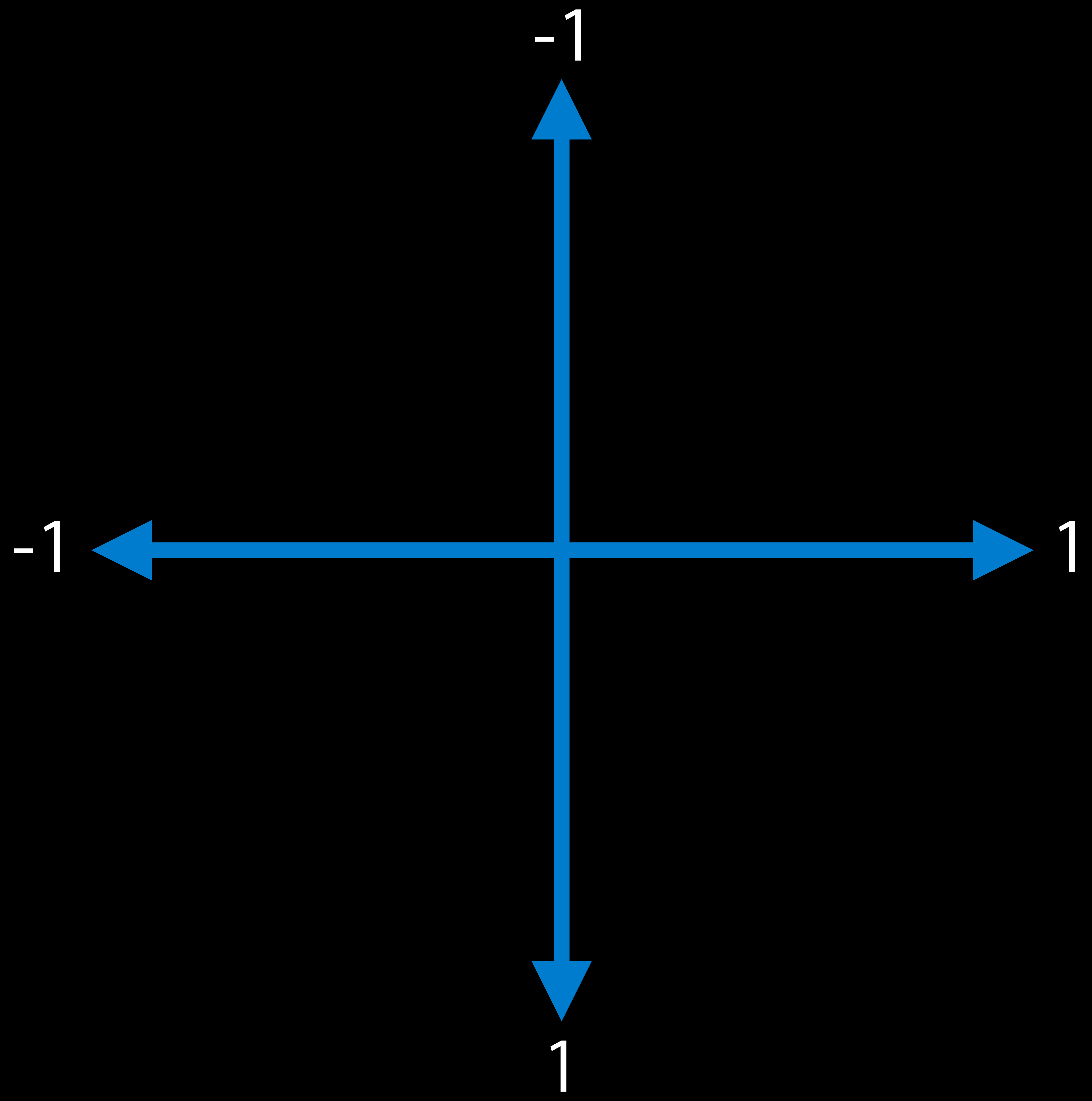
Motion Effects

Understanding directions



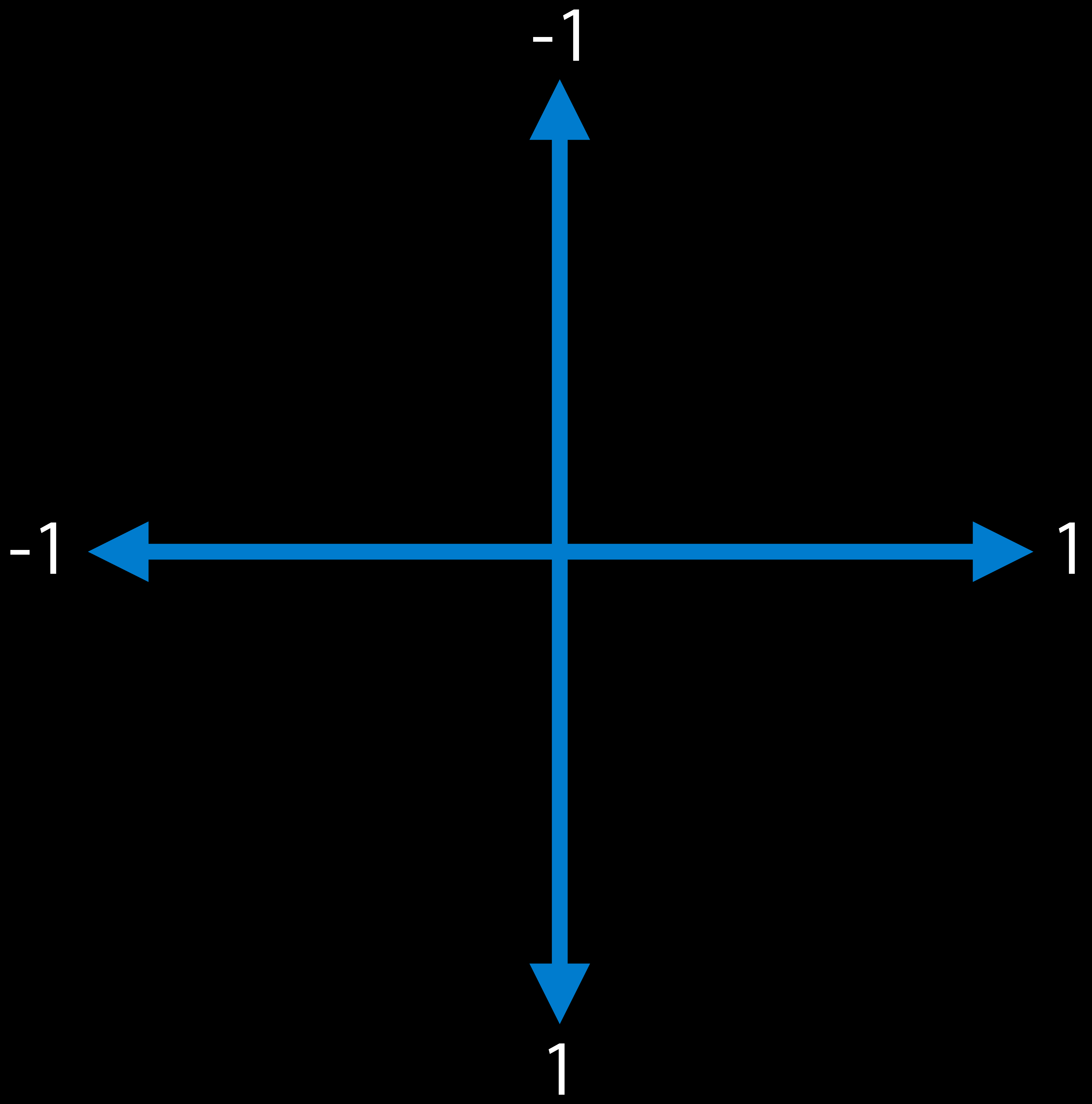
Motion Effects

Understanding directions



Motion Effects

Understanding directions



Motion Effects

UIInterpolatingMotionEffect

- Interpolate between two values
- Defined by a key path
- Updates based on device motion
- Attach UIMotionEffects to a UIView

Motion Effects

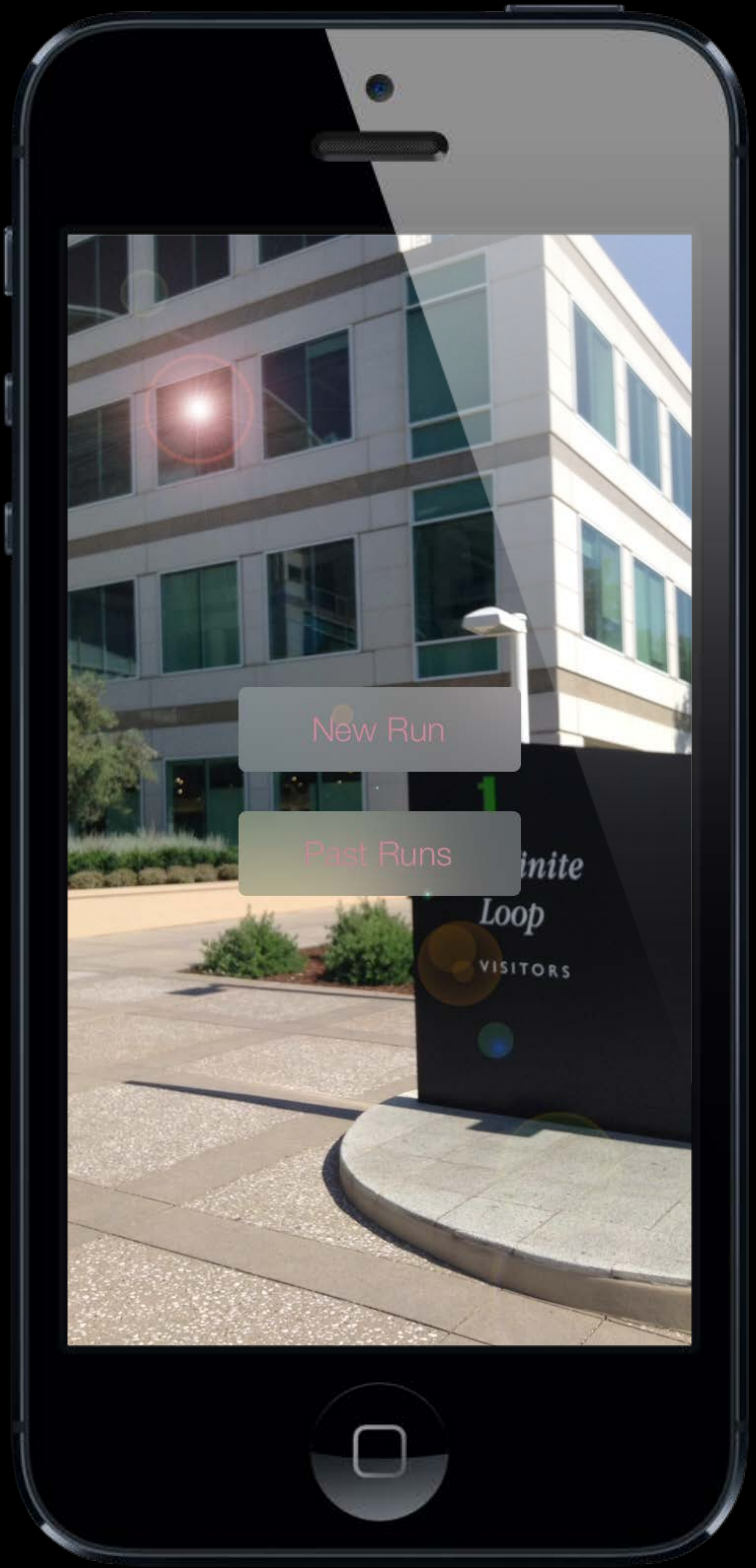
Advanced behaviors

`UIMotionEffectGroup`

Motion Effects

Advanced behaviors

```
- (NSDictionary *)
keyPathsAndRelativeValuesForViewerOffset:
(UIOffset)viewerOffset
```


New Run
Past Runs
1 Infinite
Loop
VISITORS

Wrap Up

- Customize UIViewController transitions
- App-wide appearance
- Resizable and template images
- UIKit Dynamics
- UIMotionEffect

Related Sessions

Building User Interfaces for iOS 7	Presidio Tuesday 10:15 AM
Getting Started with UIKit Dynamics	Presidio Tuesday 4:30PM
Customizing Your App’s Appearance for iOS 7	Presidio Wednesday 3:15PM
Custom Transitions Using View Controllers	Pacific Heights Thursday 11:30 AM
Advanced Techniques with UIKit Dynamics	Presidio Thursday 3:15PM

More Information

Jake Behrens
App Frameworks Evangelist
behrens@apple.com

Documentation
UIDynamicAnimator Class Reference
UIPercentDrivenInteractiveTransition Class Reference
UIAppearance Protocol Reference
UIViewControllerTransitioning Delegate Protocol Reference
View Controller Programming Guide for iOS
UIMotionEffect Class Reference
http://developer.apple.com/

Apple Developer Forums
http://devforums.apple.com

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