

Exploring Scroll Views in iOS 7

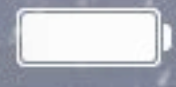
Session 217

Josh Shaffer and Eliza Block

iOS Software

These are confidential sessions—please refrain from streaming, blogging, or taking pictures



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Thursday, June 13

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Search iPhone



Messages



Calendar



Photos



Camera



Weather



Clock



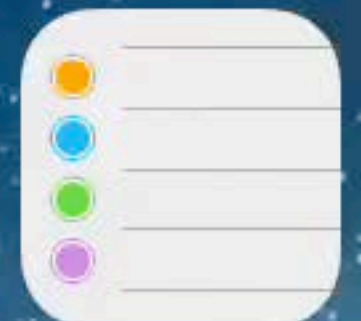
Maps



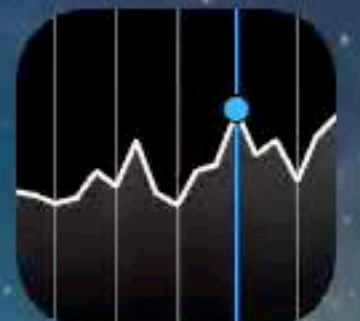
Videos



Notes



Reminders



Stocks



Game Center

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 Search



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[Mailboxes](#)

WWDC (1)

[Edit](#)

● Josh Shaffer 6/5/13 >

Delete your email
Now with UIScrollView!

Josh Shaffer 6/5/13 >

UIScrollView Lab
There's a lab right after the session!

Josh Shaffer 6/5/13 >

UIScrollView Session
Thursday, June 13th 2013 San Francisco,
CA Presidio

Updated Just Now



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2013 San Francisco,

Just Now

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Today Calendars Inbox

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World Clock Alarm



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Calendar



Clock



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Today

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Thursday June 13, 2013

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Today

Calendars

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Timer

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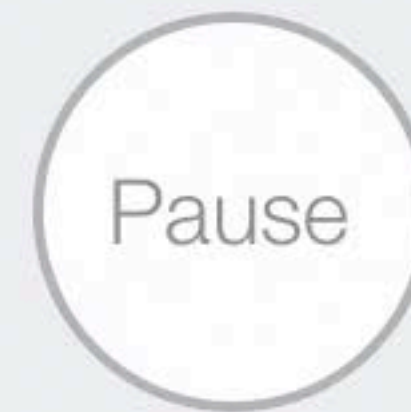
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When Timer Ends

Marimba >



World Clock



Alarm



Stopwatch



Timer



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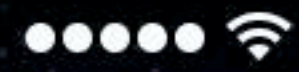
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Private



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Passbook

Scan Code



SEPHORA

CHIC WEEK
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Walgreens



UNITED

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Gold



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HOTELS & RESORTS

RM# 411
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TARGET

OFFER
mobile coupon



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[← Messages](#)

WWDC

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Stationary header views

Custom touch handling

2012 – Enhancing User Experience with Scroll Views

Photo browsing revisited

Scrolling with OpenGL

2013 – Exploring Scroll Views in iOS 7

Advanced nesting techniques

Scrolling with UIKit dynamics

Delivered



iMessage

Send

Nested Scroll Views



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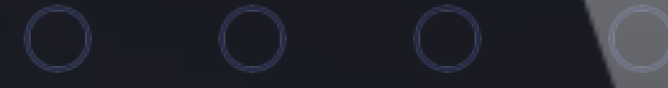
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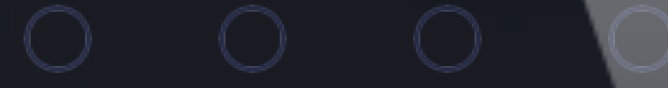
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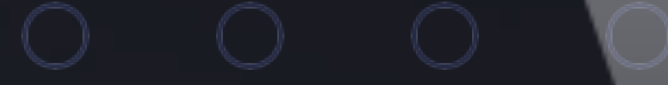
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scrollViewDidScroll:

Pulling the Parent Scroll View

```
- (void)scrollViewDidScroll:(UIScrollView *)scrollView {  
}
```


Pulling the Parent Scroll View

```
- (void)scrollViewDidScroll:(UIScrollView *)scrollView {  
    determine delta beyond catch point  
}
```

Pulling the Parent Scroll View

```
- (void)scrollViewDidScroll:(UIScrollView *)scrollView {  
    determine delta beyond catch point  
}
```

Pulling the Parent Scroll View

```
- (void)scrollViewDidScroll:(UIScrollView *)scrollView {  
    determine delta beyond catch point  
    adjust parent contentOffset by delta  
}
```


Pulling the Parent Scroll View

```
- (void)scrollViewDidScroll:(UIScrollView *)scrollView {  
    determine delta beyond catch point  
    adjust parent contentOffset by delta  
}
```

Demo

Eliza Block

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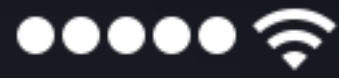
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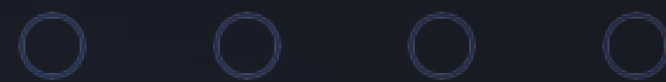
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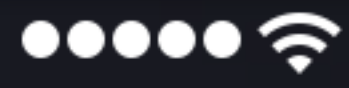
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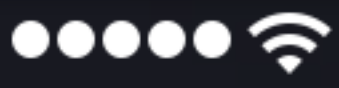
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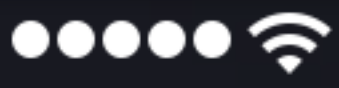
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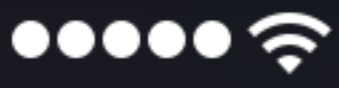
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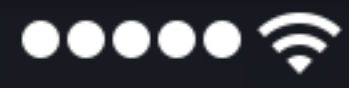
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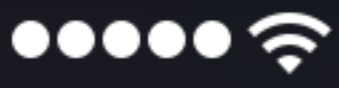
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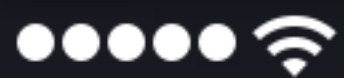
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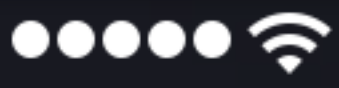
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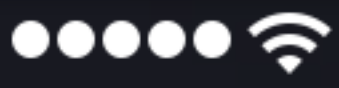
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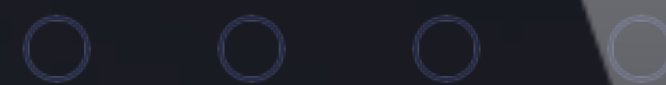
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Emergency

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Pulling the Parent Scroll View

```
- (void)scrollViewDidScroll:(UIScrollView *)scrollView {  
    determine delta beyond catch point  
    adjust parent contentOffset by delta  
}
```

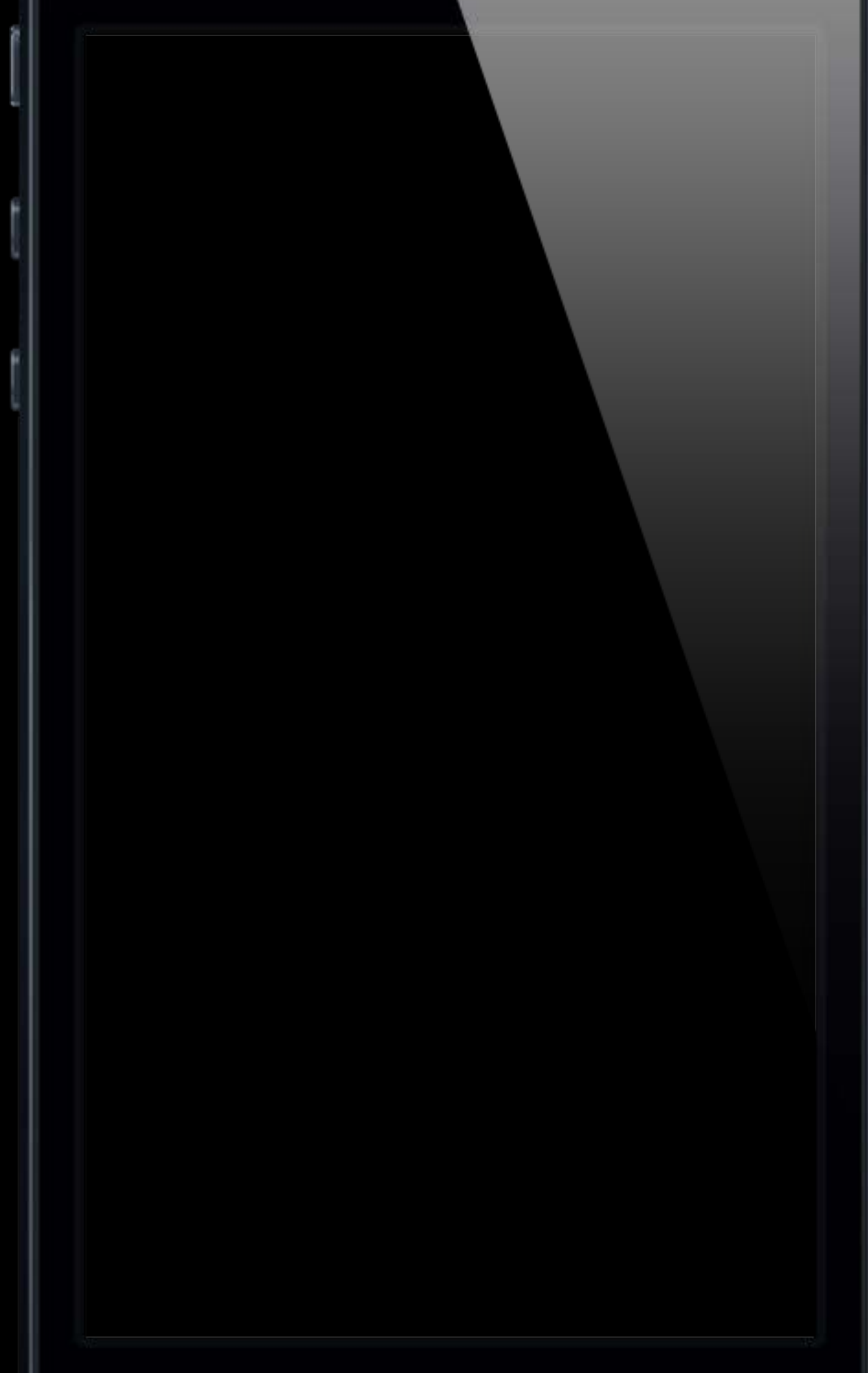
Pulling the Parent Scroll View

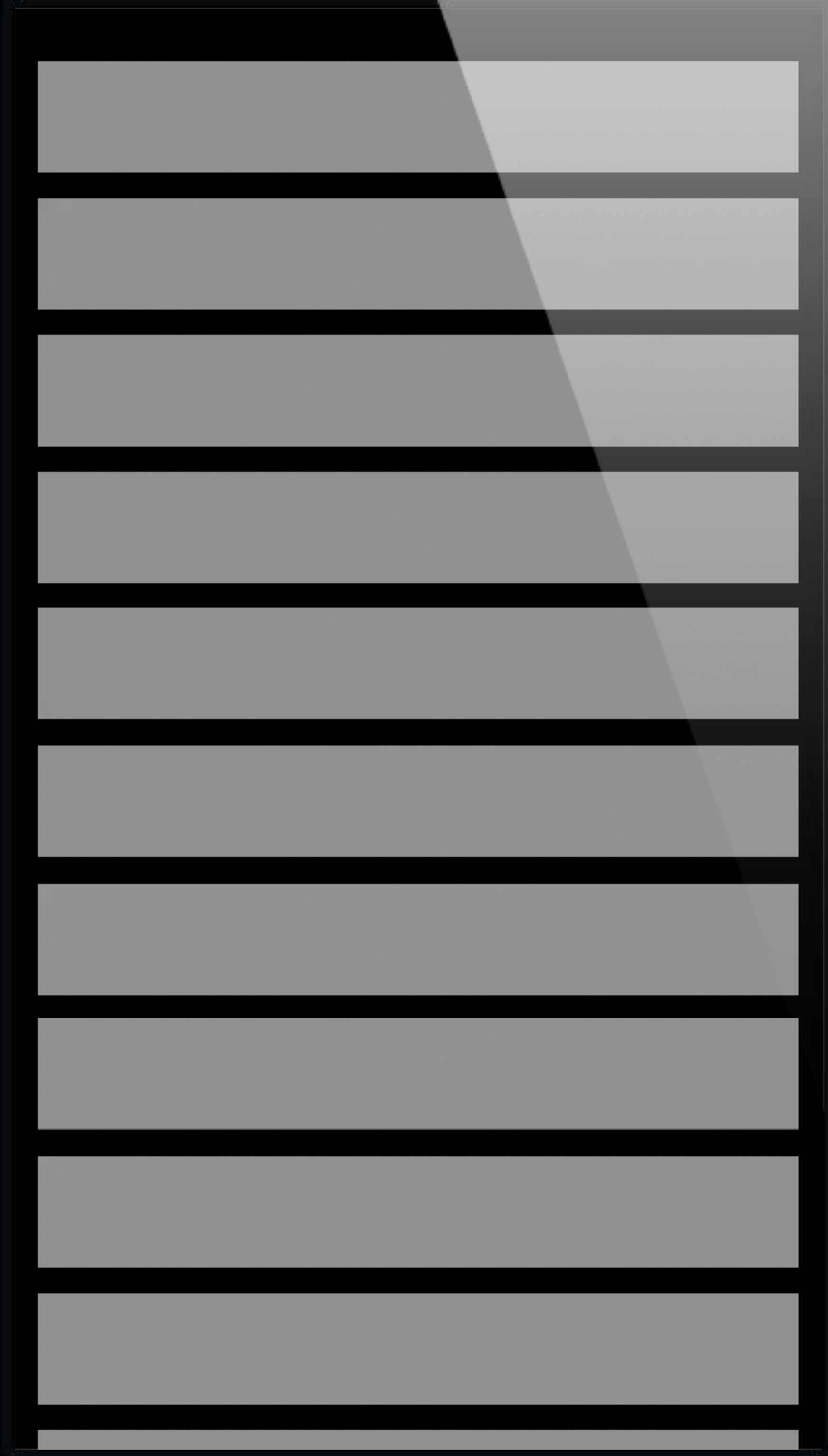
```
- (void)scrollViewDidScroll:(UIScrollView *)scrollView {  
    determine delta beyond catch point  
    adjust parent contentOffset by delta  
    translate child by delta  
}
```

Demo

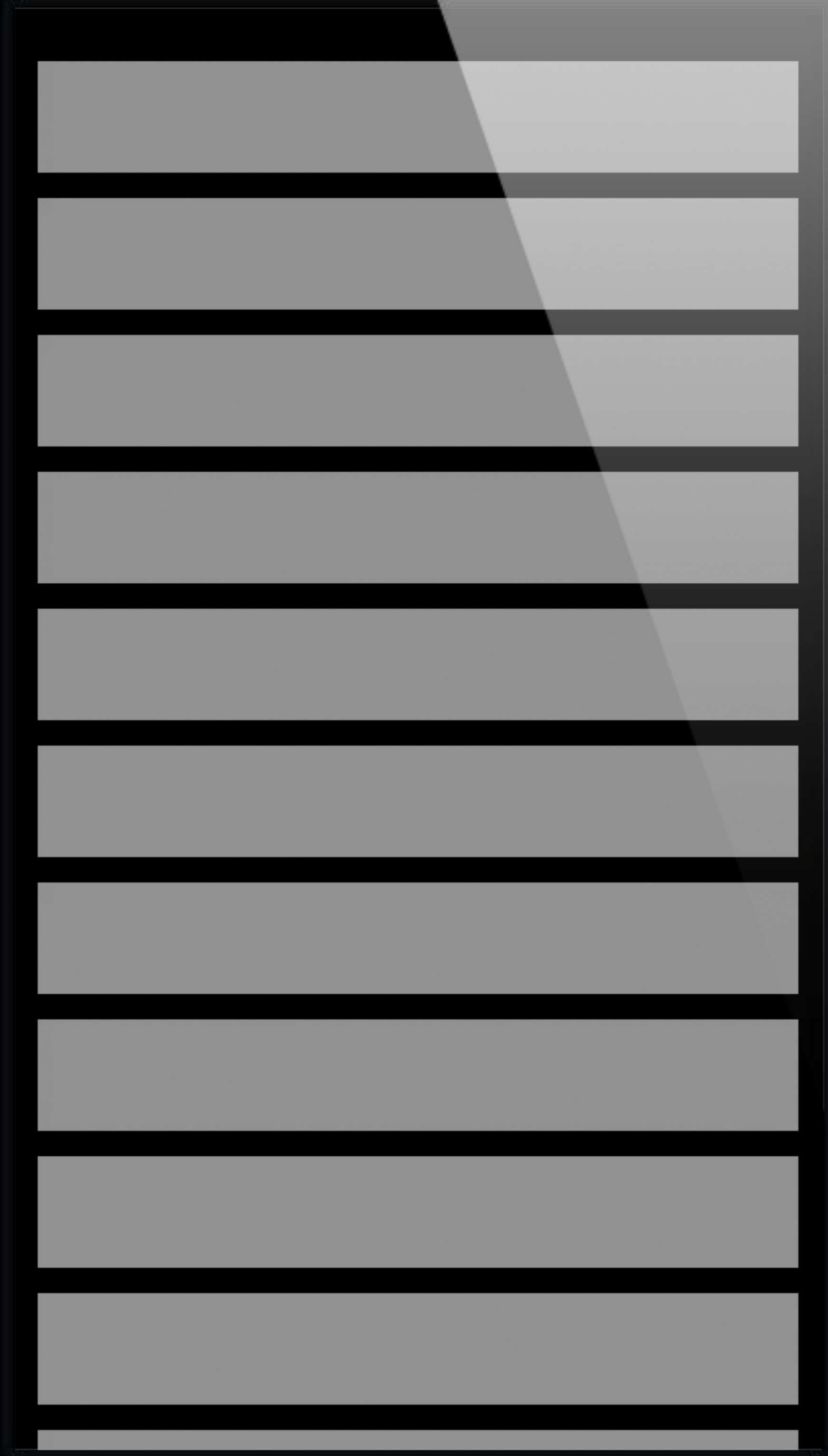
Eliza Block

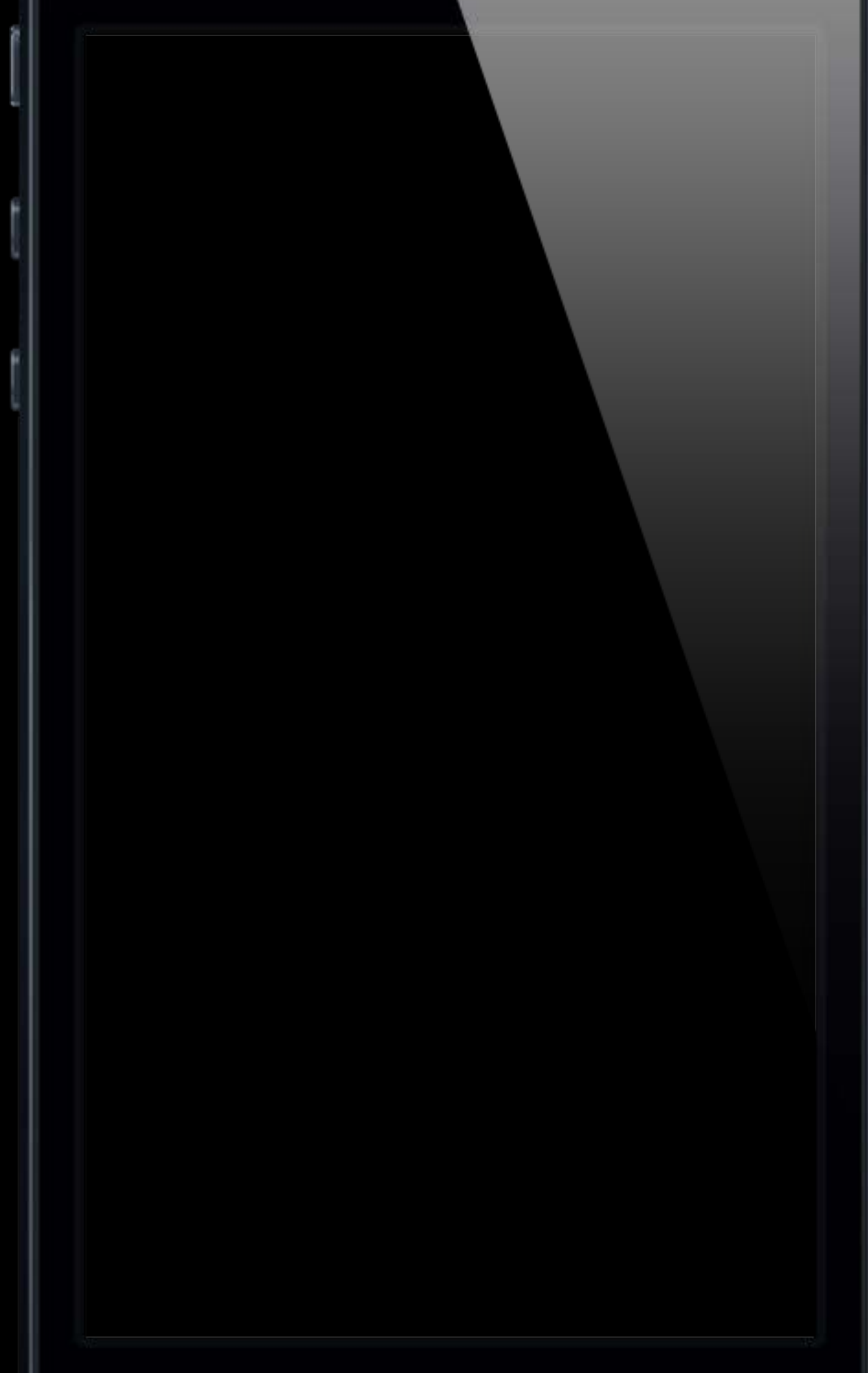
Scrolling with UIKit Dynamics

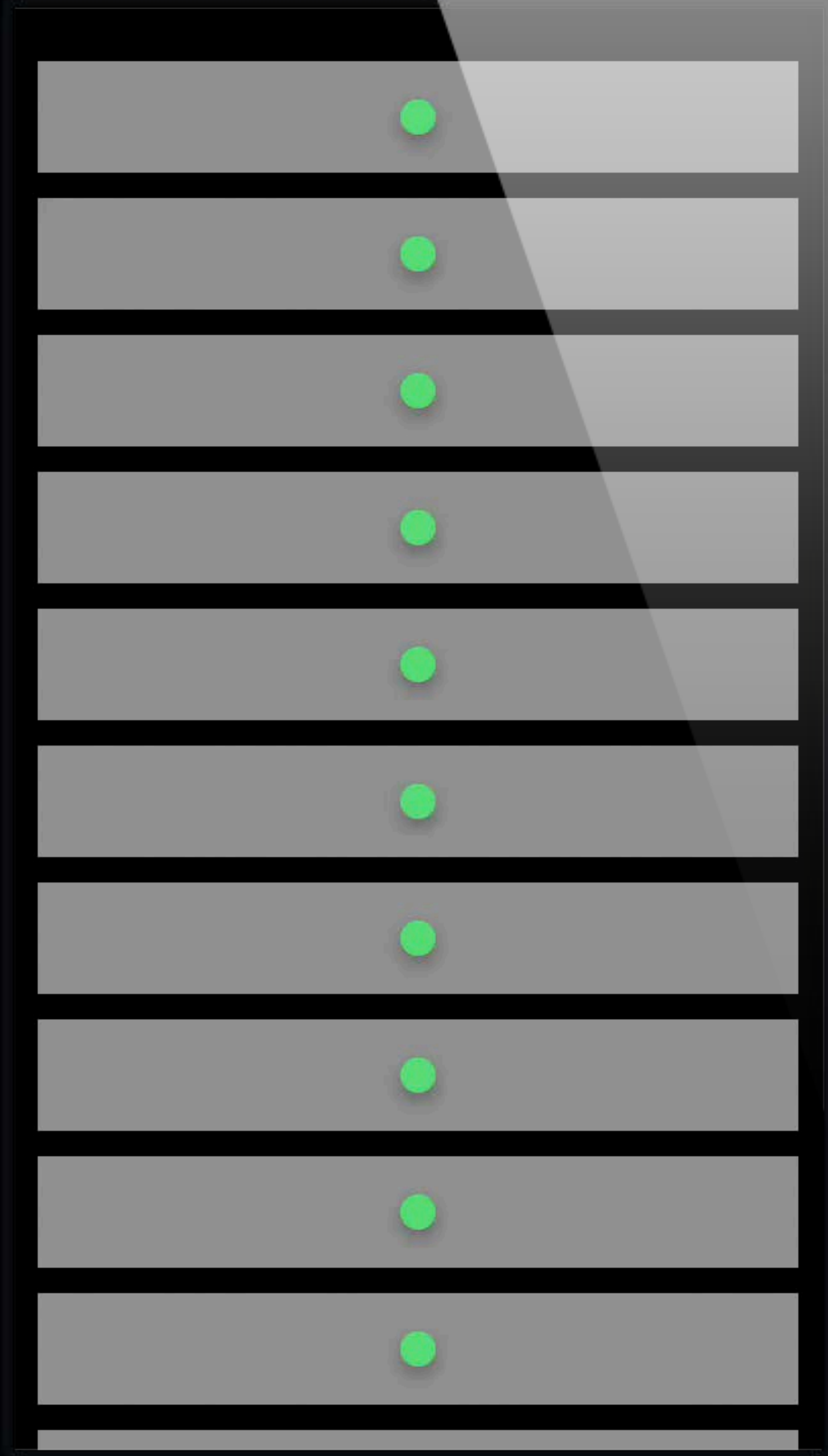












Setup

Setup

- Subclass UICollectionViewFlowLayout

Setup

- Subclass UICollectionViewFlowLayout
- Create UIDynamicAnimator

Setup

- Subclass UICollectionViewFlowLayout
- Create UIDynamicAnimator
- Create UIAttachmentBehavior for each item

Setup

- Subclass UICollectionViewFlowLayout
- Create UIDynamicAnimator
- Create UIAttachmentBehavior for each item
- Stretch the attachments when scrolling

Subclass UICollectionViewFlowLayout

```
@implementation DynamicCollectionViewFlowLayout

- (void)prepareLayout {
    create UICollectionViewLayoutAttributes
}

- (NSArray *)layoutAttributesForElementsInRect:(CGRect)rect {
}

- (UICollectionViewLayoutAttributes *)layoutAttributesForItemAtIndexPath:
    (NSIndexPath *)indexPath {
}

@end
```


Subclass UICollectionViewFlowLayout

```
@implementation DynamicCollectionViewFlowLayout

- (void)prepareLayout {
    create UICollectionViewLayoutAttributes
}

- (NSArray *)layoutAttributesForElementsInRect:(CGRect)rect {
}

- (UICollectionViewLayoutAttributes *)layoutAttributesForItemAtIndexPath:
    (NSIndexPath *)indexPath {
}

@end
```

Subclass UICollectionViewFlowLayout

```
@implementation DynamicCollectionViewFlowLayout

- (void)prepareLayout {
    create UICollectionViewLayoutAttributes
    create UIDynamicAnimator and UIAttachmentBehaviors
}

- (NSArray *)layoutAttributesForElementsInRect:(CGRect)rect {
}

- (UICollectionViewLayoutAttributes *)layoutAttributesForItemAtIndexPath:
    (NSIndexPath *)indexPath {
}

@end
```

Subclass UICollectionViewFlowLayout

```
@implementation DynamicCollectionViewFlowLayout

- (void)prepareLayout {
    create UICollectionViewLayoutAttributes
    create UIDynamicAnimator and UIAttachmentBehaviors
}

- (NSArray *)layoutAttributesForElementsInRect:(CGRect)rect {
}

- (UICollectionViewLayoutAttributes *)layoutAttributesForItemAtIndexPath:
    (NSIndexPath *)indexPath {
}

@end
```

Subclass UICollectionViewFlowLayout

```
@implementation DynamicCollectionViewFlowLayout

- (void)prepareLayout {
    create UICollectionViewLayoutAttributes
    create UIDynamicAnimator and UIAttachmentBehaviors
}

- (NSArray *)layoutAttributesForElementsInRect:(CGRect)rect {
    return [_dynamicAnimator itemsInRect:rect];
}

- (UICollectionViewLayoutAttributes *)layoutAttributesForItemAtIndexPath:
    (NSIndexPath *)indexPath {

@end
```

Subclass UICollectionViewFlowLayout

```
@implementation DynamicCollectionViewFlowLayout

- (void)prepareLayout {
    create UICollectionViewLayoutAttributes
    create UIDynamicAnimator and UIAttachmentBehaviors
}

- (NSArray *)layoutAttributesForElementsInRect:(CGRect)rect {
    return [_dynamicAnimator itemsInRect:rect];
}

- (UICollectionViewLayoutAttributes *)layoutAttributesForItemAtIndexPath:
    (NSIndexPath *)indexPath {
}

@end
```


Subclass UICollectionViewFlowLayout

```
@implementation DynamicCollectionViewFlowLayout

- (void)prepareLayout {
    create UICollectionViewLayoutAttributes
    create UIDynamicAnimator and UIAttachmentBehaviors
}

- (NSArray *)layoutAttributesForElementsInRect:(CGRect)rect {
    return [_dynamicAnimator itemsInRect:rect];
}

- (UICollectionViewLayoutAttributes *)layoutAttributesForItemAtIndexPath:
    (NSIndexPath *)indexPath {
    return [_dynamicAnimator layoutAttributesForCellAtIndexPath:indexPath];
}

@end
```

Subclass UICollectionViewFlowLayout

```
@implementation DynamicCollectionViewFlowLayout

- (void)prepareLayout {
    create UICollectionViewLayoutAttributes
    create UIDynamicAnimator and UIAttachmentBehaviors
}

- (NSArray *)layoutAttributesForElementsInRect:(CGRect)rect {
    return [_dynamicAnimator itemsInRect:rect];
}

- (UICollectionViewLayoutAttributes *)layoutAttributesForItemAtIndexPath:
    (NSIndexPath *)indexPath {
    return [_dynamicAnimator layoutAttributesForCellAtIndexPath:indexPath];
}

@end
```


scrollViewDidScroll:

`scrollViewDidScroll:`

`contentOffset == bounds.origin`

Stretch the Attachments

```
- (BOOL)shouldInvalidateLayoutForBoundsChange:(CGRect)newBounds {  
}
```

Stretch the Attachments

```
- (BOOL)shouldInvalidateLayoutForBoundsChange:(CGRect)newBounds {  
    CGFloat delta = newBounds.origin.y - self.collectionView.bounds.origin.y  
}
```

Stretch the Attachments

```
- (BOOL)shouldInvalidateLayoutForBoundsChange:(CGRect)newBounds {  
    CGFloat delta = newBounds.origin.y - self.collectionView.bounds.origin.y  
}
```


Stretch the Attachments

```
- (BOOL)shouldInvalidateLayoutForBoundsChange:(CGRect)newBounds {  
    CGFloat delta = newBounds.origin.y - self.collectionView.bounds.origin.y  
    shift layout attribute positions by delta  
}
```

Stretch the Attachments

```
- (BOOL)shouldInvalidateLayoutForBoundsChange:(CGRect)newBounds {  
    CGFloat delta = newBounds.origin.y - self.collectionView.bounds.origin.y  
    shift layout attribute positions by delta  
}
```

Stretch the Attachments

```
- (BOOL)shouldInvalidateLayoutForBoundsChange:(CGRect)newBounds {  
    CGFloat delta = newBounds.origin.y - self.collectionView.bounds.origin.y  
    shift layout attribute positions by delta  
    notify UIDynamicAnimator  
}
```

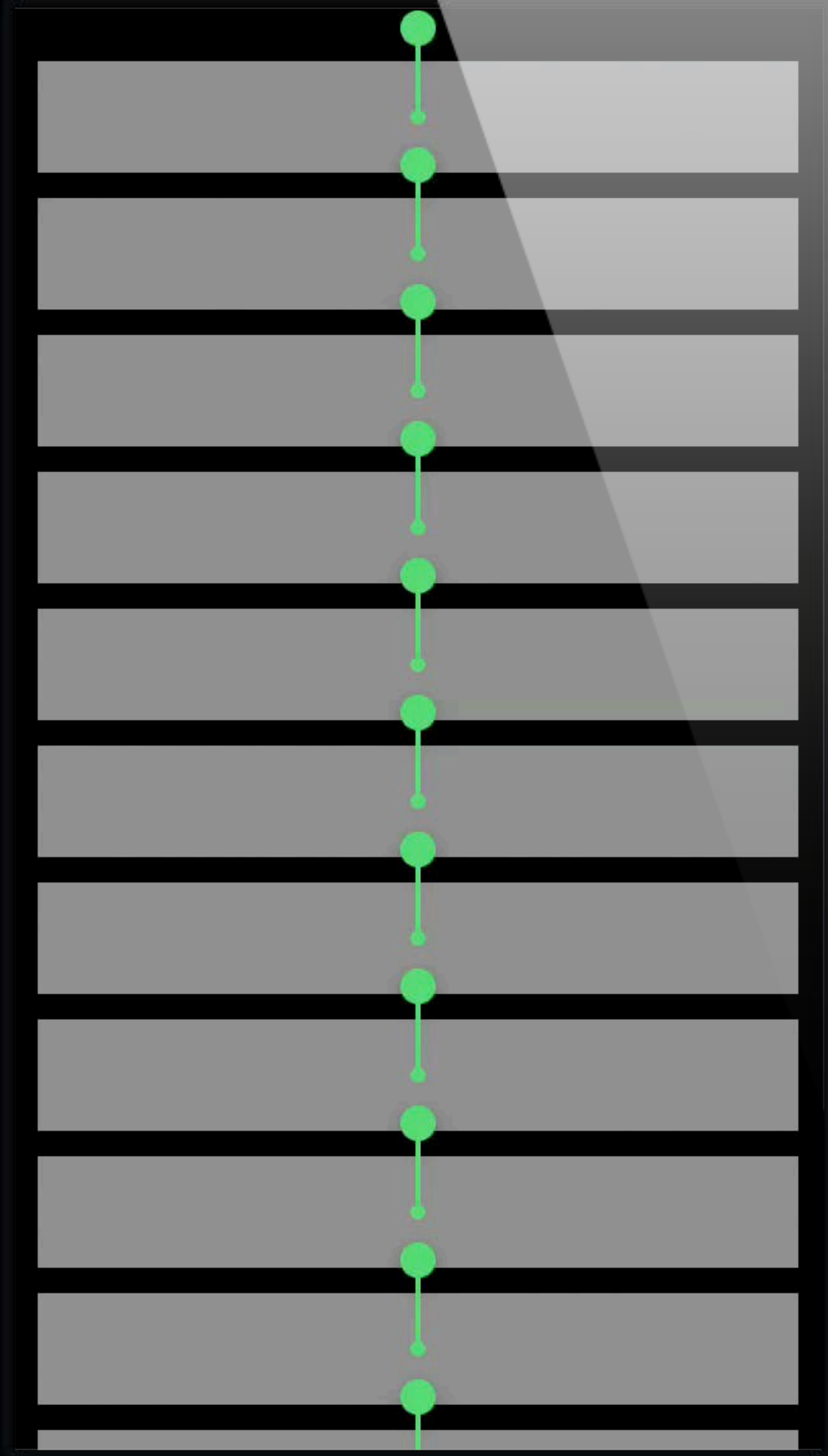
Stretch the Attachments

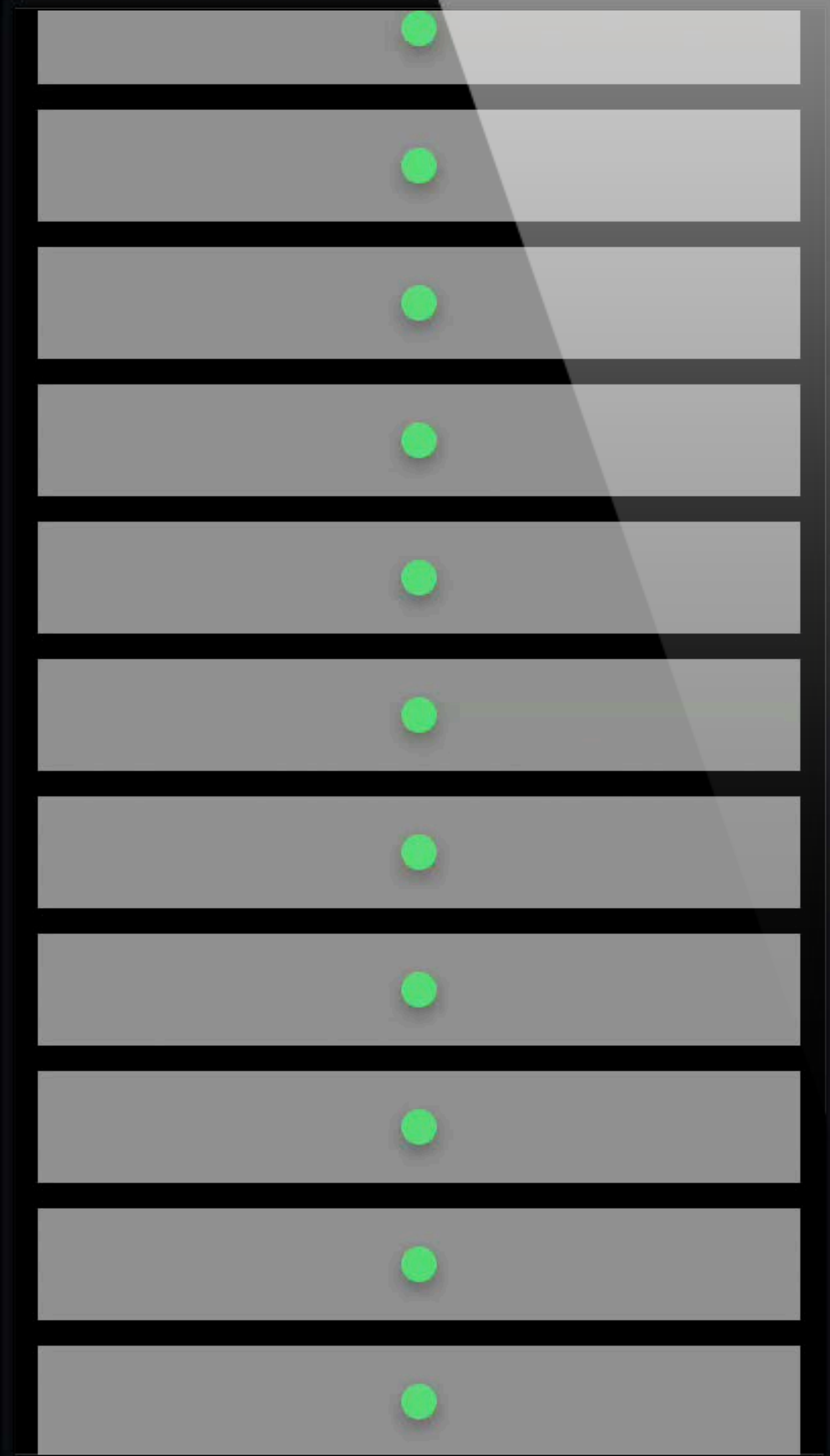
```
- (BOOL)shouldInvalidateLayoutForBoundsChange:(CGRect)newBounds {  
    CGFloat delta = newBounds.origin.y - self.collectionView.bounds.origin.y  
    shift layout attribute positions by delta  
    notify UIDynamicAnimator  
}
```

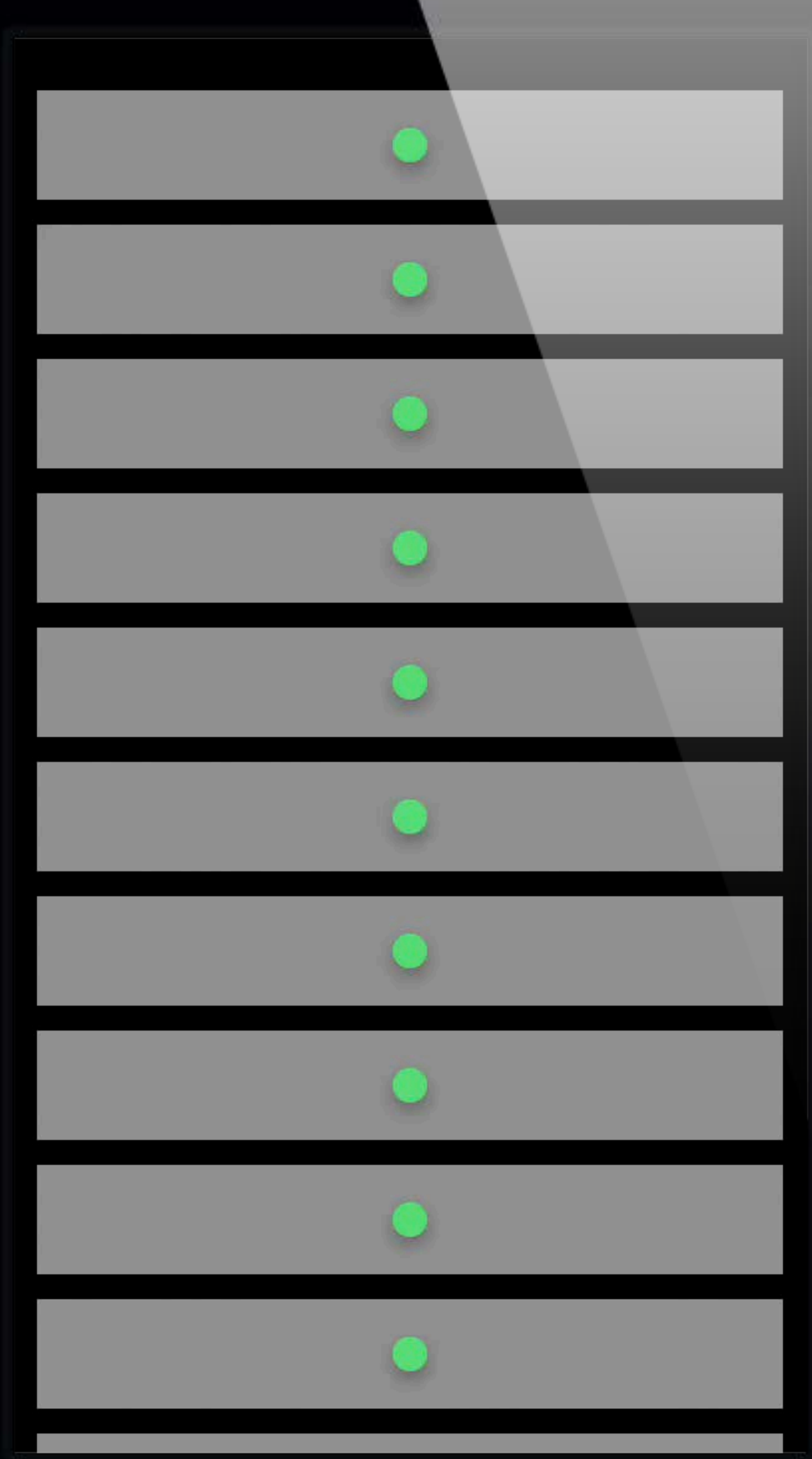
Demo

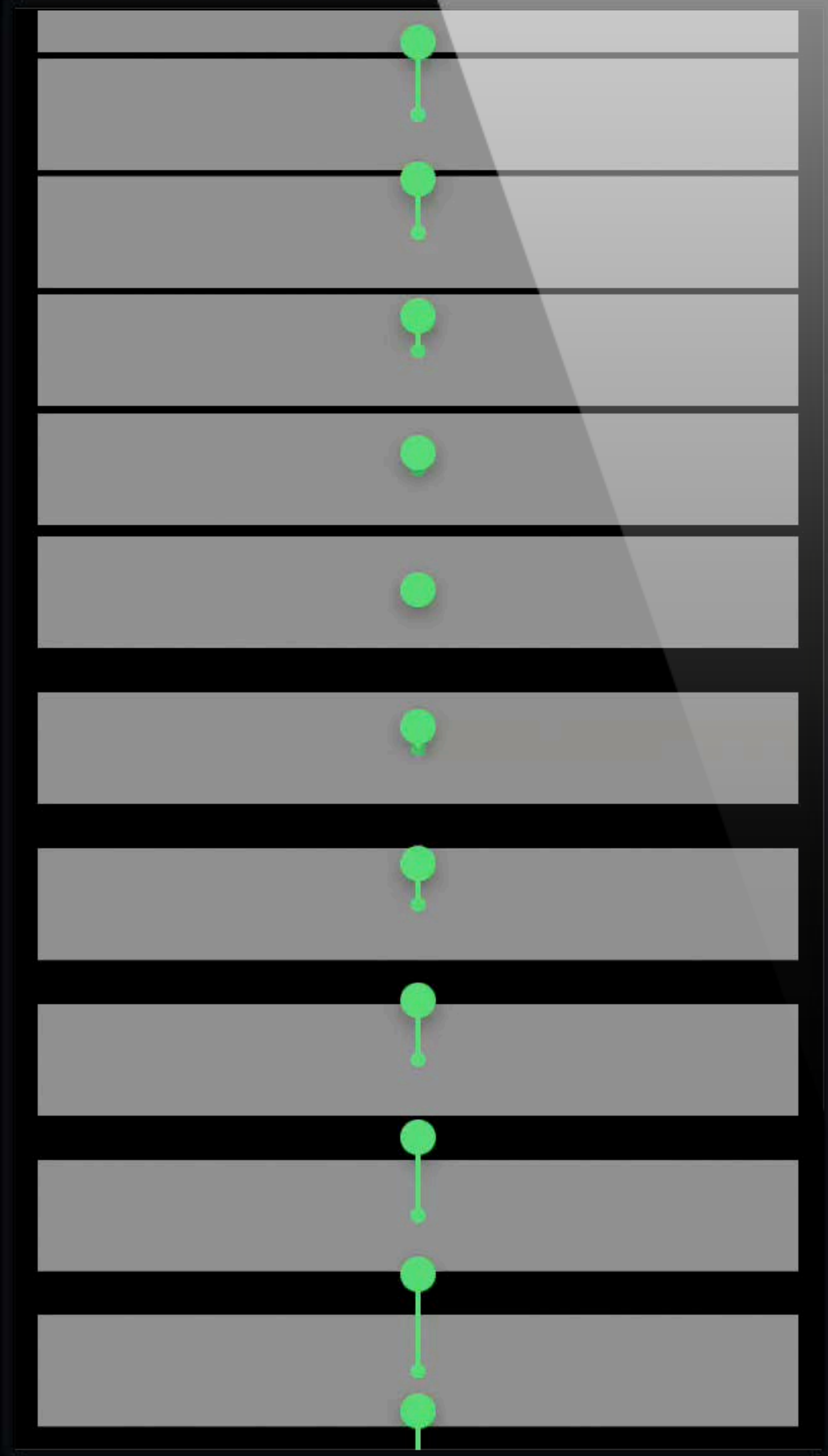
Eliza Block

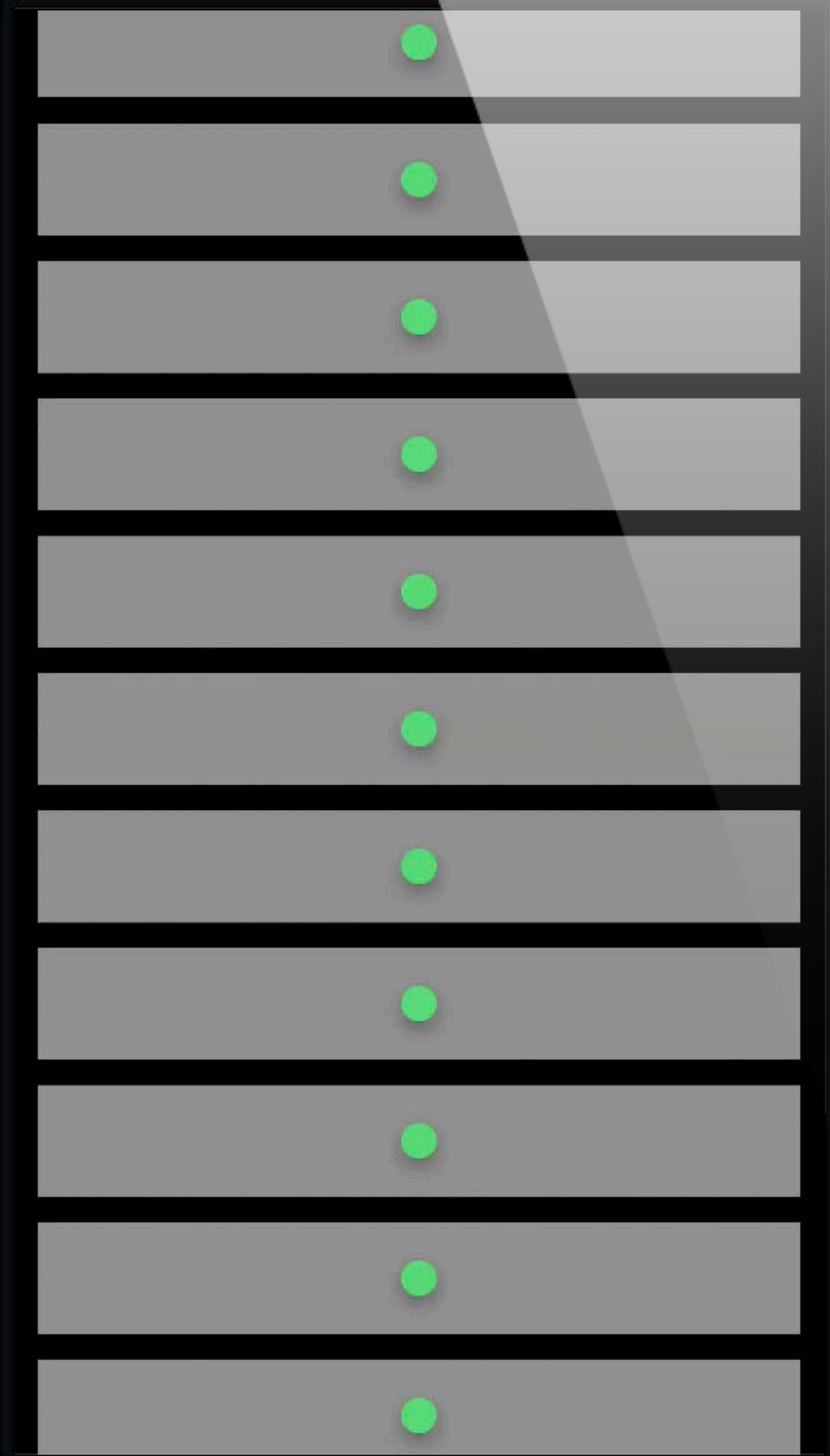












Demo

Eliza Block

UIScrollView Session History

2009 – Mastering iPhone Scroll Views

2010 – Designing Apps with Scroll Views

2011 – Advanced Scroll View Techniques

2012 – Enhancing User Experience with Scroll Views

2013 – Exploring Scroll Views in iOS 7

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UIScrollView Session History

2009 – Mastering iPhone Scroll Views

basics

2010 – Designing Apps with Scroll Views

photo browsing, tiling

2011 – Advanced Scroll View Techniques

infinite scrolling, stationary views, interaction with gestures

2012 – Enhancing User Experience with Scroll Views

photo browsing 2.0, scrolling with OpenGL, custom deceleration

2013 – Exploring Scroll Views in iOS 7

nested scroll views, integration with dynamics

More Information

Jake Behrens

App Frameworks Evangelist
behrens@apple.com

Documentation

Scroll View Programming Guide for iOS
<http://developer.apple.com/ios>

Apple Developer Forums

<http://devforums.apple.com>

Related Sessions

Building User Interfaces for iOS 7	Presidio Tuesday 10:15AM	
Getting Started with UIKit Dynamics	Presidio Tuesday 4:30PM	
Advanced Techniques with UIKit Dynamics	Presidio Thursday 3:15PM	

Labs

Scroll View, Collection View, and Table View on iOS Lab	Frameworks Lab B Thursday 11:30AM	
Cocoa Touch Animation Lab	Frameworks Lab B Thursday 2:00PM	
Cocoa Touch Lab	Frameworks Lab B Friday 9:00AM	

 WWDC2013