Building Apps with Dynamic Type

Session 245

Clare Kasemset, Software Engineering Manager
Nandini Sundar, Software Engineer

Agenda

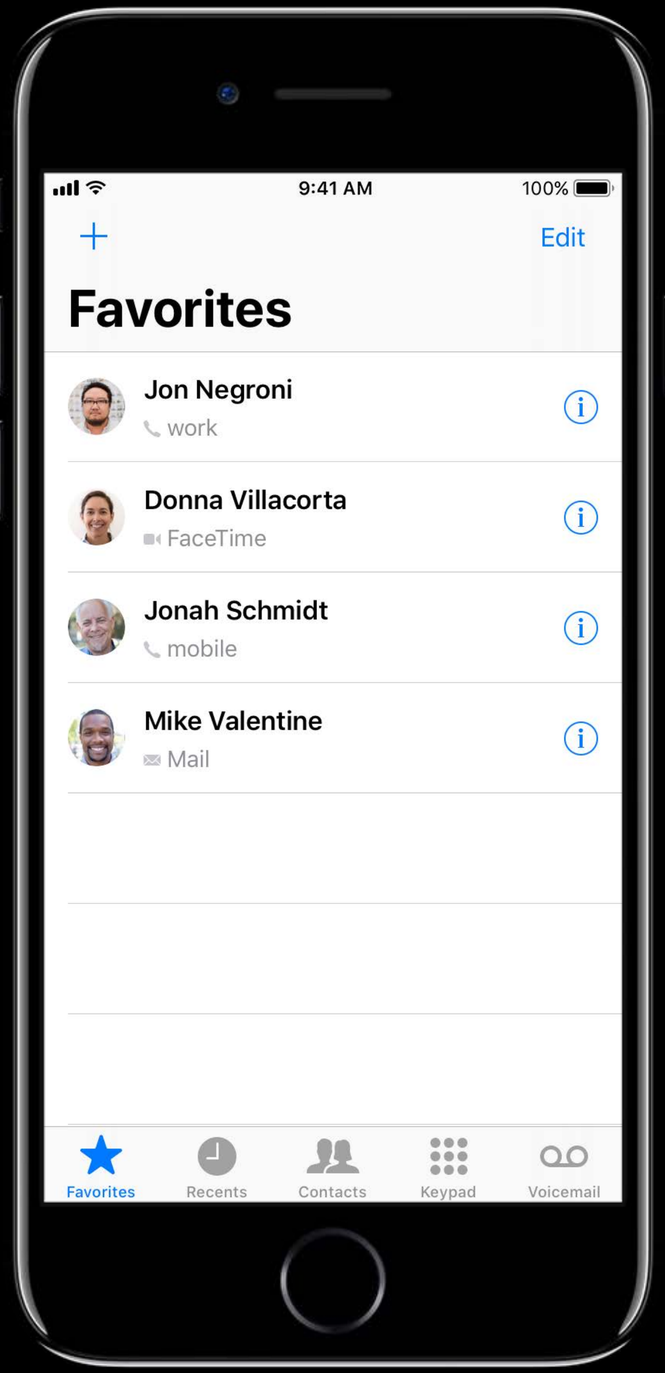
What is Dynamic Type?

What’s new in iOS 11

Guidelines and API

Demos with a sample app

What is Dynamic Type?


9:41 AM
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Edit
Favorites
Jon Negroni
work
Donna Villacorta
FaceTime
Jonah Schmidt
mobile
Mike Valentine
Mail
Favorites
Recents
Contacts
Keypad
Voicemail


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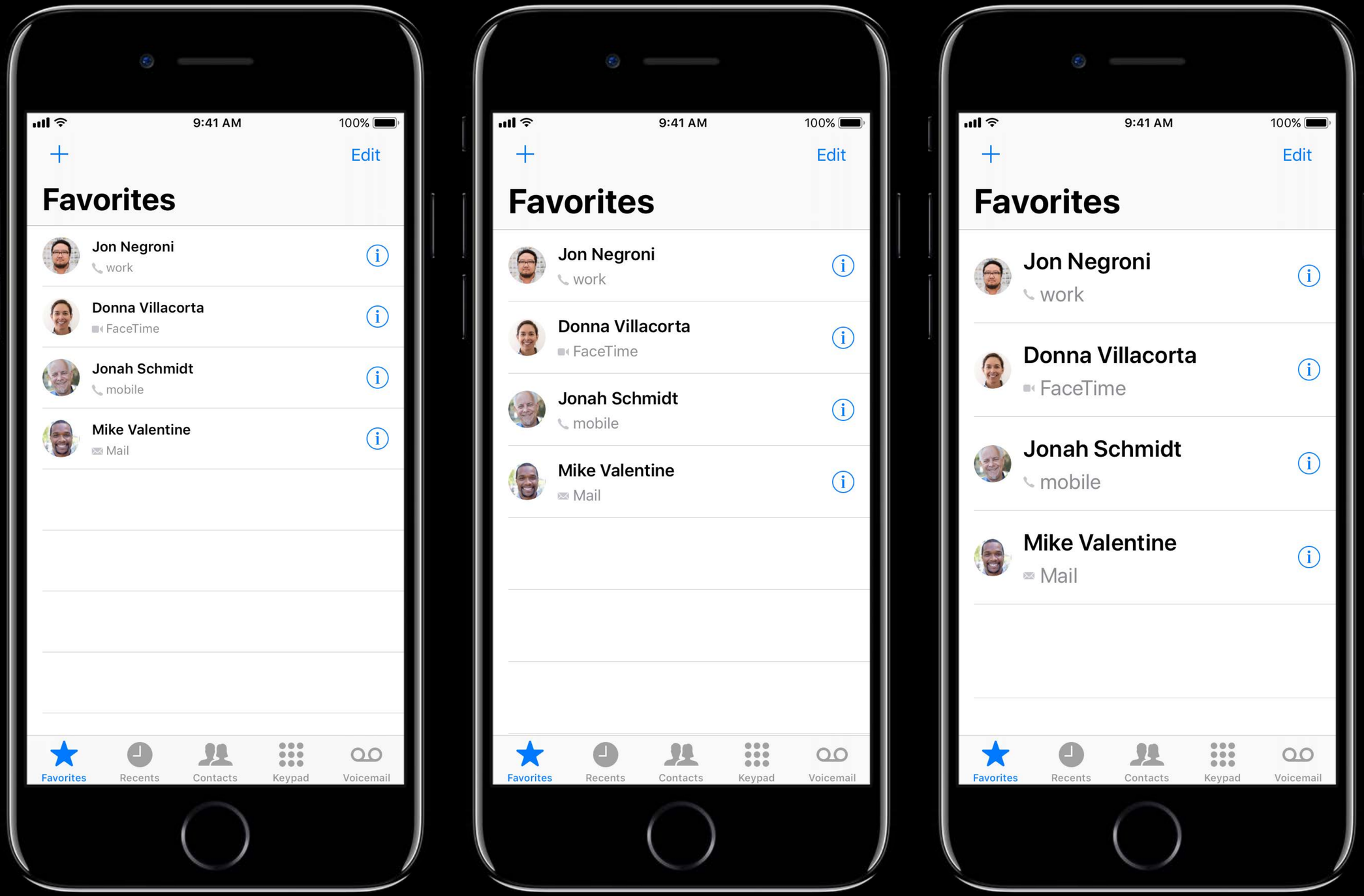
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Jon Negroni
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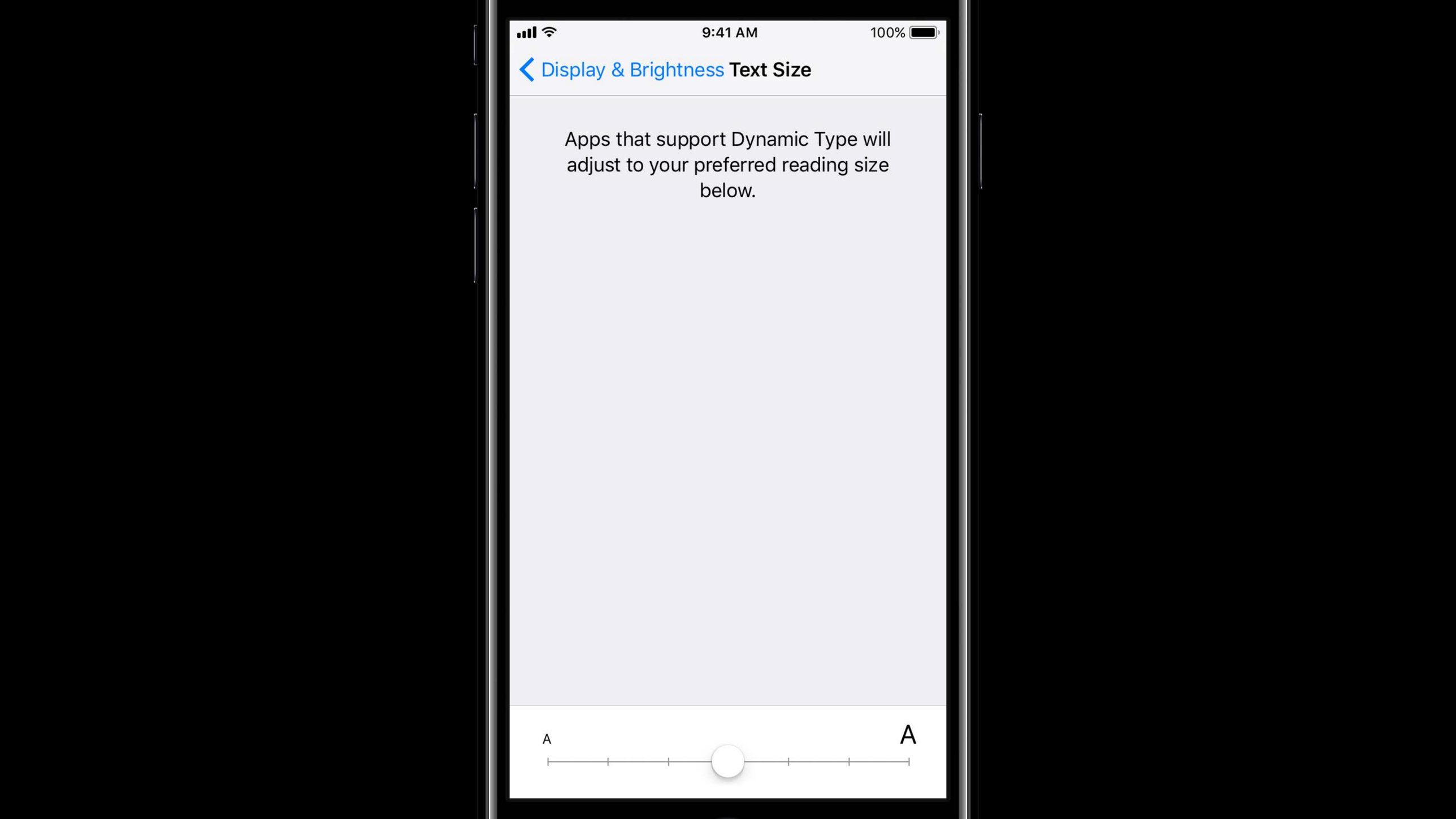
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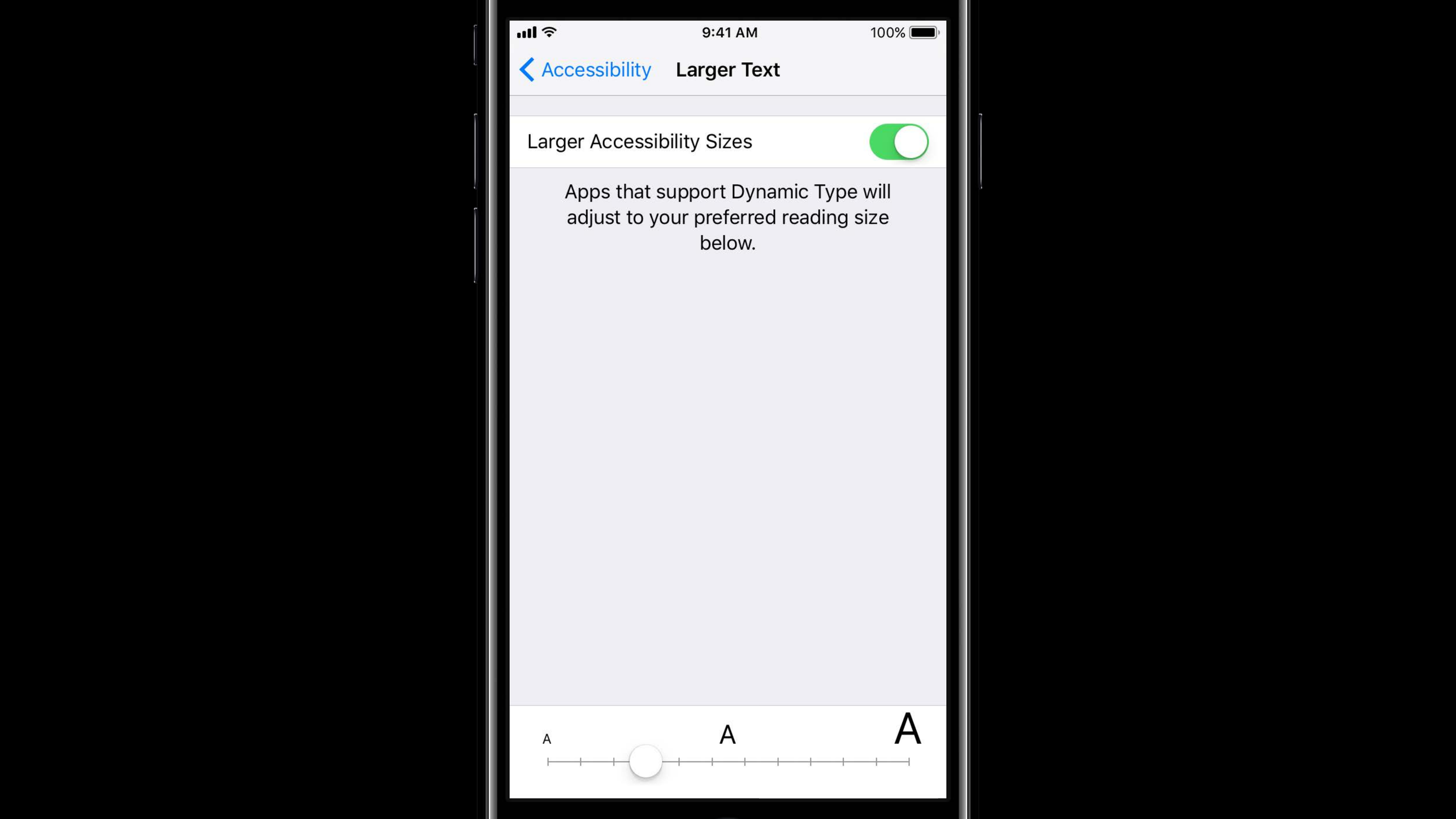
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Accessibility
Larger Text
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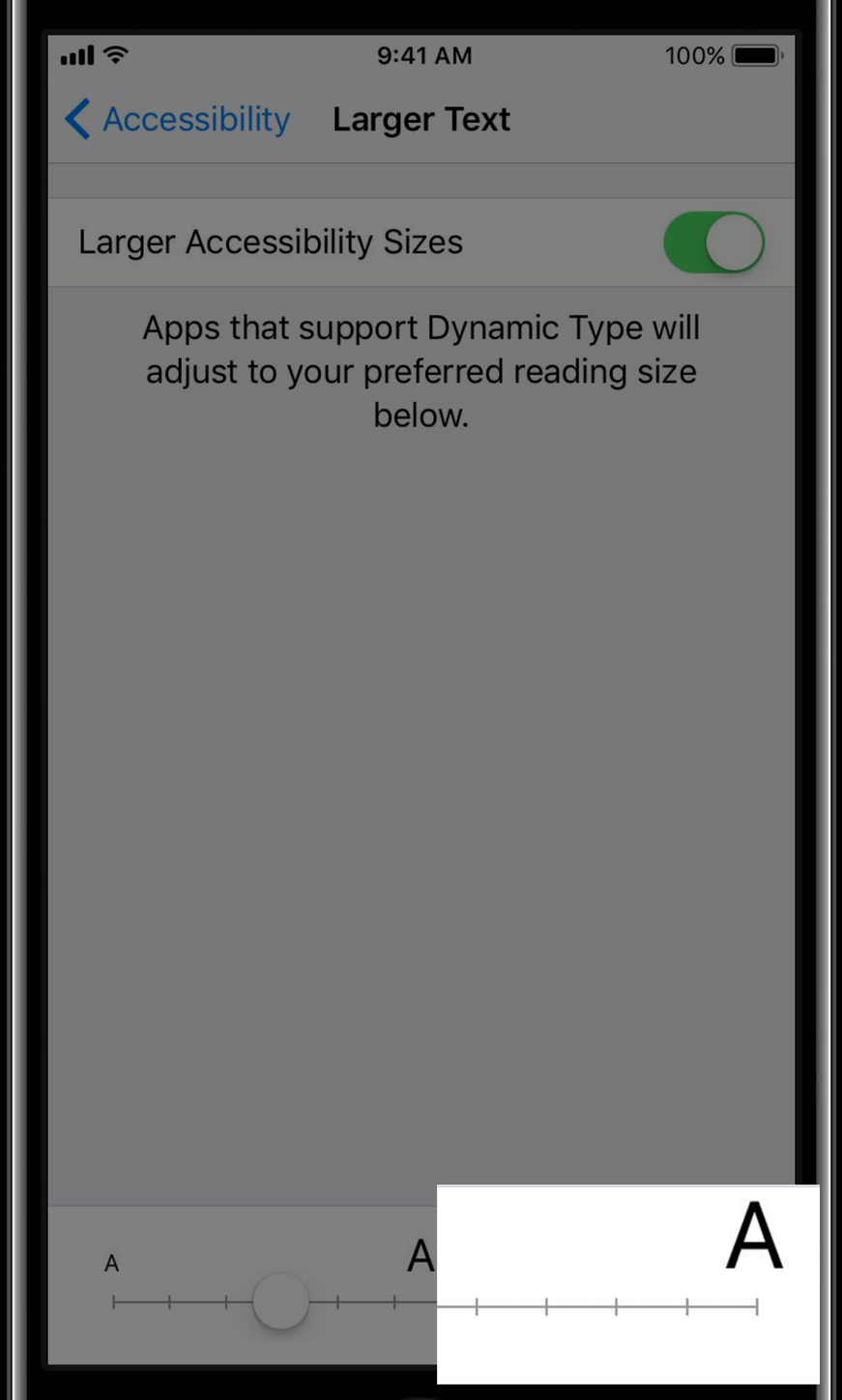
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Accessibility
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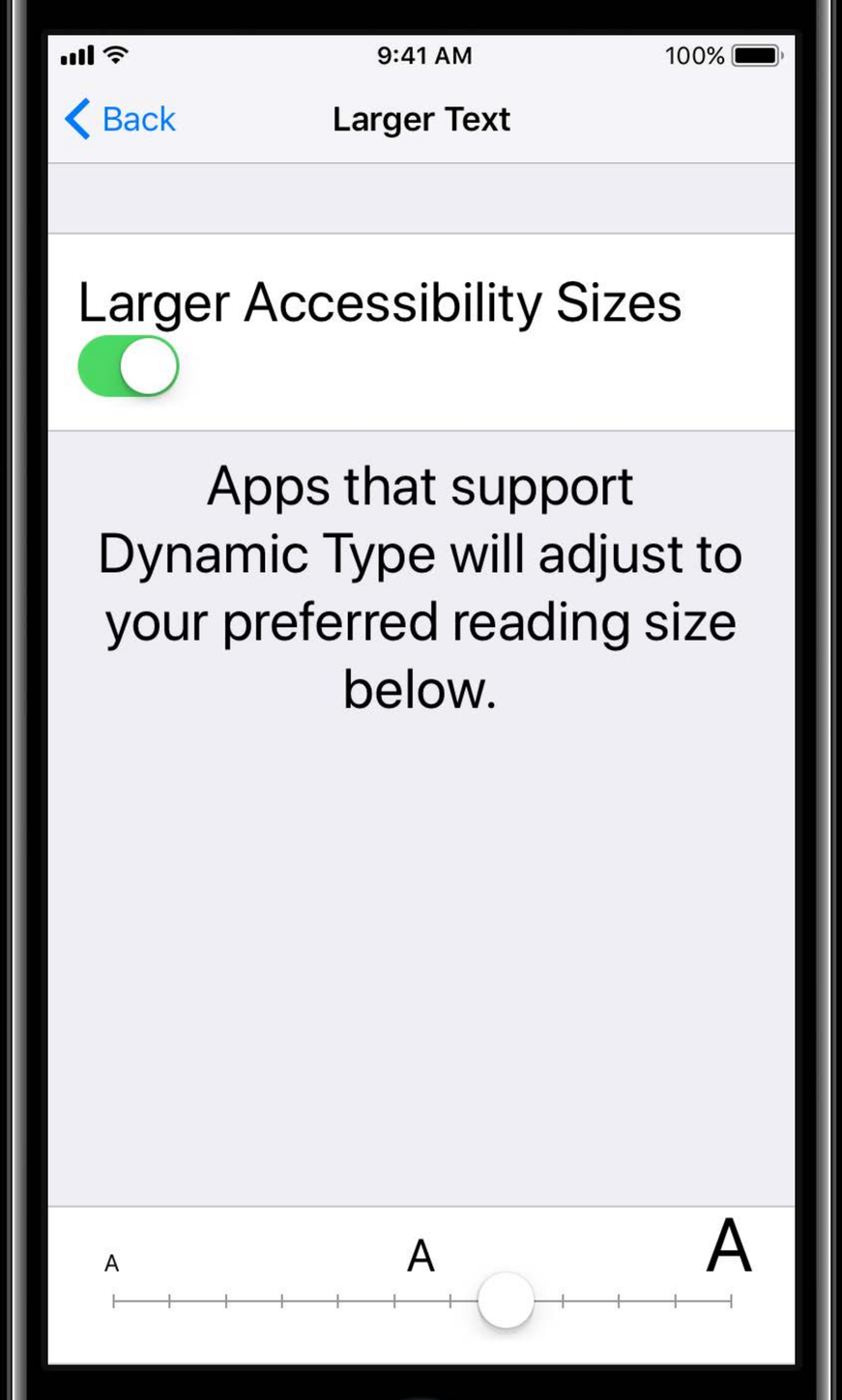
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Larger Accessibility Sizes
Apps that support Dynamic Type will adjust to your preferred reading size below.
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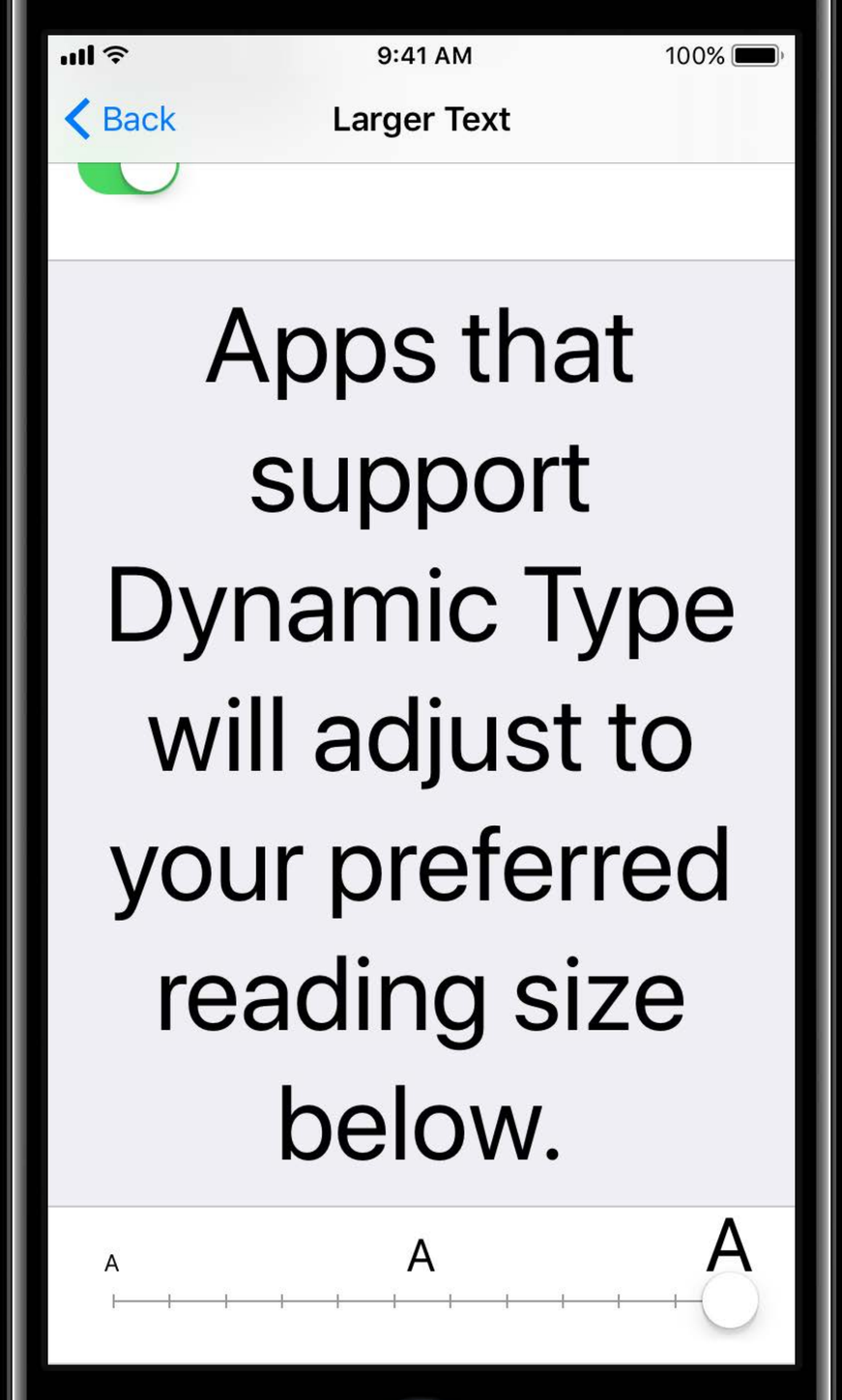
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Larger Text
Apps that support Dynamic Type will adjust to your preferred reading size below.
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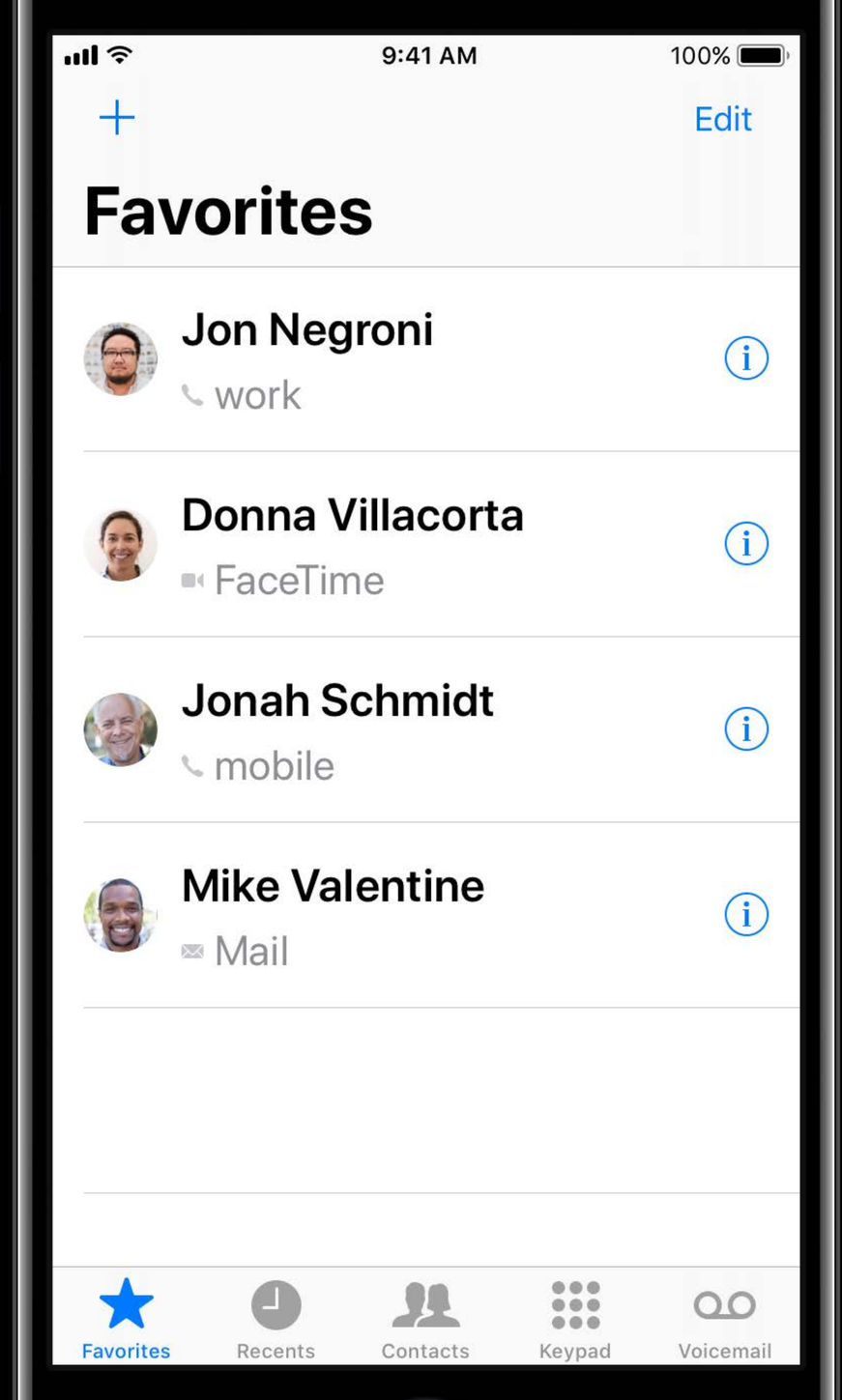
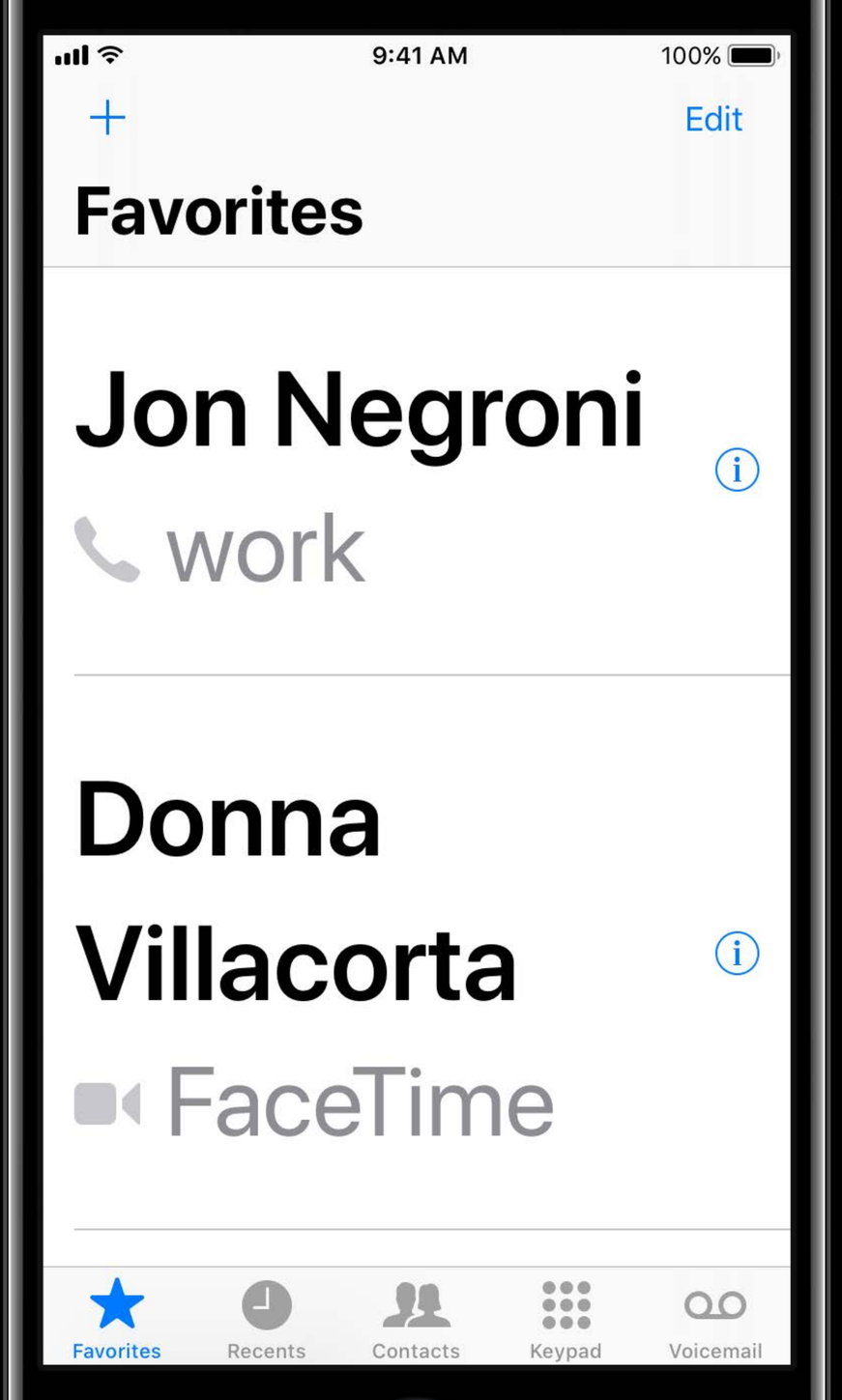

9:41 AM
100%
Edit
Favorites
Jon Negroni
work
Donna Villacorta
FaceTime
Jonah Schmidt
mobile
Mike Valentine
Mail
Favorites
Recents
Contacts
Keypad
Voicemail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Jon Negroni
work
Donna Villacorta
FaceTime
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Recents
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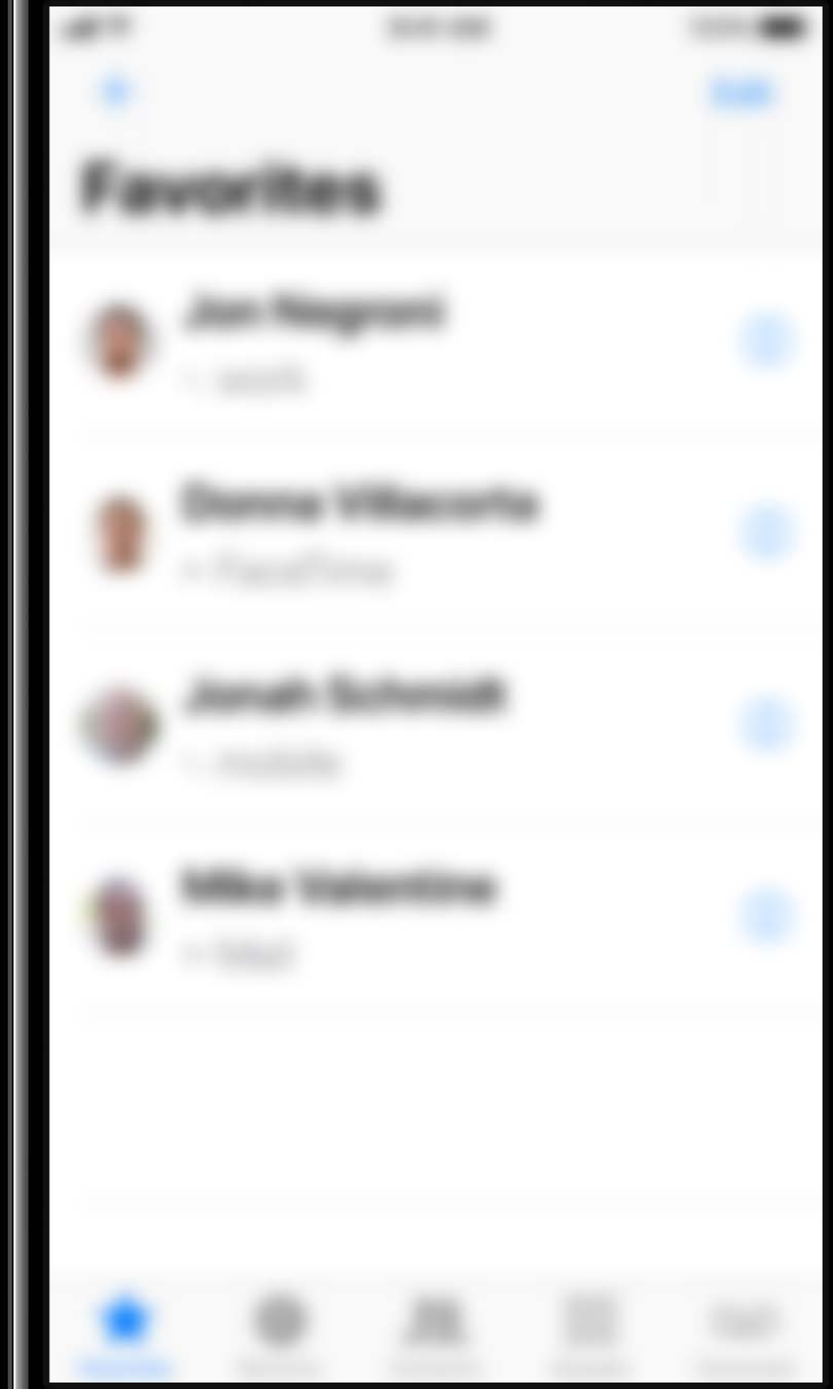
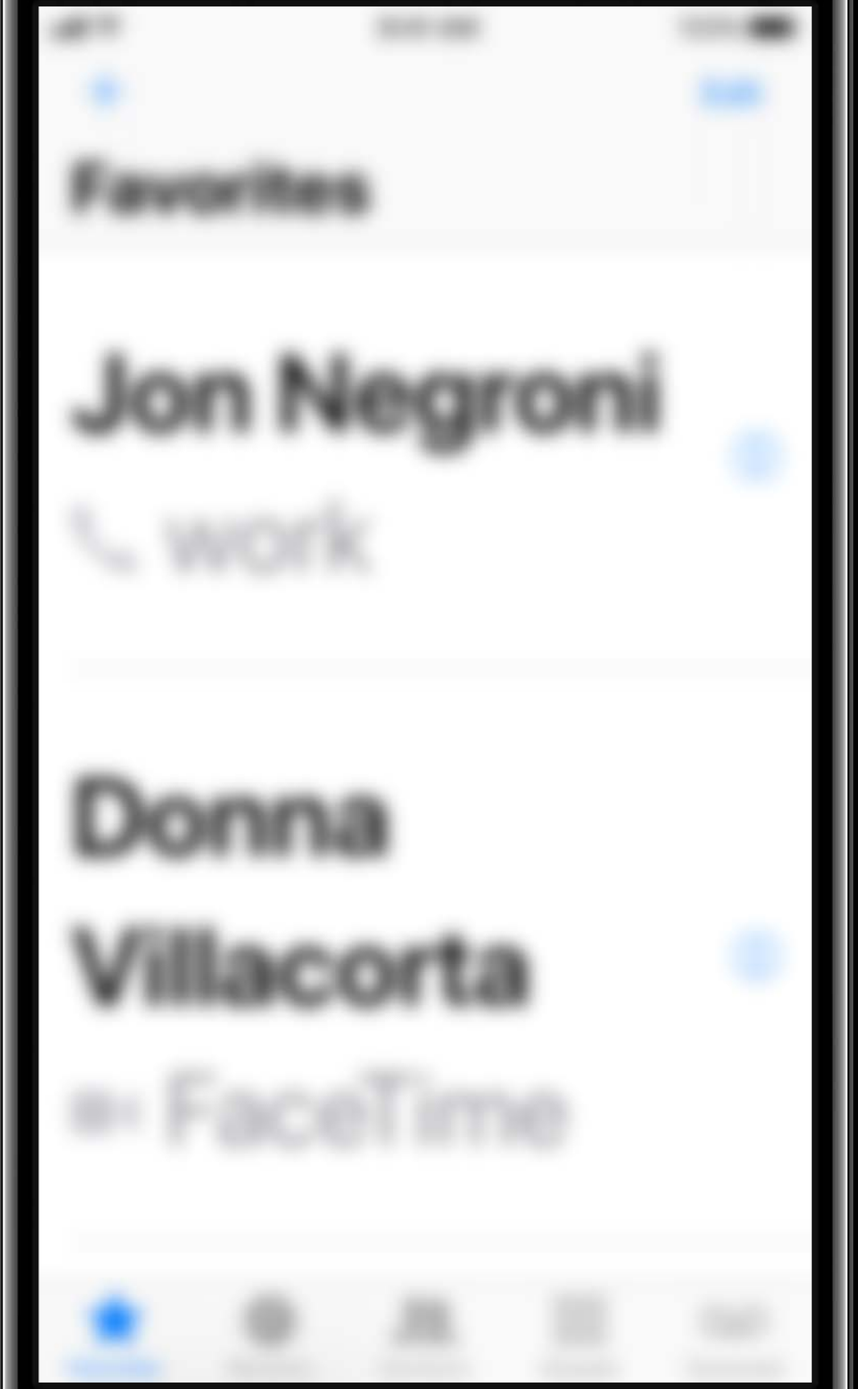

Favorites
Jon Negroni
Donna Villacorta
Jonah Schmidt
Mike Valentine


Favorites
Jon Negroni
work
Donna
Villacorta
FaceTime

What’s New in iOS 11

Goals

Goals

Text is large enough for the user to read

Goals

Text is large enough for the user to read

Text is fully readable

Goals

Text is large enough for the user to read

Text is fully readable

App UI looks beautiful

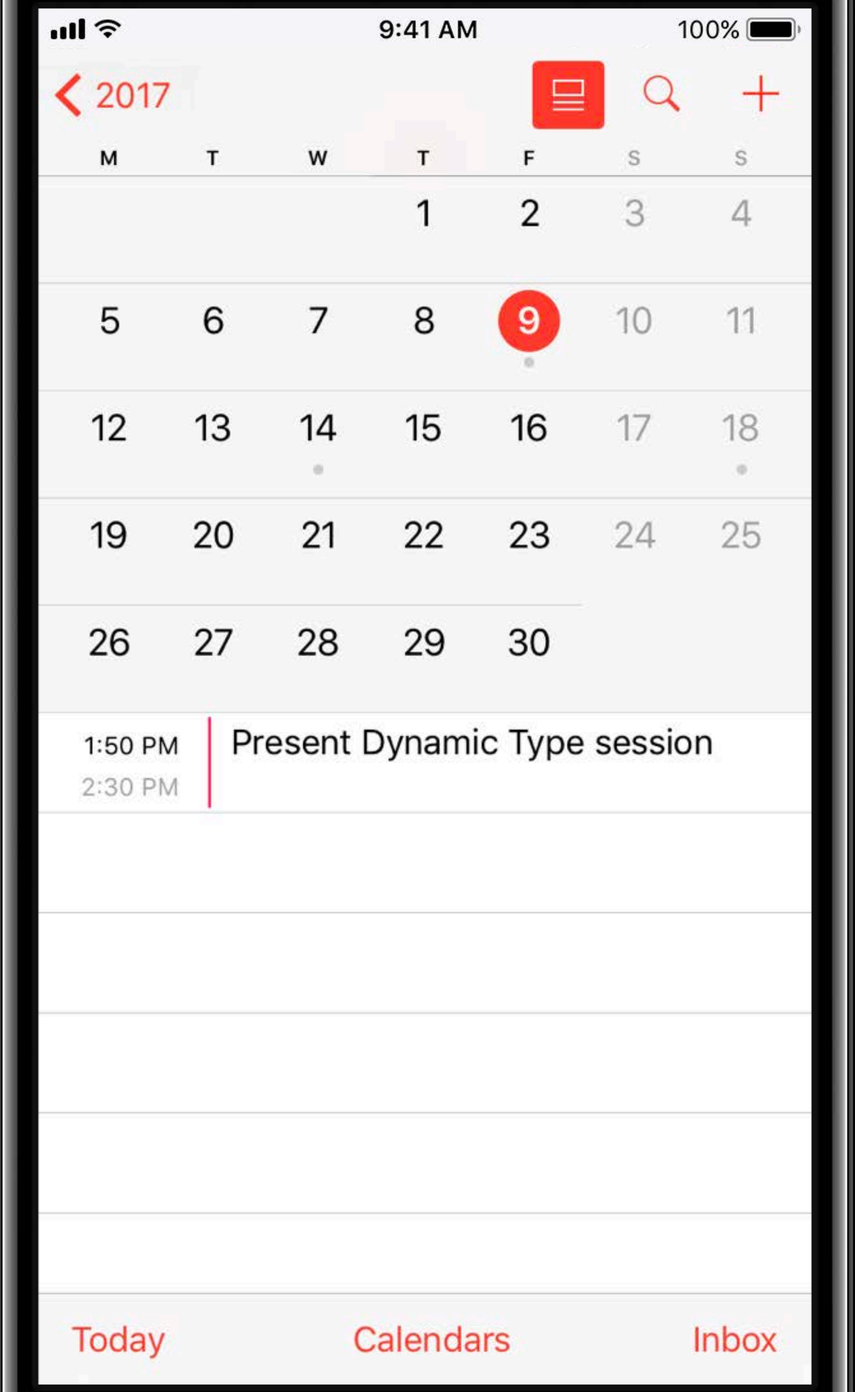
Goals

Text is large enough for the user to read

Text is fully readable

App UI looks beautiful


9:41 AM
100%
Settings
General
Display & Brightness
Wallpaper
Sounds & Haptics
Siri & Search
Touch ID & Passcode
Emergency SOS
Battery
Privacy
iTunes & App Store
Wallet & Apple Pay
9:41 AM
100%
Settings
General
Display & Brightness
Wallpaper
Sounds &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2017
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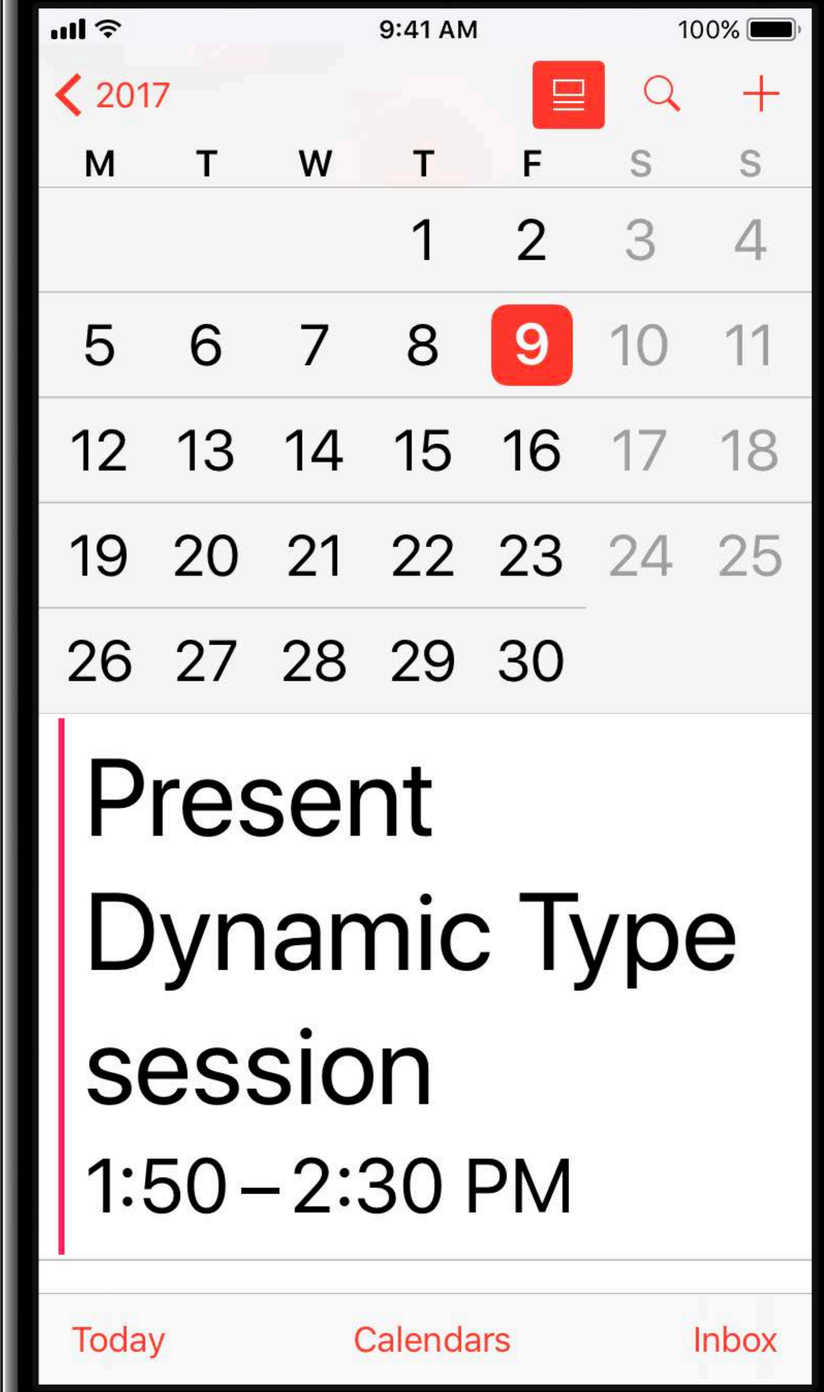
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30
1:50 PM
2:30 PM
Present Dynamic Type session
Today
Calendars
Inbox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2017
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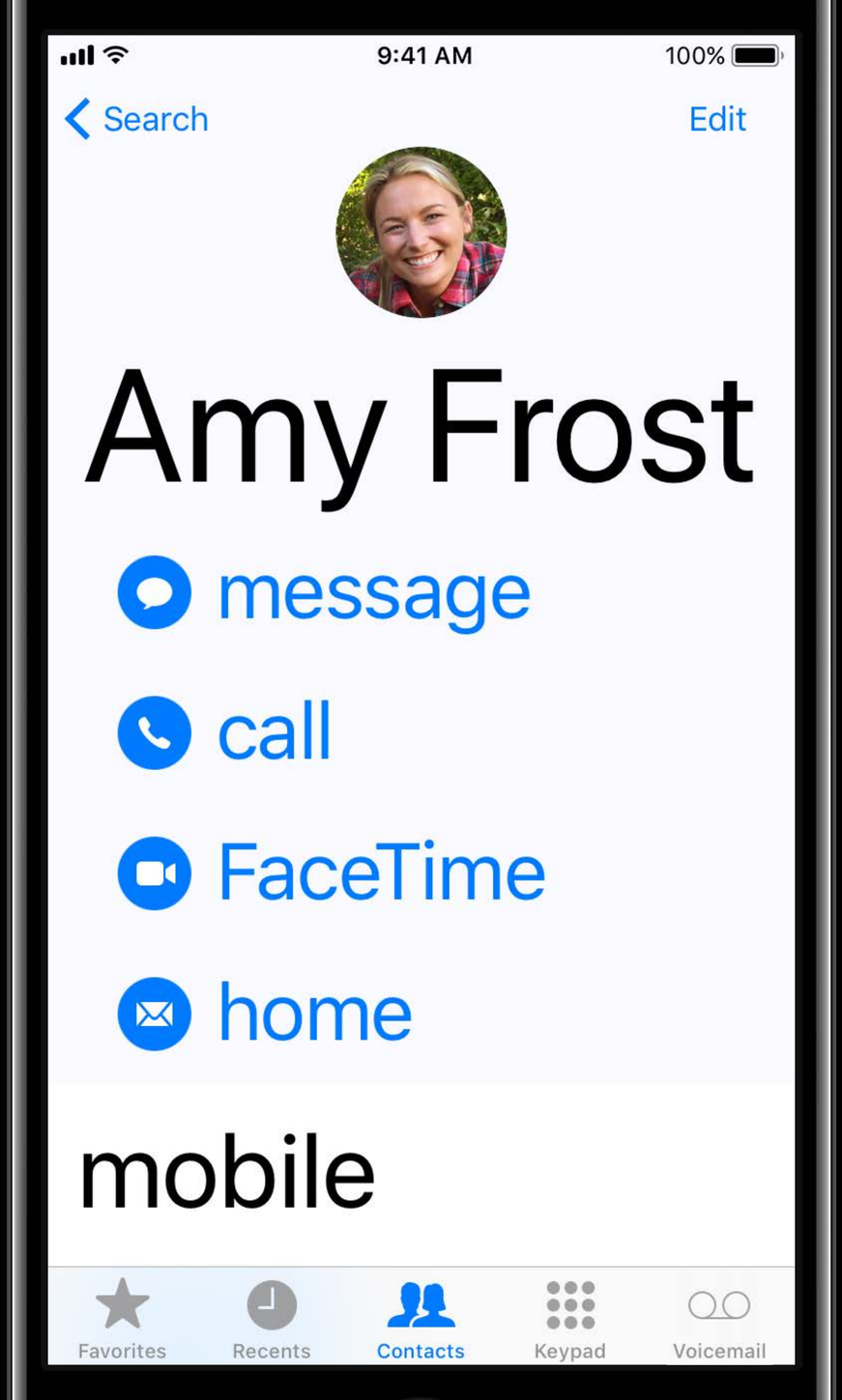
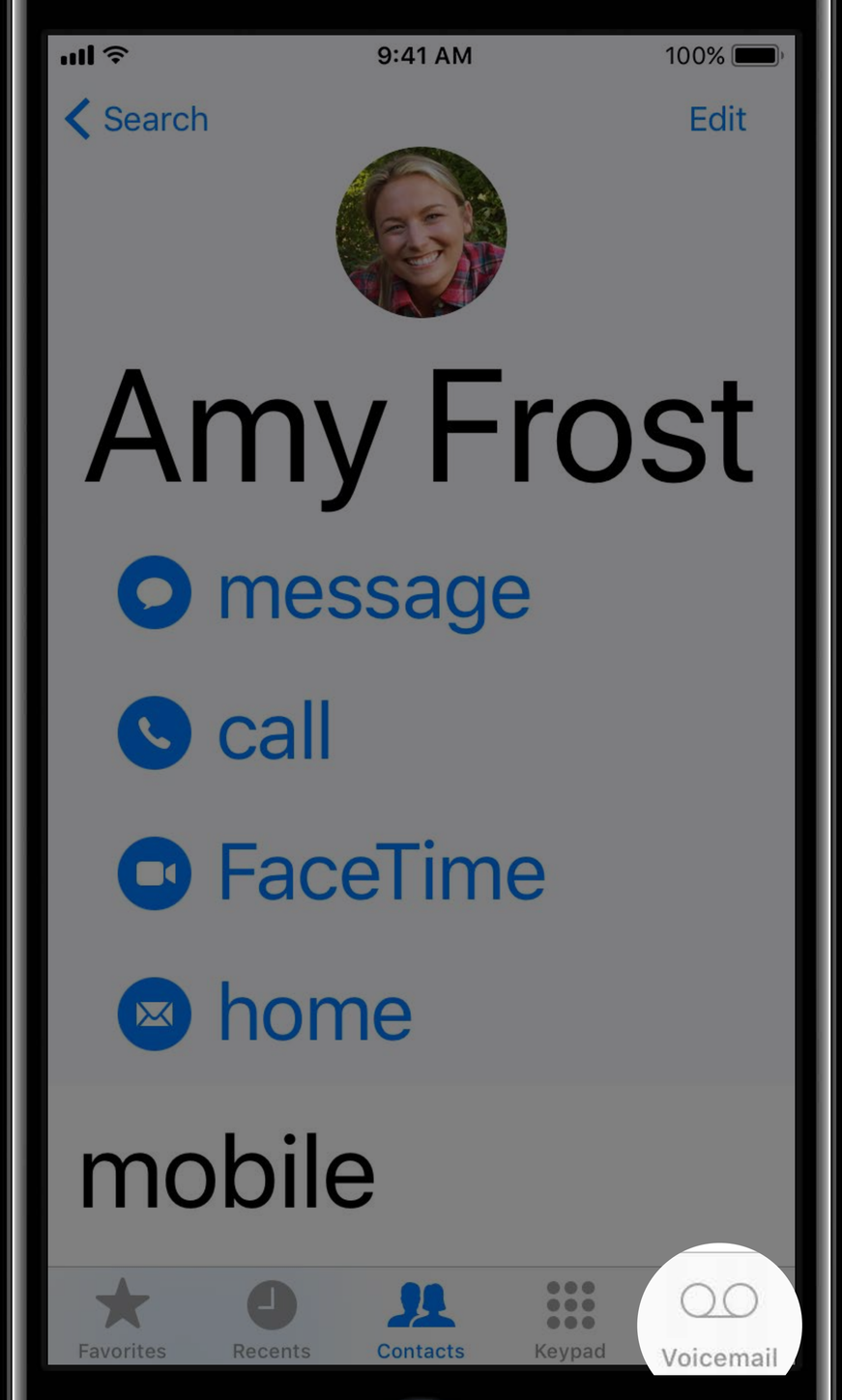
Today
Calendars
Inbox


9:41 AM
100%
Search
Edit
Amy Frost
message
call
FaceTime
home
mobile
Favorites
Recents
Contacts
Keypad
Voicemail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message
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mobile
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Recents
Contacts
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9:41 AM
100%
Search
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Amy Frost
Voicemail
home
mobile
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Recents
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Keypad
Voicemail

Guidelines and API

Guidelines and API

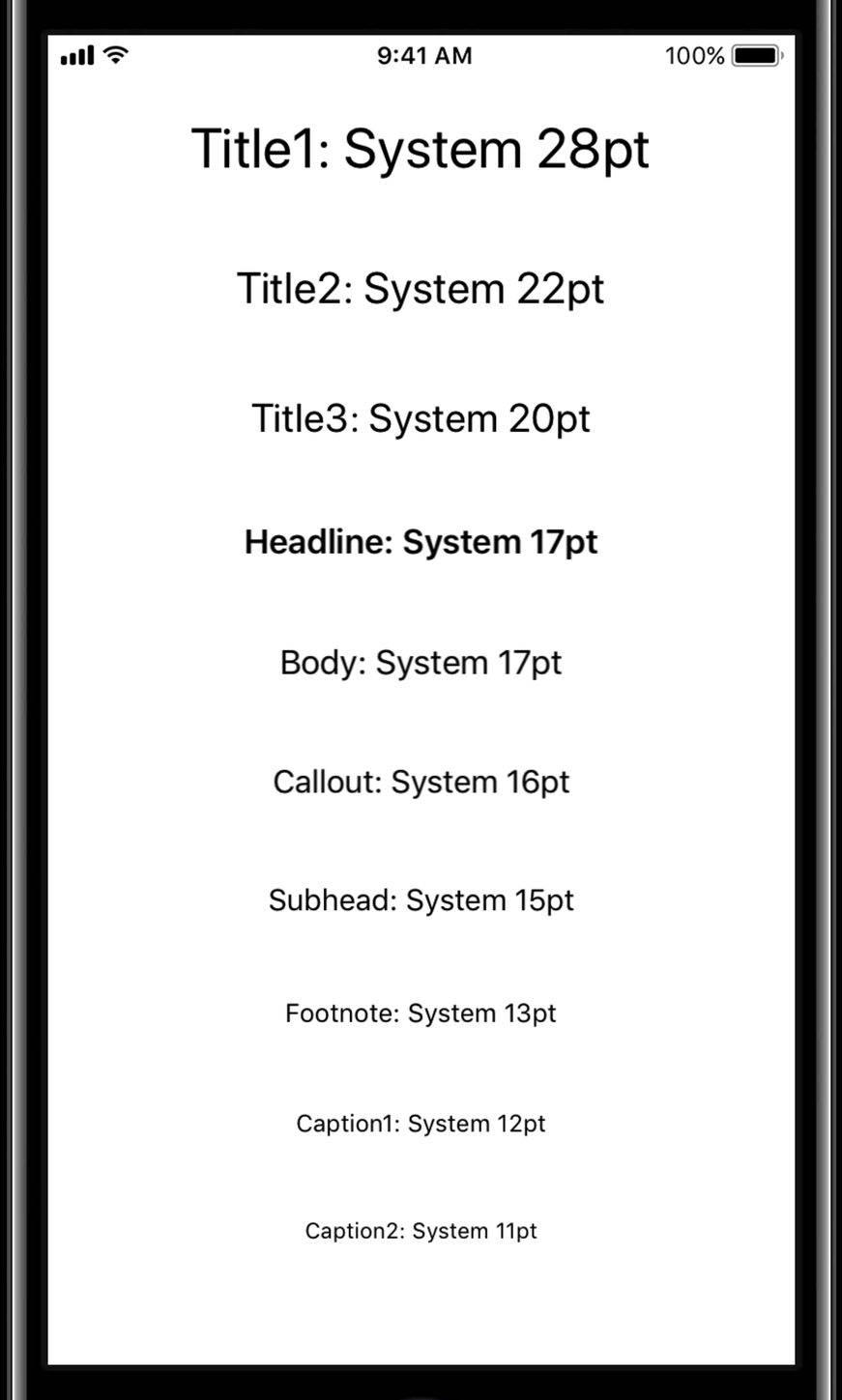
Scaling font sizes

Accommodating large text

Table views

Images

Scaling Font Sizes


9:41 AM
100%
Title1: System 28pt
Title2: System 22pt
Title3: System 20pt
Headline: System 17pt
Body: System 17pt
Callout: System 16pt
Subhead: System 15pt
Footnote: System 13pt
Caption1: System 12pt
Caption2: System 11pt

Text Styles

Standard Sizes

Accessibility Sizes

Title1
Title2
Title3
Headline
Body
Callout
Subhead
Footnote
Caption1
Caption2

Text Styles

Standard Sizes

Title1
Title2
Title3
Headline
Body
Callout
Subhead
Footnote
Caption1
Caption2

Accessibility Sizes

Body

Text Styles

NEW

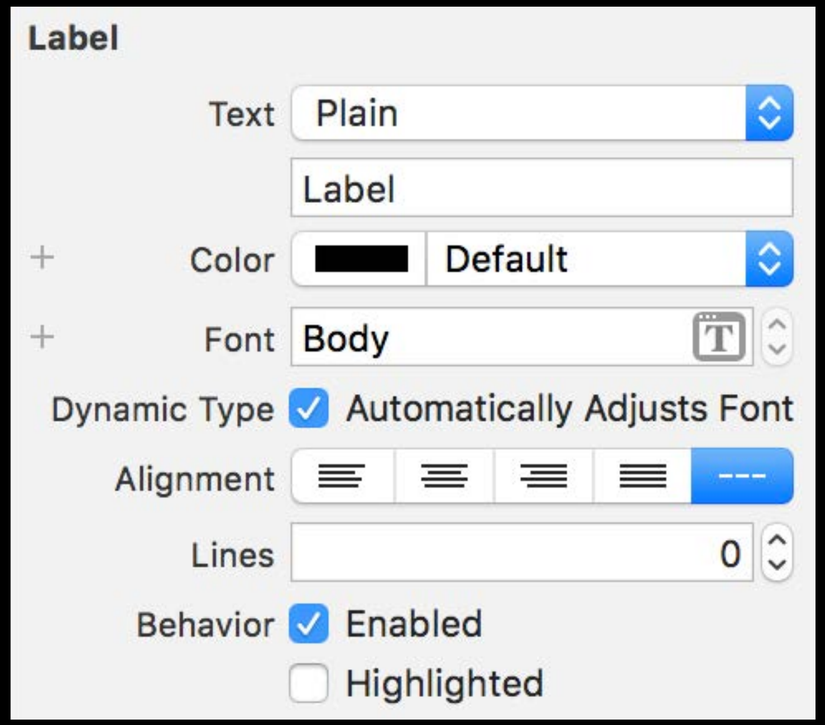
Standard Sizes

Title1
Title2
Title3
Headline
Body
Callout
Subhead
Footnote
Caption1
Caption2

Accessibility Sizes

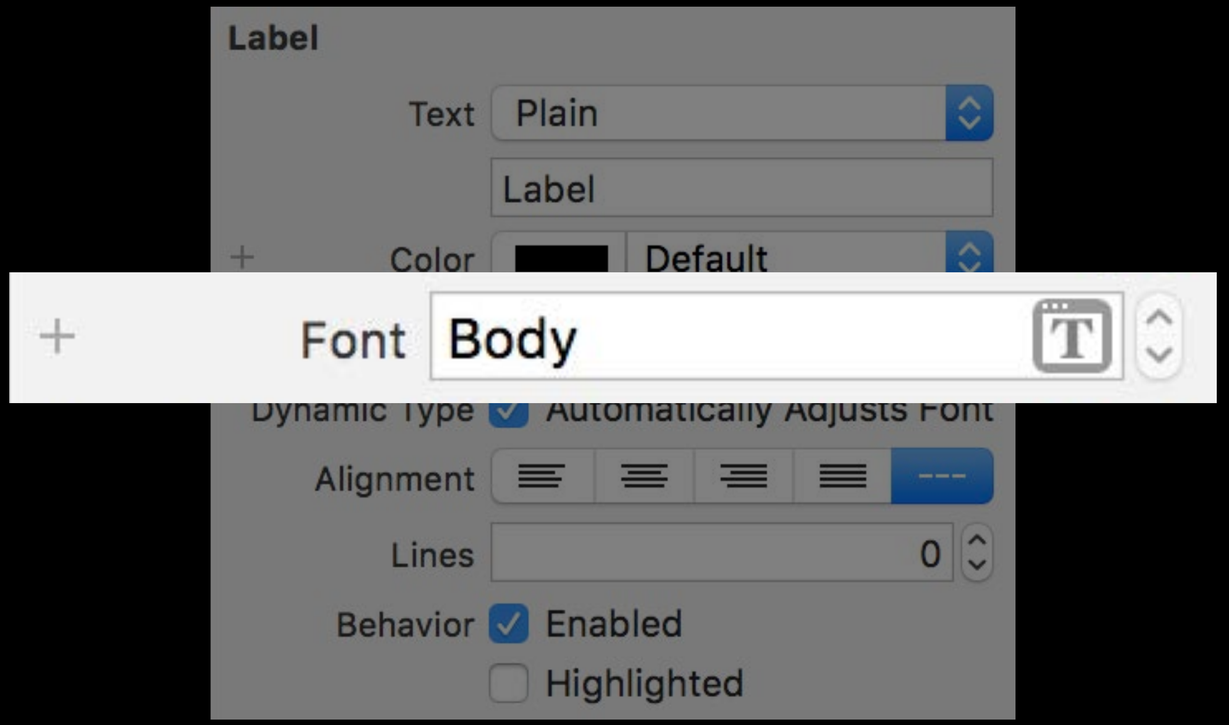
Title1
Title2
Title3
Headline
Body
Callout
Subhead
Footnote
Caption1
Caption2

Text Styles


Label
Text
Plain
Label
Color
Default
Font
Body
Dynamic Type
Automatically Adjusts Font
Alignment

Lines
0
Behavior
Enabled
Highlighted

Text Styles


Label
Text
Plain
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Default
Font
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Dynamic Type
Automatically Adjusts Font
Alignment
Lines
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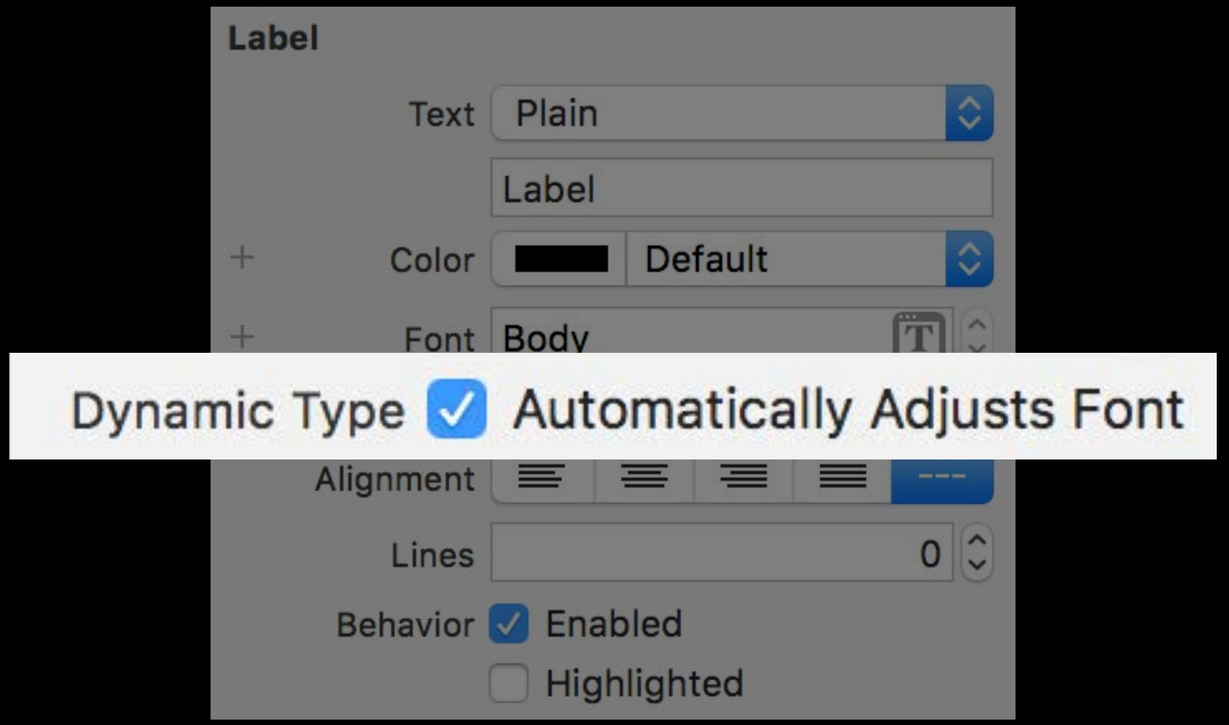
Behavior
Enabled
Highlighted

Text Styles

NEW



Text Styles

```
label.font = UIFont.preferredFont(forTextStyle: .body)
label.adjustsFontForContentSizeCategory = true
```

Text Styles

```
label.font = UIFont.preferredFont(forTextStyle: .body)
label.adjustsFontForContentSizeCategory = true
```

Text Styles

```
label.font = UIFont.preferredFont(forTextStyle: .body)
label.adjustsFontForContentSizeCategory = true
```

Custom Fonts

Title Font

Body Font

Custom Fonts

NEW

Title Font

Body Font

Title Font

Body Font

Custom Fonts

```
label.font = customFont
```

Custom Fonts

NEW

```
label.font = UIFontMetrics.default.scaledFont(for: customFont)
```

Custom Fonts

NEW

```
titleLabel.font = UIFontMetrics(forTextStyle: .title1).scaledFont(for: customFont)
```

Web Views

```
body {
    font: -apple-system-body; // available on Apple devices only
}
h1 {
    font-size: 1.3rem;
}
```

Web Views

```
body {
    font: -apple-system-body; // available on Apple devices only
}
h1 {
    font-size: 1.3rem;
}
```

Web Views

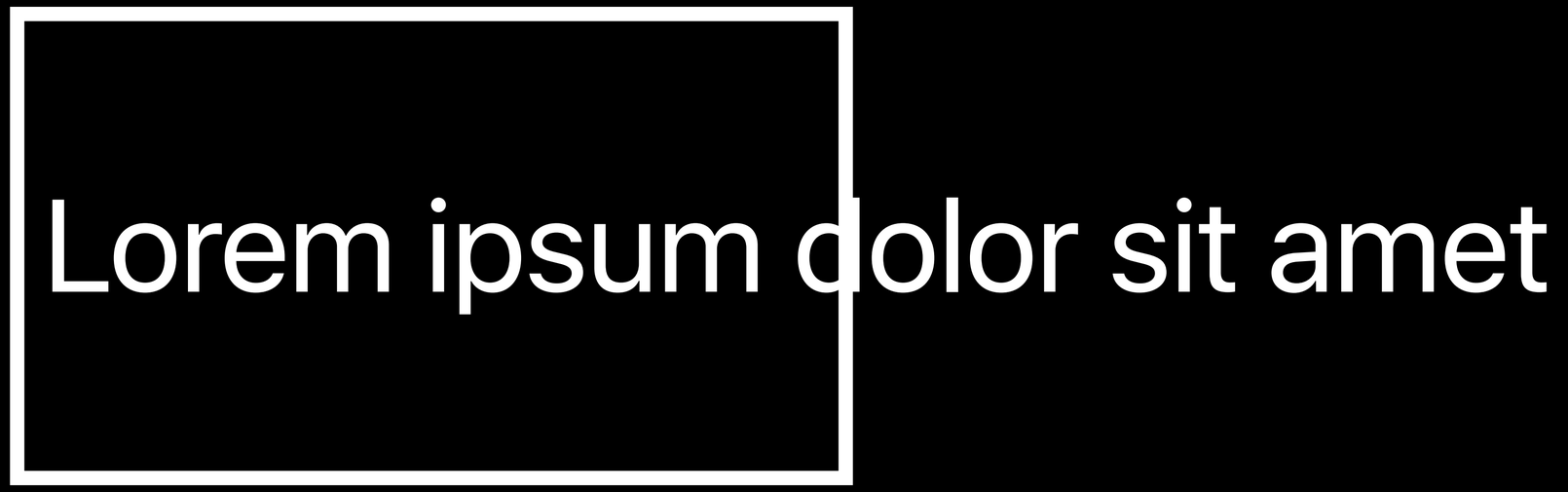
```
body {
    font: -apple-system-body; // available on Apple devices only
}
h1 {
    font-size: 1.3rem;
}
```

Accommodating Large Text

Fitting Large Text on Screen

Fitting Large Text on Screen

Scale font size

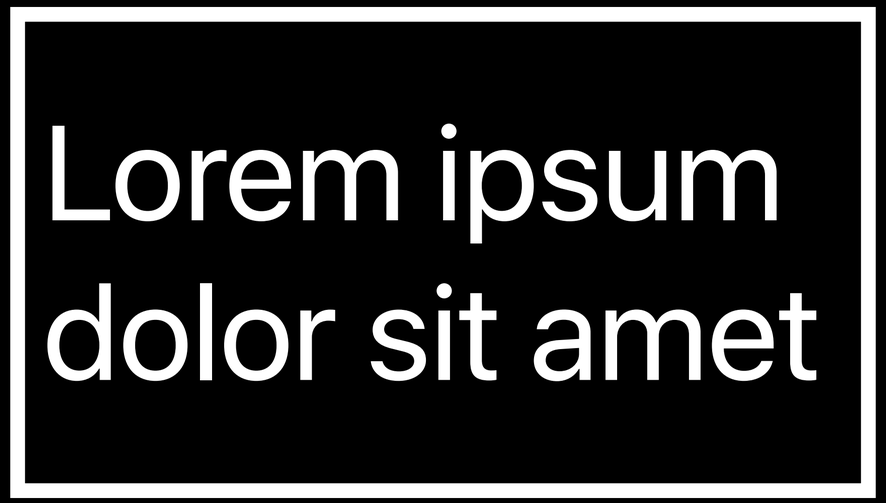


Fitting Large Text on Screen

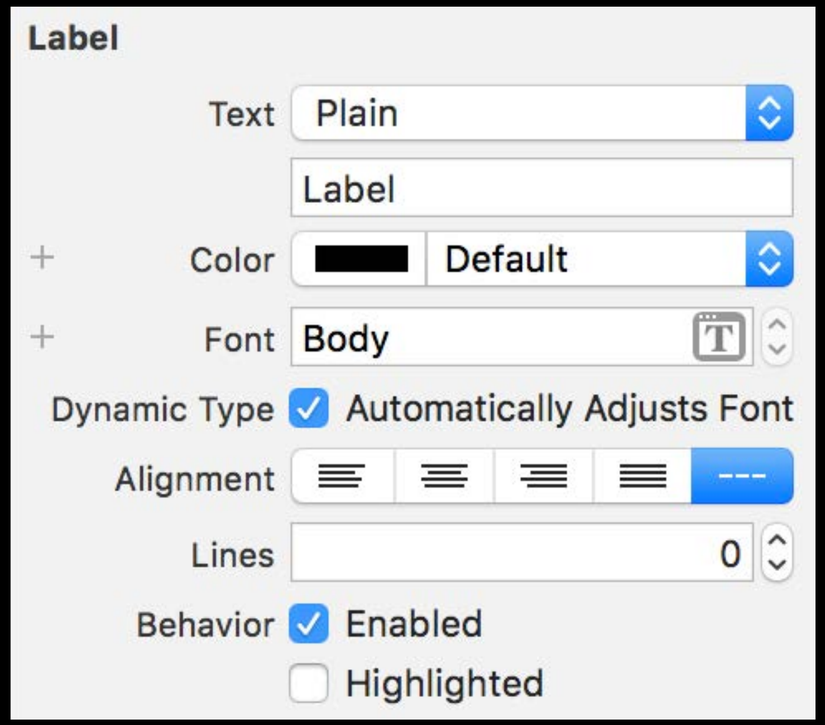
Constrain trailing edge

Fitting Large Text on Screen

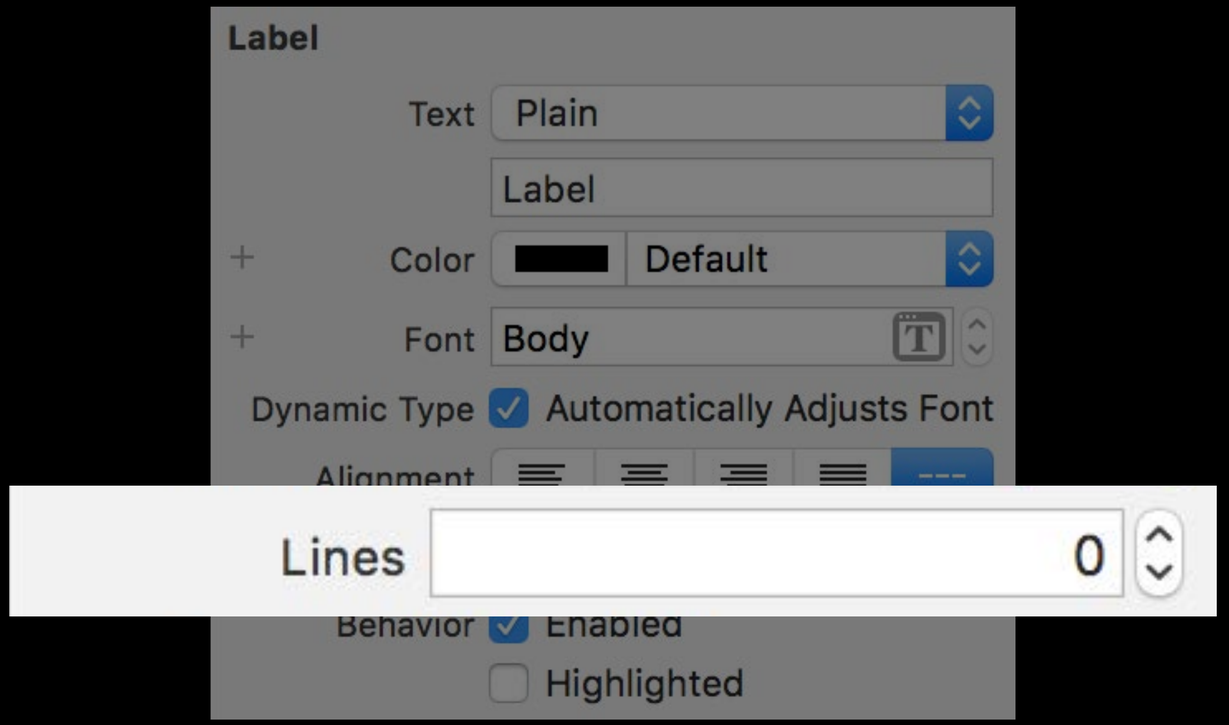
Wrap to multiple lines



Wrap to Multiple Lines



Wrap to Multiple Lines



Wrap to Multiple Lines

```
label.numberOfLines = 0
```

Avoid Constant Values Based on Default Text Size

Avoid Constant Values Based on Default Text Size

Avoid Constant Values Based on Default Text Size

Auto Layout System Spacing Constraints

NEW

```
secondLabel.firstBaselineAnchor.constraintEqualToSystemSpacingBelow(
firstLabel.lastBaselineAnchor, multiplier: 1.0)
```

Auto Layout System Spacing Constraints

NEW

```
secondLabel.firstBaselineAnchor.constraintEqualToSystemSpacingBelow(
firstLabel.lastBaselineAnchor, multiplier: 1.0)
```

Auto Layout System Spacing Constraints

NEW

```
secondLabel.firstBaselineAnchor.constraintEqualToSystemSpacingBelow(
firstLabel.lastBaselineAnchor, multiplier: 1.0)
```

Scaled Values

```
frame.origin.y += 40.0
```

Scaled Values

NEW

```
frame.origin.y += UIFontMetrics.default.scaledValue(for: 40.0)
```

Side-By-Side Text

Side-By-Side Text

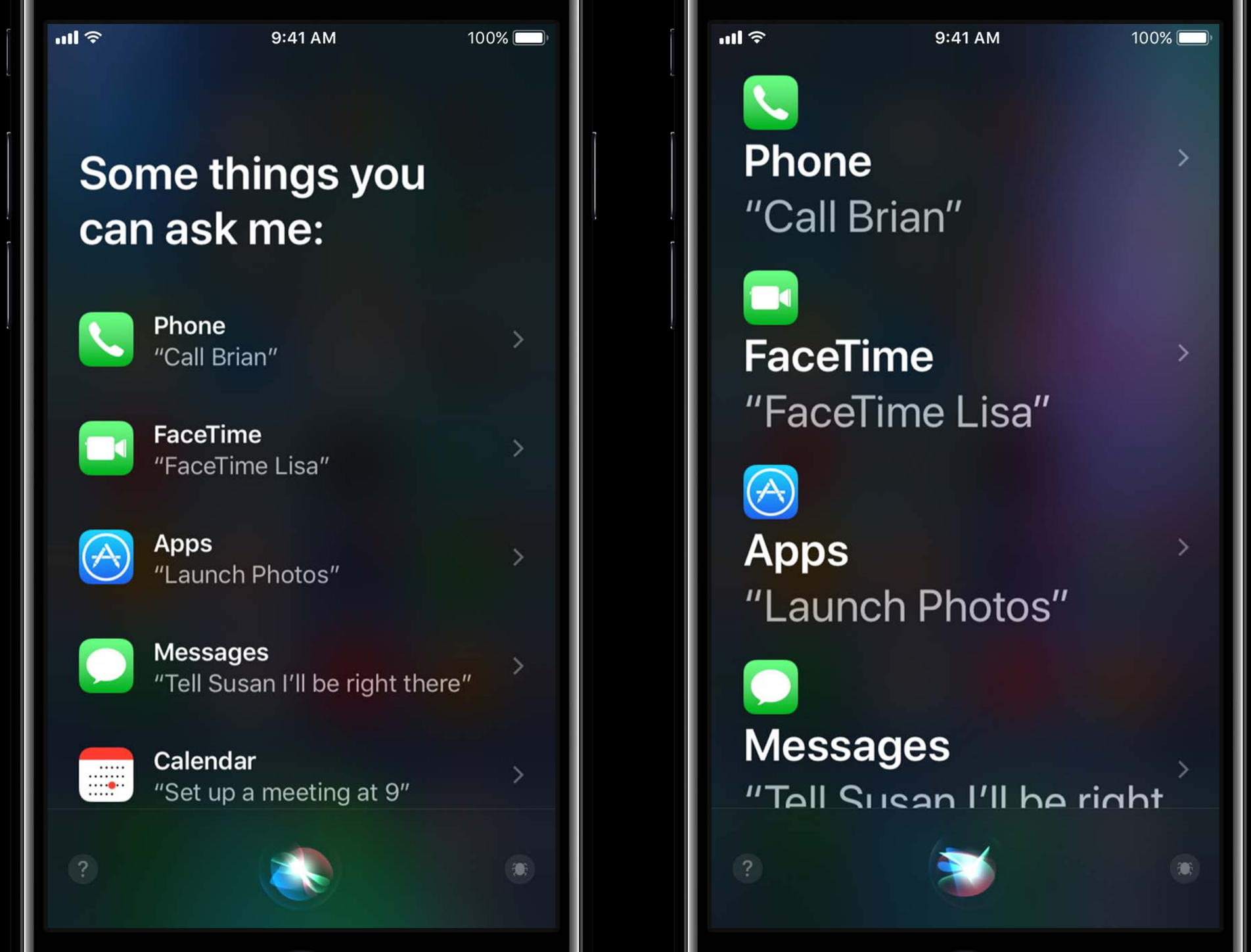
Scale font size

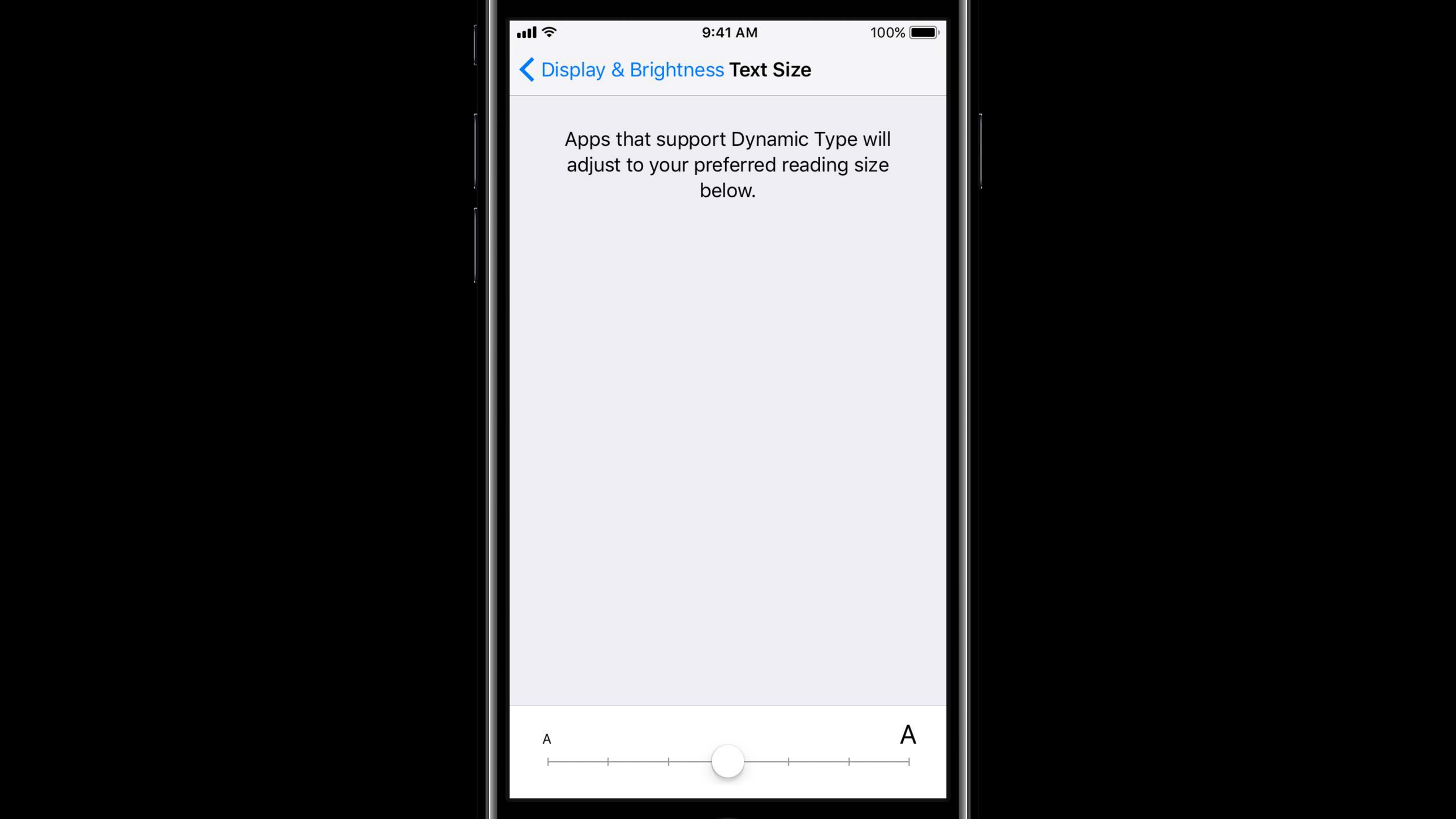
Side-By-Side Text

Wrap to multiple lines

Side-By-Side Text

Stack vertically


9:41 AM
100%
Some things you can ask me:
Phone
“Call Brian”
FaceTime
“FaceTime Lisa”
Apps
“Launch Photos”
Messages
“Tell Susan I’ll be right there”
Calendar
“Set up a meeting at 9”
9:41 AM
100%
Phone
“Call Brian”
FaceTime
“FaceTime Lisa”
Apps
“Launch Photos”
Messages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Display & Brightness Text Size
Apps that support Dynamic Type will adjust to your preferred reading size below.
A
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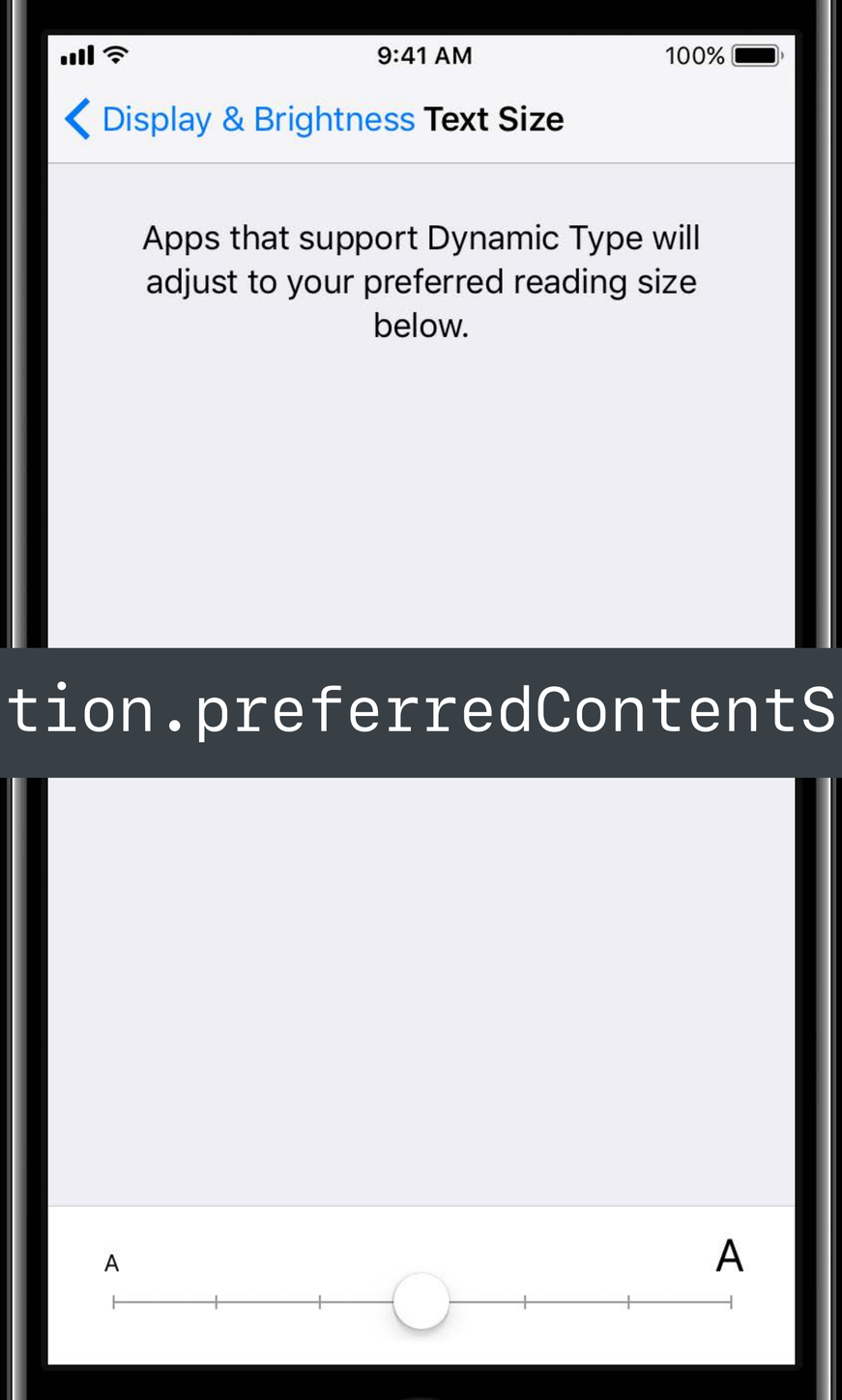
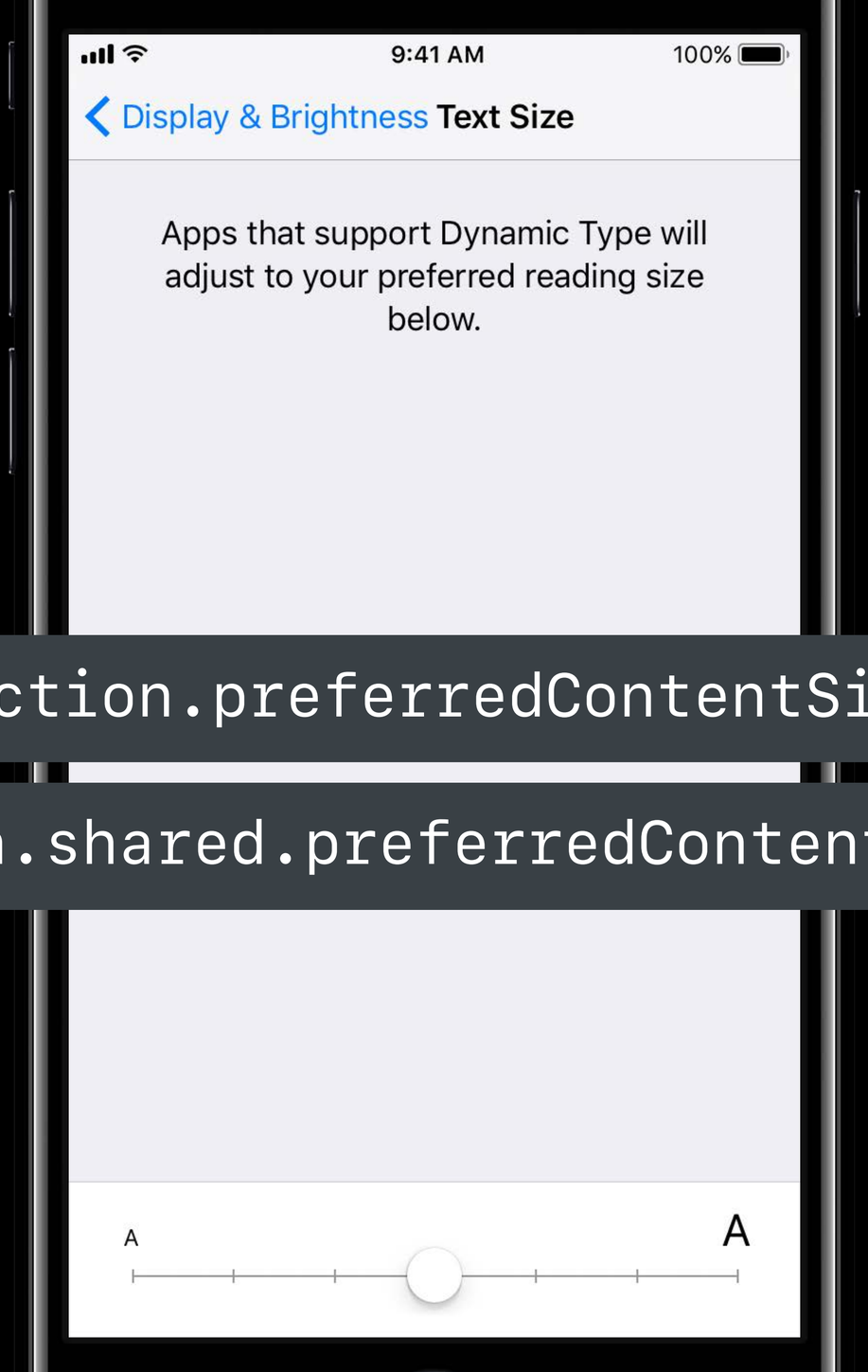
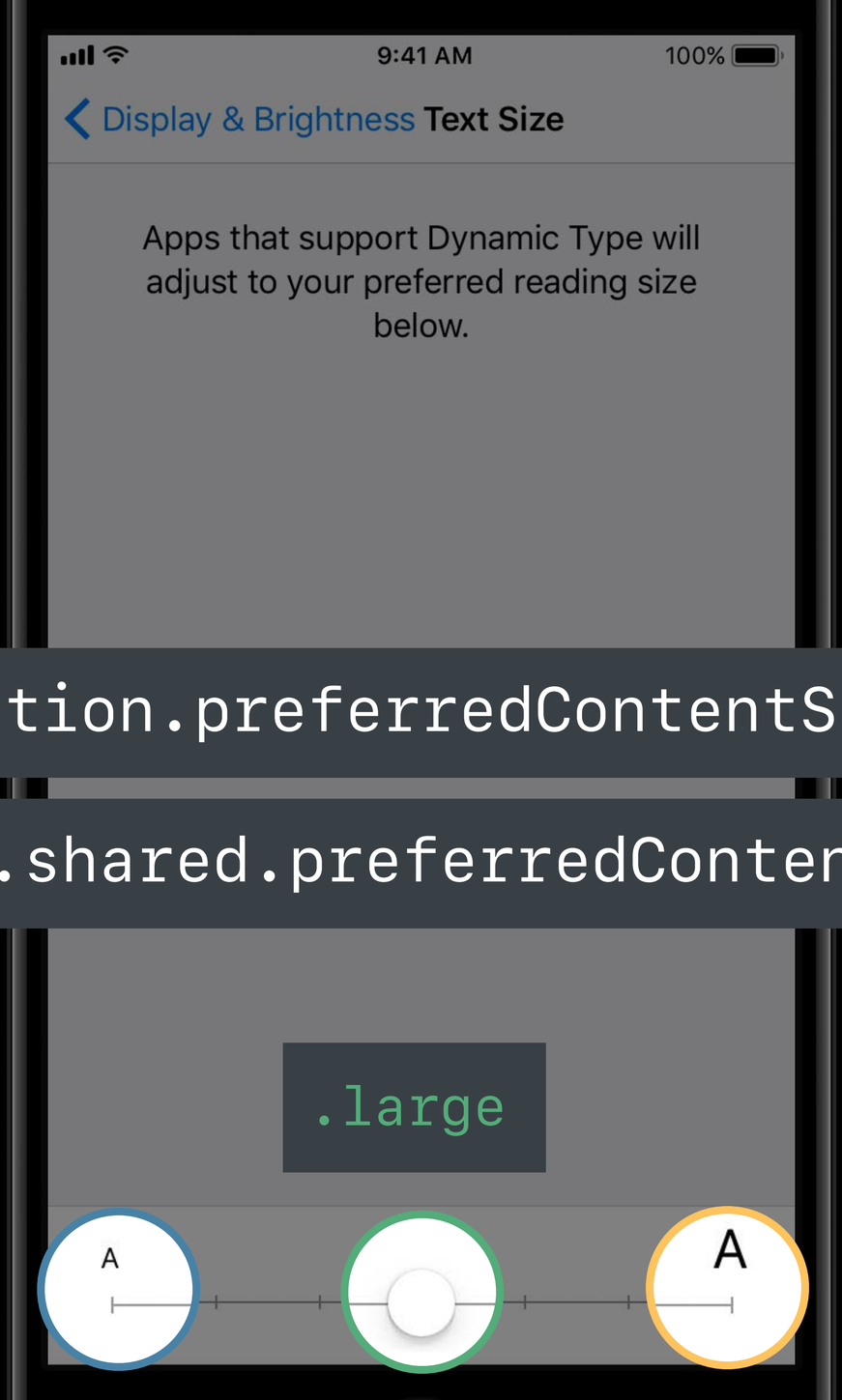


traitCollection.preferredContentSizeCategory



`traitCollection.preferredContentSizeCategory`

`UIApplication.shared.preferredContentSizeCategory`



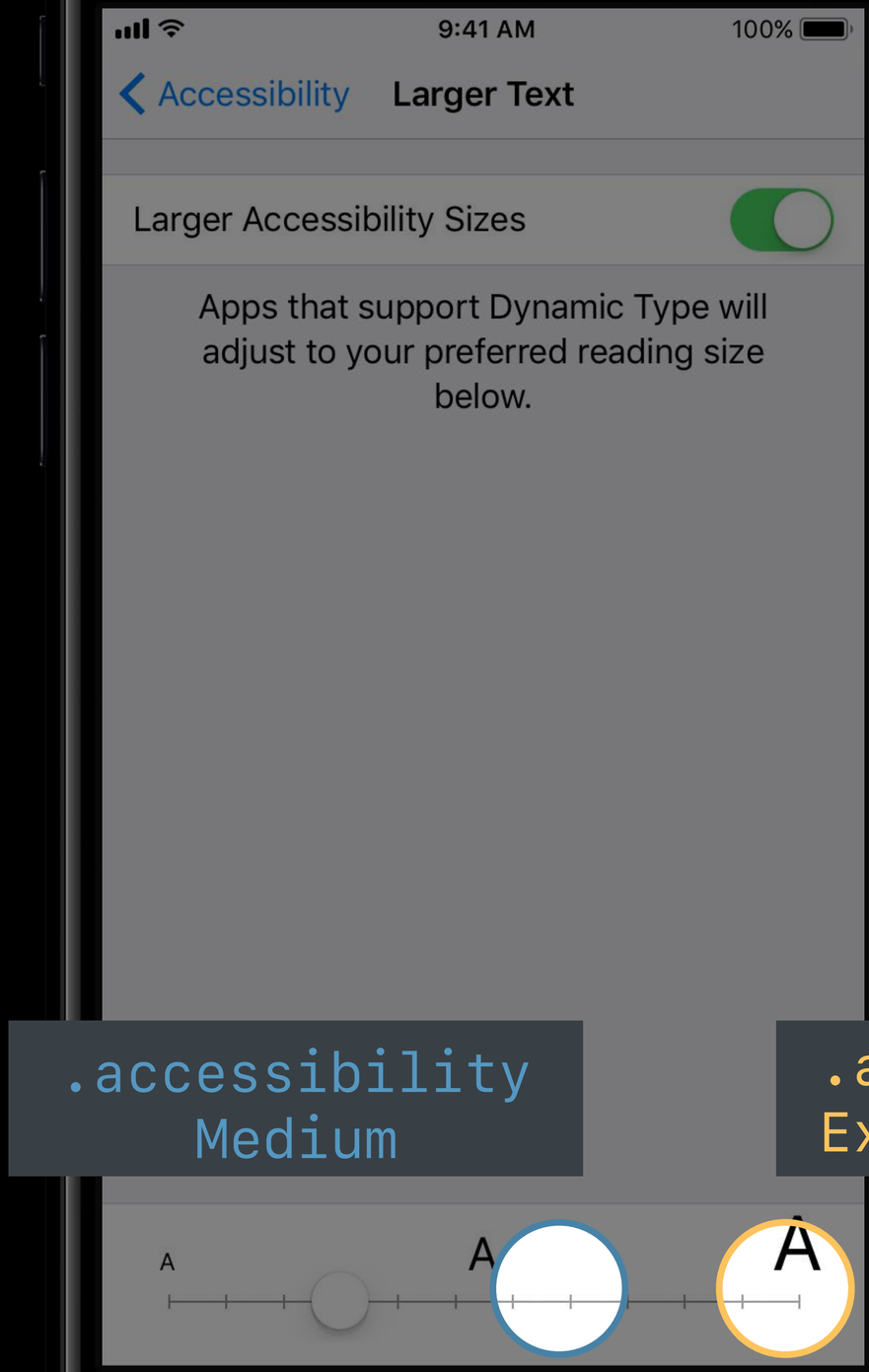
traitCollection.preferredContentSizeCategory

UIApplication.shared.preferredContentSizeCategory

.large

.extraSmall

.extraExtraExtraLarge



`.accessibilityMedium`

`.accessibilityExtraExtraExtraLarge`

Make Layout Decisions Based on Text Size

NEW

```
if traitCollection.preferredContentSizeCategory.isAccessibilityCategory {
    // Vertically stack
} else {
    // Lay out side by side
}
```

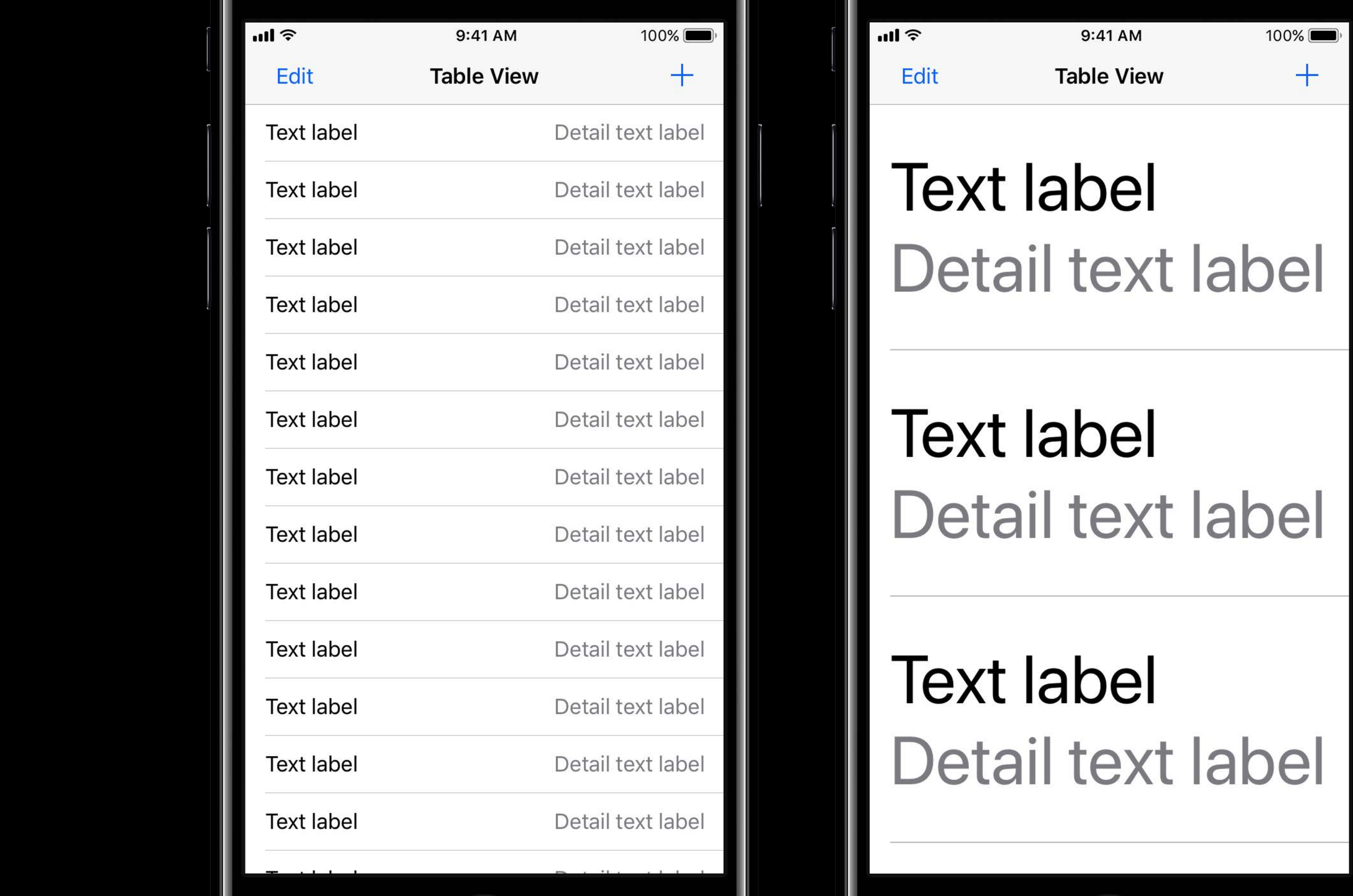
Make Layout Decisions Based on Text Size

NEW

```
if traitCollection.preferredContentSizeCategory > .extraExtraLarge {
    // Vertically stack
} else {
    // Lay out side by side
}
```

Table Views


9:41 AM
100%
Settings
General
Display & Brightness
Wallpaper
Sounds & Haptics
Siri & Search
Touch ID & Passcode
Emergency SOS
Battery
Privacy
iTunes & App Store
Wallet & Apple Pay
9:41 AM
100%
Settings
General
Display & Brightness
Wallpaper
Sounds &


9:41 AM
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Edit
Table View
Text label
Detail text label
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Table View
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Detail text label

Default Table View Behaviors in iOS 11

NEW

Default Table View Behaviors in iOS 11

NEW

Standard table view cells adapt layout for Dynamic Type

Default Table View Behaviors in iOS 11

NEW

Standard table view cells adapt layout for Dynamic Type

Cell heights are based on their content

Self-Sizing Table View Cells

Self-Sizing Table View Cells

Table view asks each cell to provide its own size

Self-Sizing Table View Cells

Table view asks each cell to provide its own size

Provide an estimated row height for off-screen cells

Self-Sizing Table View Cells

Self-Sizing Table View Cells

Enable self-sizing for cells if needed

Self-Sizing Table View Cells

Enable self-sizing for cells if needed

```
tableView.rowHeight = UITableViewAutomaticDimension
tableView.estimatedRowHeight = <a reasonable estimate>
```

Self-Sizing Table View Cells

Enable self-sizing for cells if needed

```
tableView.rowHeight = UITableViewAutomaticDimension
tableView.estimatedRowHeight = <a reasonable estimate>
```

If applicable, do the same for section headers and footers

Self-Sizing Table View Cells

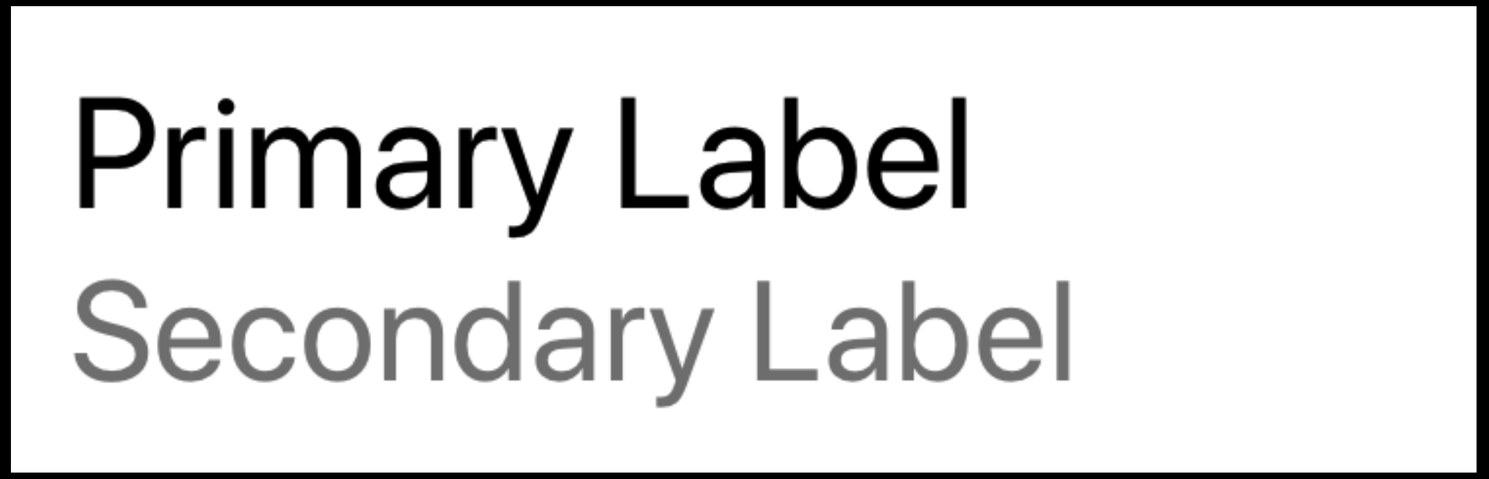
Enable self-sizing for cells if needed

```
tableView.rowHeight = UITableViewAutomaticDimension
tableView.estimatedRowHeight = <a reasonable estimate>
```

If applicable, do the same for section headers and footers

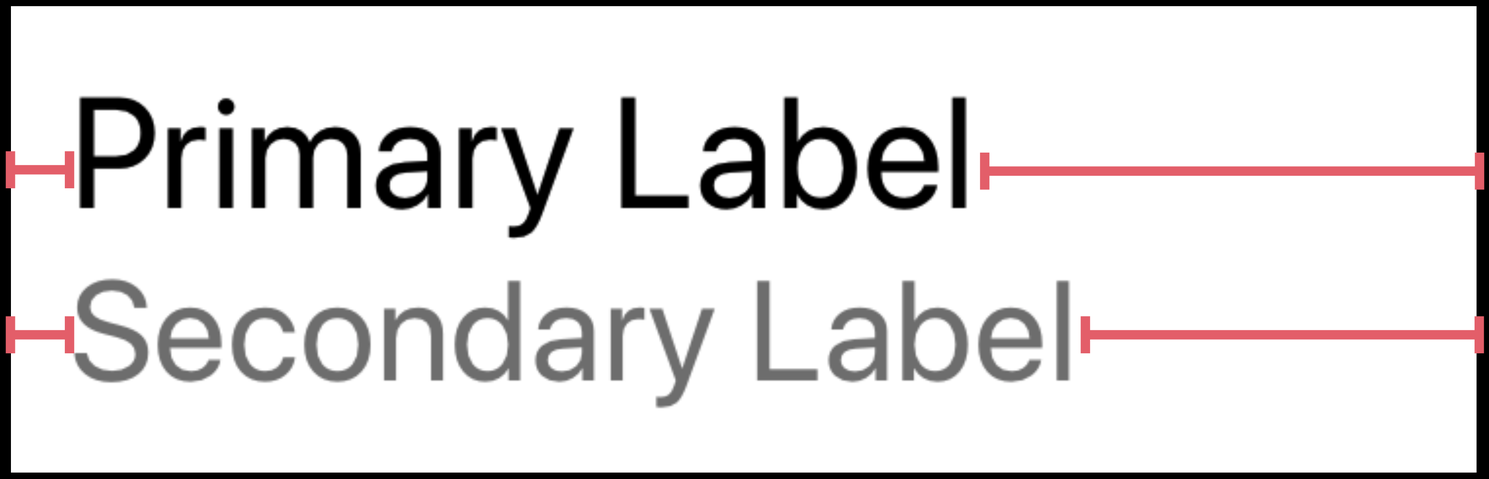
```
tableView.estimatedSectionHeaderHeight = <a reasonable estimate>
tableView.sectionHeaderHeight = UITableViewAutomaticDimension
tableView.estimatedSectionFooterHeight = <a reasonable estimate>
tableView.sectionFooterHeight = UITableViewAutomaticDimension
```

Self-Sizing Custom Cells



Self-Sizing Custom Cells

```
contentView.layoutMarginsGuide.leadingAnchor.constraint(equalTo: primaryLabel.leadingAnchor)
```



Self-Sizing Custom Cells

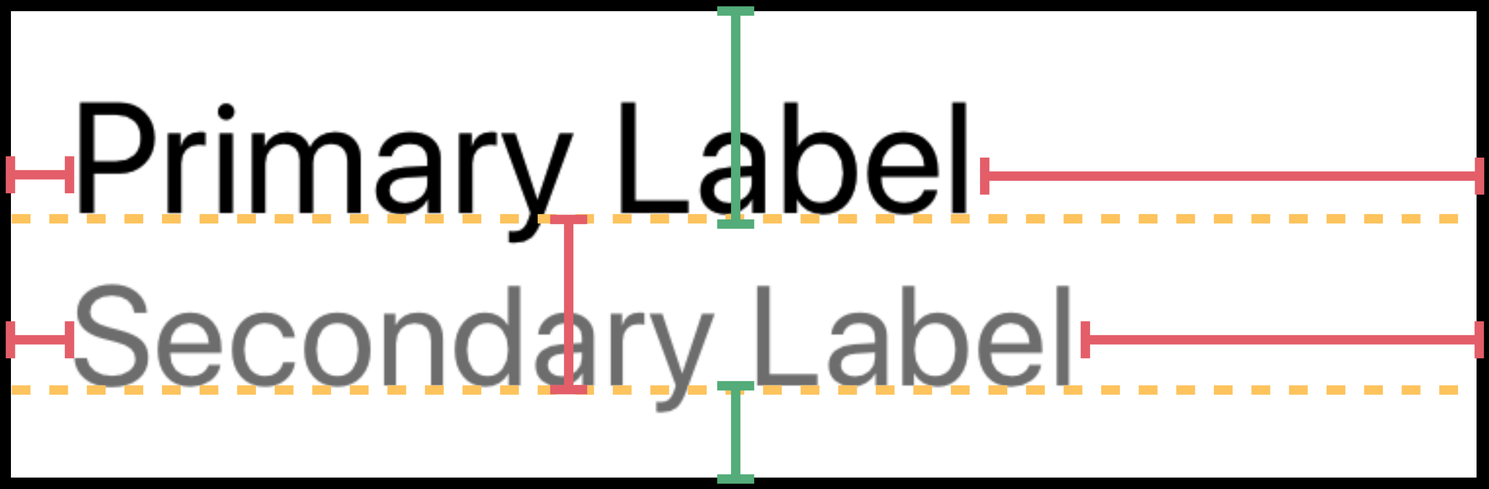
```
contentView.layoutMarginsGuide.leadingAnchor.constraint(equalTo: primaryLabel.leadingAnchor)
```

Self-Sizing Custom Cells

```
secondaryLabel.firstBaselineAnchor.constraintEqualToSystemSpacingBelow(
primaryLabel.lastBaselineAnchor, multiplier: 1.0)
```

Self-Sizing Custom Cells

```
primaryLabel.firstBaselineAnchor.constraintEqualToSystemSpacingBelow(
contentView.topAnchor, multiplier: 1.0),
contentView.bottomAnchor.constraintEqualToSystemSpacingBelow(
secondaryLabel.lastBaselineAnchor, multiplier: 1.0)
```



Self-Sizing Custom Cells

Self-Sizing Custom Cells

Also possible with manual layout

Self-Sizing Custom Cells

Also possible with manual layout

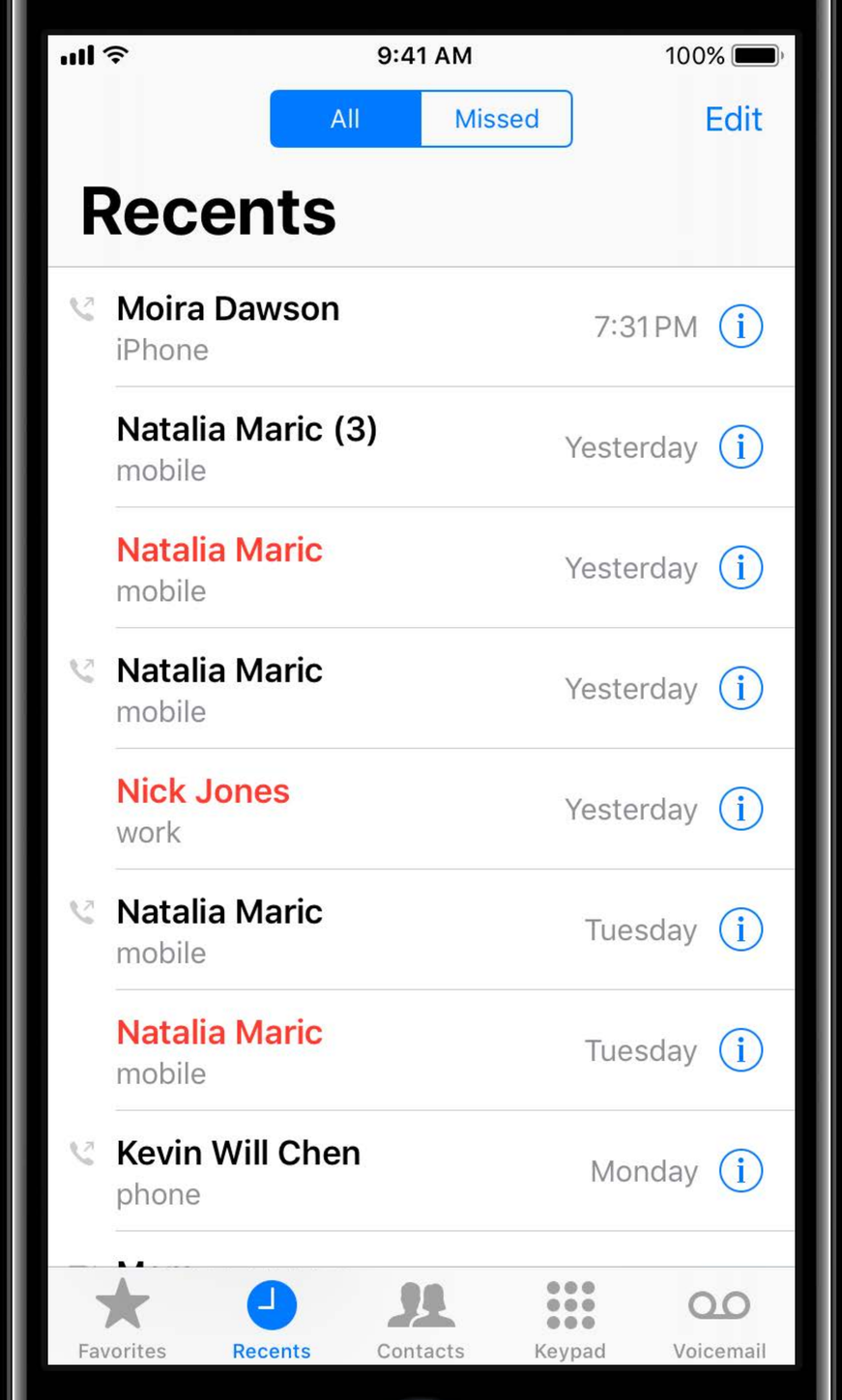
- Override `sizeThatFits` to return correct height

Self-Sizing Custom Cells

Also possible with manual layout

- Override `sizeThatFits` to return correct height
- Use `contentView.bounds.size.width` to determine available width

Images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Nick Jones
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Kevin Will Chen
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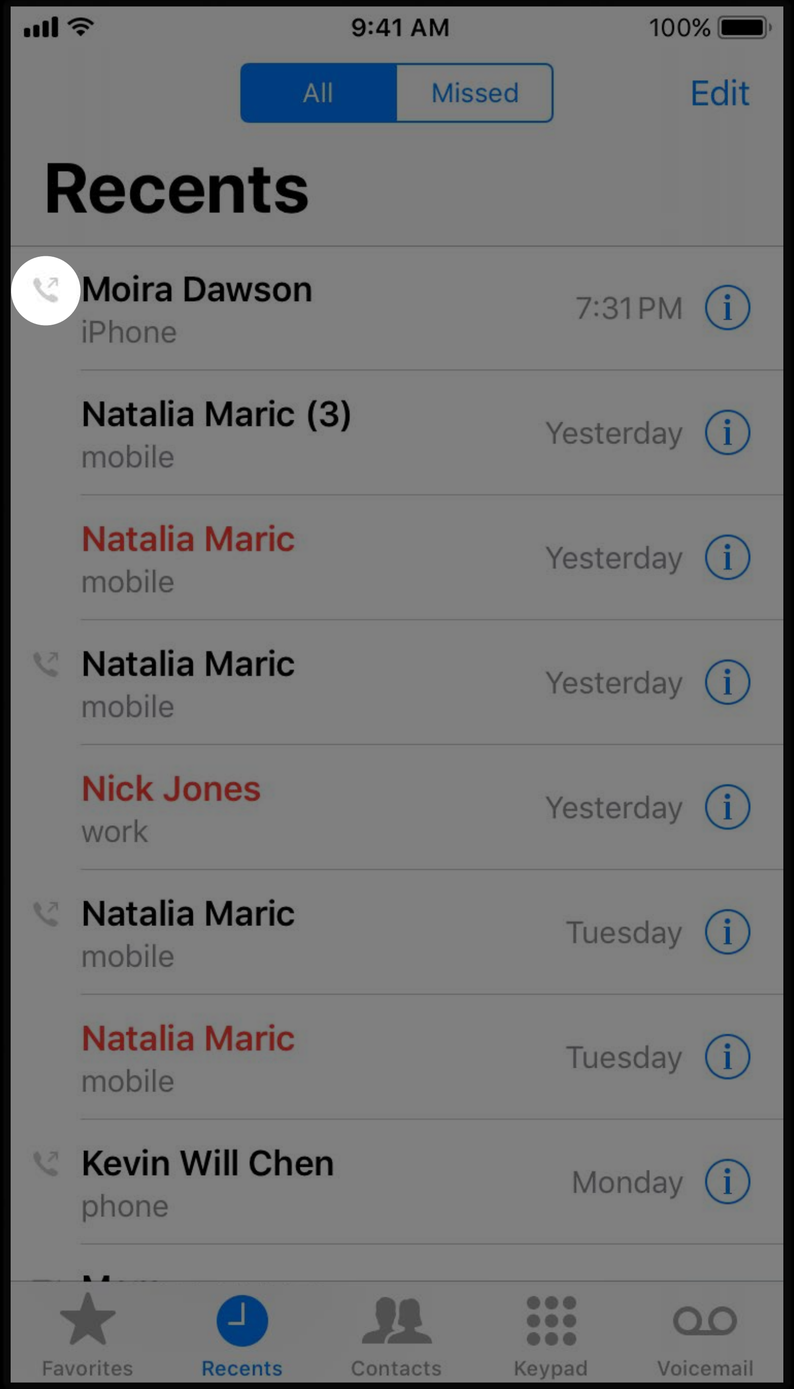
Monday
Favorites
Recents
Contacts
Keypad
Voicemail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Contacts
Keypad
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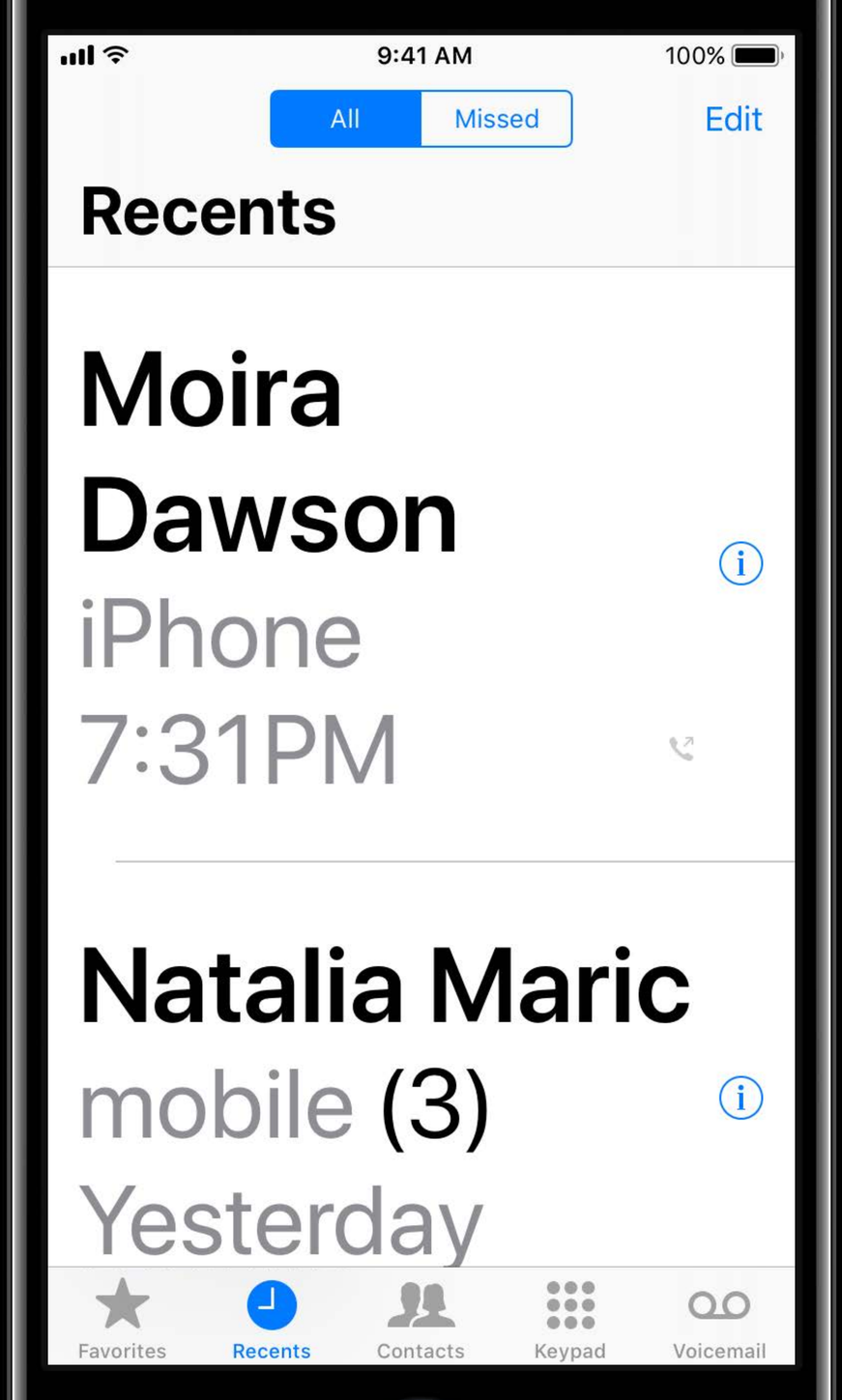
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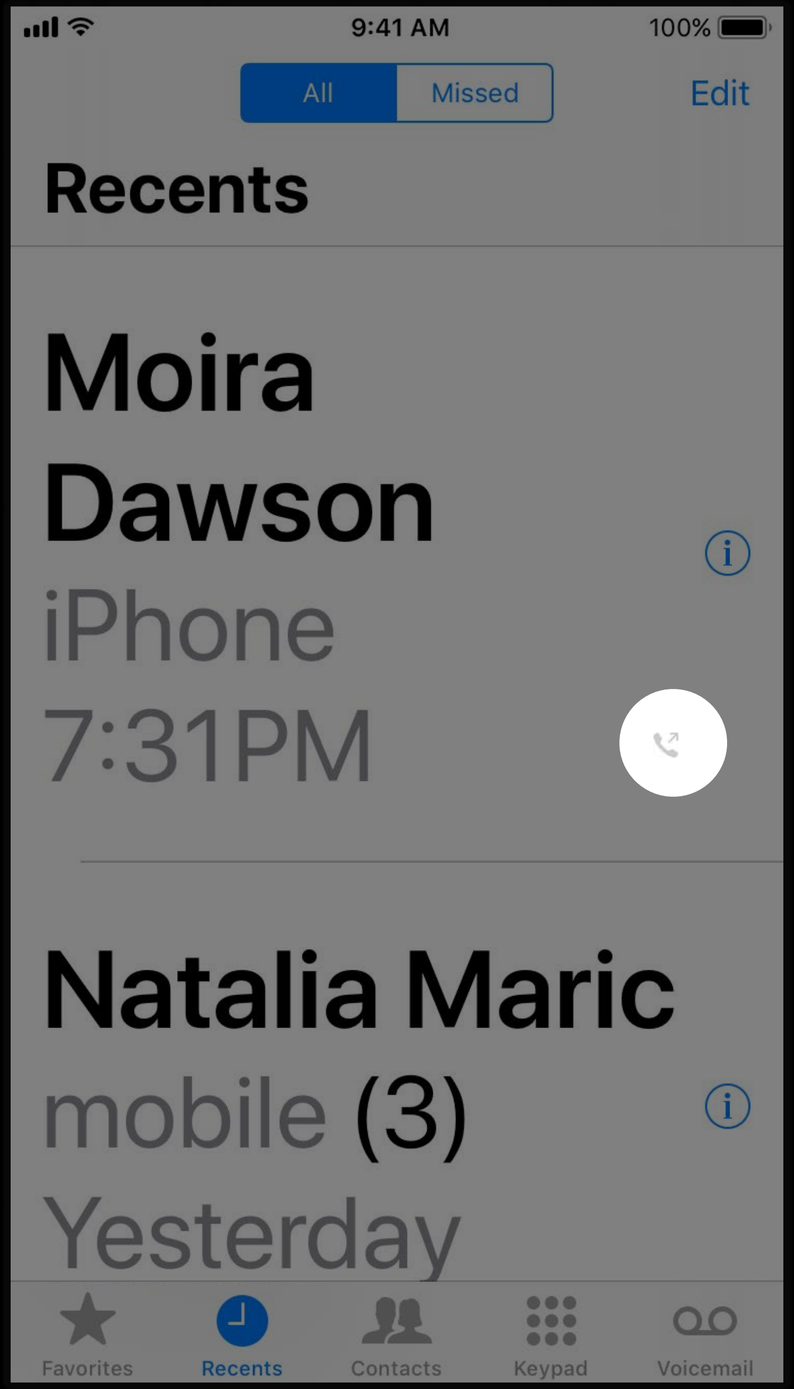
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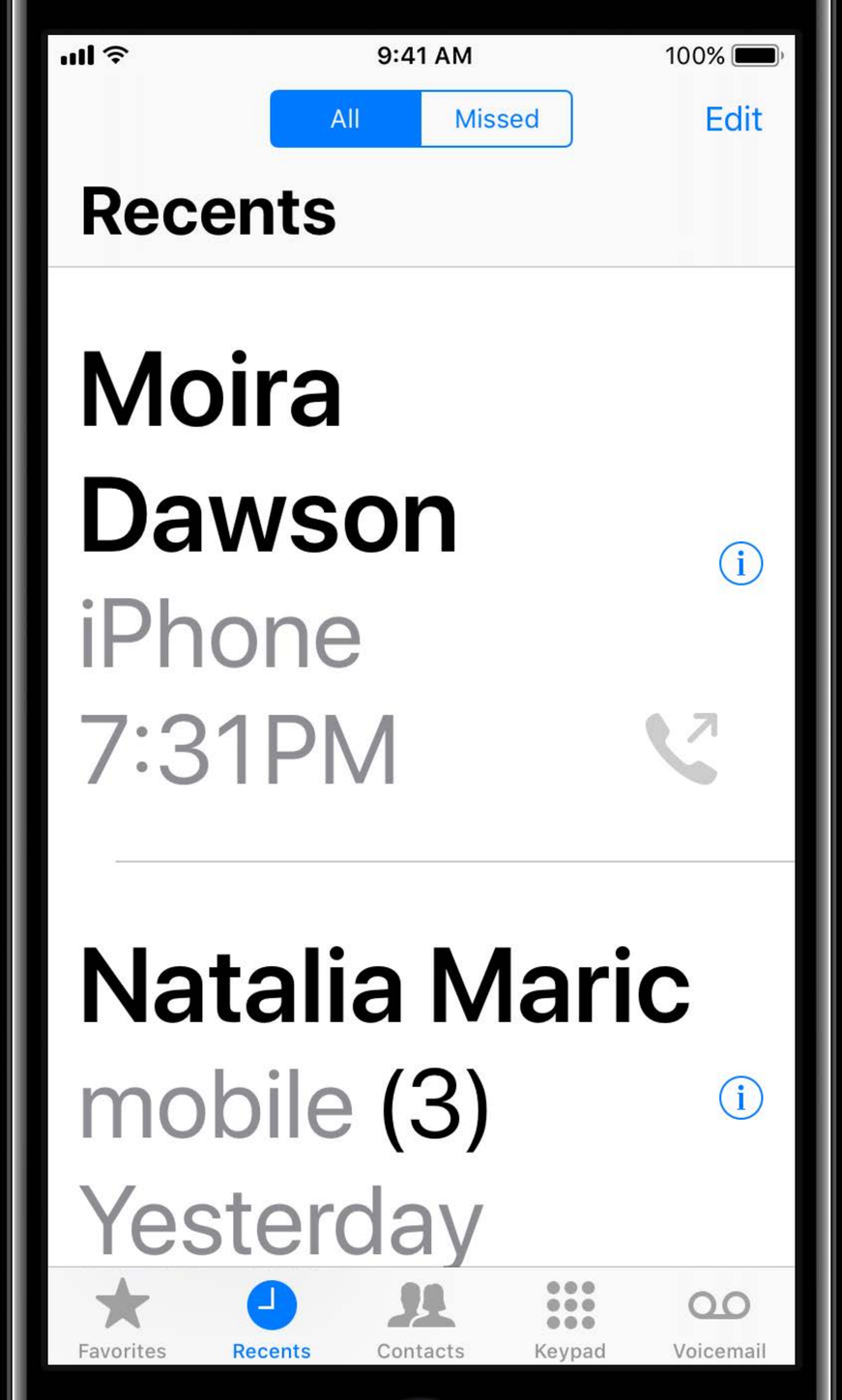
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Voicemail

Allow Images to Scale Up

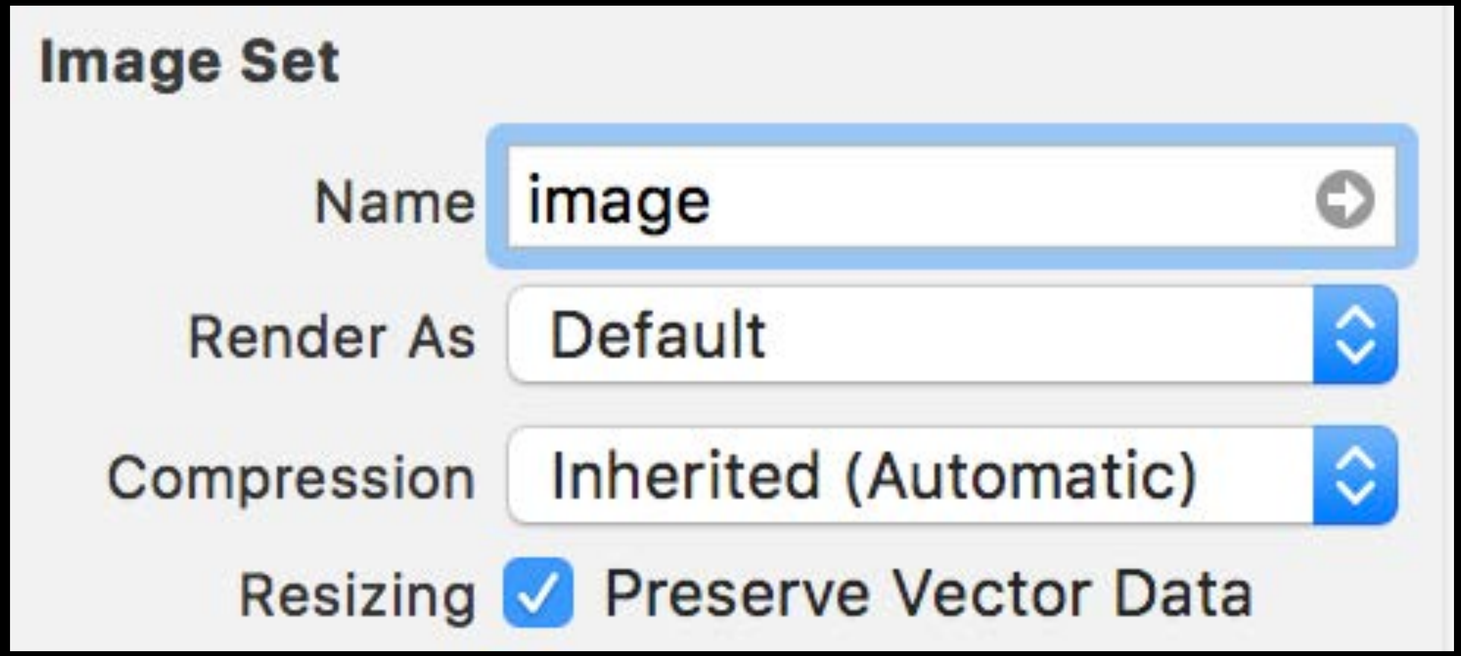
NEW

Provide PDF at 1x scale

Allow Images to Scale Up

NEW

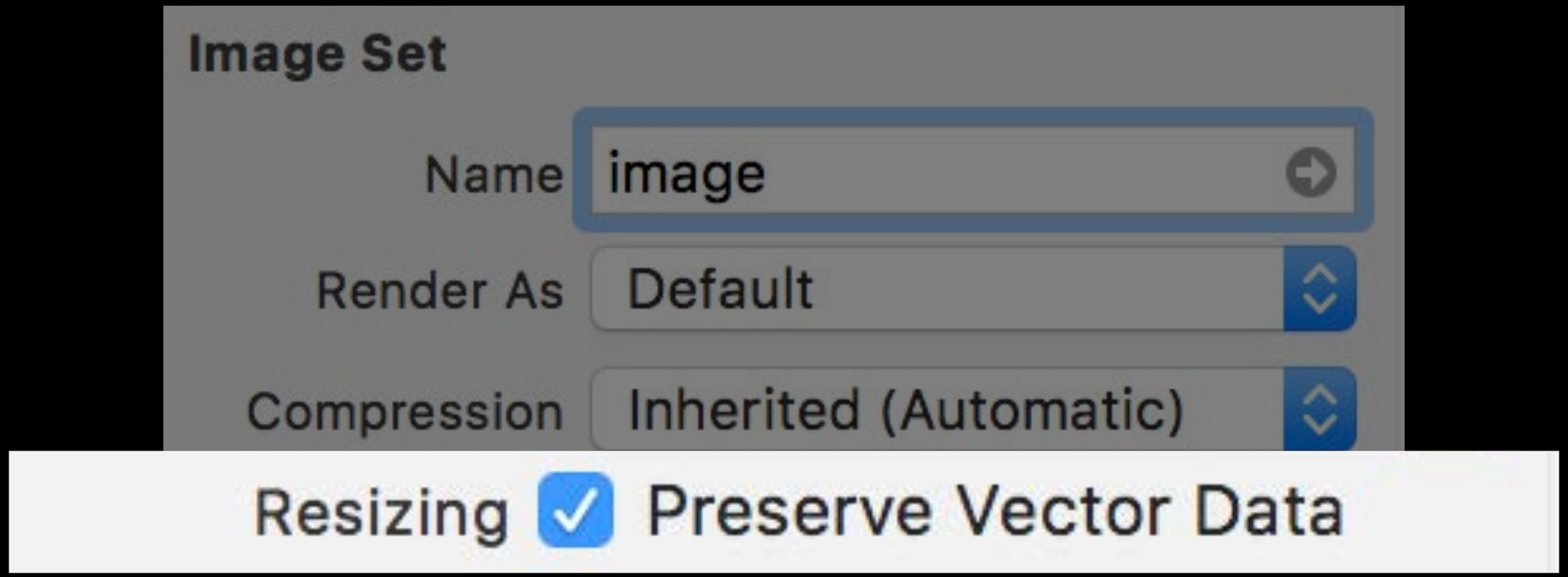
Provide PDF at 1x scale



Allow Images to Scale Up

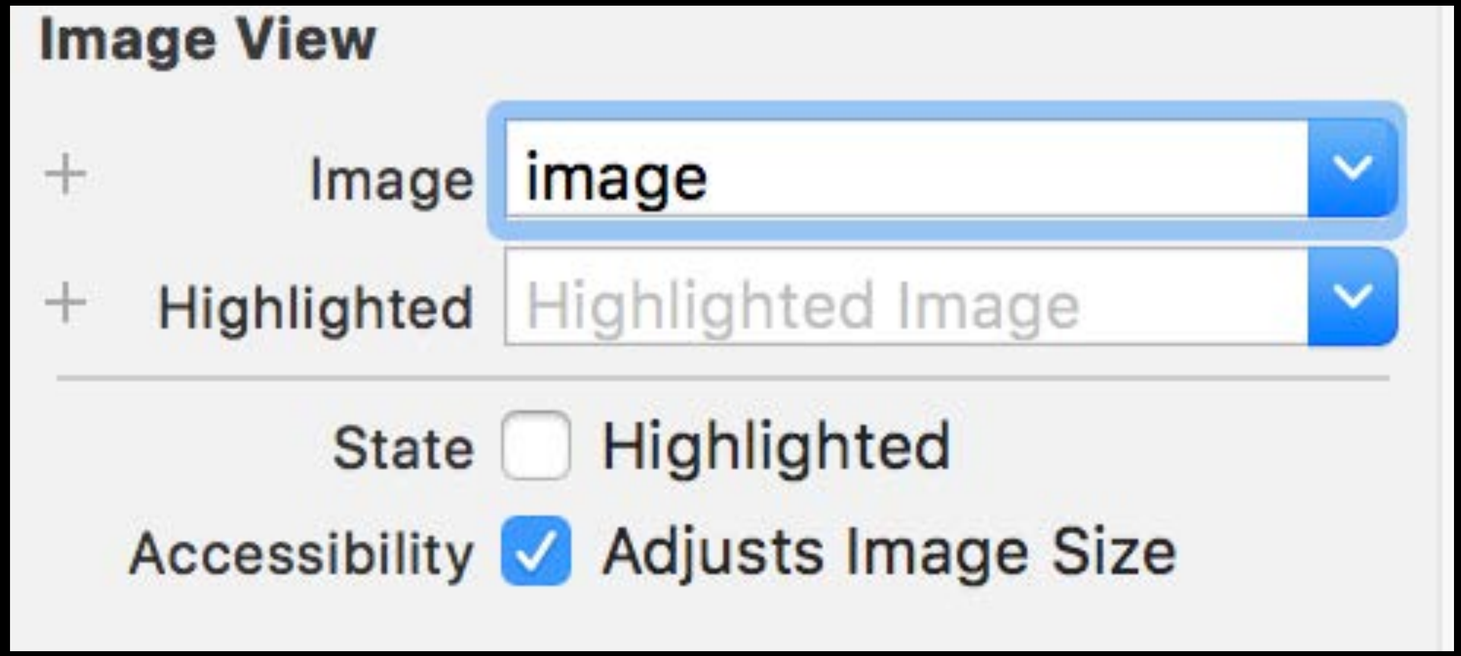
NEW

Provide PDF at 1x scale



Allow Images to Scale Up

NEW



Allow Images to Scale Up

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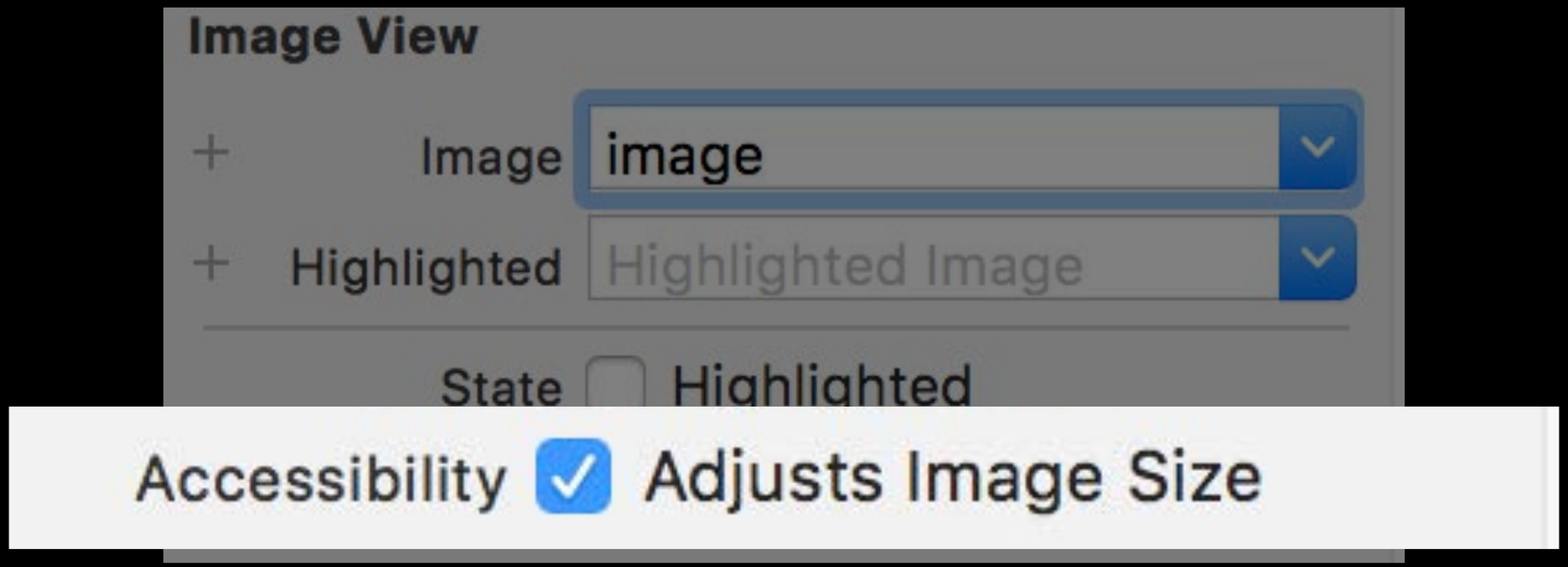

Allow Images to Scale Up

NEW

```
// UIAccessibilityContentSizeCategoryImageAdjusting protocol
// Scale the image for the 5 largest text sizes (accessibility sizes)
// Works for UIImageView, UIButton, and NSTextAttachment

imageView.adjustsImageSizeForAccessibilityContentSizeCategory = true
```


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Search
Edit
Amy Frost
Voicemail
home
mobile
Favorites
Recents
Contacts
Keypad
Voicemail

Allow Bar Item Images to Scale Smoothly

NEW

Allow Bar Item Images to Scale Smoothly

NEW

If PDF, use Preserve Vector Data checkbox in asset catalog

Allow Bar Item Images to Scale Smoothly

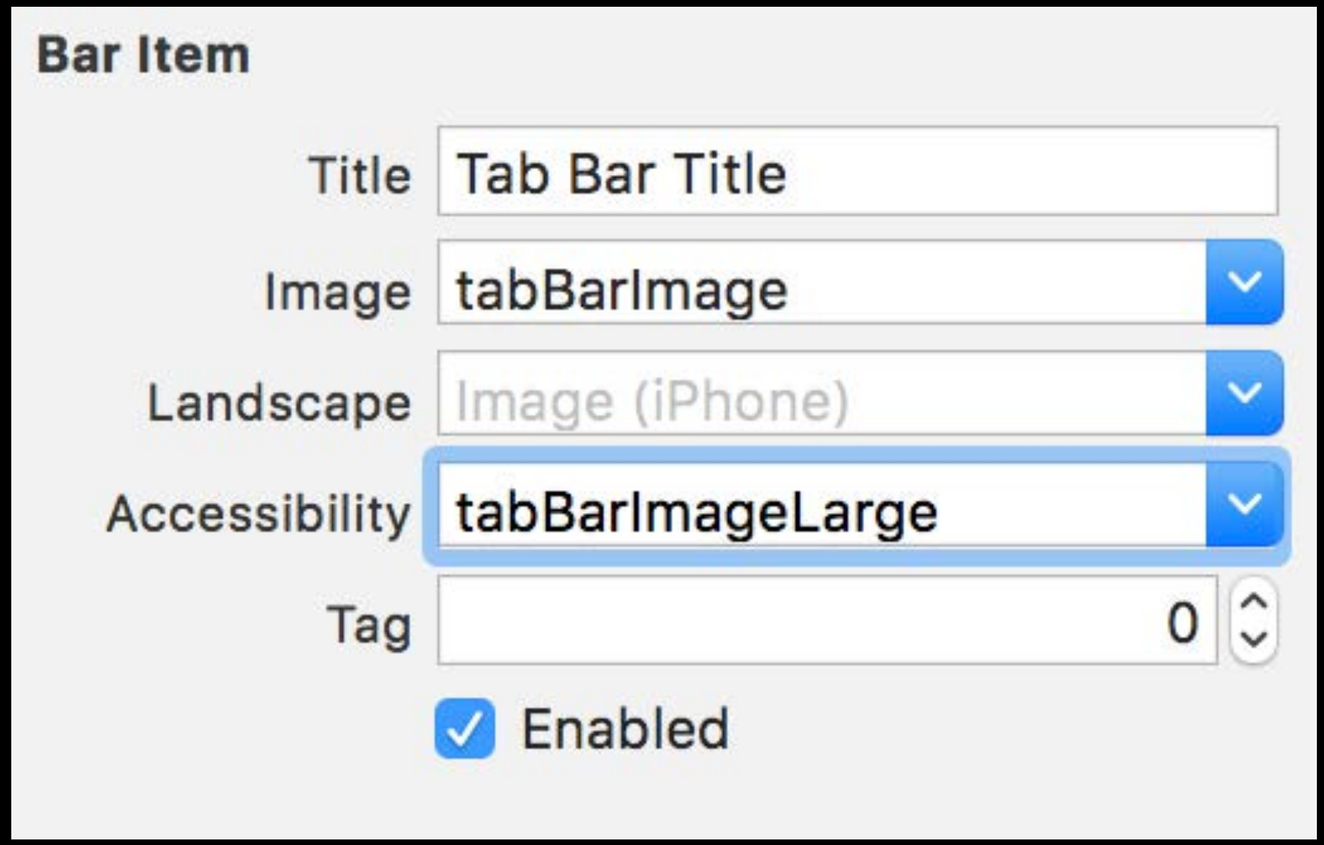
NEW

If PDF, use Preserve Vector Data checkbox in asset catalog

If not PDF, provide a larger version (75 x 75 points)

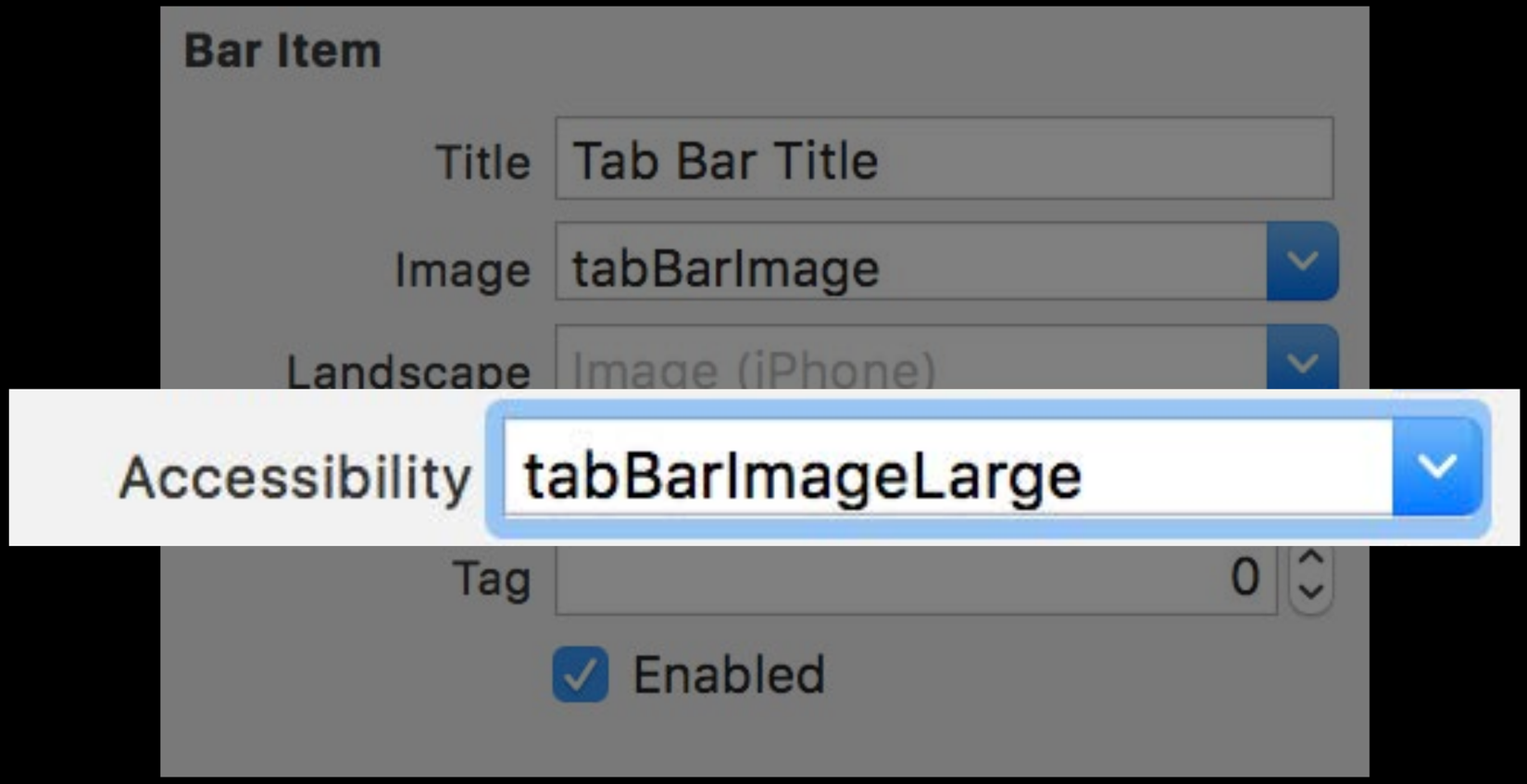
Allow Bar Item Images to Scale Smoothly

NEW



Allow Bar Item Images to Scale Smoothly

NEW



Allow Bar Item Images to Scale Smoothly

NEW

```
// Available on UIBarItem
barButtonItem.largeContentSizeImage = largerImage
```

Demo

Adapting your app for Dynamic Type

Nandini Sundar, Software Engineer

More Examples in Sample Code

Interface Builder examples

Wrapping text around images

Scrolling when necessary

And more!

Summary

Summary

Easy to support Dynamic Type with iOS 11 API

Summary

Easy to support Dynamic Type with iOS 11 API

Supporting Dynamic Type is good for your users

More Information

https://developer.apple.com/wwdc17/245

Related Sessions

Design For Everyone	WWDC 2017
What’s New in Accessibility	WWDC 2017
Media and Gaming Accessibility	WWDC 2017
Auto Layout Techniques in Interface Builder	WWDC 2017

Labs

Accessibility and Dynamic Type Lab	Technology Lab C	Fri 2:30PM–4:00PM


WWDC17