

Controlling Auto Layout's Rendering Pipeline



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Module Overview



The Rendering Pipeline

View Controller and Auto Layout

Auto Resizing Mask

Venn Diagram Demo

IBOutlets for NSLayoutConstraint

Laying out the Views



1) Update Constraints

The constraints are analyzed and measured

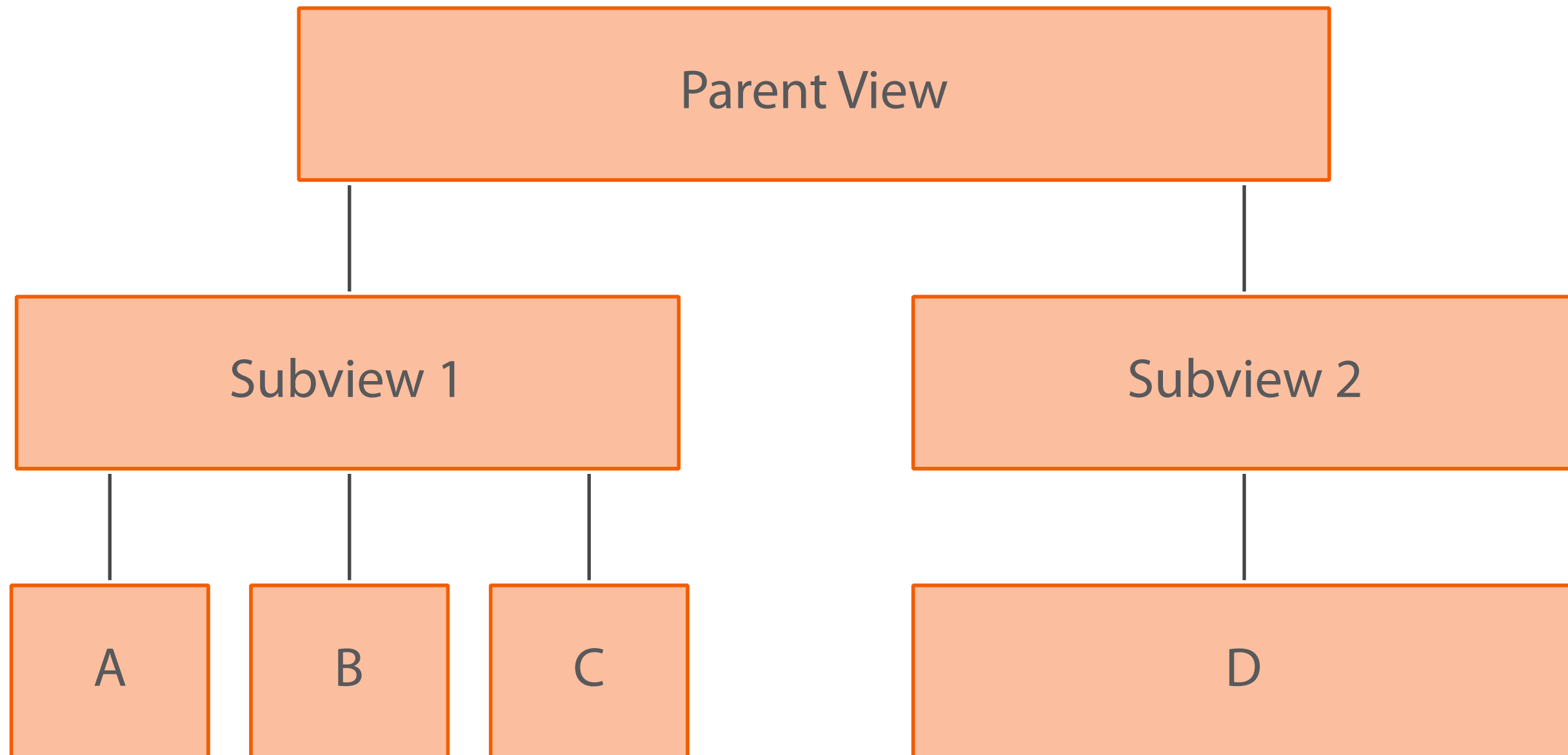
2) Layout Subviews

The frames for the view hierarchy are set

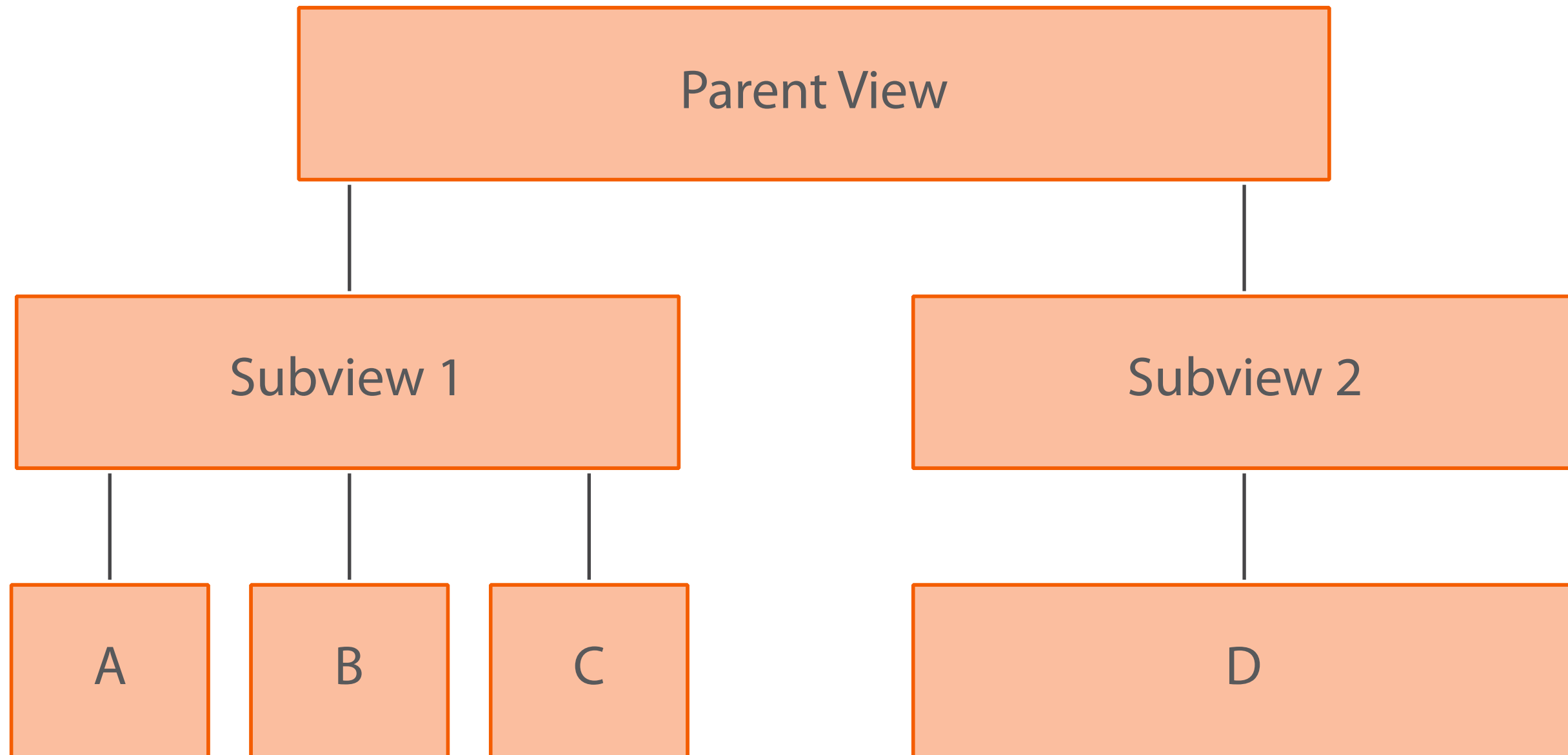
3) Display

The views are rendered to the screen

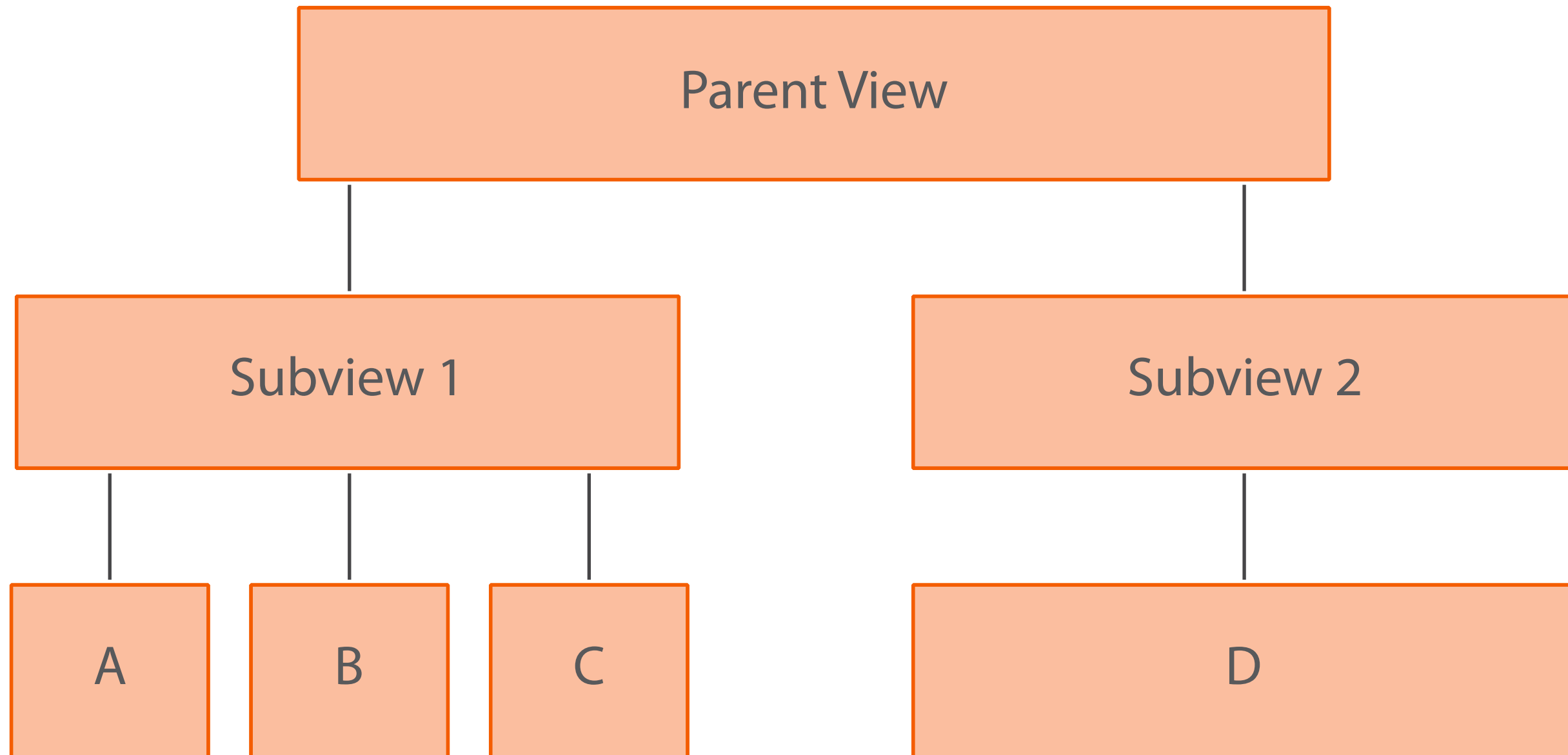
Updating Constraints



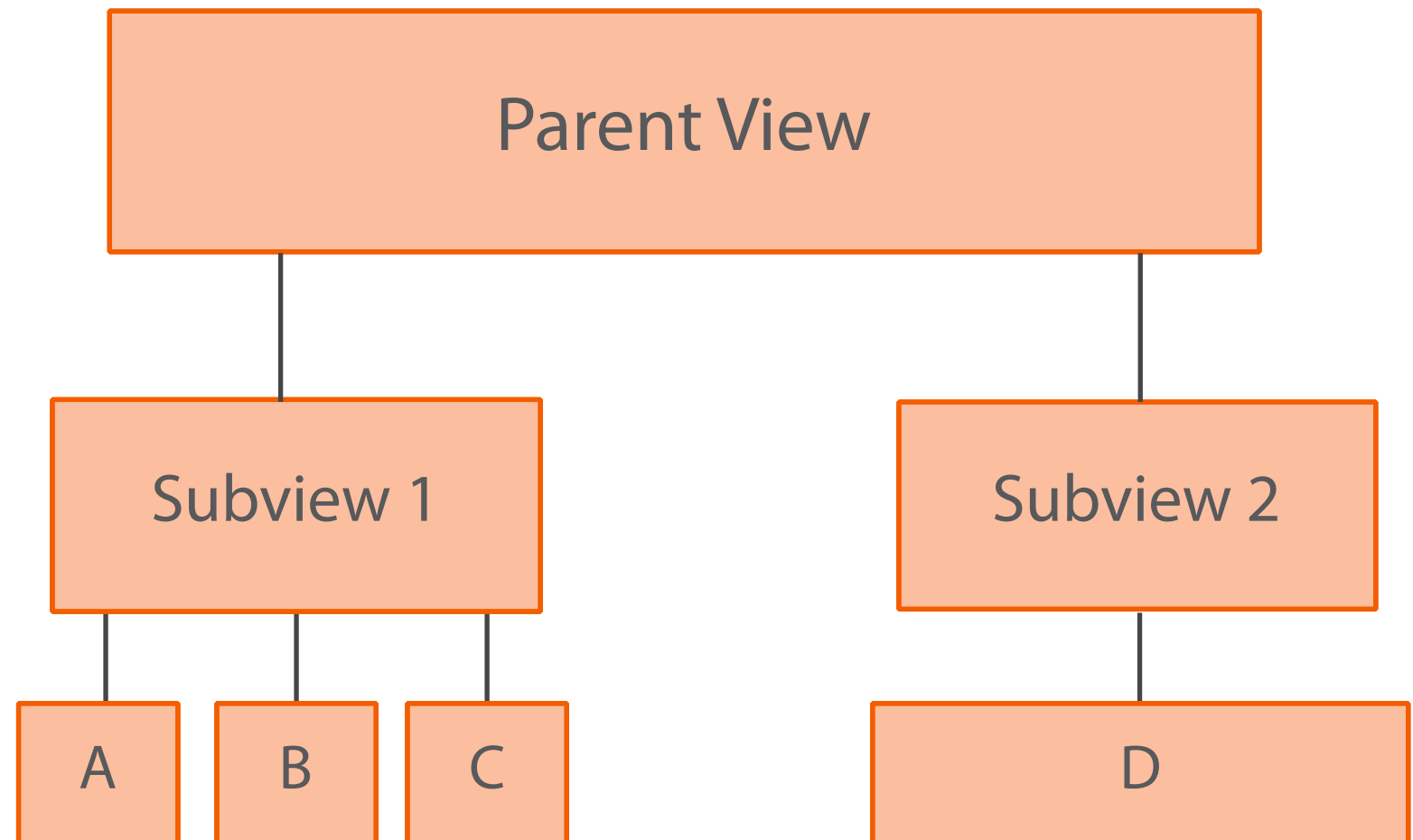
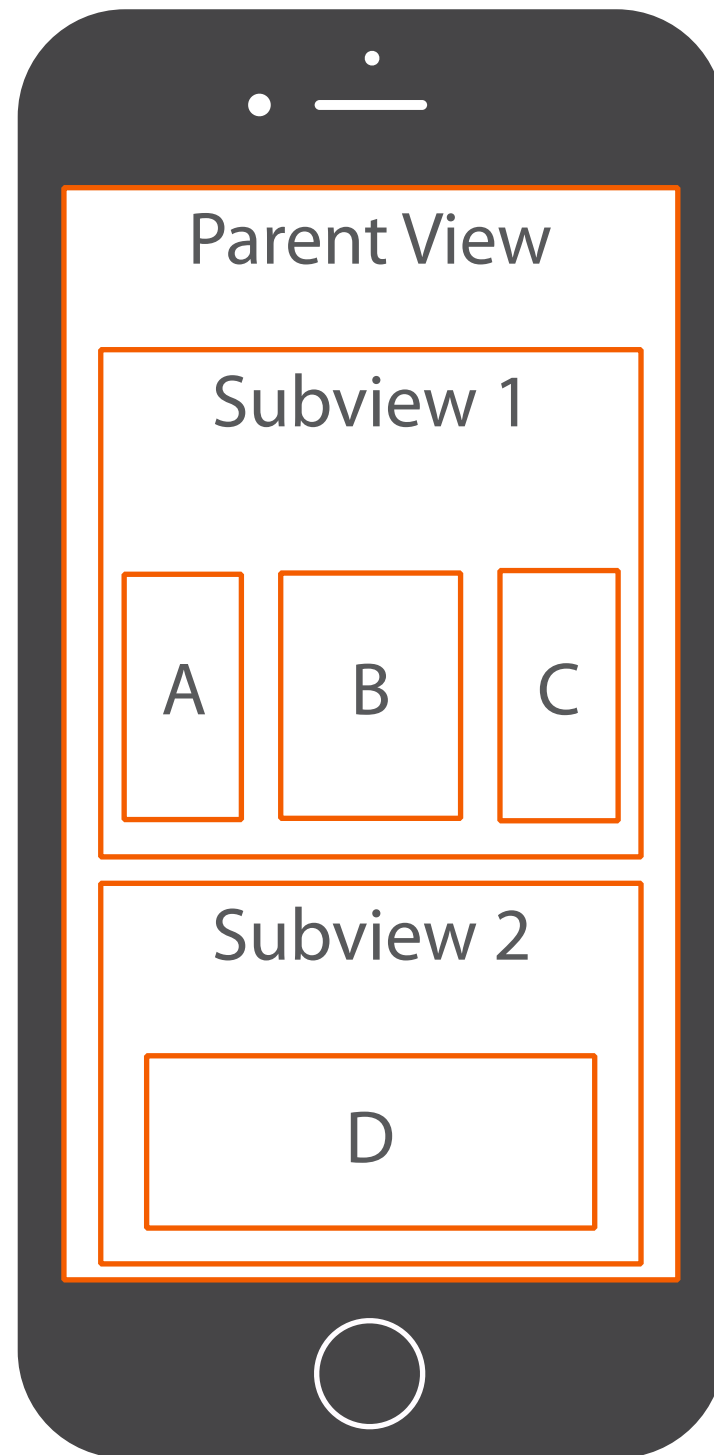
Updating Constraints

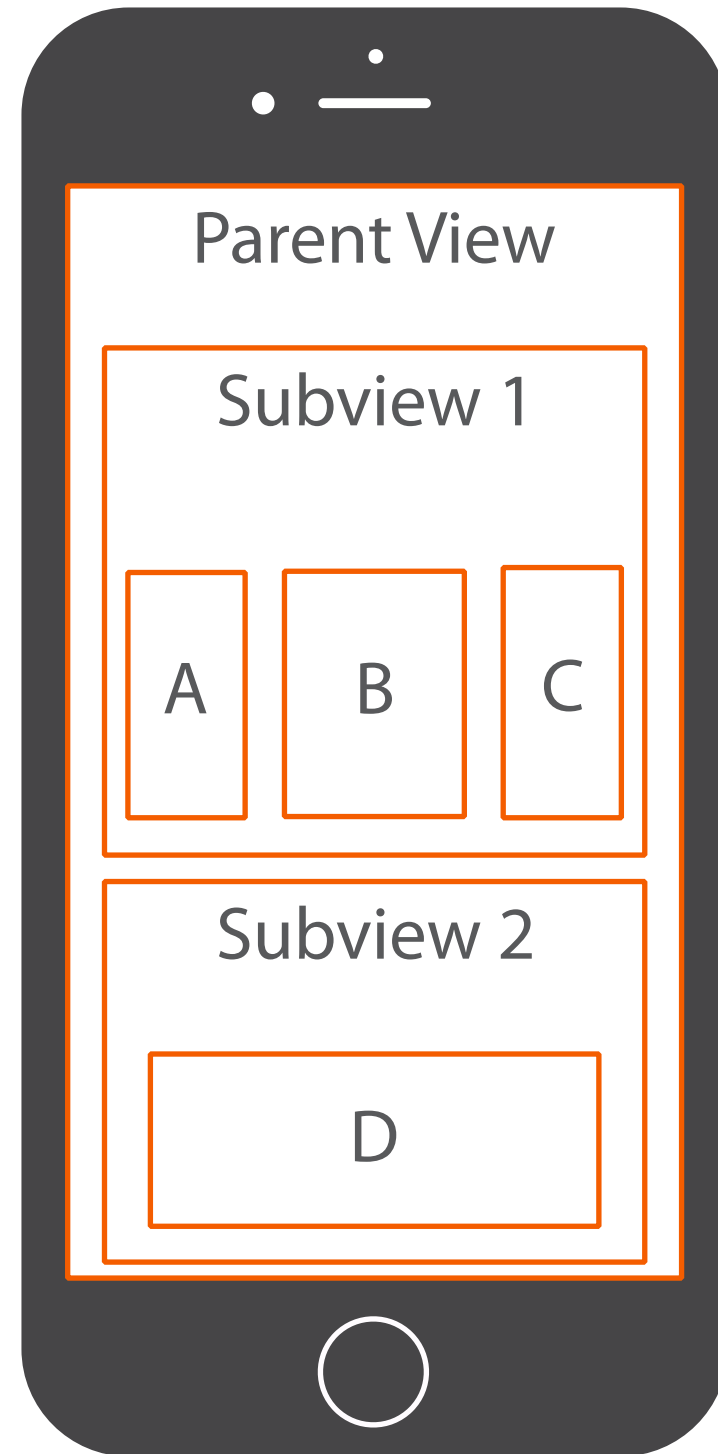


Updating Constraints



Layout Subviews





Layout Subviews



Render
Views

Laying out the Views



1) Update Constraints

The constraints are analyzed and measured

2) Layout Subviews

The frames for the view hierarchy are set

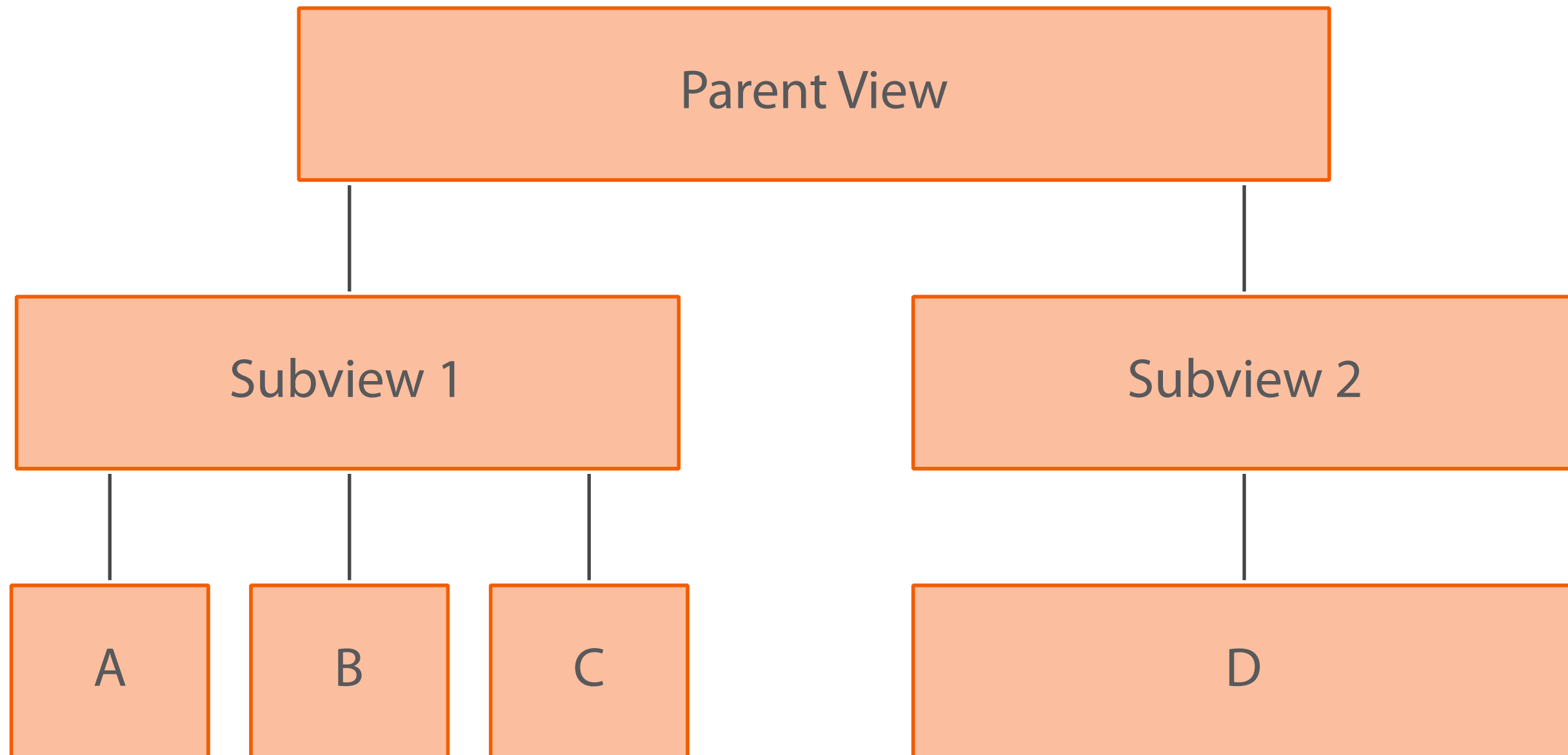
3) Display

The views are rendered to the screen

```
override func updateConstraints() {  
    /*  
        Constraints for your Custom View  
    */  
    super.updateConstraints()  
}
```

Updating Constraints

Updating Constraints



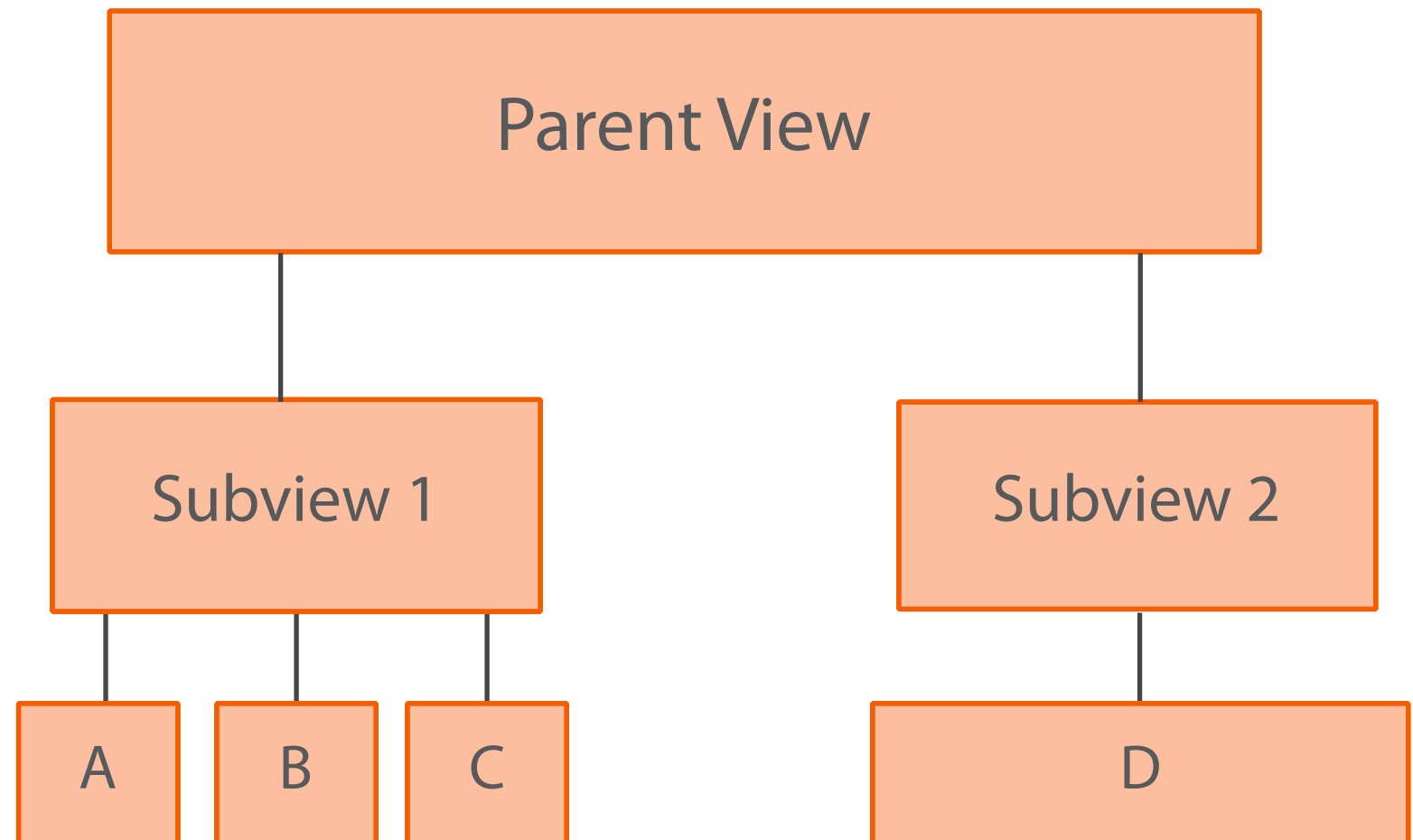
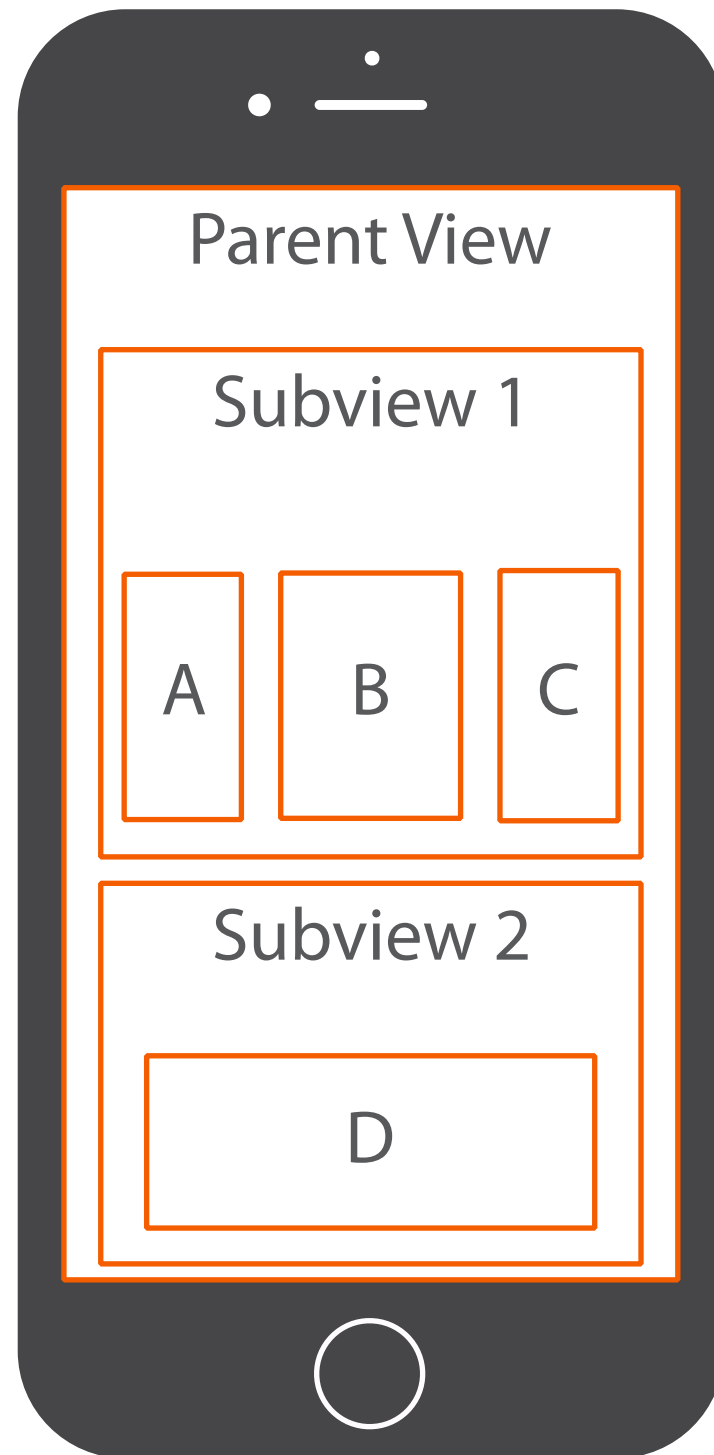
```
override func updateConstraints() {  
    /*  
        Constraints for your Custom View  
    */  
    super.updateConstraints()  
}  
  
self.setNeedsUpdateConstraints()
```

Updating Constraints

Can Modify Constraints Outside of this Method

Changing Multiple Constraints with Subviews

Layout Subviews



```
override func layoutSubviews() {  
    super.layoutSubviews()  
    /*  
        Setup Custom Information such as frame, bounds, etc.  
    */  
}  
  
self.setNeedsLayout()
```

Layout Subviews

Creating a custom view out of subviews

Do not update constraints

```
override fun drawRect(rect: CGRect) {  
    /*  
        Custom Drawing  
    */  
}
```

Draw Rect


```
view.setNeedsUpdateConstraints()
```

```
view.updateConstraintsIfNeeded()
```

```
view.setNeedsLayout()
```

```
view.layoutIfNeeded()
```

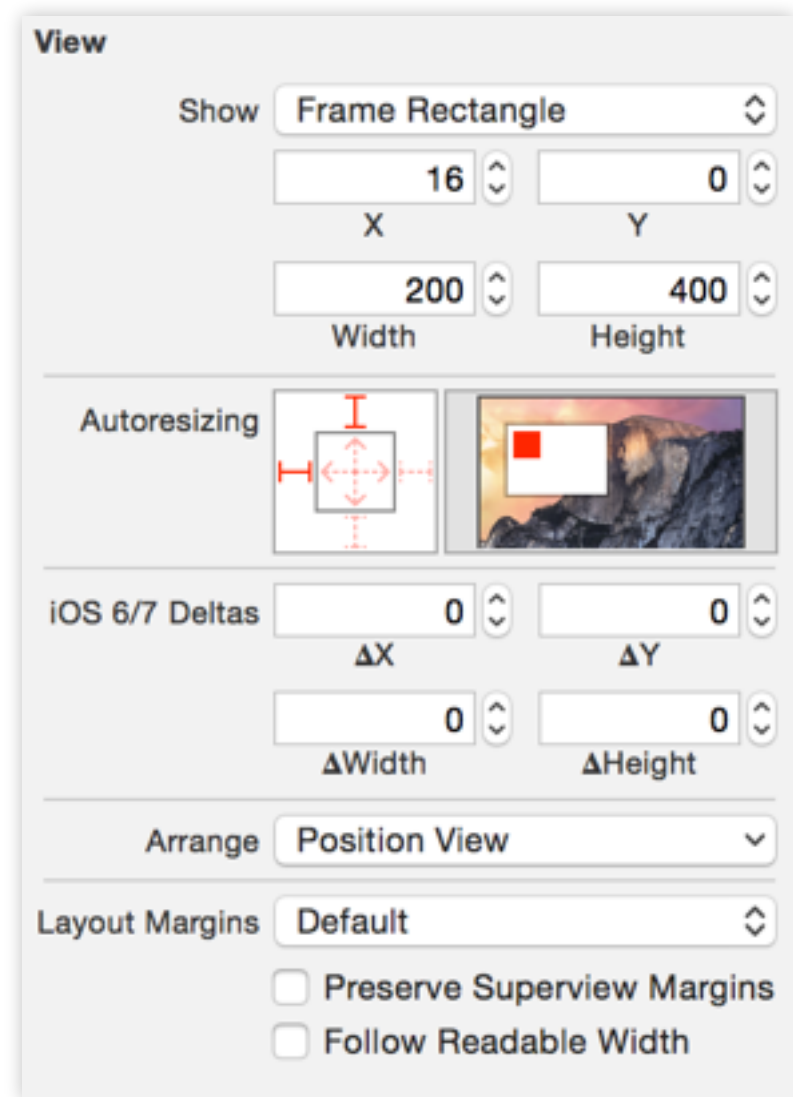
Force Layout

```
override func viewWillLayoutSubviews() {  
    super.viewWillLayoutSubviews()  
  
}
```

```
override func viewDidLayoutSubviews() {  
    super.viewDidLayoutSubviews()  
  
}
```

UIViewController - Layout Subviews

Translates Autoresizing Mask Into Constraints



Mix Auto Layout and Legacy System

The two layout paradigms can be mixed

Layout Manually

Using Layout Subviews to place a frame

Frame Constructors Default to True

Pay attention to how you create your views in code

Summary



The Rendering Pipeline

Hooking into the Pipeline

View Will/Did Layout Subviews

IBOutlets for NSLayoutConstraint

Auto Resizing Mask