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# AutoLayout

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강사 주영민

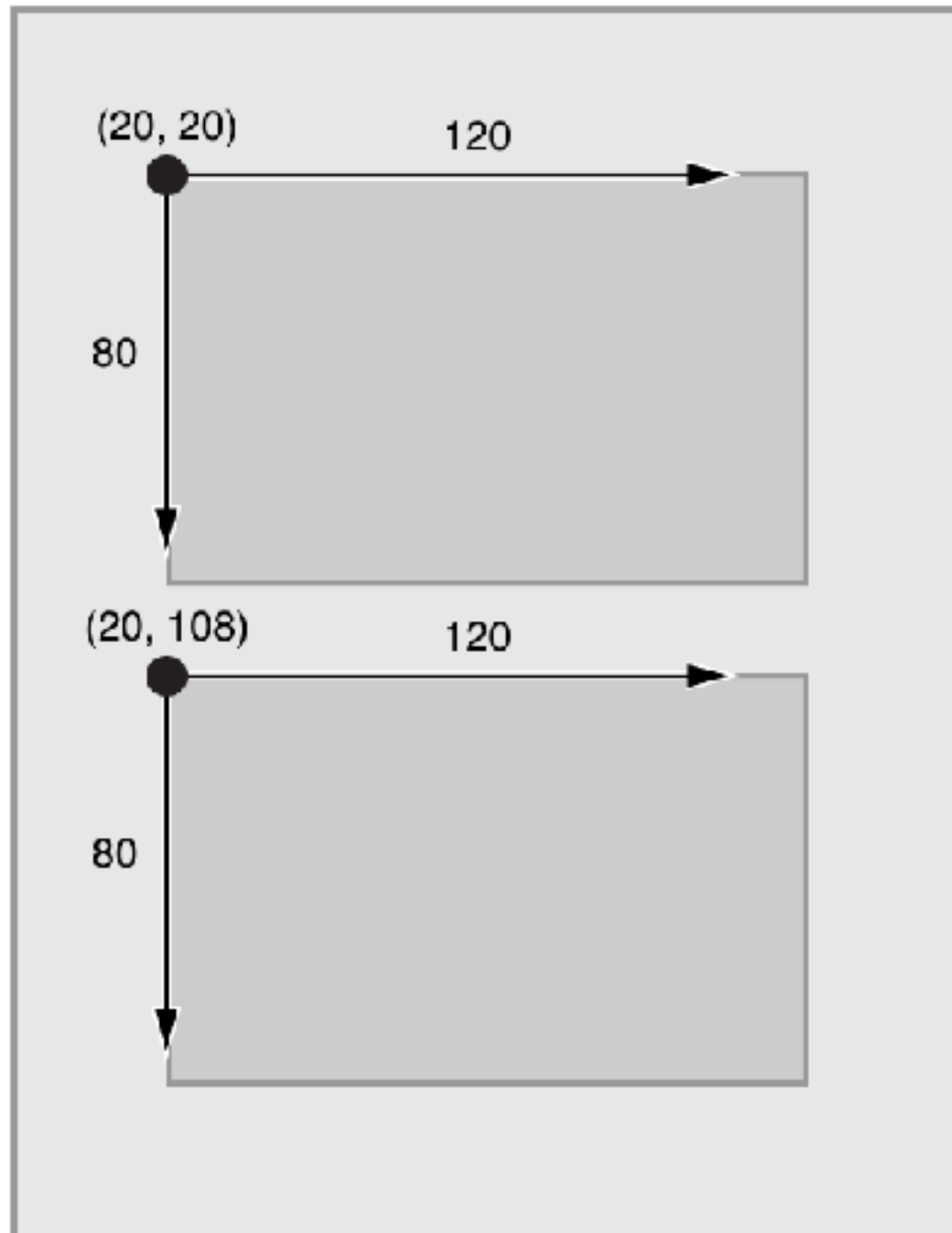
# AutoLayout

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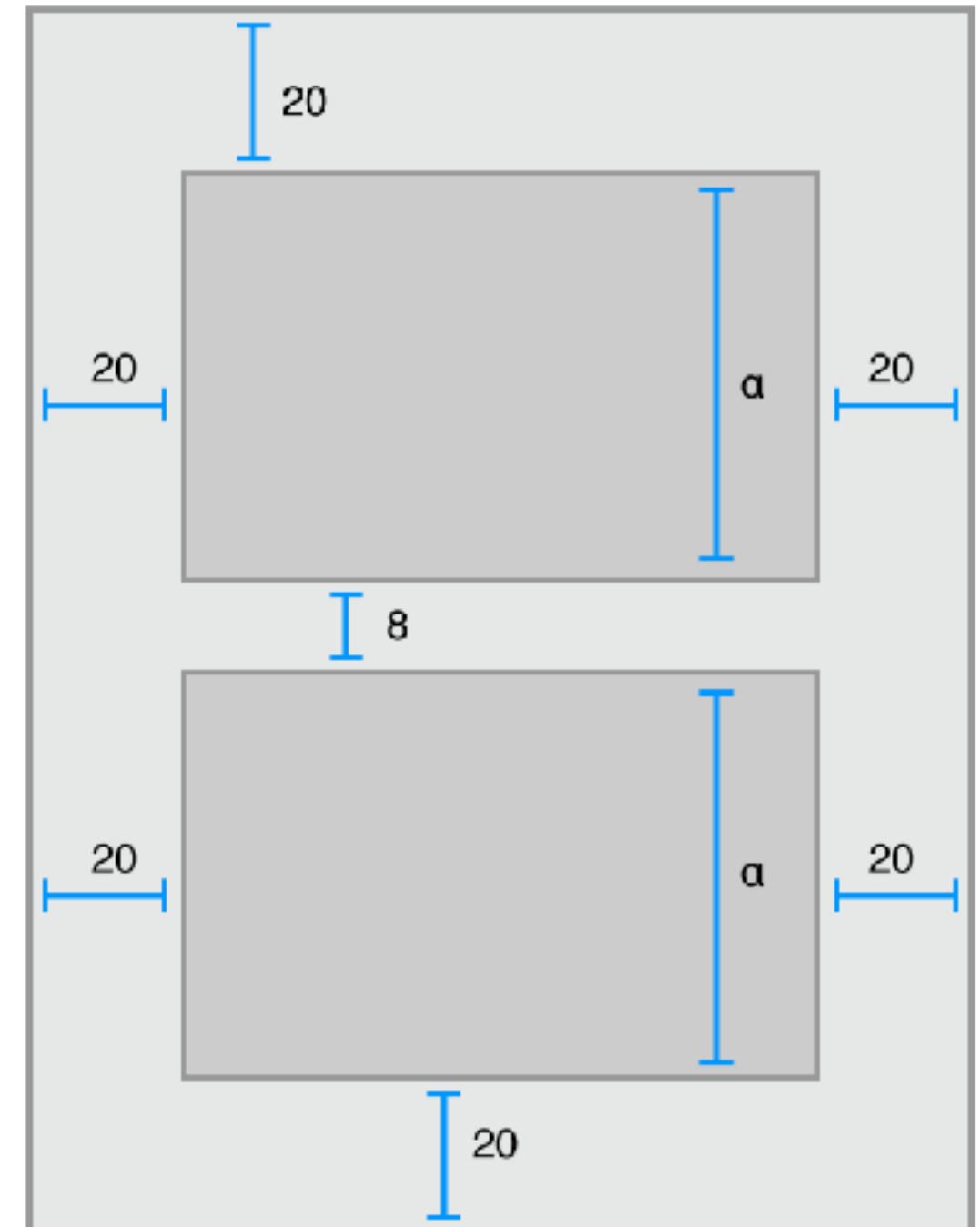
- AutoLayout은 각각의 View의 Size와 위치를 제약사항을 통해서 유동적으로 계산하여 표현하는 방법

# Auto Layout VS Frame-Based Layout

## Frame-Based Layout



## Auto Layout



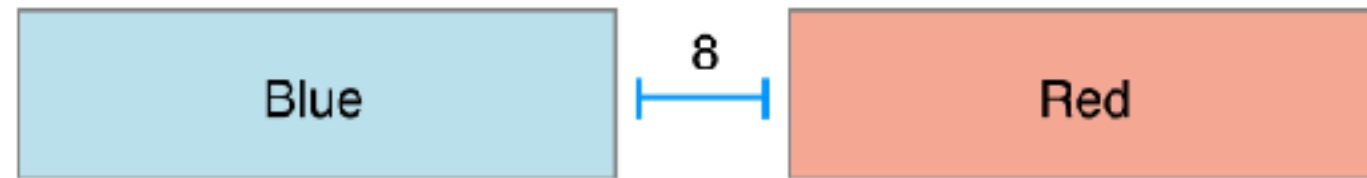
# Constraint(제약)

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- 각 View의 거리, 길이, 위치 등을 표현하기 위한 제약

# Constraint

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$$\underbrace{\text{RedView.Leading}}_{\text{Item 1}} = \underbrace{1.0}_{\text{Multiplier}} \times \underbrace{\text{BlueView.trailing}}_{\text{Item 2}} + \underbrace{8.0}_{\text{Constant}}$$

Relationship

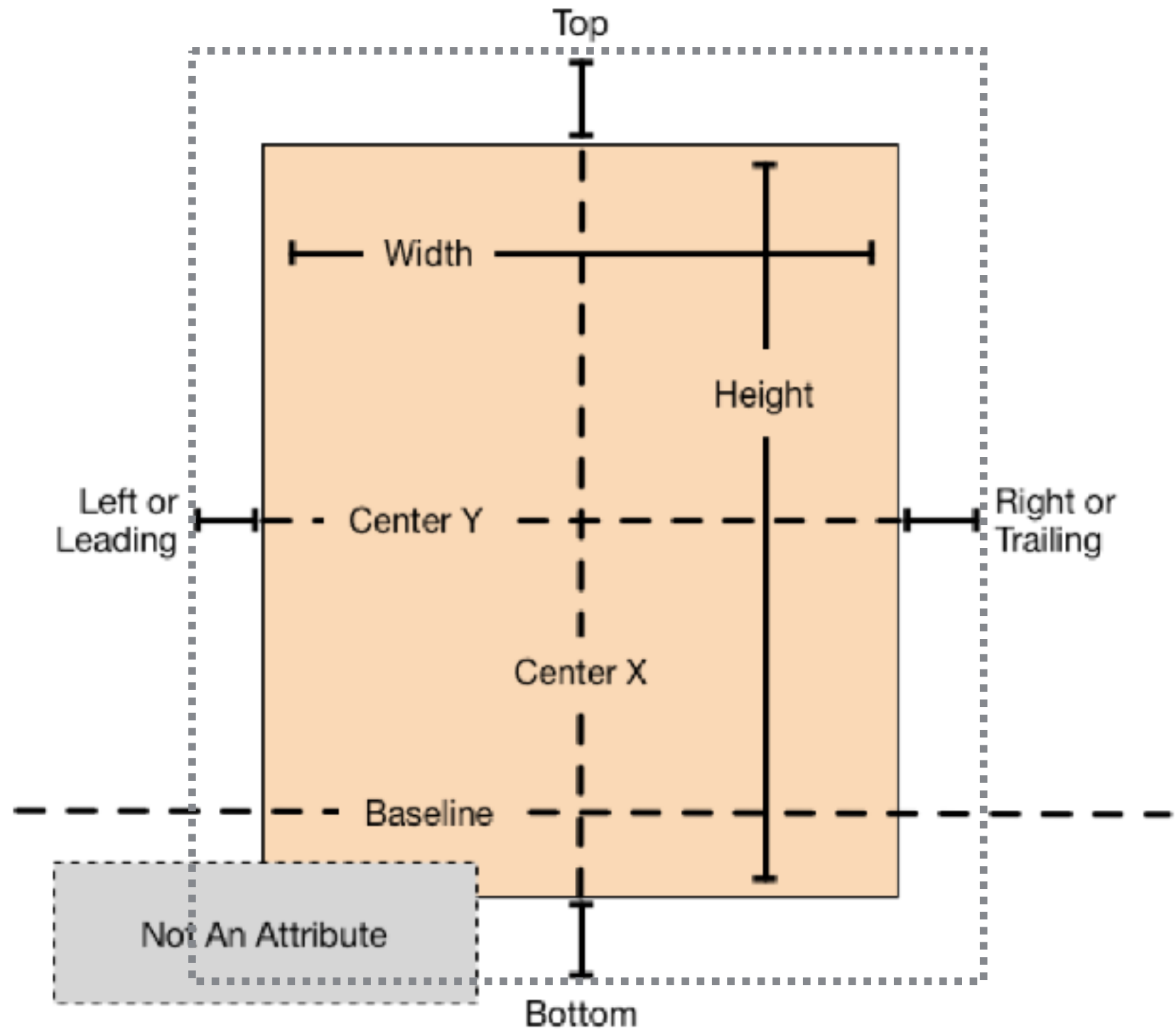
Attribute 2

Attribute 1

- Multiplier : 비율을 통한 레이아웃 설정을 위한 속성
- Constant : 일정한 간격을 유지하기 위한 속성

# Attribute(속성)

- Size attributes
  - ✓ width
  - ✓ height
- Location attributes
  - ✓ Leading
  - ✓ Trailing
  - ✓ Top
  - ✓ Bottom
  - ✓ Vertical
  - ✓ Horizontal



# Constraint 공식

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대상 View의 Attribute는 기준View의 Attribute X 비율 +간격이다.

$$\text{Item1.Attribute} = \text{비율} \times \text{Item2.Attribute} + \text{간격}$$

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# 제약사항 만들기

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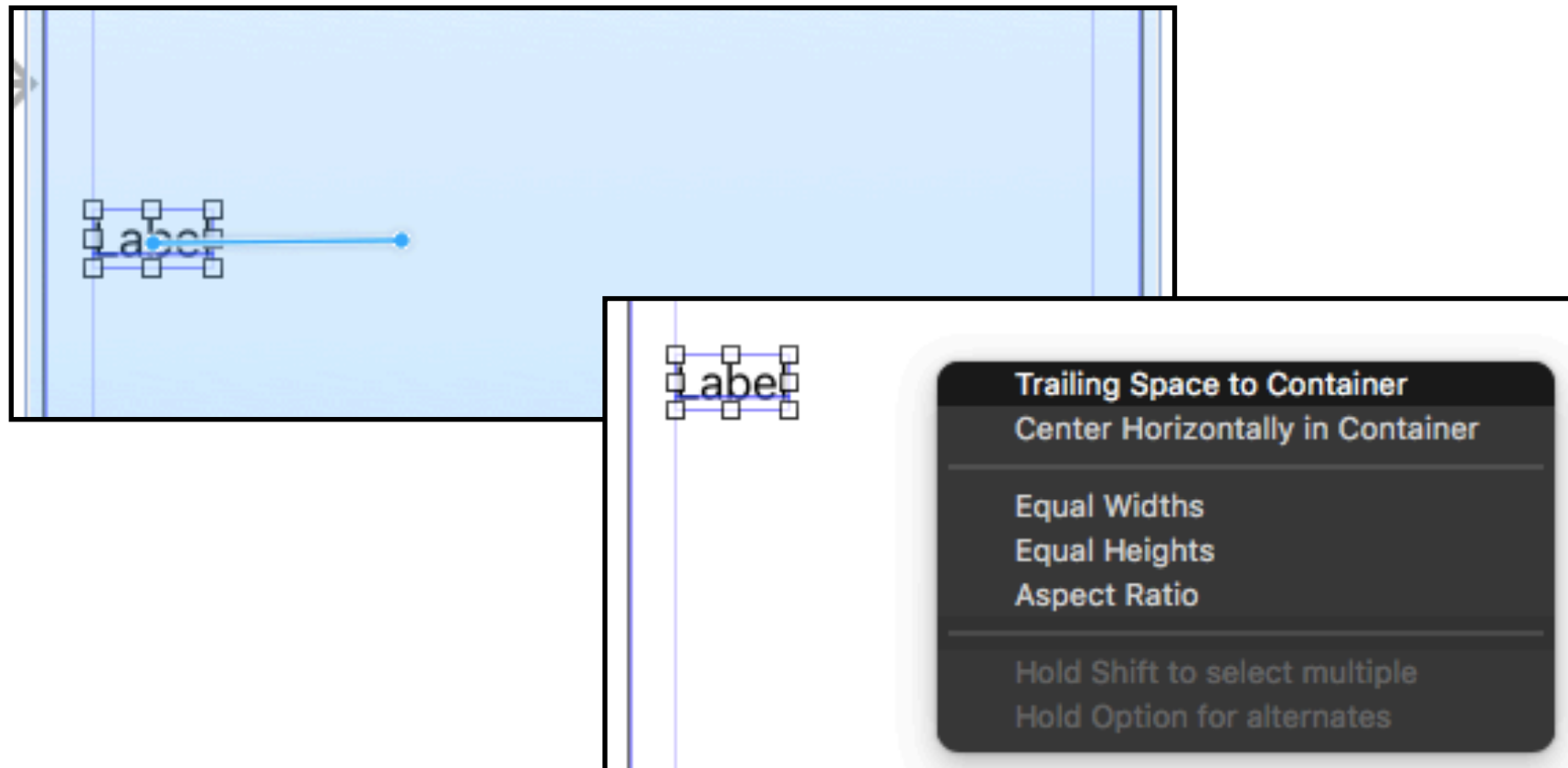
강사 주영민



# Using Stroyboard

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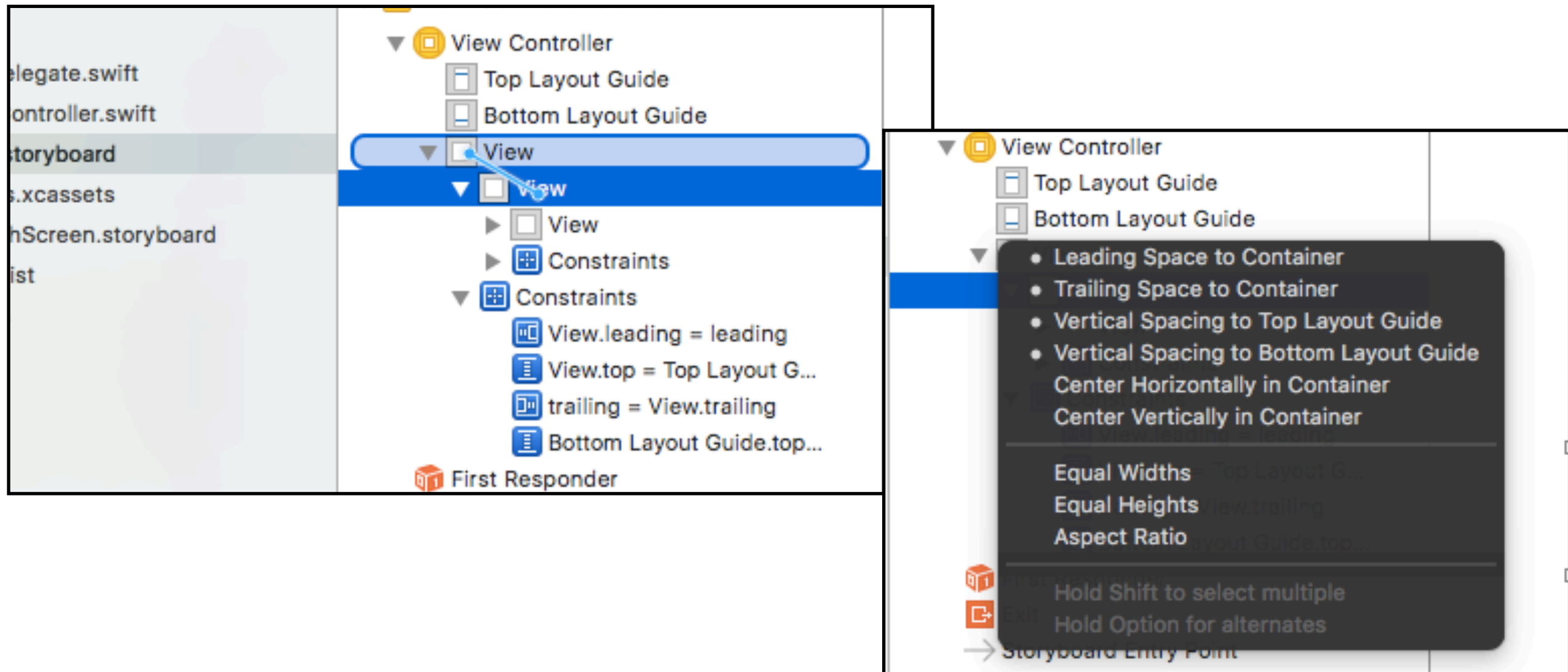
Control + Drag



✓ drag의 위치와 방향에 따라 다른 제약 메뉴가 나타난다.

# Using Storyboard

Control + Drag



✓ drag의 위치와 방향에 따라 다른 제약 메뉴가 나타난다.

# Layout margin

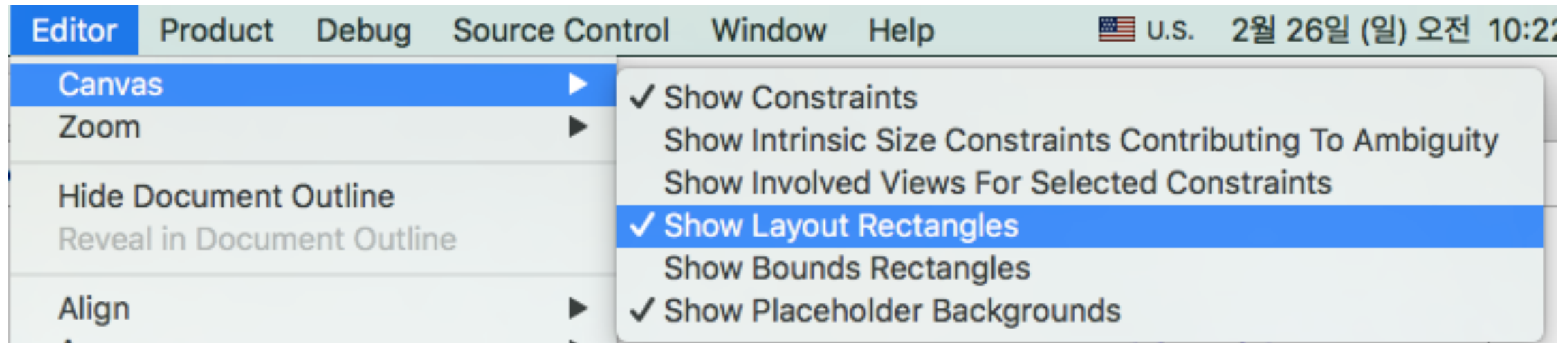
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- SuperView의 가장자리와 SubView와의 간격이 유지되도록 설정된 내부 패딩값
- 기본적으로 UIView의 내부에 8Point의 여백을 가지고 있다.
- Interface Builder에서는 변경할수 없으며, UIView.layoutMargins 프로퍼티를 통해 변경 가능하다.

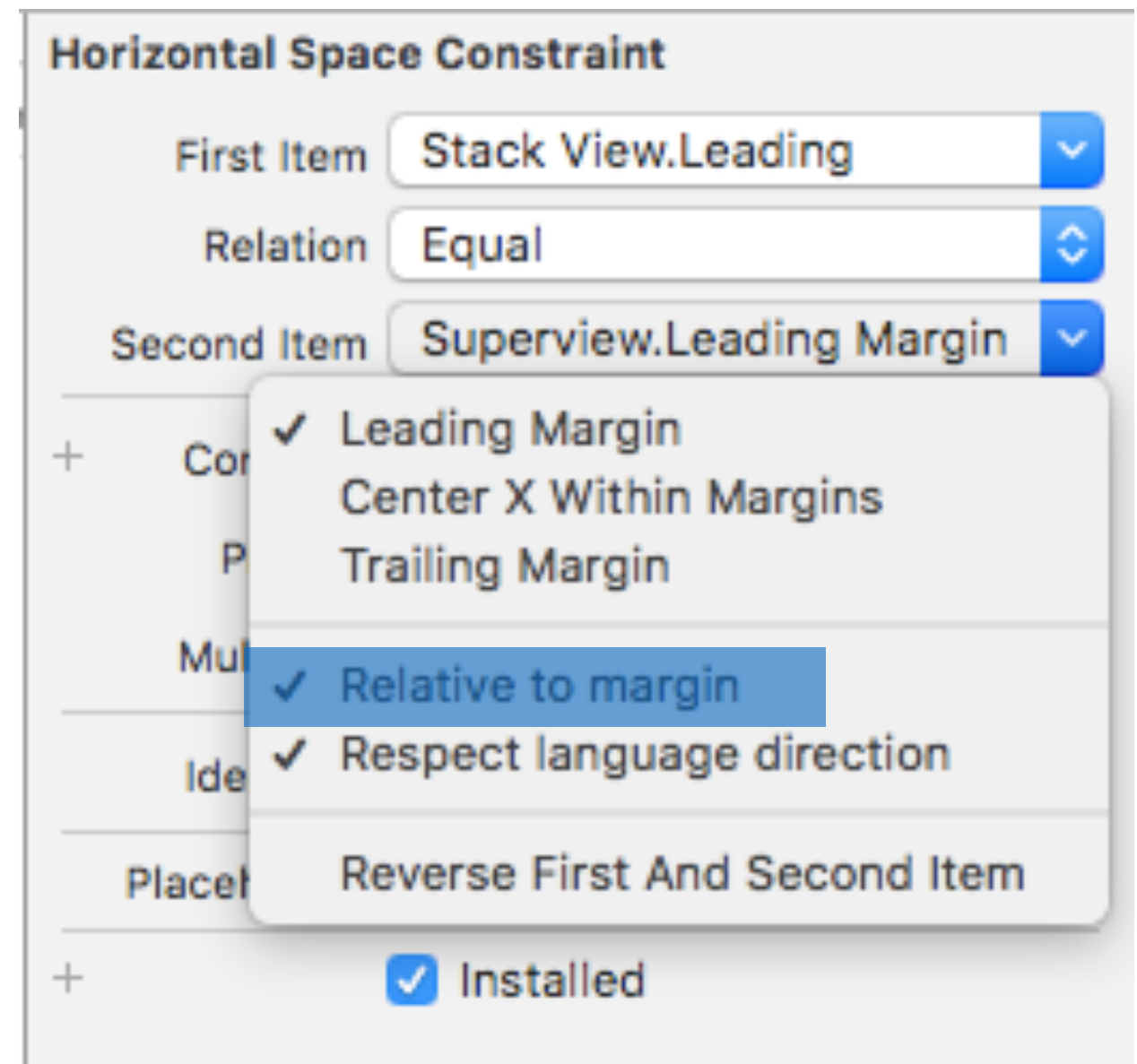
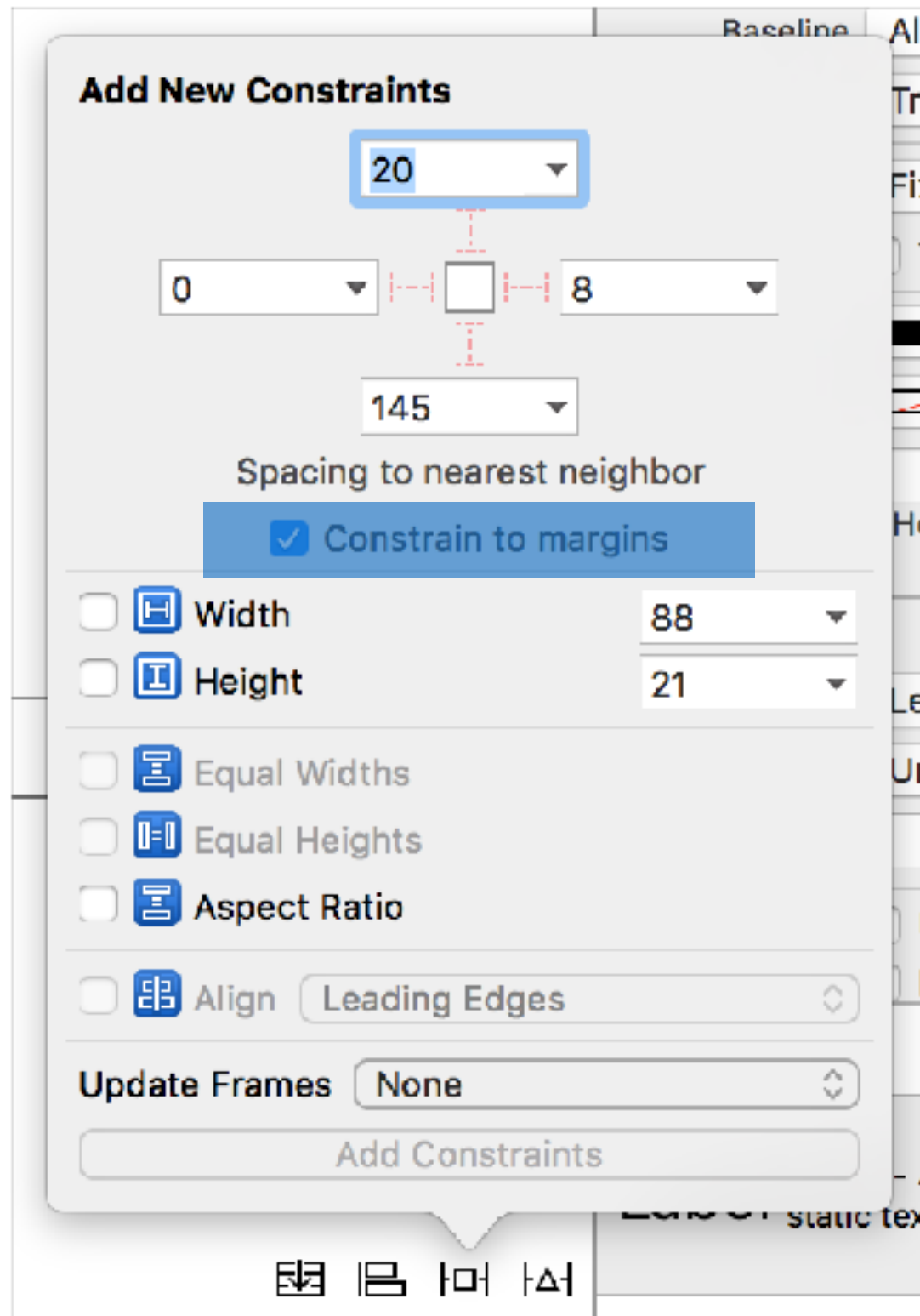


# Show Layout Margin

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# Layout Margin 제거

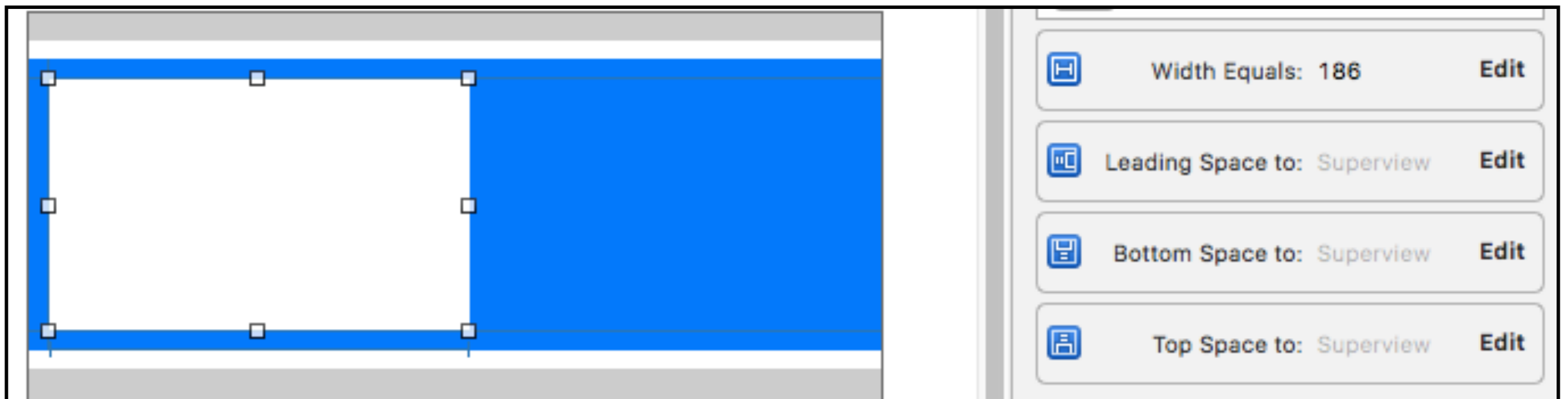
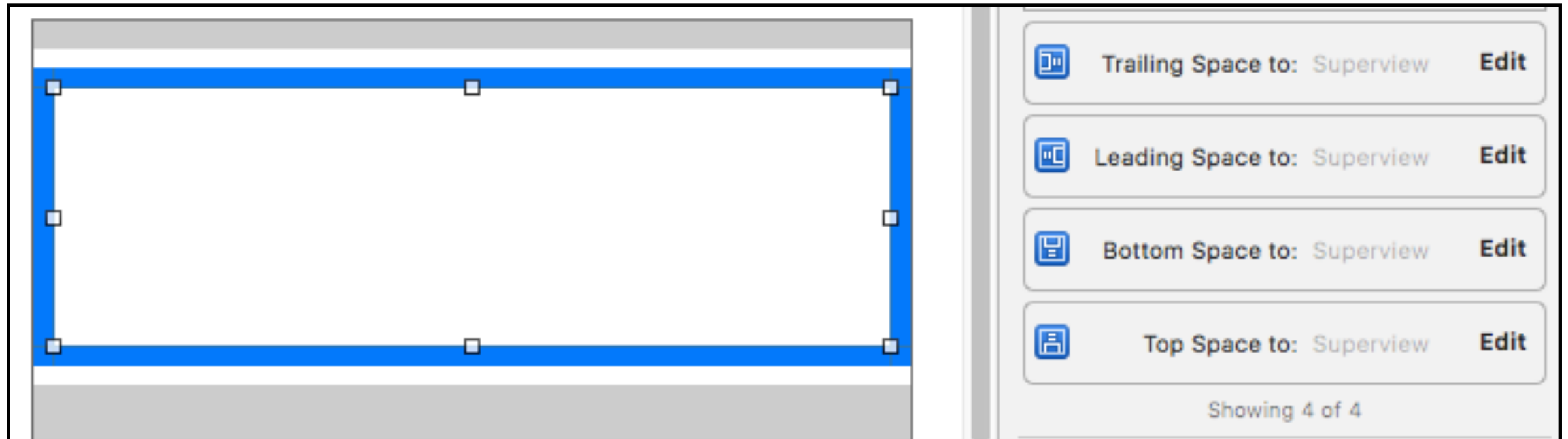


# 제약사항 만들기 팁

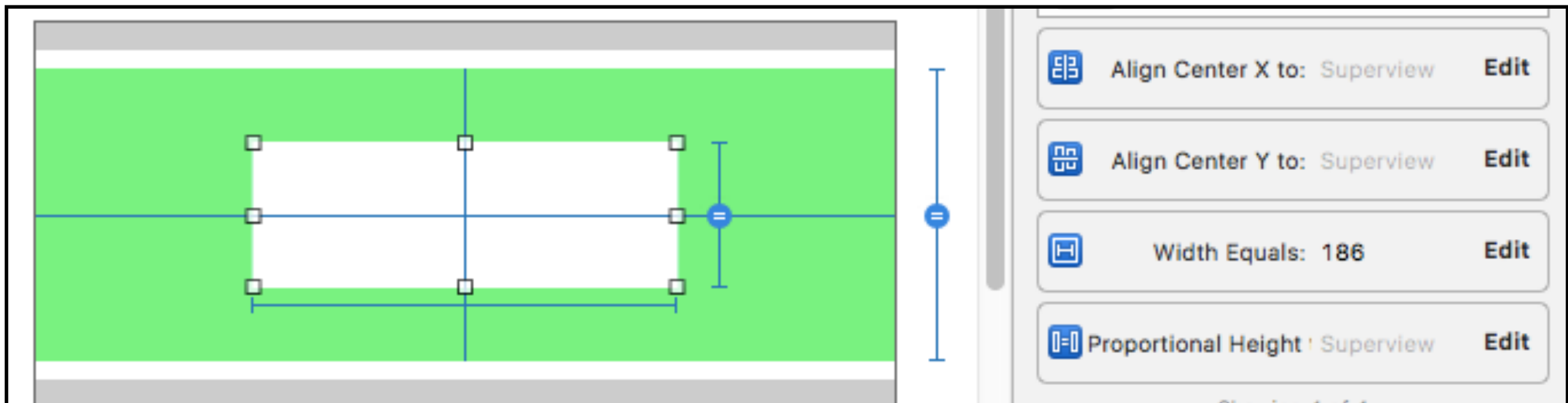
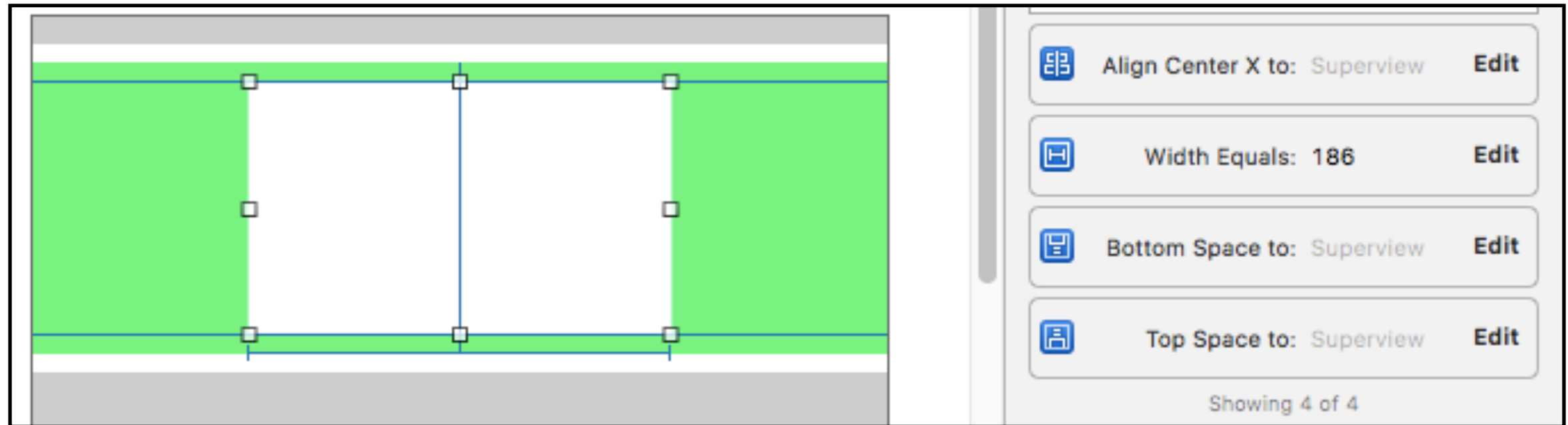
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- 각 View의 주변 모든 제약사항이 만족해야된다.
- 가로제약, 세로제약을 확인
- 중복된 제약은 제거한다.
- 화면 배치의 기준 View를 정해서 연관된 제약사항을 만들시 수정에 따른 변경 고려

# 예제



# 예제





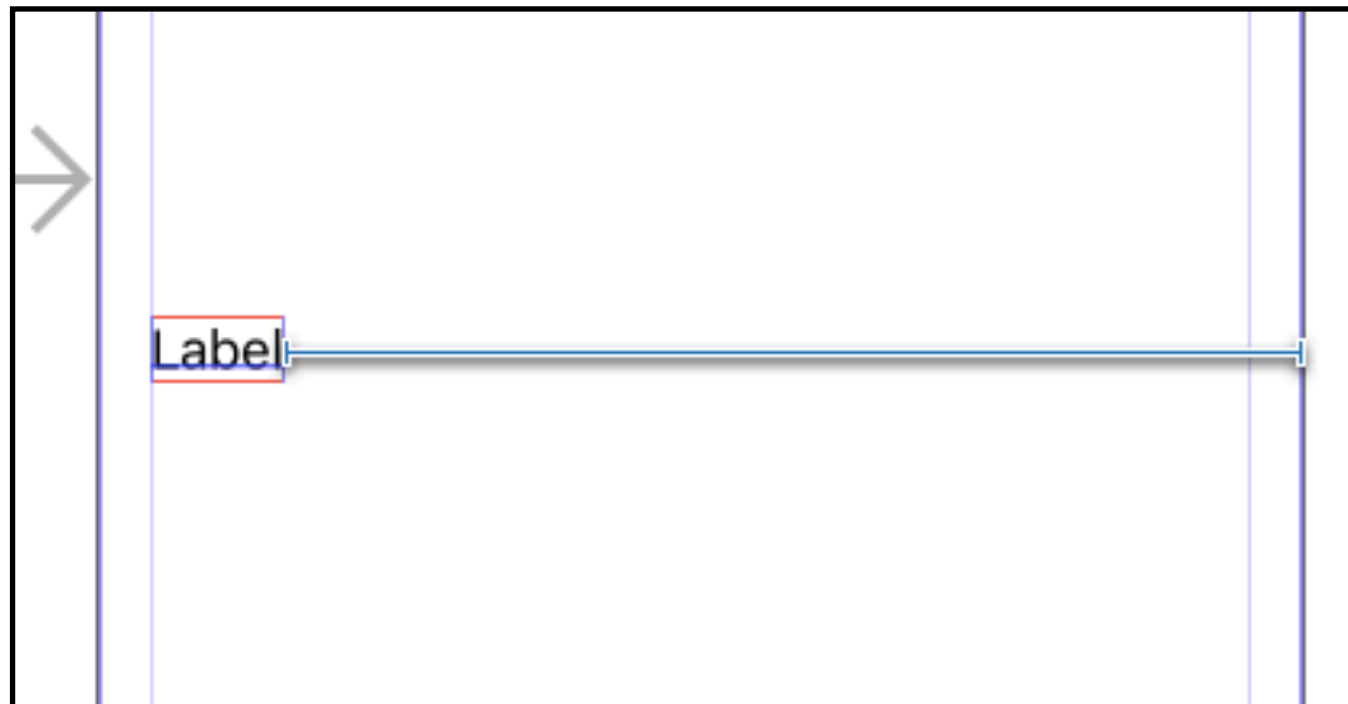
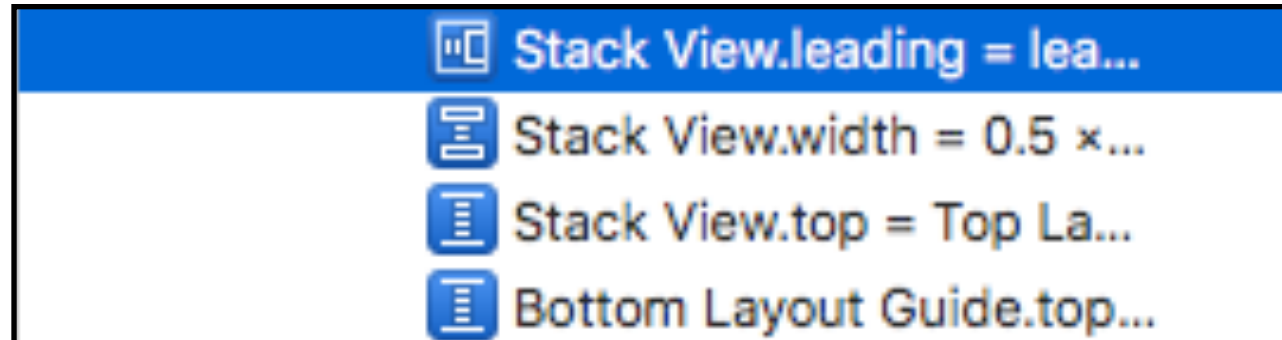
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# 제약 설정

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강사 주영민

# constraint 선택 설정



**Horizontal Space Constraint**

First Item: Stack View.Leading

Relation: Equal

Second Item: Superview.Leading Margin

+ Constant: 27

Priority: 1000

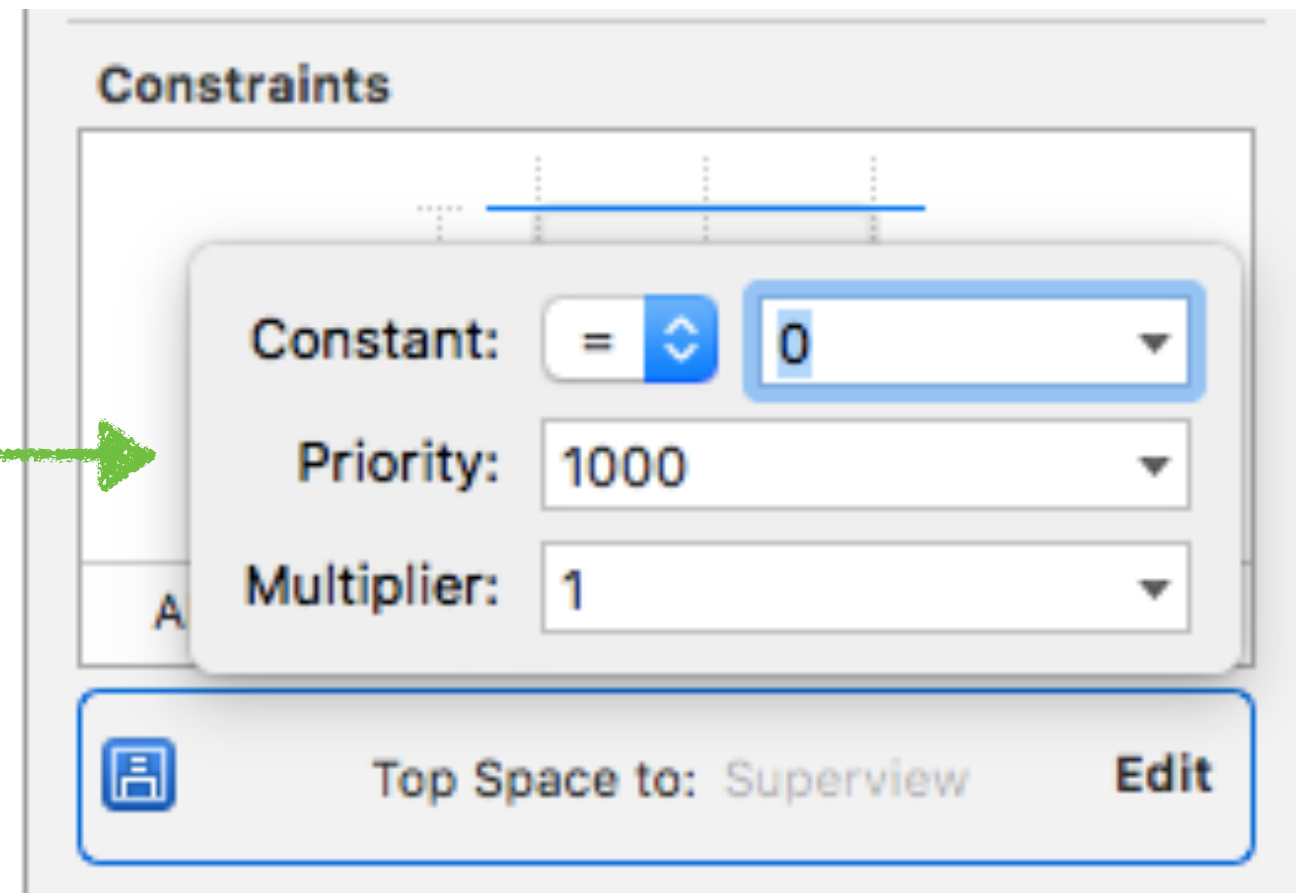
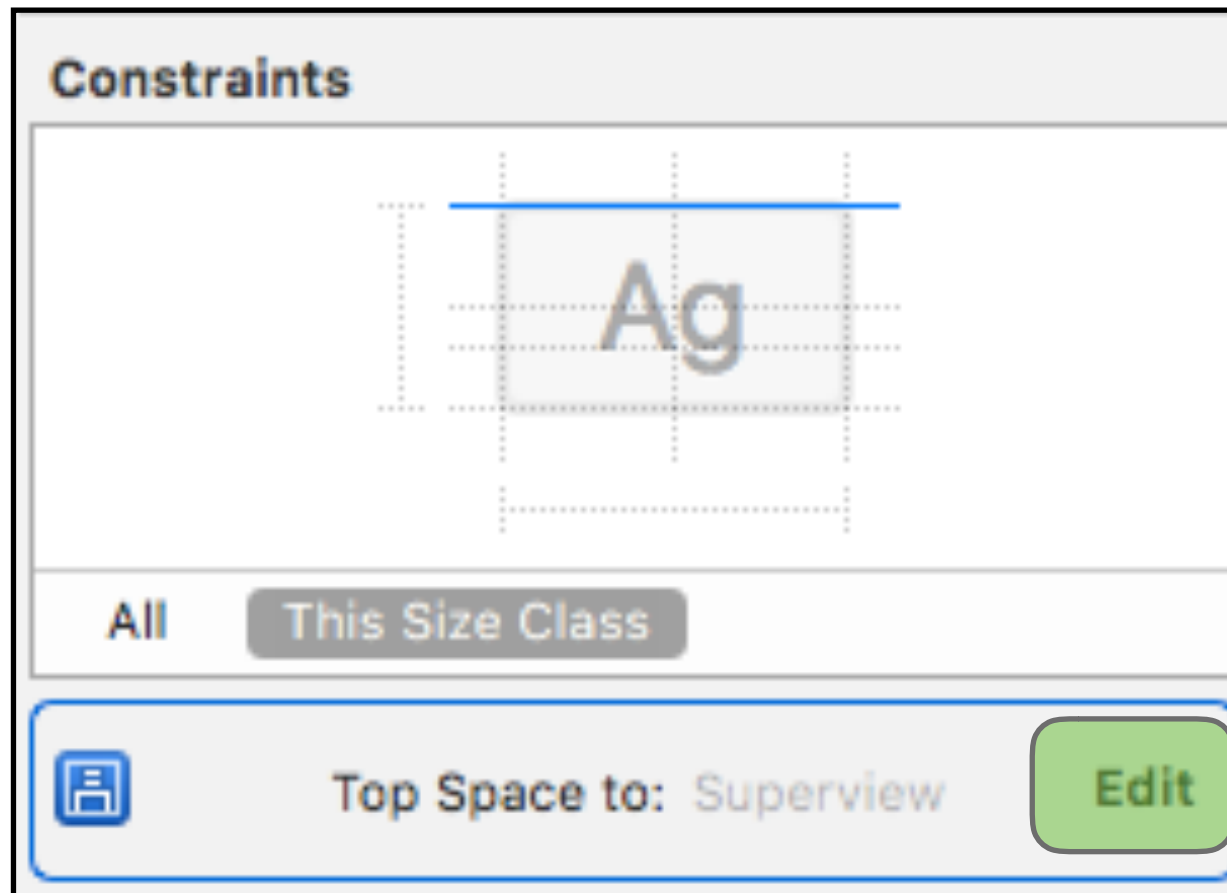
Multiplier: 1

Identifier: Identifier

Placeholder: ☐ Remove at build time

+ ☒ Installed

# constraint Edit 버튼 설정



# 설정 방법

**Horizontal Space Constraint**

First Item: Stack View.Leading

Relation: Equal

Second Item: Superview.Leading Margin

+ Constant: 27

Priority: 1000

Multiplier: 1

Identifier: Identifier

Placeholder: ☐ Remove at build time

+ ☒ Installed

**$\text{Item1.Attribute} = \text{Multiplier} \times \text{Item2.Attribute} + \text{Constrant}$**

\* 같은 Priority에서 같은 제약이 존재 할수 없다.

# 실습

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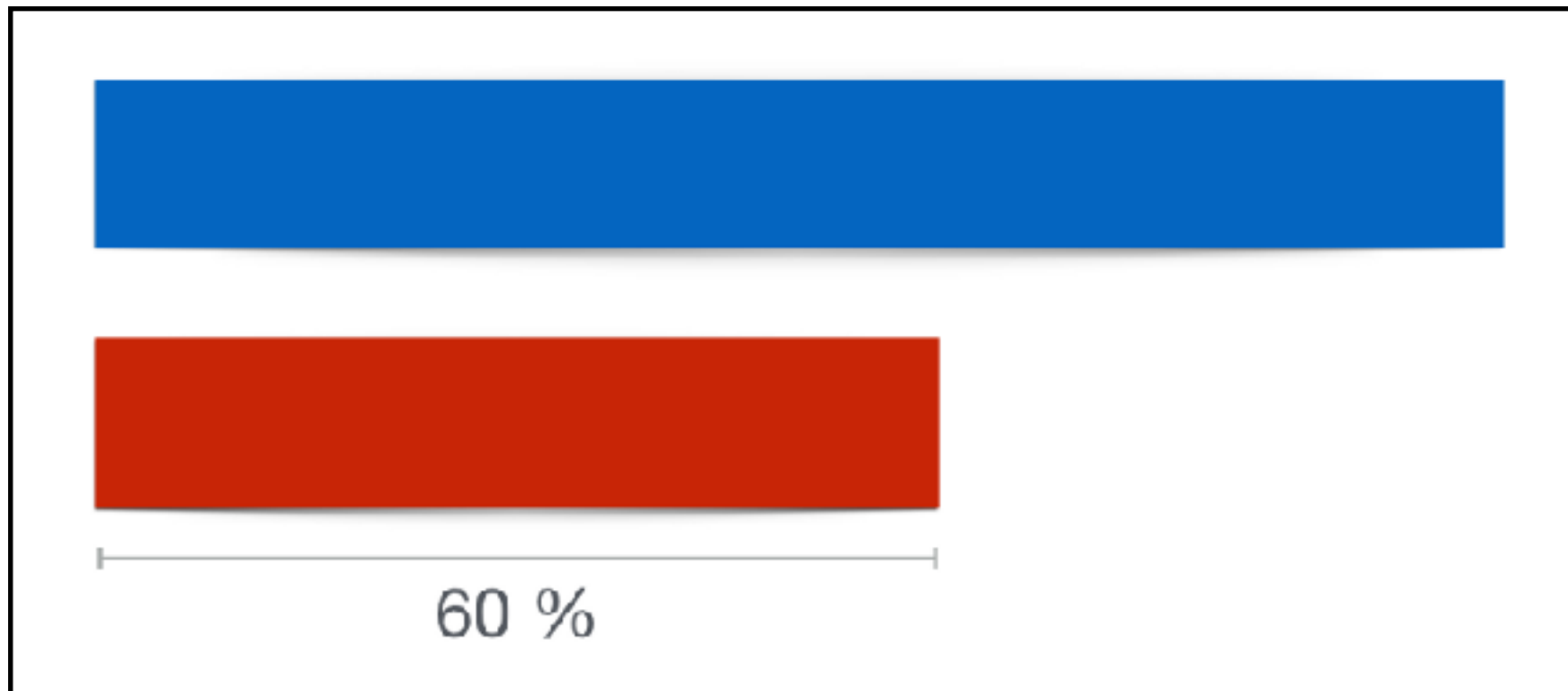


- Red View의 넓이가 Blue View의 넓이의 두 배

# 실습

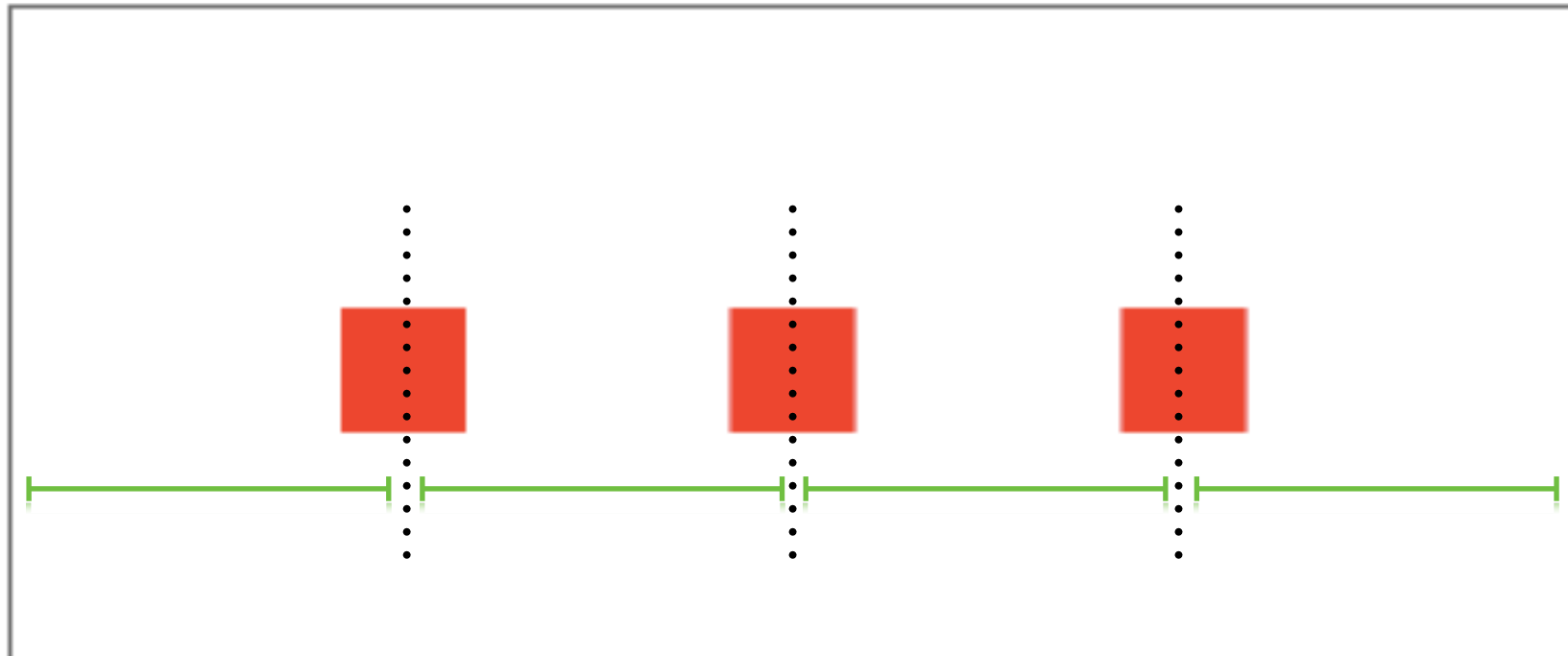
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- redView의 길이가 BlueView의 60퍼센트 길이



# 실습 : 동일한 간격 View

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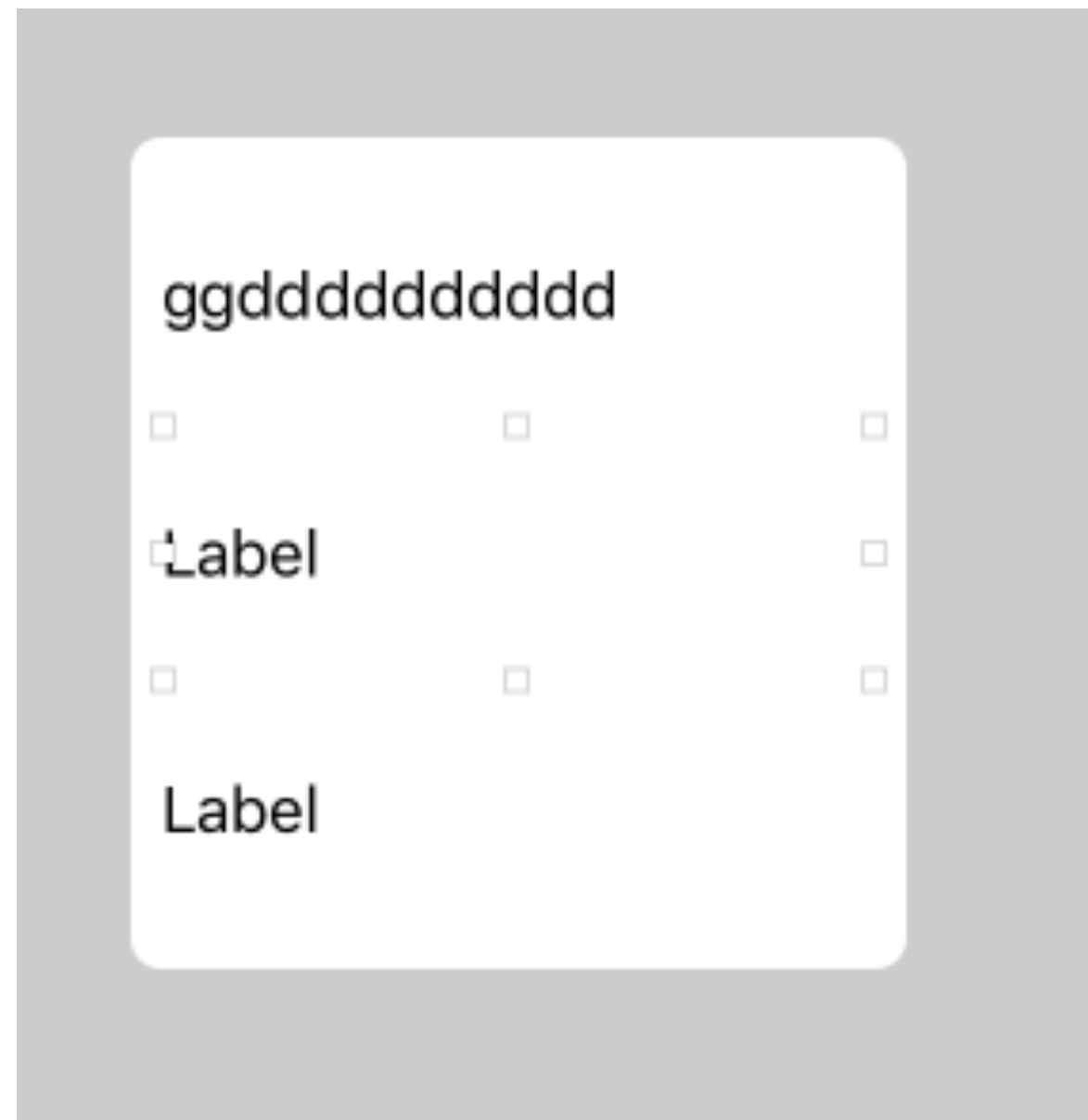


- 한변이 30point인 정사각형
- superView의 삼등분 지점에 센터가 위치

# StackView

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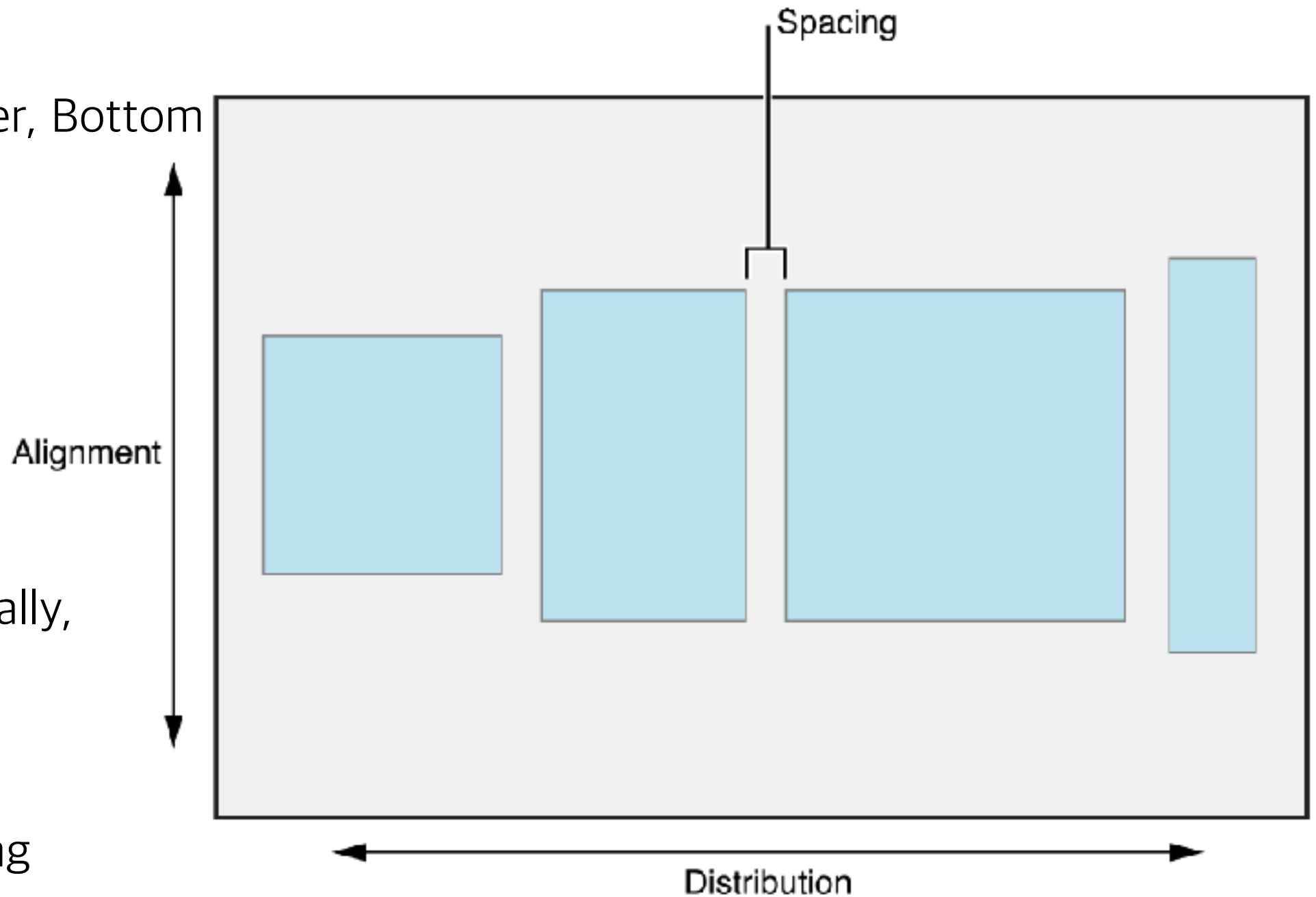
- 제약없이 View를 자동배치
- StackView의 하위뷰로 추가시 Option에 따라 View가 자동으로 배치
- iOS9이후에 사용 가능
- Horizontal Stack View와 Vertical Stack View로 나뉘어져 있다.





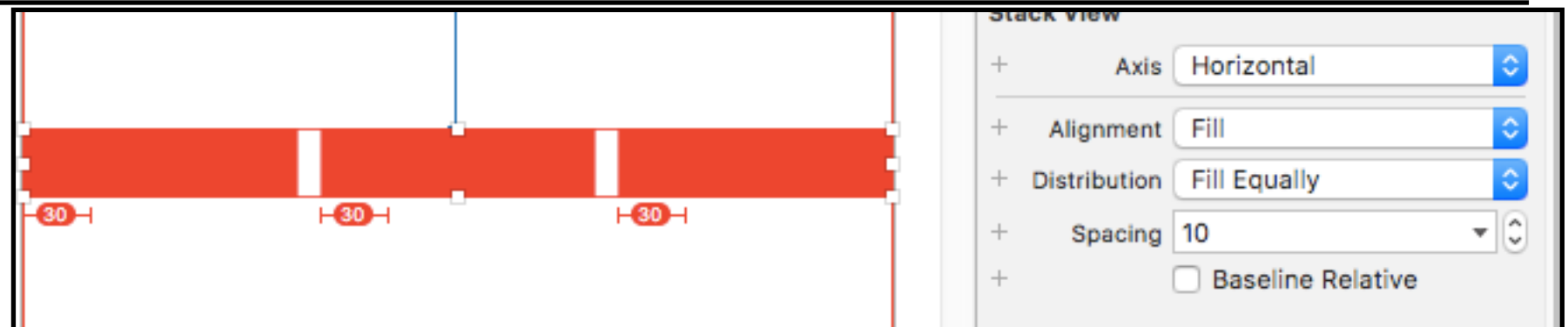
# StackView 구조

- Alignment
  - Fill, Top, Center, Bottom
- Distribution
  - Fill,
  - Fill Equally,
  - Fill Proportionally,
  - Equal Spacing,
  - Equal Centering

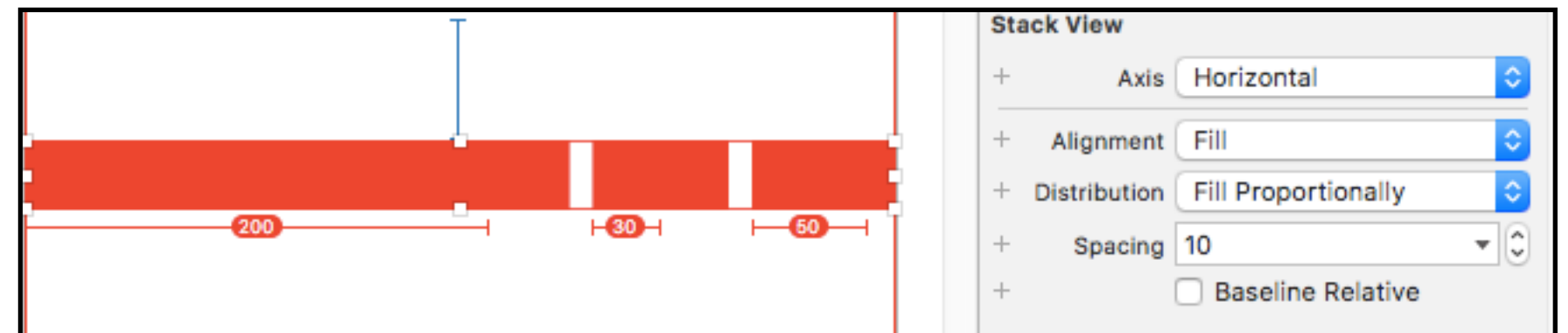


# StackView Distribution

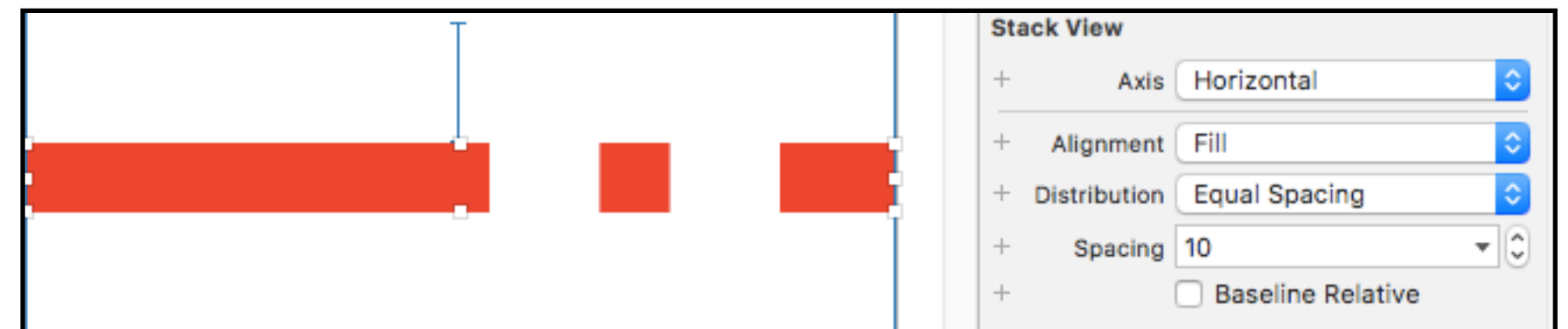
- Fill Equally,



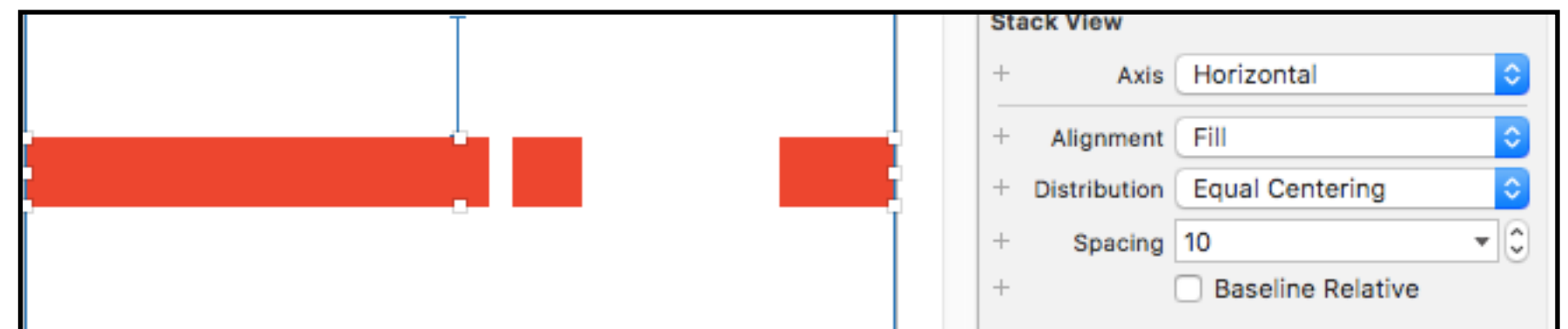
- Fill Proportionally,



- Equal Spacing,

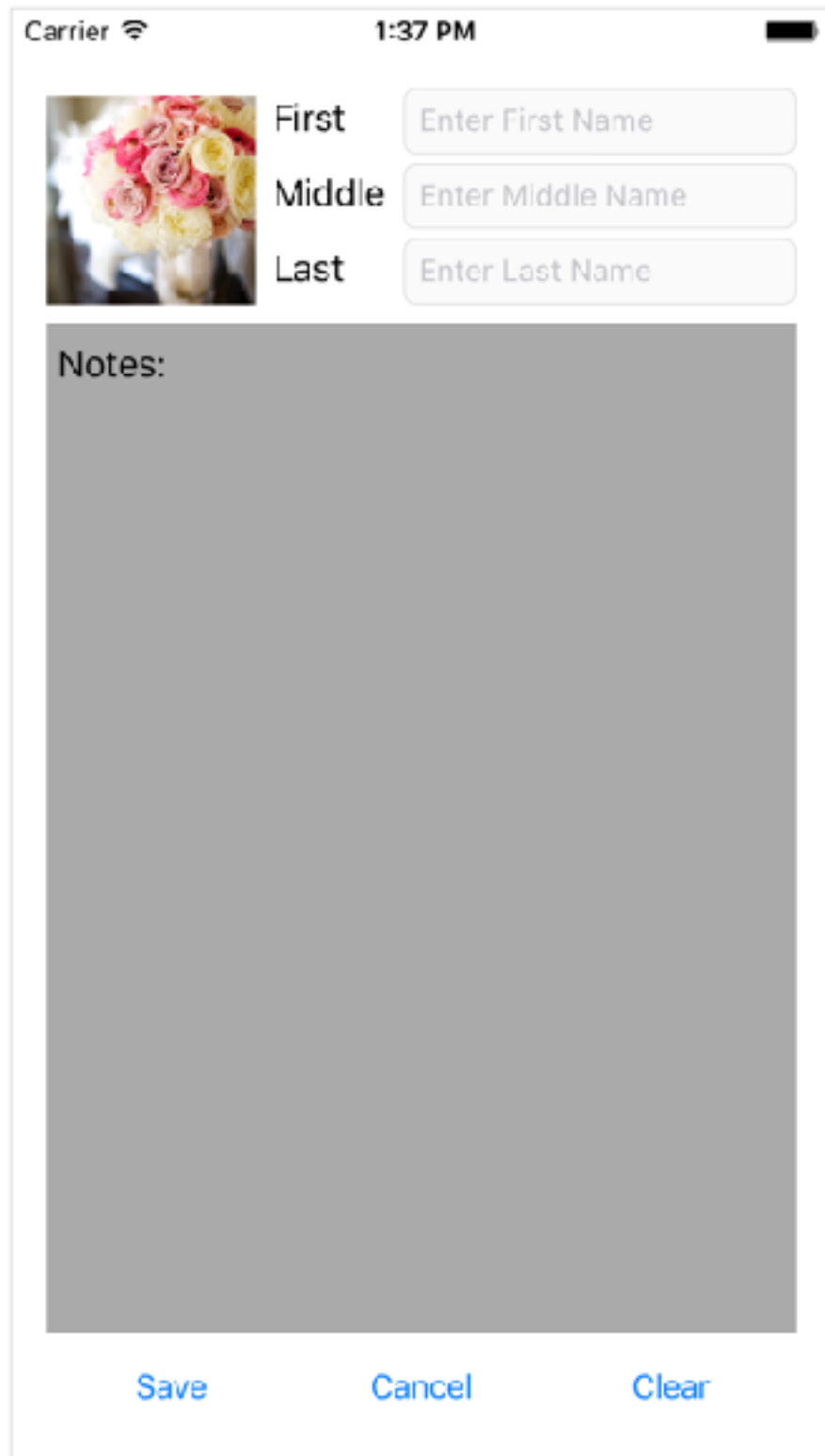


- Equal Centering



# 실습

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Carrier 1:37 PM

First Enter First Name

Middle Enter Middle Name

Last Enter Last Name

Notes:

Save Cancel Clear

- 어떻게 만들어야 할까요?