Code로 UI개발하기

AutoLayout helper Library 소개

이정우 IBM Japan

저는…

- 일본에서만 13년차 일하고 있는 외노자 입니다.😇
- Backend, frontend 여러 가지 합니다만, Java는 안 합니다.(싫어합니다.)😥
- iOS는 약 10년 정도
- 현 IBM Japan 근무중

오늘 할 얘기

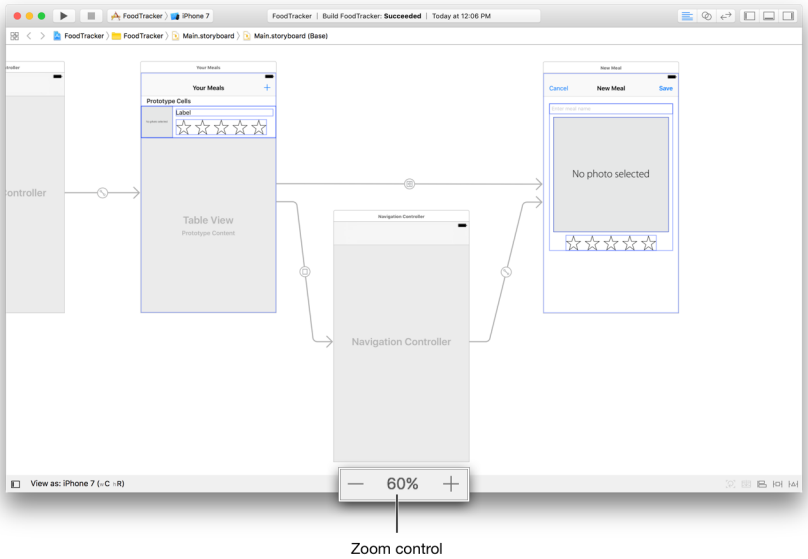
- iOS App 개발의 중요한 부분인 UI관련 개발할때 Storyboard를 사용하지 않는 방법에 대해……🤗

Agenda

- Storyboard vs Code Base
- Storyboard로 개발할때의 장단점
- Code Base로 개발할때의 장단점
- Code Base로 개발 단점 극복하기

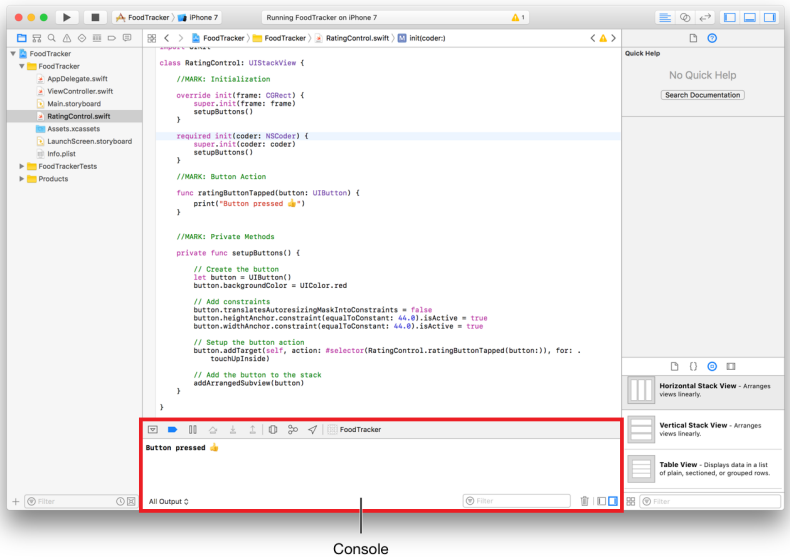
Storyboard vs Code Base

Storyboard vs Code base



Zoom control

vs



Console

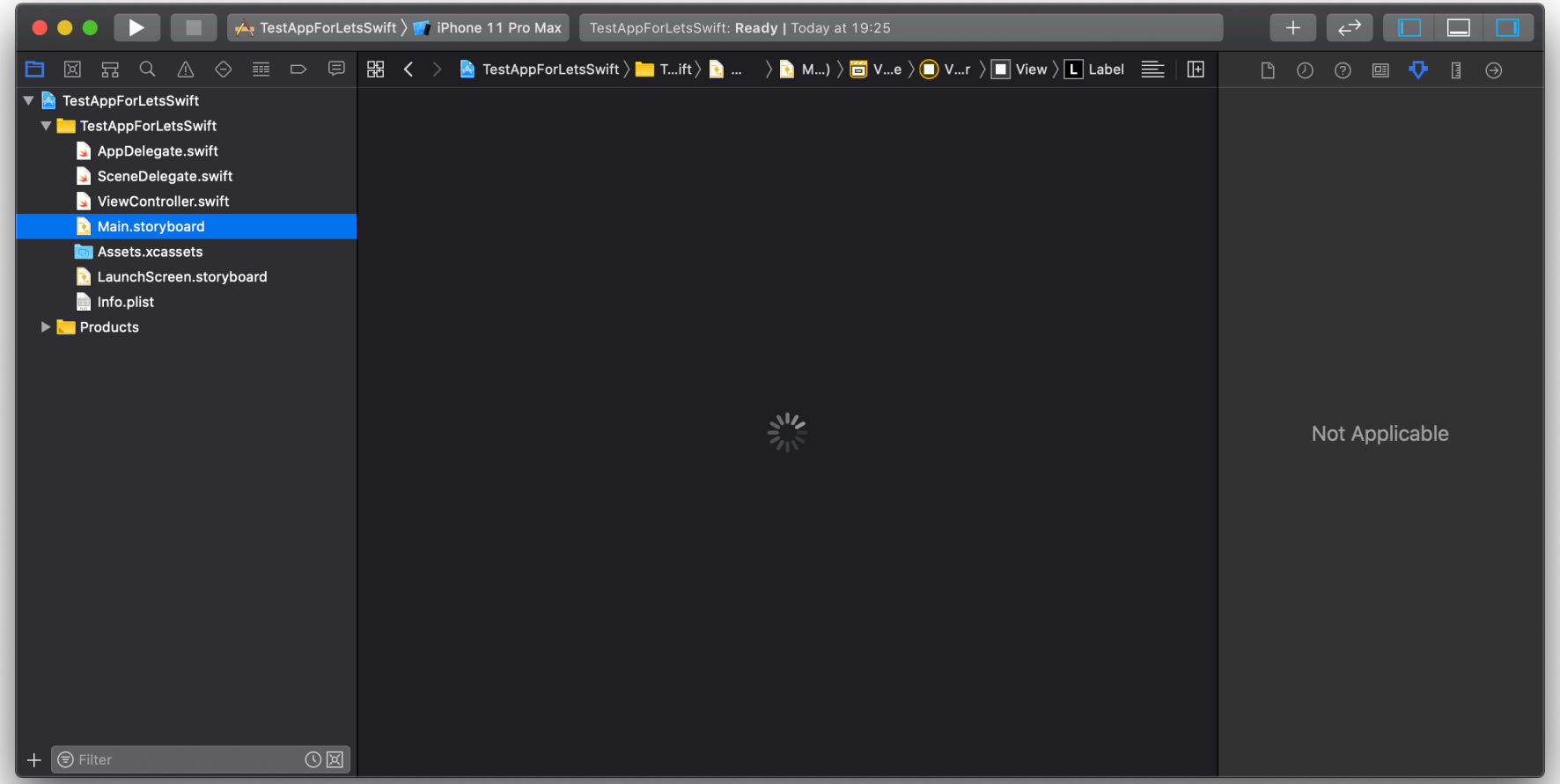
Storyboard로 개발할때의 장단점

Storyboard로 개발의 장점

1. WYSIWYG
    1. 결과물에 관해 예측하기 쉬움
2. 속성확인가능
3. 소스코드를 일일이 기억하지 않아도 됨

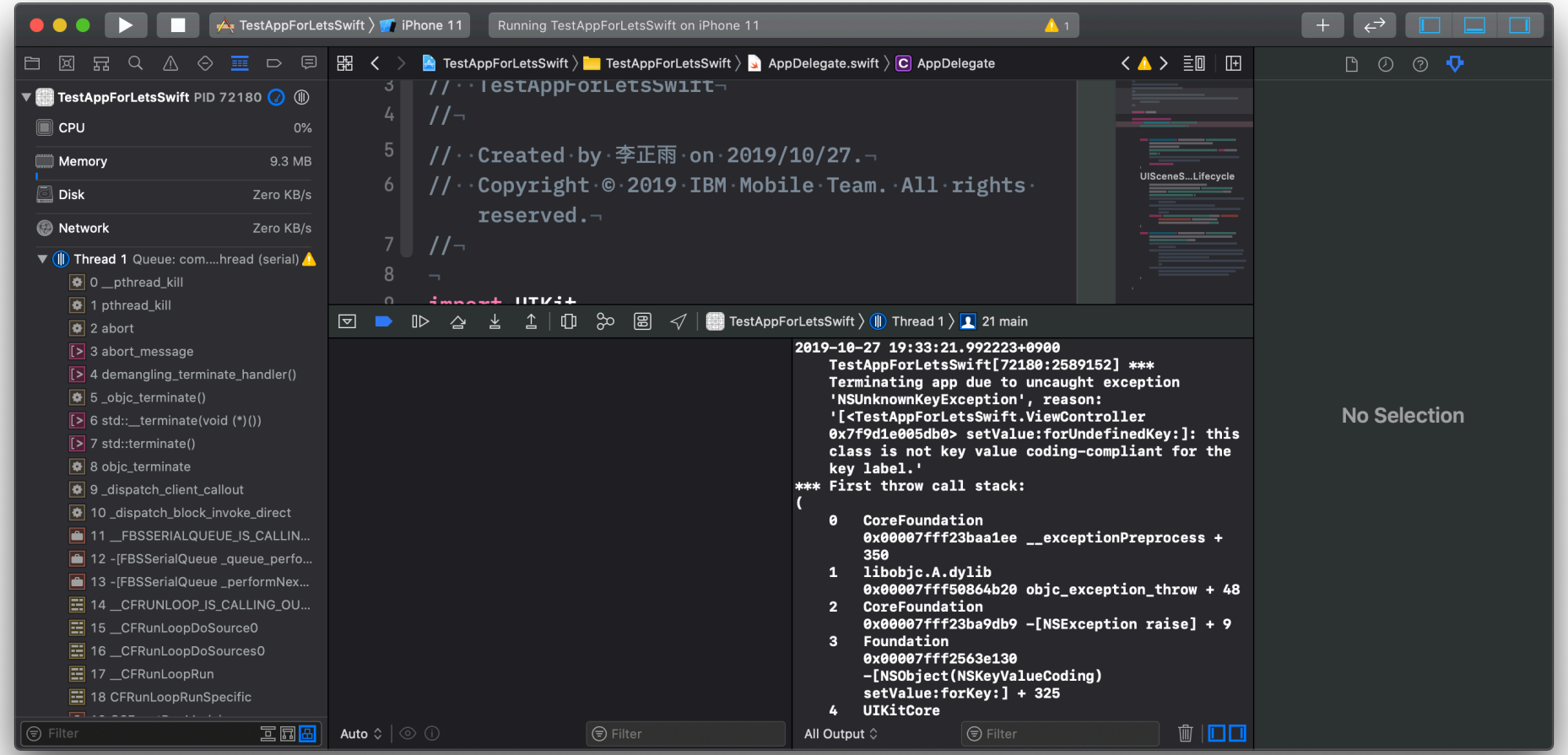
Storyboard로 개발의 단점

1. 무거움😨



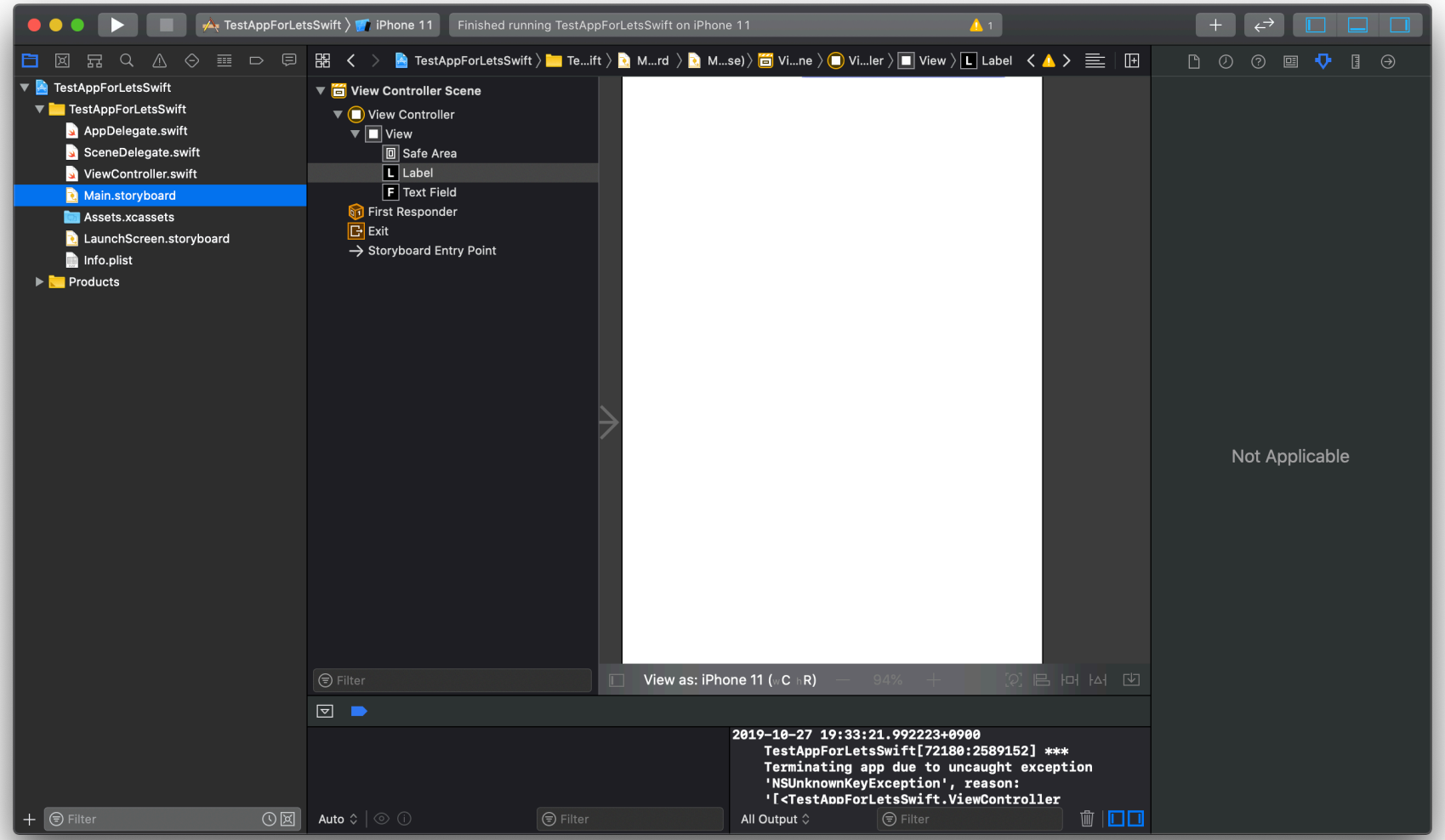
Storyboard로 개발의 단점

2. 링크가 끊어졌을 때 알기힘듬...🤷🏻



Storyboard로 개발의 단점

3. 작은 모니터로 개발이 짜증남...😰



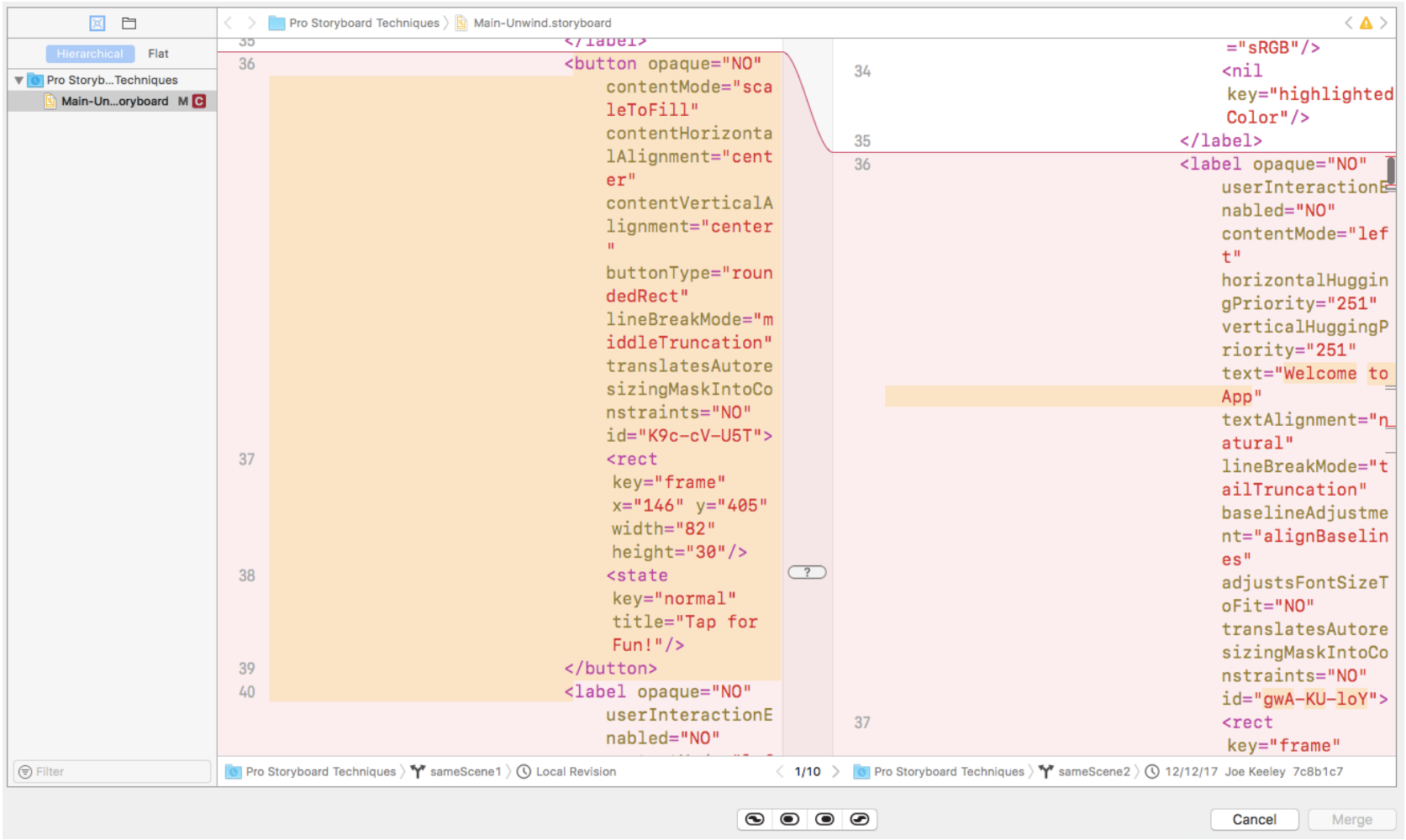
Storyboard로 개발의 단점

4. Diff로는 개발 내용을 알기힘듬 -> 리뷰가... 🙅🏻

```
$ git diff
diff --git a/TestAppForLetsSwift.xcodeproj/project.xcworkspace/xcuserdata/JungwooLee.xcuserdatad/UserInterfaceState.xcus
index d7c20d4..08d816f 100644
Binary files a/TestAppForLetsSwift.xcodeproj/project.xcworkspace/xcuserdata/JungwooLee.xcuserdatad/UserInterfaceState.xc
diff --git a/TestAppForLetsSwift/Base.lproj/Main.storyboard b/TestAppForLetsSwift/Base.lproj/Main.storyboard
index 89f9f43..7456be7 100644
--- a/TestAppForLetsSwift/Base.lproj/Main.storyboard
+++ b/TestAppForLetsSwift/Base.lproj/Main.storyboard
@@ -49,6 +49,15 @@
                     <view key="view" contentMode="scaleToFill" id="hVf-II-4wX">
                         <rect key="frame" x="0.0" y="0.0" width="414" height="842"/>
                         <autoresizingMask key="autoresizingMask" widthSizable="YES" heightSizable="YES"/>
+                        <subviews>
+                            <label opaque="NO" userInteractionEnabled="NO" contentMode="left" horizontalHuggingPriority
+                                <rect key="frame" x="186" y="115" width="42" height="78"/>
+                                <autoresizingMask key="autoresizingMask" flexibleMaxX="YES" flexibleMaxY="YES"/>
+                                <fontDescription key="fontDescription" type="system" pointSize="17"/>
+                                <nil key="textColor"/>
+                                <nil key="highlightedColor"/>
+                            </label>
+                        </subviews>
                         <color key="backgroundColor" systemColor="systemBackgroundColor" cocoaTouchSystemColor="whiteCo
                         <viewLayoutGuide key="safeArea" id="Ezq-ba-8YL"/>
                     </view>
@@ -56,7 +65,7 @@
                 </viewController>
                 <placeholder placeholderIdentifier="IBFirstResponder" id="2B3-se-e61" userLabel="First Responder" custo
             </objects>
-            <point key="canvasLocation" x="862" y="135"/>
+            <point key="canvasLocation" x="907.24637681159425" y="134.59821428571428"/>
         </scene>
     </scenes>
 </document>
lines 1-32/32 (END)
```

Storyboard로 개발의 단점

4.1 Conflict…😨



Code Base로 개발할때의 장단점

Code Base로 개발 장점

1. 따로 무거워지지 않음
2. Code만 보이면 모니터 크기는 그렇게 중요하지 않음
3. 상대적으로 Diff를 알아보기 쉬움
4. Conflict발생 가능성이 상대적으로 낮음

-> Storyboard의 단점이 반대로

Code Base로 개발 단점

1. 해당 Component의 속성을 어느정도 숙지하고 있어야함

   -> Document를 자주 봅시다!(Cmd + Shift + 0)

2. Source Code이기 때문에 어떤 화면이 만들어질지 알아보기 힘듬

3. Code가 상당히 길어짐

-> 2와 3을 해결해 봅시다!🤔

Code Base 단점 극복하기

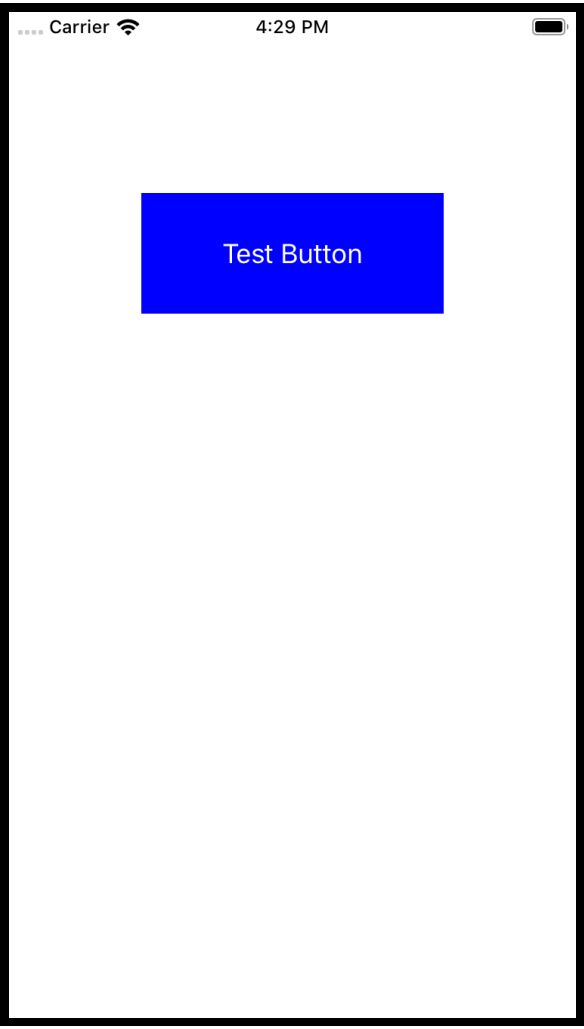
Code Base로 개발 전재

- 당연히 Auto Layout 사용
  - Autoresizing은 논외..🙄
- Auto Layout의 구현 방법
  1. NSLayoutConstraint를 일일이 작성
  2. Visual Format Language를 사용
  3. Anchor사용

NSConstraint

```
let button = UIButton()
button.setTitle("Test Button", for: .normal)
button.backgroundColor = .blue

view.addSubview(button)
button.translatesAutoresizingMaskIntoConstraints = false
NSLayoutConstraint.activate([
    NSLayoutConstraint(item: button,
                       attribute: .centerX,
                       relatedBy: .equal,
                       toItem: view,
                       attribute: .centerX,
                       multiplier: 1.0,
                       constant: 0.0),
    NSLayoutConstraint(item: button,
                       attribute: .width,
                       relatedBy: .equal,
                       toItem: nil,
                       attribute: .height,
                       multiplier: 1.0,
                       constant: 200.0),
    NSLayoutConstraint(item: button,
                       attribute: .top,
                       relatedBy: .equal,
                       toItem: view,
                       attribute: .topMargin,
                       multiplier: 1.0,
                       constant: 100.0),
    NSLayoutConstraint(item: button,
                       attribute: .height,
                       relatedBy: .equal,
                       toItem: nil,
                       attribute: .height,
                       multiplier: 1.0,
                       constant: 80.0),
])
```



Visual Format Language

```
NSLayoutConstraint.activate(
    [
        NSLayoutConstraint.constraints(withVisualFormat: "H:[button(200)]",
                                       options: .alignAllCenterX,
                                       metrics: nil,
                                       views: ["button": button]),
        NSLayoutConstraint.constraints(withVisualFormat: "V:[sv]-(<=1.0)-[button(80)]",
                                       options: .alignAllCenterX,
                                       metrics: nil,
                                       views: ["sv": view!, "button": button]),
        NSLayoutConstraint.constraints(withVisualFormat: "V:|-(100)-[button(80)]",
                                       options: .alignAllTop,
                                       metrics: nil,
                                       views: ["button": button])
    ].flatMap({ $0 })
)
```

- 독특한 문법
- 가운데 정렬이 매우 귀찮음
- 가독성이 아주 뛰어나다고 하기 힘듬

NSLayoutAnchor

```
NSLayoutConstraint.activate([
    button.centerXAnchor.constraint(equalTo: view.centerXAnchor),
    button.widthAnchor.constraint(equalToConstant: 200.0),
    button.topAnchor.constraint(equalTo: view.topAnchor, constant: 100.0),
    button.heightAnchor.constraint(equalToConstant: 80.0)
])
```

- 앞의 방법보다 가독성도 뛰어나고
- Priority의 설정이 귀찮음
  - isActive

아직 쉽진 않네요..😔🤔

생각해봅시다. 🤔

```
NSLayoutConstraint.activate([
    button.centerXAnchor.constraint(equalTo: view.centerXAnchor),
    button.widthAnchor.constraint(equalTo: constant: 200.0),
    button.topAnchor.constraint(equalTo: view.topAnchor, constant: 100.0),
    button.heightAnchor.constraint(equalTo: stant: 80.0)
])
```

equal... greaterThan..

```
let constraint = view1.anchor (==|<=|>=) view2.anchor (*|/) 1.0 (+|-) 10.0
```

Return

Relation

Multiplier

Constant

Source Code

- https://github.com/doil6317/SuperEasyLayout

좀 더 편하고 읽기 쉽게…

- Anchor + Operation!!

```
button.centerX == view.centerX
```

- Constant

```
button.top == view.topMargin + 100.0
```

- Multiplier

```
button.centerX == view.centerX / 2.0 // or view.center * 0.5
```

- Constant + Multiplier

```
button.centerX == view.centerX / 2.0 + 20.0
```

- Dimension

```
button.width == 200.0
```

좀 더 편하고 읽기 쉽게…

- 부등호

```
label.right <= view.right - 20.0
label.top >= view.top - 20.0
label.width <= 200.0
```

- Anchor Priority

```
button.centerX ! .defaultHigh == view.centerX
```

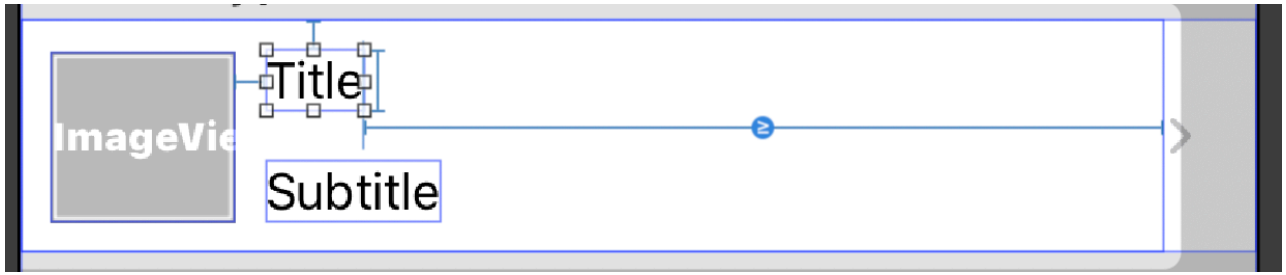
- huggingPriority

```
button.huggingHorizontalPriority == .defaultHigh
```

- compressionRegistancePriority

```
button.compressionRegistanceVerticalPriority == .defaultLow
```

이렇게..




```
imageView.left == superview.left + 10.0
imageView.width == 60.0
imageView.top == superview.top + 10.0
imageView.bottom == superview.bottom - 10.0

titleLabel.left == imageView.right + 10.0
titleLabel.right <= superview.right - 10.0
titleLabel.top == superview.top + 10.0
titleLabel.height == 21.0

subtitleLabel.left == imageView.right + 10.0
subtitleLabel.right <= superview.right - 10.0
subtitleLabel.height == 21.0
subtitleLabel.bottom == superview.bottom - 10.0
```

참 쉽죠?!🤗

QnA