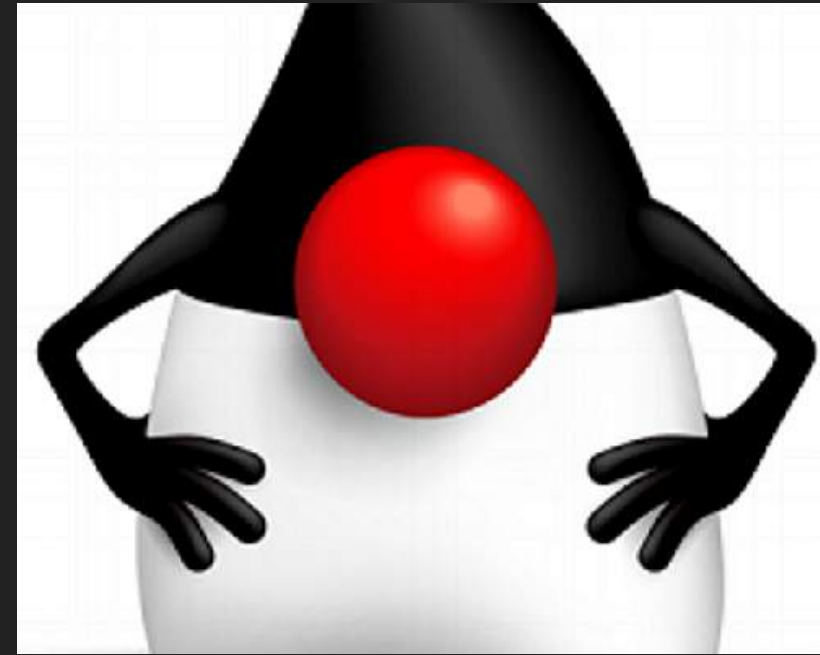




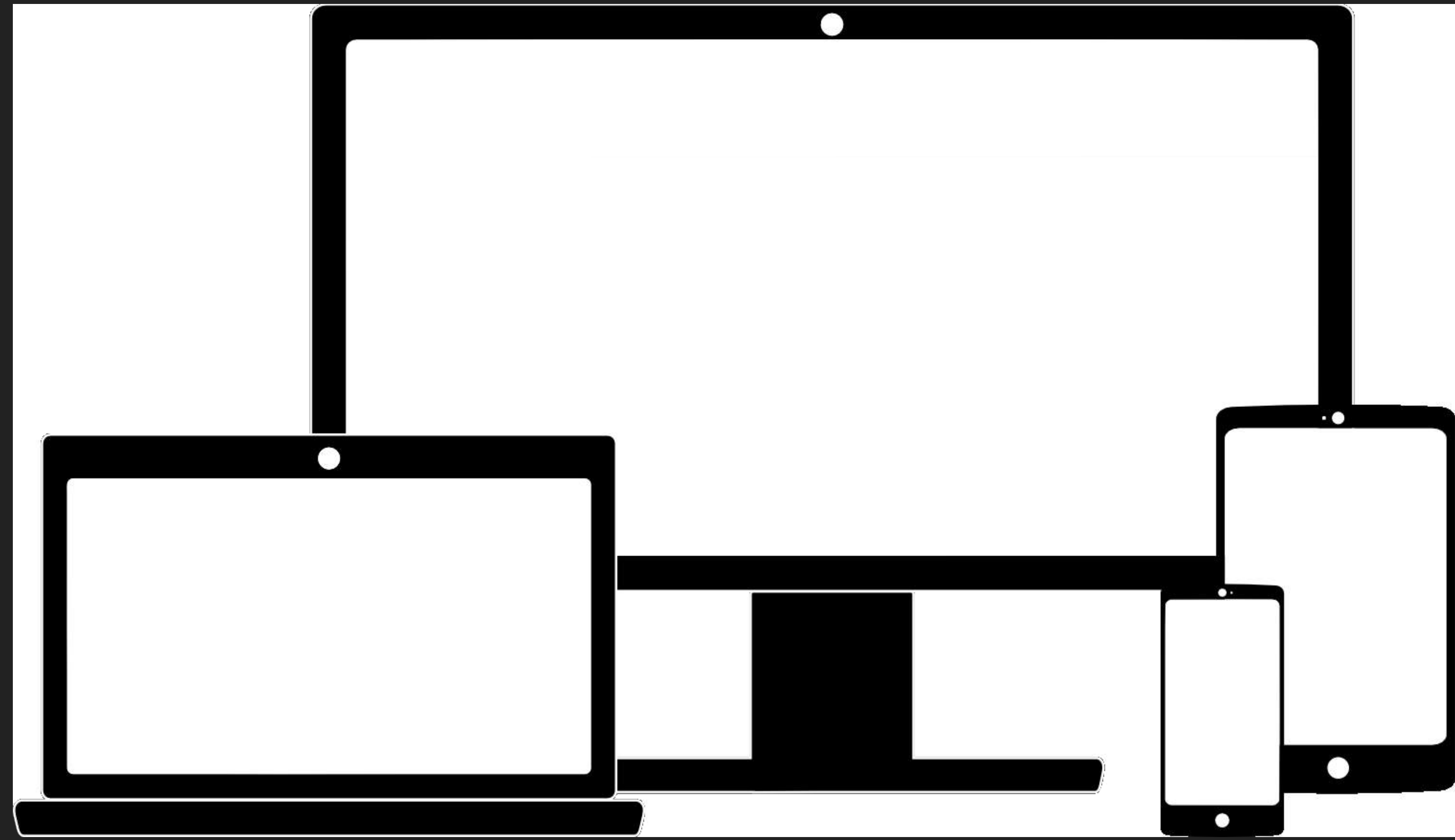
BETTER PROJECTS  
**FASTER**

[BPF.LI/S](https://bpf.li/s)



KARSTEN SILZ

MAY 23, 2021



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# HOW SHOULD JAVA DEVELOPERS BUILD FRONT- ENDS FOR WEB, MOBILE, AND DESKTOP TODAY?



**SLIDES & VIDEOS**

**EXTRA INFORMATION**

**FEEDBACK**

**GET STARTED!**

**NEWSLETTER**

**[HTTPS://BPF.LI/APT](https://bpf.li/apt)**

# AGENDA

**HOW CAN WE BUILD FRONT-ENDS TODAY?**

**WHAT DO WE JAVA DEVELOPERS WISH FOR?**

**WEB: NEW WEB APPLICATION**

**MOBILE: NEW NATIVE IOS & ANDROID APPS**

**DESKTOP: GOT WEB APPLICATION – WHAT NOW?**

**I GIVE ADVICE...**

...SO WHAT'S MY **ANGLE?**



**22 YEARS**

**12 CRITERIA + RESEARCH**

**NO COURSES/BOOKS,  
NO AFFILIATION**

**I GIVE YOU OPTIONS...**



**YOUR CRITERIA/RATING**

**YOUR ENVIRONMENT**

**YOUR DECISION**

**...YOU DECIDE!**

**HOW CAN WE BUILD FRONT-ENDS TODAY?**

**WHAT DO WE JAVA DEVELOPERS WISH FOR?**

**WEB: NEW WEB APPLICATION**

**MOBILE: NEW NATIVE IOS & ANDROID APPS**

**DESKTOP: GOT WEB APPLICATION – WHAT NOW?**

**HOW CAN WE BUILD  
FRONT-ENDS TODAY?**

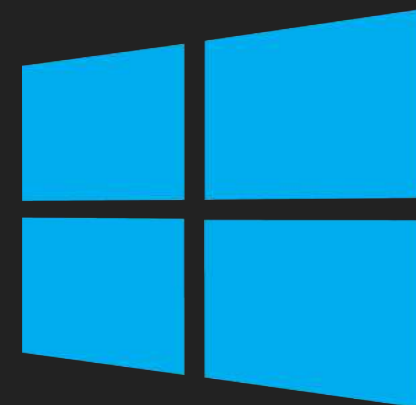
**APPLICATIONS & DEVICES?**

# ENTERPRISE APPLICATIONS

FORMS, DATA GRIDS, REPORTS

NO GAMES/MEDIA PLAYERS

## PC



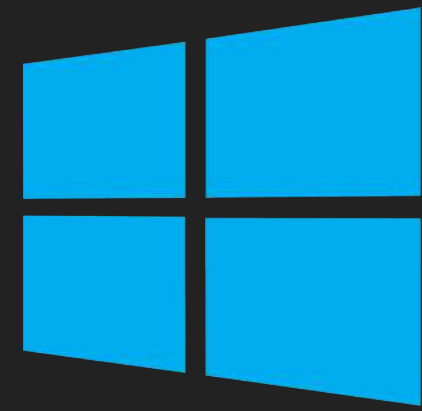
## MOBILE



**HOW TO BUILD?**

**GO SAFE:**

**"STILL HERE IN 5 YEARS"**



**WEB**

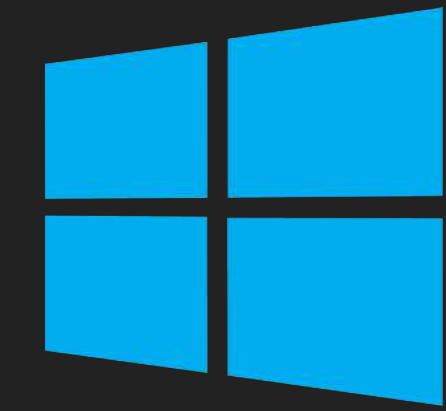
**NATIVE**

**NATIVE**

**NATIVE**

**NATIVE**

**NATIVE**





**+** 1 CODEBASE

**-** SLOWER

**-** LESS FEATURES

**-** JAVASCRIPT

**-** DIFFICULT DEBUGGING

**WEB**

**-** 5 CODEBASES

**+** FAST

**+** ALL FEATURES

**-** 5 LANGUAGES

**+** EASY DEBUGGING

**NATIVE**

- + 1 CODEBASE**
- + FAST**
- + ALL FEATURES**
- + EASY DEBUGGING**

# CROSS-PLATFORM

**STATE OF THE ART:**  
**DECLARATIVE**

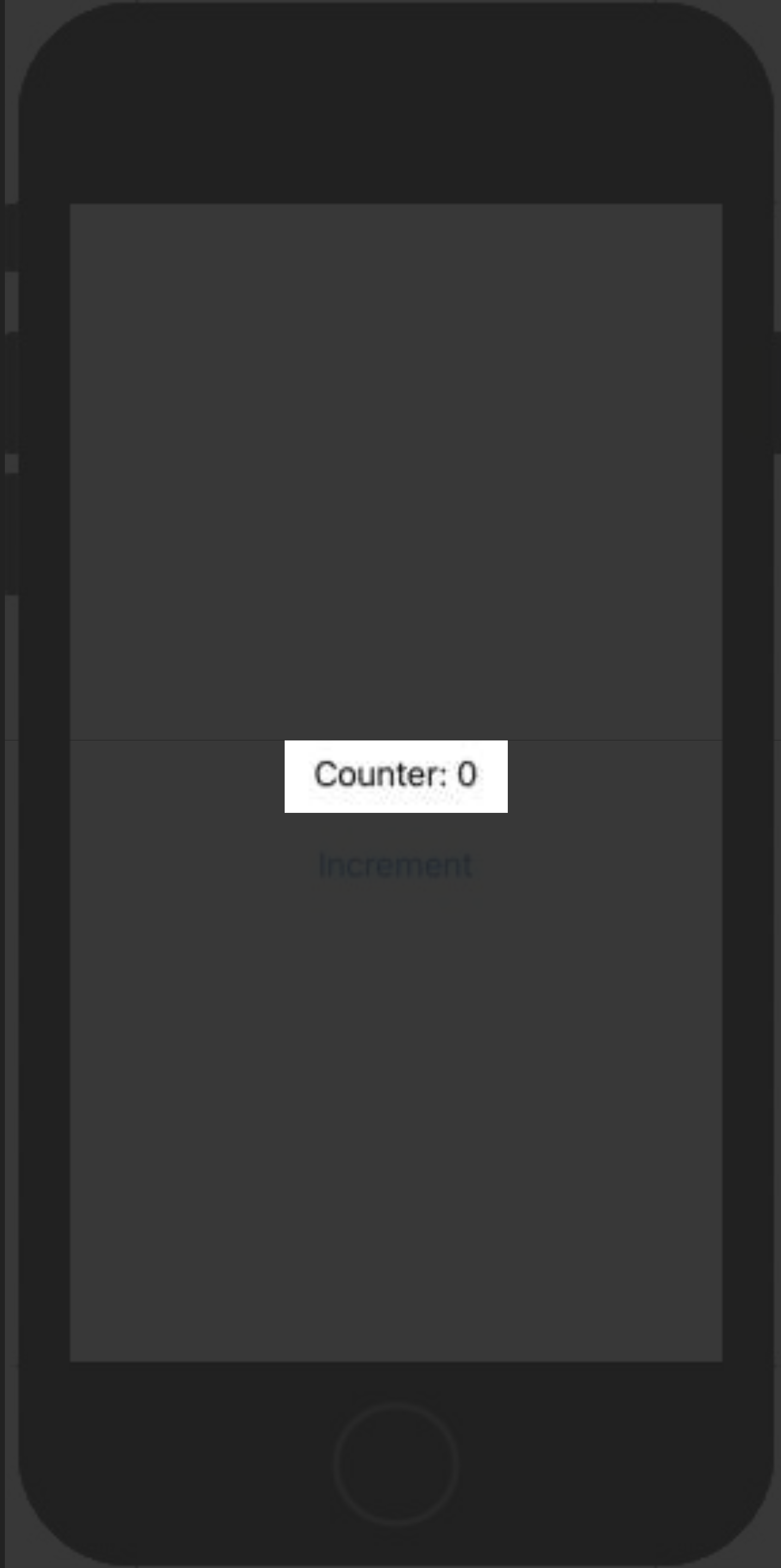
**EXAMPLE:**  
**APPLE SWIFTUI**

Counter: 0

[Increment](#)

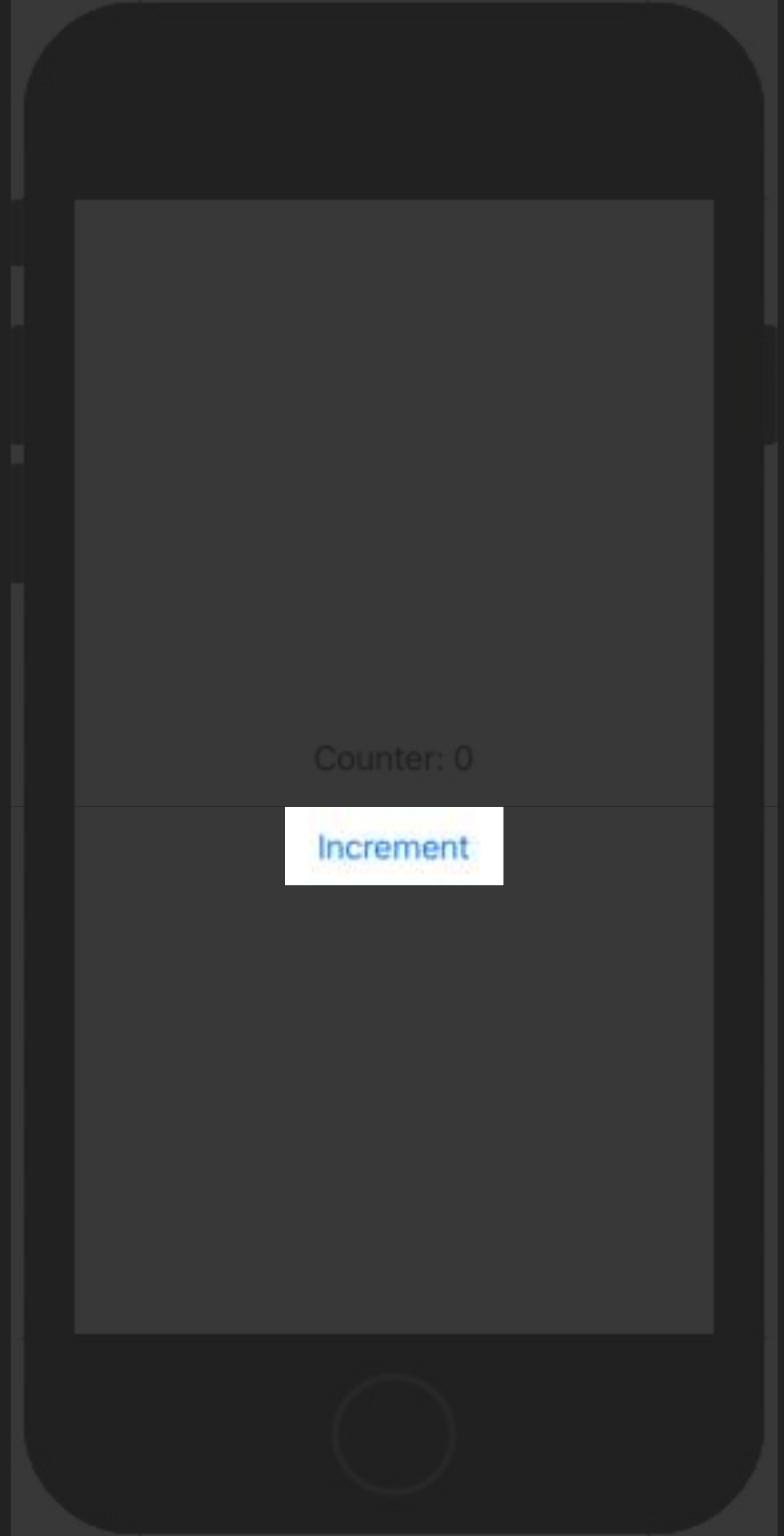
```
@State var count: Int = 0

var body: some
View {
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```



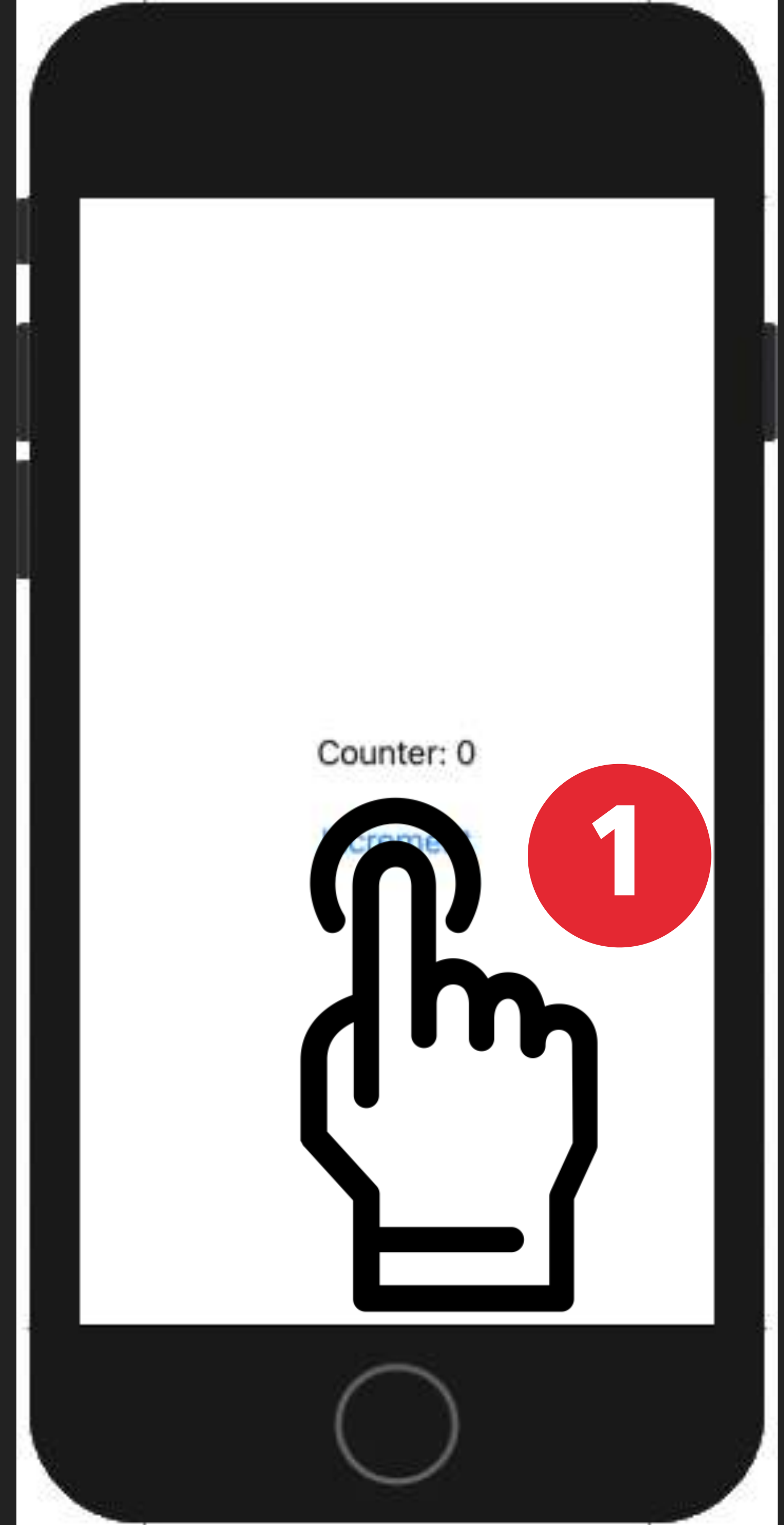
```
@State var count: Int = 0

var body: some
View {
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```



```
@State var count: Int = 0

var body: some
View {
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```

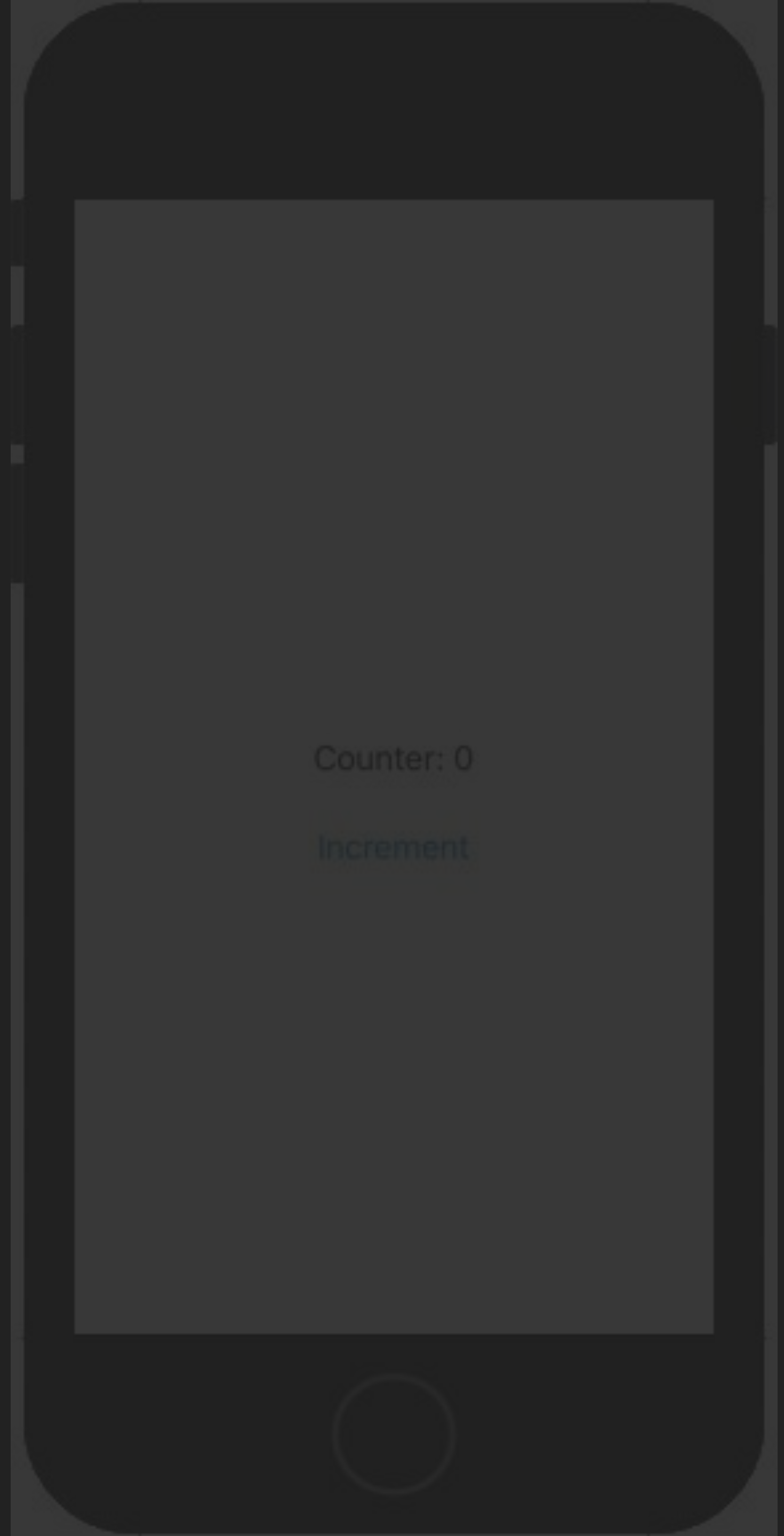




```
@State var count: Int = 0

var body: some
View {
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```

2



```
@State var count: Int = 1
```

3

```
var body: some
```

```
View {
```

```
    VStack(alignment: .center,
```

```
        content: {
```

```
            Text("Counter: \ (count) ")
```

```
                .padding()
```

```
            Button(action: {
```

```
                self.count += 1
```

```
            }, label: {
```

```
                Text("Increment")
```

```
            })
```

```
        })
```

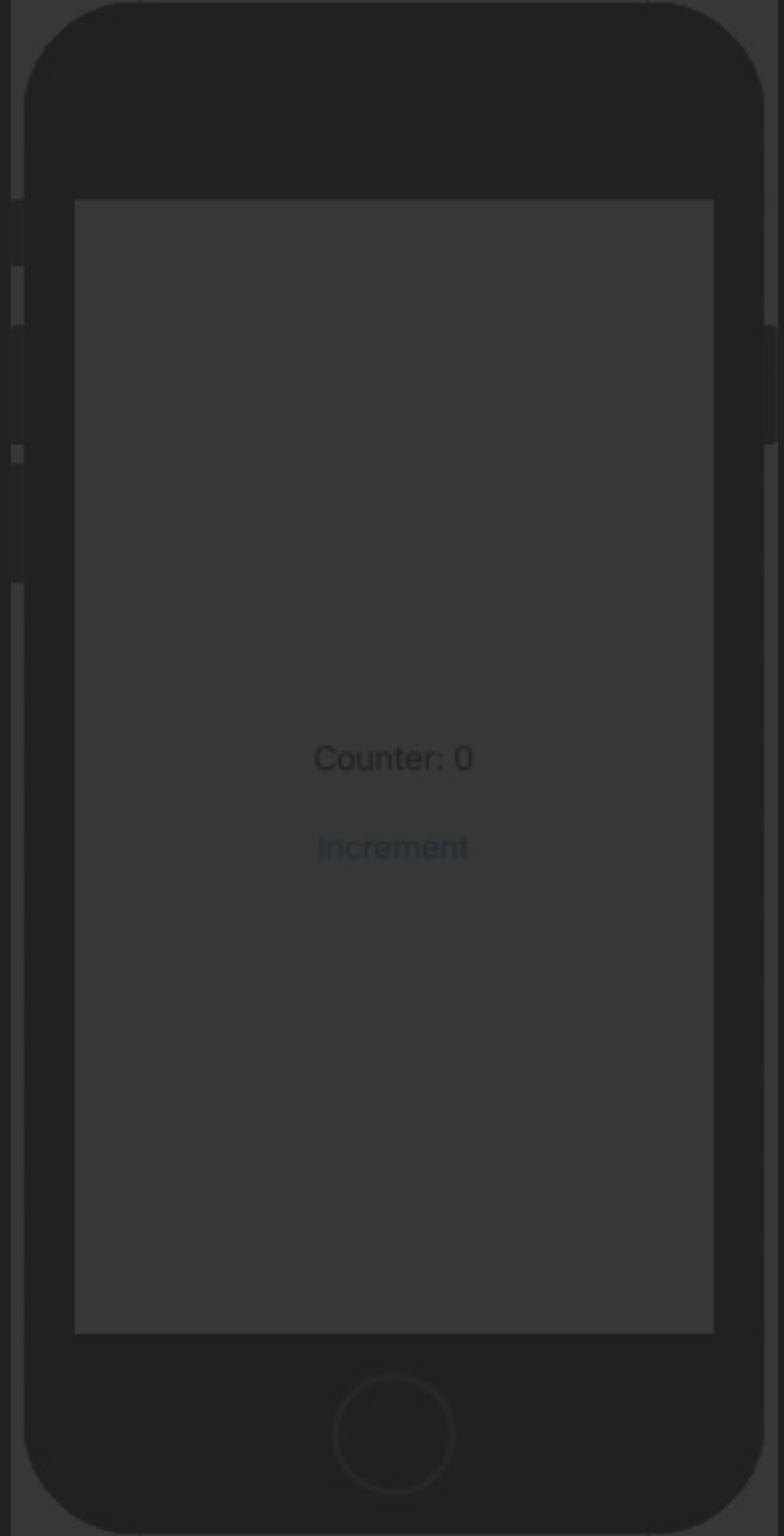
```
    }
```

Counter: 0

Increment

```
@State var count: Int = 1

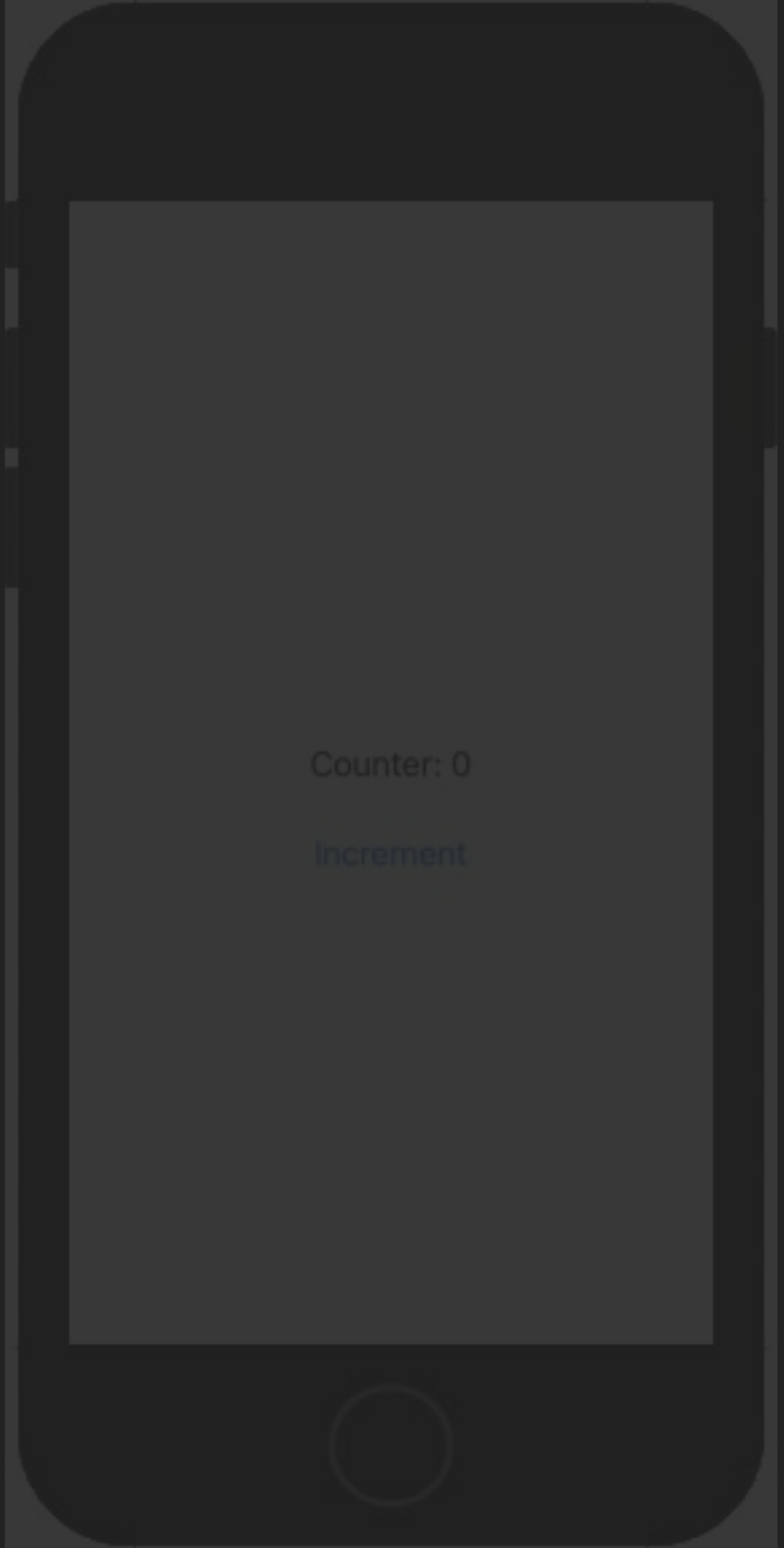
var h: some
View 4
  VStack(alignment: .center,
    content: {
      Text("Counter: \ (count) ")
        .padding()
      Button(action: {
        self.count += 1
      }, label: {
        Text("Increment")
      })
    })
  })
}
```



```
@State var count: Int = 1

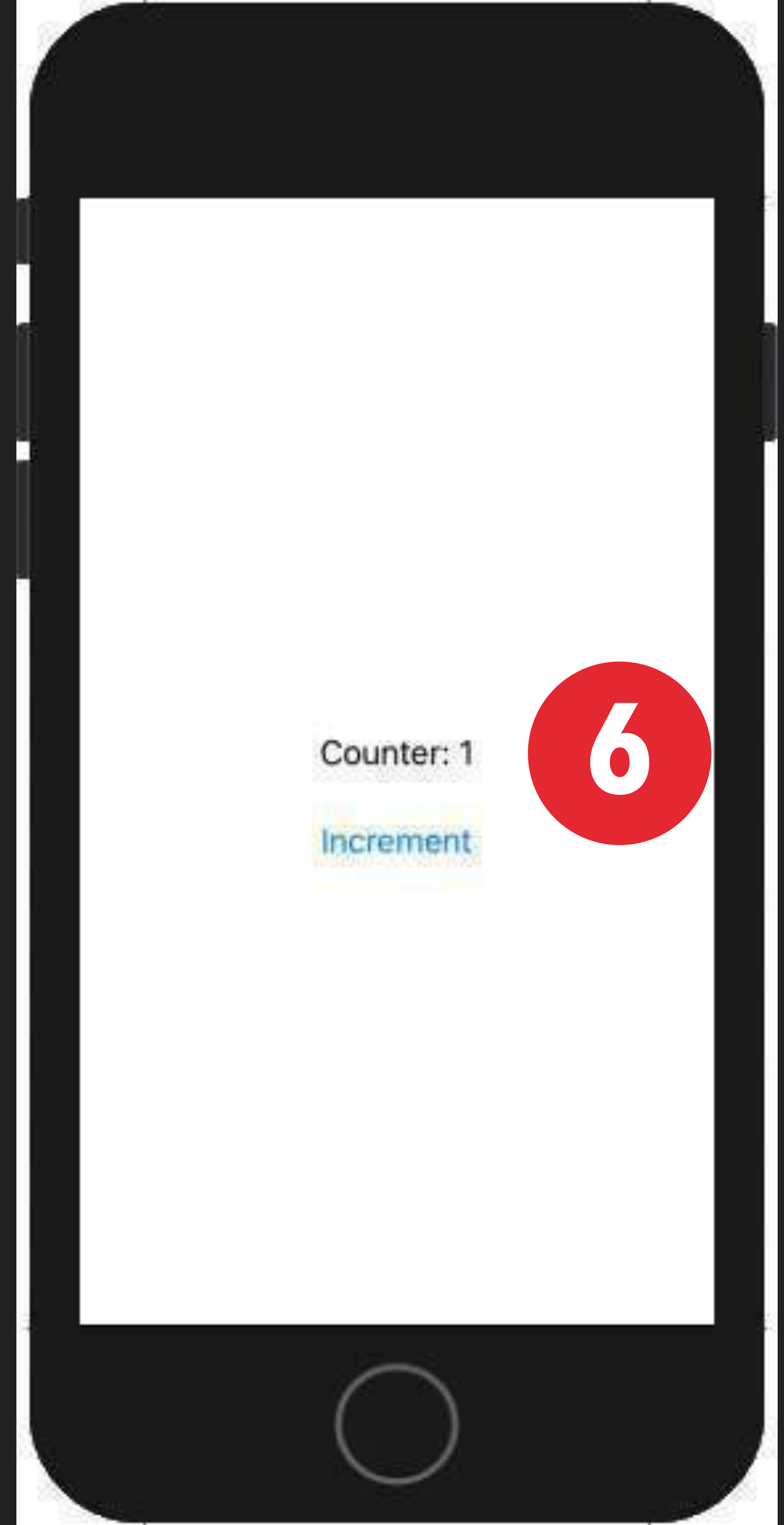
var body: some
View {
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```

5



```
@State var count: Int = 1

var body: some
View {
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```



**WHAT WAS THAT?**

```
@State var count: Int = 0

var body: some
View {
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```

CODE

```
@State var count: Int = 0

var body: some
View
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```

# STATUS & EVENTS



```
@State var count: Int = 0

var body: some
View
    VStack(alignment: .center,
        content: {
            Text("Counter: \ (count) ")
                .padding()
            Button(action: {
                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```

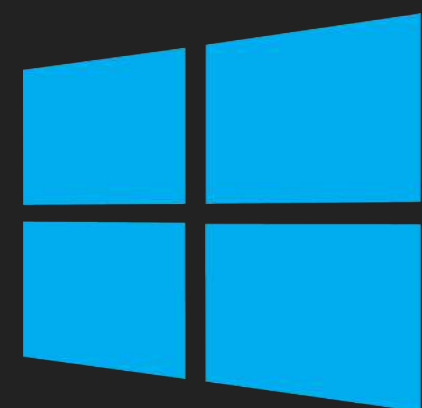
# FRAMEWORK DRIVES UPDATES

**CODE**

**STATUS & EVENTS**

**FRAMEWORK DRIVES UPDATES**

**DECLARATIVE**



**.NET MAUI (NOVEMBER 2021)**



**SWIFTUI**



**REACT**



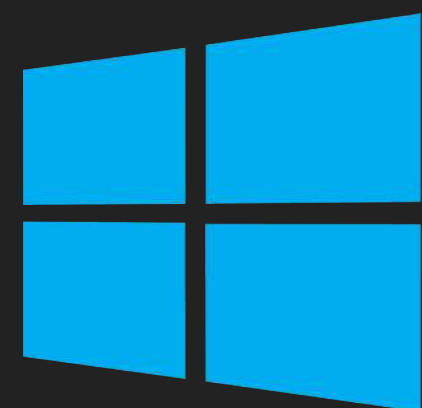
**SWIFTUI**

**REACT NATIVE**



**REACT NATIVE**

**JETPACK COMPOSE (2021)**



OPTION (2021)



RECOMMENDED (NOW)

DECLARATIVE



RECOMMENDED (NOW)



RECOMMENDED (2021)

**STATE OF THE ART:**  
**DECLARATIVE**

**CHANGE FRAMEWORKS**

**JOB SECURITY**

**WHY STATE OF THE ART?**

ANGULAR (GOOGLE)

THYMELEAF

JSF (JAKARTA EE)

VAADIN (VAADIN LTD.)

REACT (FACEBOOK)

VUE.JS

WEB FRAMEWORKS

THYMELEAF, JSF: NOT **DECLARATIVE**

NOT **POPULAR**

THYMELEAF, VAADIN: NOT **SAFE**

JSF, THYMELEAF, VAADIN:  
**OUT**



ANGULAR

THYMELEAF

JSF

VAADIN

REACT

VUE.JS

**WEB** FRAMEWORKS

ANGULAR

REACT

VUE.JS

WEB FRAMEWORKS

**FLUTTER (GOOGLE)**

**JAVAFX (GLUON)**

**REACT NATIVE (FACEBOOK)**

**XAMARIN (MICROSOFT)**

**X-PLATFORM FRAMEWORKS**

NOT DECLARATIVE

NOT POPULAR

JAVAFX: NOT SAFE

XAMARIN: CHANGES

XAMARIN & JAVAFX: OUT

FLUTTER

JAVAFX

REACT NATIVE

XAMARIN

**X-PLATFORM FRAMEWORKS**

**FLUTTER**

**REACT NATIVE**

**X-PLATFORM FRAMEWORKS**

COMPARED AGAINST CROSS-PLATFORM:  
TOO MUCH EFFORT, TOO LITTLE GAIN

NO NATIVE FRAMEWORKS

**ENTERPRISE APPLICATIONS FOR PC & MOBILE**

**STATE OF THE ART: DECLARATIVE FRONT-ENDS**

**WEB: ANGULAR, REACT, VUE.JS**

**CROSS-PLATFORM: FLUTTER, REACT NATIVE**

**SUM-UP: FRONT-ENDS**



~~HOW CAN WE BUILD FRONT ENDS TODAY?~~

WHAT DO WE **JAVA** DEVELOPERS WISH FOR?

**WEB:** NEW WEB APPLICATION

**MOBILE:** NEW NATIVE IOS & ANDROID APPS

**DESKTOP:** GOT WEB APPLICATION – WHAT NOW?

WHAT DO WE **JAVA**  
DEVELOPERS WISH FOR?

**JAVA**

**WEB**

**FAST**

**DECLARATIVE**

**MOBILE**

**NATIVE  
FUNCTIONALITY**

**SAFE**

**DESKTOP**

**1 CODEBASE**

**POPULAR**

**EXTENSIONS**

**FAST BUILD,  
DEPLOY & DEBUG**

**LEARN**

**BUILD, DEPLOY & DEBUG**

**DEVELOPER**

**"X WINS"**

**WHY POPULAR?**

DEVELOPERS: QUESTIONS @ STACK OVERFLOW,  
STUDENTS OF PAID COURSES @ UDEMY

EMPLOYERS: MENTIONS @ INDEED IN 61  
COUNTRIES (92% OF WORLD-WIDE GDP)

HOW POPULAR?

**JAVA**

**WEB**

**FAST**

**DECLARATIVE**

**MOBILE**

**NATIVE  
FUNCTIONALITY**

**SAFE**

**DESKTOP**

**1 CODEBASE**

**POPULAR**

**EXTENSIONS**

**FAST BUILD,  
DEPLOY & DEBUG**

THAT'S OUR WISH LIST!

~~HOW CAN WE BUILD FRONT ENDS TODAY?~~

~~WHAT DO WE JAVA DEVELOPERS WISH FOR?~~

**WEB:** NEW WEB APPLICATION

**MOBILE:** NEW NATIVE IOS & ANDROID APPS

**DESKTOP:** GOT WEB APPLICATION – WHAT NOW?



**ANGULAR**

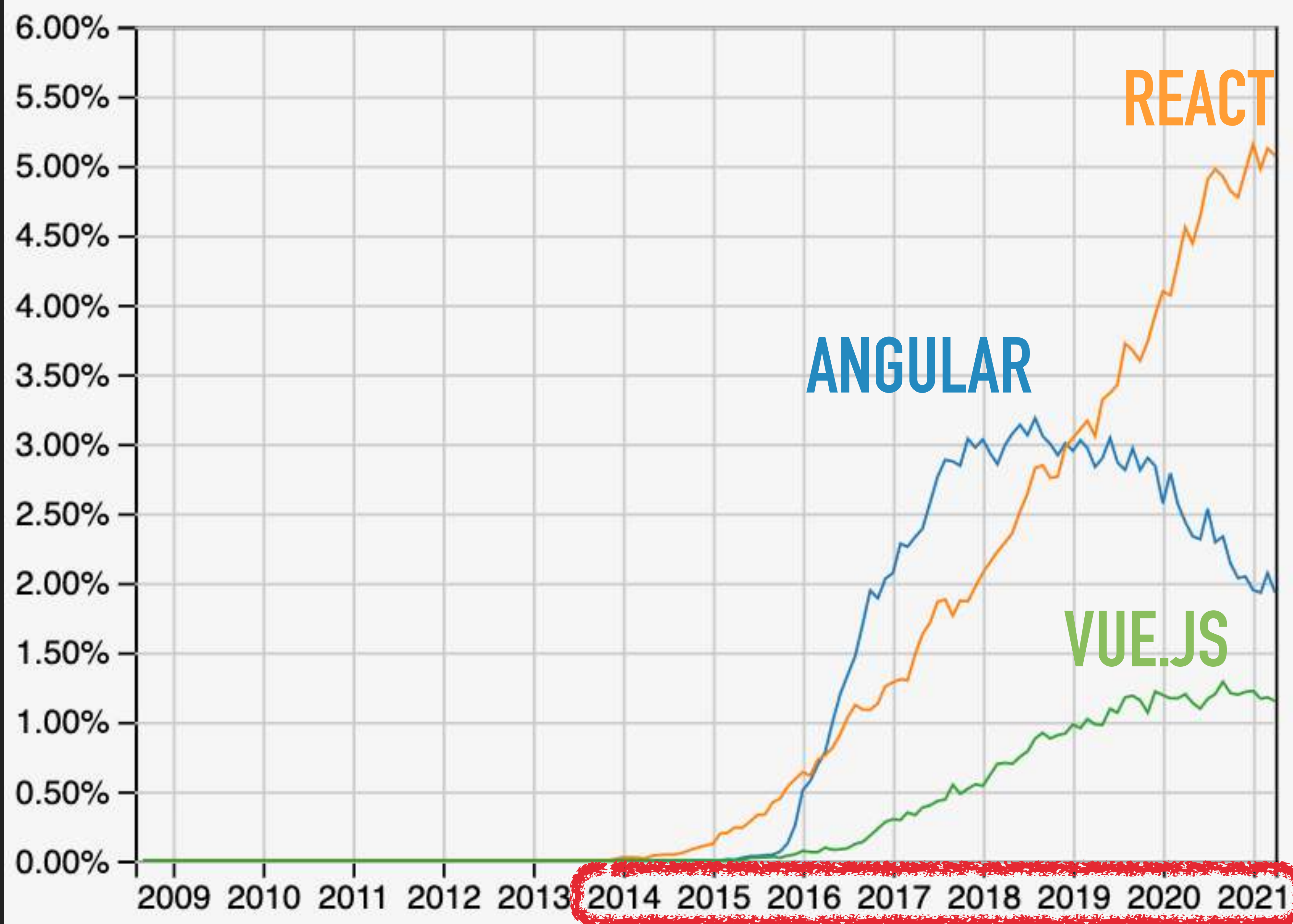
**REACT**

**VUE.JS**

**WEB**

**WHAT'S POPULAR?**

**QUESTIONS @  
STACK OVERFLOW**



REACT

4.3X

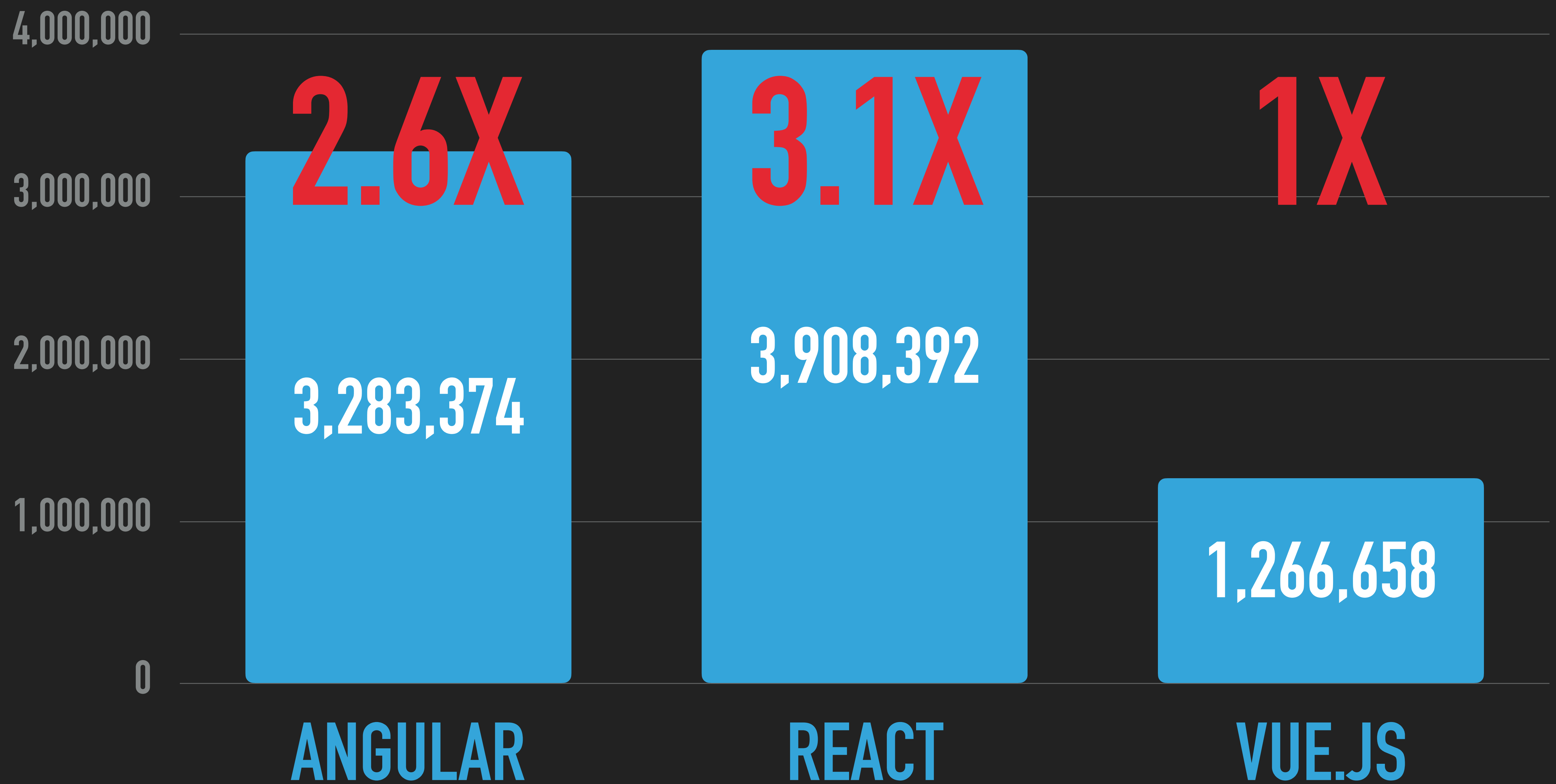
ANGULAR

1.6X

VUE.JS

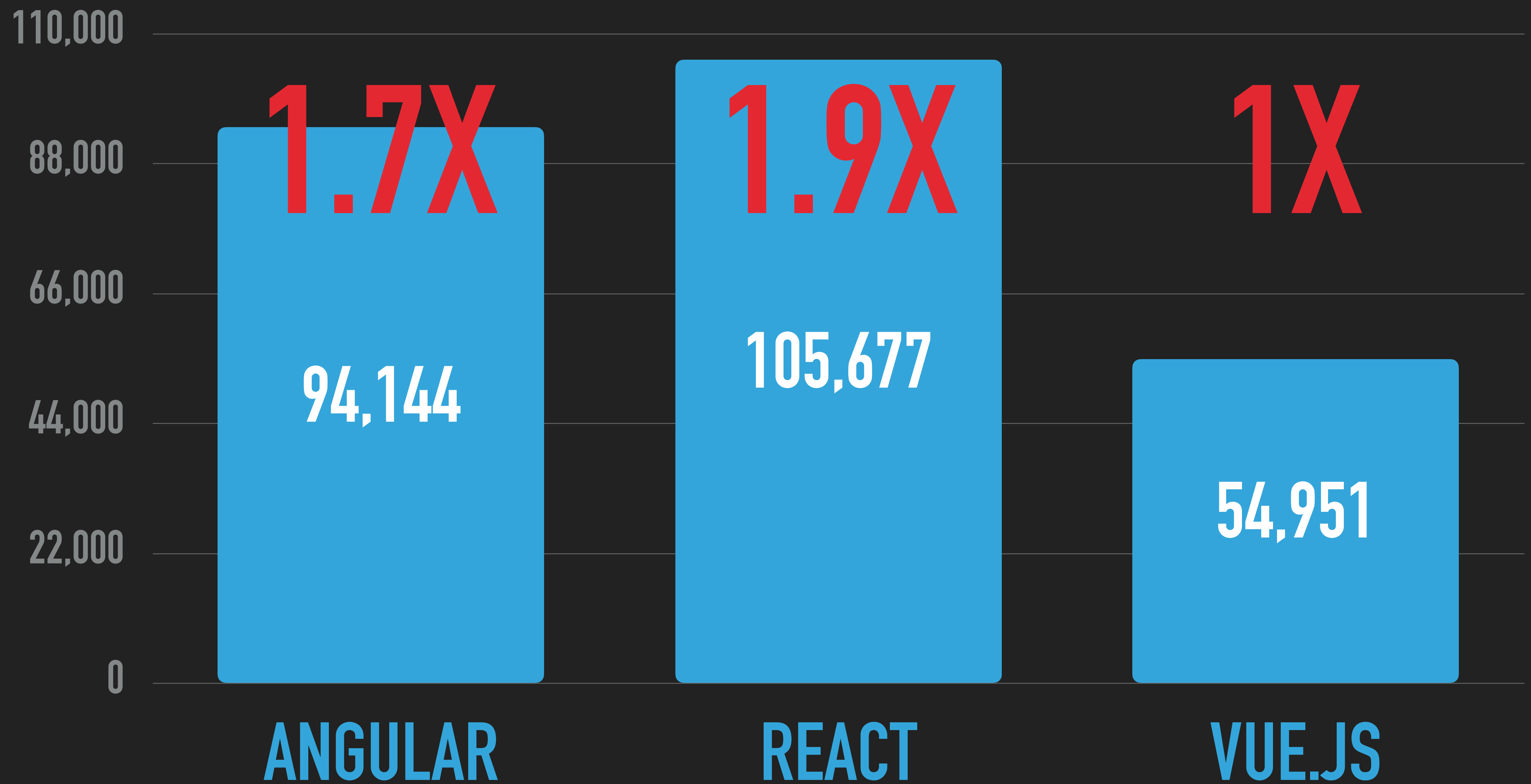
1X

**STUDENTS @ UDEMY**



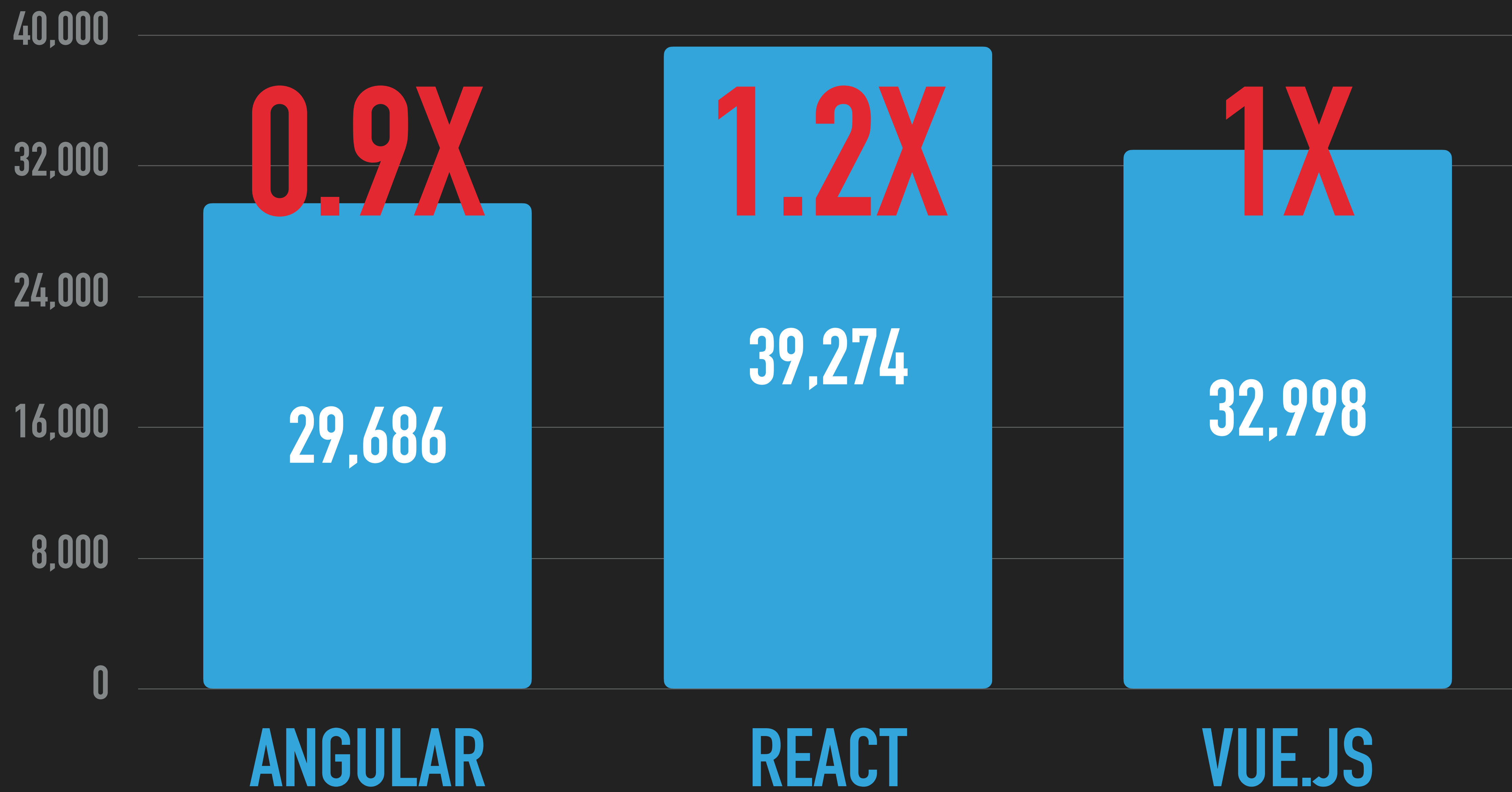
**MENTIONS @ INDEED:**

**GLOBAL**





**MENTIONS @ INDEED:**  
**ASIA & PACIFIC**



1. REACT

2. ANGULAR

3. VUE.JS

POPULAR: WEB

**WISH LIST: WEB**

**JAVA**

**WEB**

**FAST**

**DECLARATIVE**

**MOBILE**

**NATIVE  
FUNCTIONALITY**

**SAFE**

**DESKTOP**

**1 CODEBASE**

**POPULAR**

**EXTENSIONS**

**FAST BUILD,  
DEPLOY & DEBUG**

JAVA ANG

WEB -

FAST REA

DECLARATIVE REA

SAFE REA

POPULAR REA

EXTENSIONS ???

FAST BUILD, <sup>???</sup>  
DEPLOY & DEBUG

**1. REACT**

**2. ANGULAR**

**3. VUE.JS**

**WINNER: WEB**

**EXISTING:** KEEP REACT, ANGULAR, VUE.JS;  
**OTHER:** MIGRATE?

**NEW/MIGRATE:** REACT, ANGULAR, VUE.JS

**ADVICE:** WEB



~~HOW CAN WE BUILD FRONT ENDS TODAY?~~

~~WHAT DO WE **JAVA** DEVELOPERS WISH FOR?~~

~~**WEB.** NEW WEB APPLICATION~~

**MOBILE:** NEW NATIVE IOS & ANDROID APPS

**DESKTOP:** GOT WEB APPLICATION – WHAT NOW?

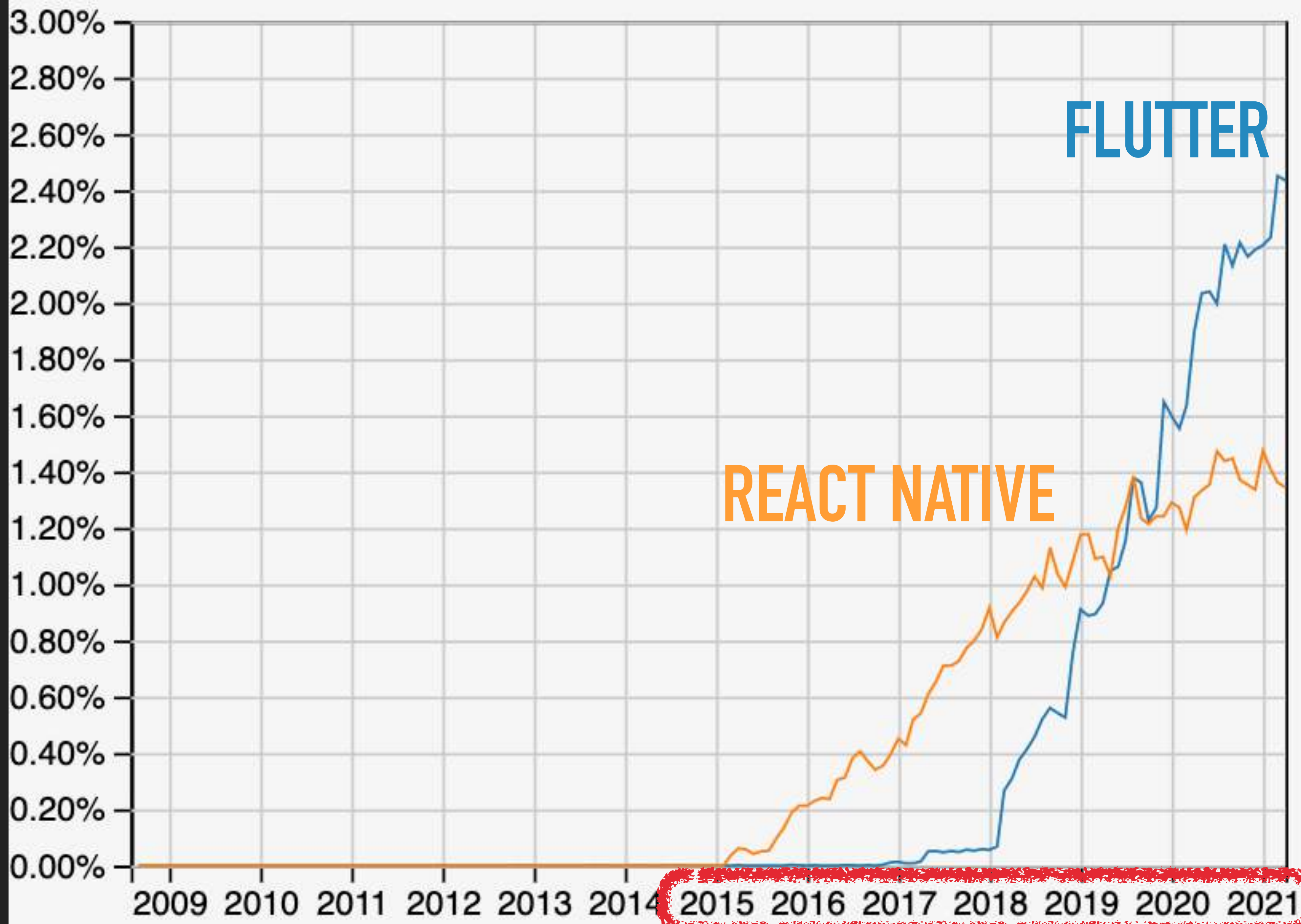
**FLUTTER**

**REACT NATIVE**

**MOBILE**

**WHAT'S POPULAR?**

**QUESTIONS @**  
**STACK OVERFLOW**



1.8X

1X

**STUDENTS @ UDEMY**

1,500,000

1,125,000

750,000

375,000

0

1.6X

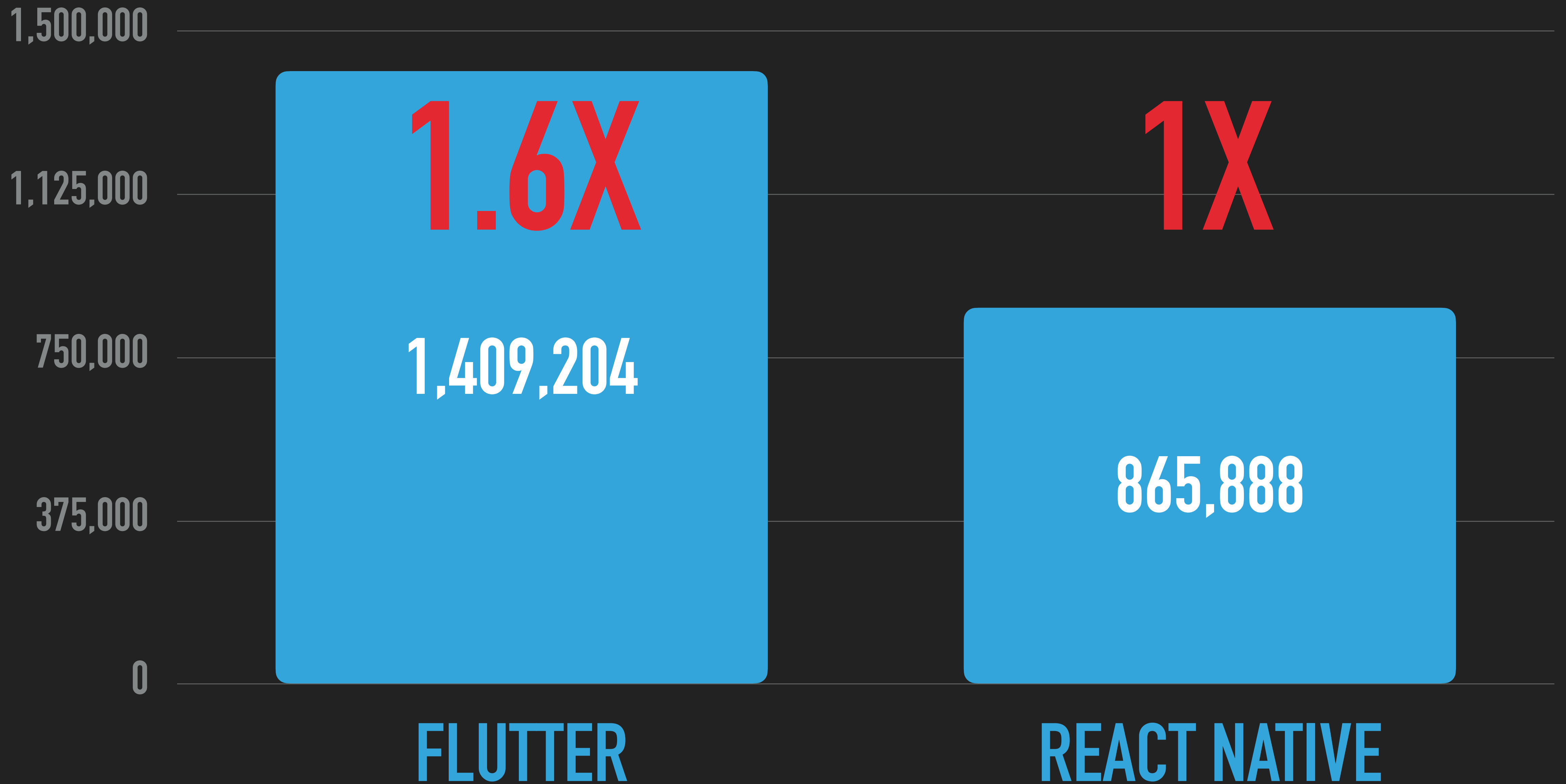
1,409,204

FLUTTER

1X

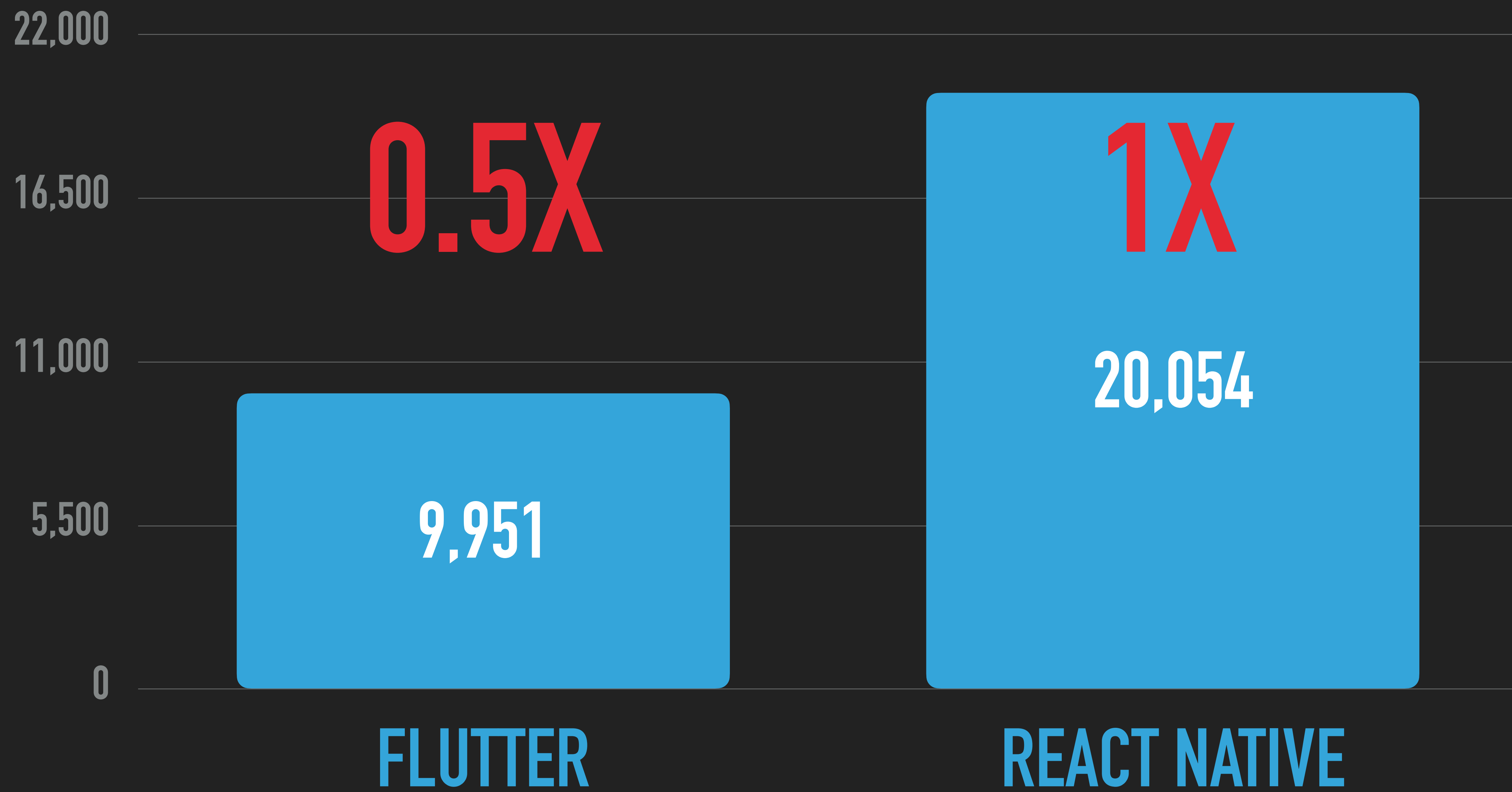
865,888

REACT NATIVE

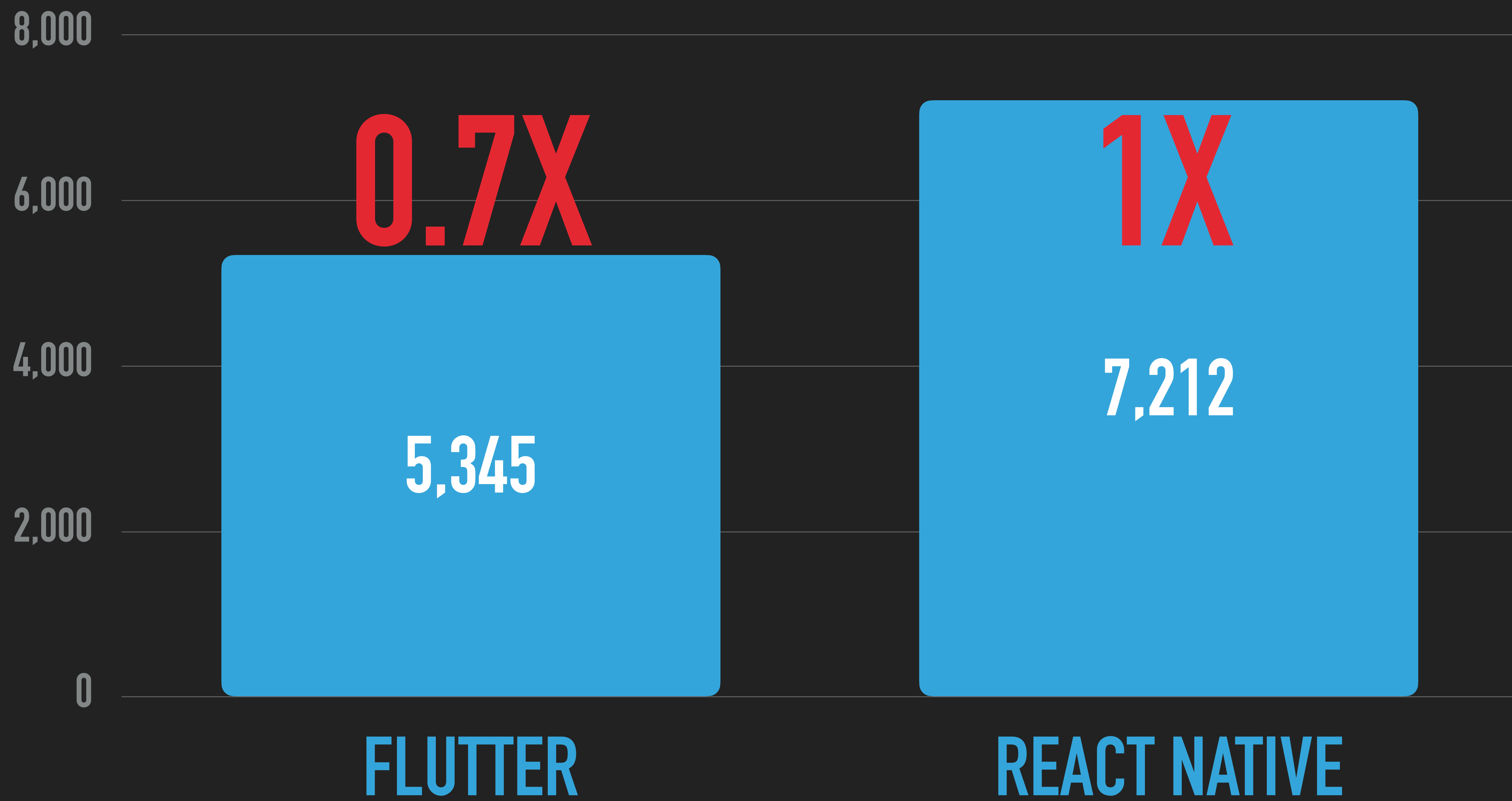


**MENTIONS @ INDEED:**  
**GLOBAL**





**MENTIONS @ INDEED:**  
**ASIA & PACIFIC**



**1. REACT NATIVE**

**2. FLUTTER**

**POPULAR: MOBILE**

# **MY FLUTTER EXPERIENCE** **ON MOBILE**

**WHAT'S FLUTTER?**

**"GOOGLE'S UI TOOLKIT FOR  
BUILDING BEAUTIFUL, NATIVELY  
COMPILED APPLICATIONS FOR  
MOBILE, WEB, AND DESKTOP FROM  
A SINGLE CODEBASE."**

- ⊖ JAVASCRIPT
- ⊖ SLOWER RENDERING
- + NATIVE UI ELEMENTS
- ⊖ WINDOWS & MACOS
- ⊖ REACT + REACT NATIVE

# REACT NATIVE

- + DART
- + FASTER RENDERING
- ⊖ EMULATED UI ELEMENTS
- + WINDOWS, MAC, LINUX
- + 1 CODEBASE

# FLUTTER



CAN'T WE USE JAVA  
INSTEAD OF DART?

```
class MyClass extends AnotherClass {  
    String myString;  
    int myInt;  
    List<String> myList = new List<String>();  
  
    String sayHello(String name) {  
        var feedback = "Hello, " + name;  
        return feedback;  
    }  
}
```

**THIS IS DART!**

```
class MyClass extends AnotherClass {  
    String myString;  
    int myInt;  
    List<String> myList = new LinkedList<>();  
  
    String sayHello(String name) {  
        var feedback = "Hello, " + name;  
        return feedback;  
    }  
}
```

# THIS IS JAVA

**BROWSER**

**"SIMPLIFIED JAVA FOR UI"**

**VM & NATIVELY COMPILED**

**WHAT'S DART?**

**MATERIAL DESIGN**

**IOS ELEMENTS (IPHONE/IPAD)**

**SHAPES (SQUARES, CIRCLES, ...)**

**EMULATED UI ELEMENTS?**

**STAND-ALONE**

**SCREENS**

**HOW DOES FLUTTER RUN?**

**PLUGINS**

**NATIVE SCREENS**

**CHANNELS & C API**

**NATIVE INTEGRATION**

**SLOW MOBILE BUILDS**

**HOT RELOAD**

**HOT RESTART**

**FASTER**

**FAST BUILD & DEPLOY!**



**HOT RELOAD IS FUN &  
KEEPS THE FLOW!**

15.000

OPEN-SOURCE

PORTAL

FORK

PLUGINS

DART = "SIMPLIFIED **JAVA** FOR UI"

SIMPLE **NATIVE** INTEGRATION

FAST **CODE, BUILD & DEPLOY**

**PLUGINS** SAVE TIME

SUM-UP: **GOOD** FLUTTER

**MY FLUTTER ISSUES**

**WILL GOOGLE KILL  
FLUTTER?**



# Killed by Google

All (225)



Join a bunch of others and follow  
@killedbygoogle on Twitter.



June  
2022

## Google Chrome Apps

"Off with their heads!" in over 1 year, Google Chrome Apps were hosted or packaged web applications that ran on the Google Chrome browser. It will be over 11 years old.



January  
2022

## Android Things

Turning to ashes in 10 months, Android Things was an Android-based embedded operating system (originally named Brillo) aimed to run on Internet of Things (IoT) devices. It will be over 6 years old.



December  
2021

## AngularJS

Biting the big one in 10 months, AngularJS was a JavaScript open-source front-end web framework based on MVC pattern using a dependency injection technique. It will be about 11 years old.



June  
2021

## Google Hangouts

Another one bites the dust in 4 months, Google Hangouts was a communication platform which included messages, video chat, and VOIP features. Execution scheduled "first half 2021". It will be over 8 years old.



June  
2021

## Expeditions

To be exterminated in 4 months, Expeditions is a program for providing virtual reality experiences to school classrooms through Google Cardboard viewers, allowing educators to take their students on virtual field trips. It will be almost 6 years old.

**IN-HOUSE COMPETITION**

**FUCHSIA**

**POPULAR**

**WE DON'T KNOW!**

**MOBILE, WEB & DESKTOP  
WITH 1 CODEBASE  
AND FLUTTER?**



**NO**

**PREVIEW**

**NO NATIVE UI ELEMENTS**

**"CUSTOMIZE MATERIAL"**

**FLUTTER: DESKTOP**

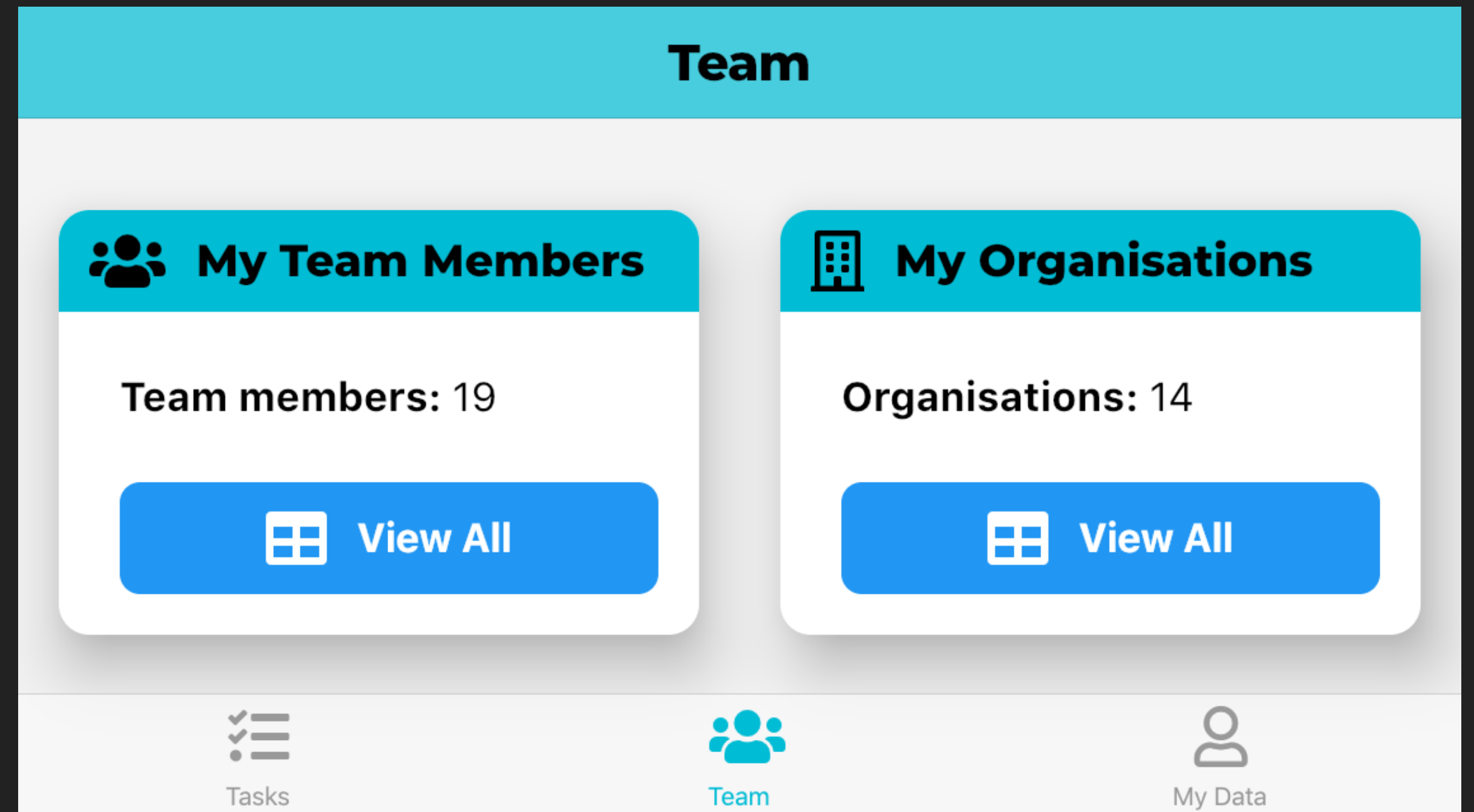
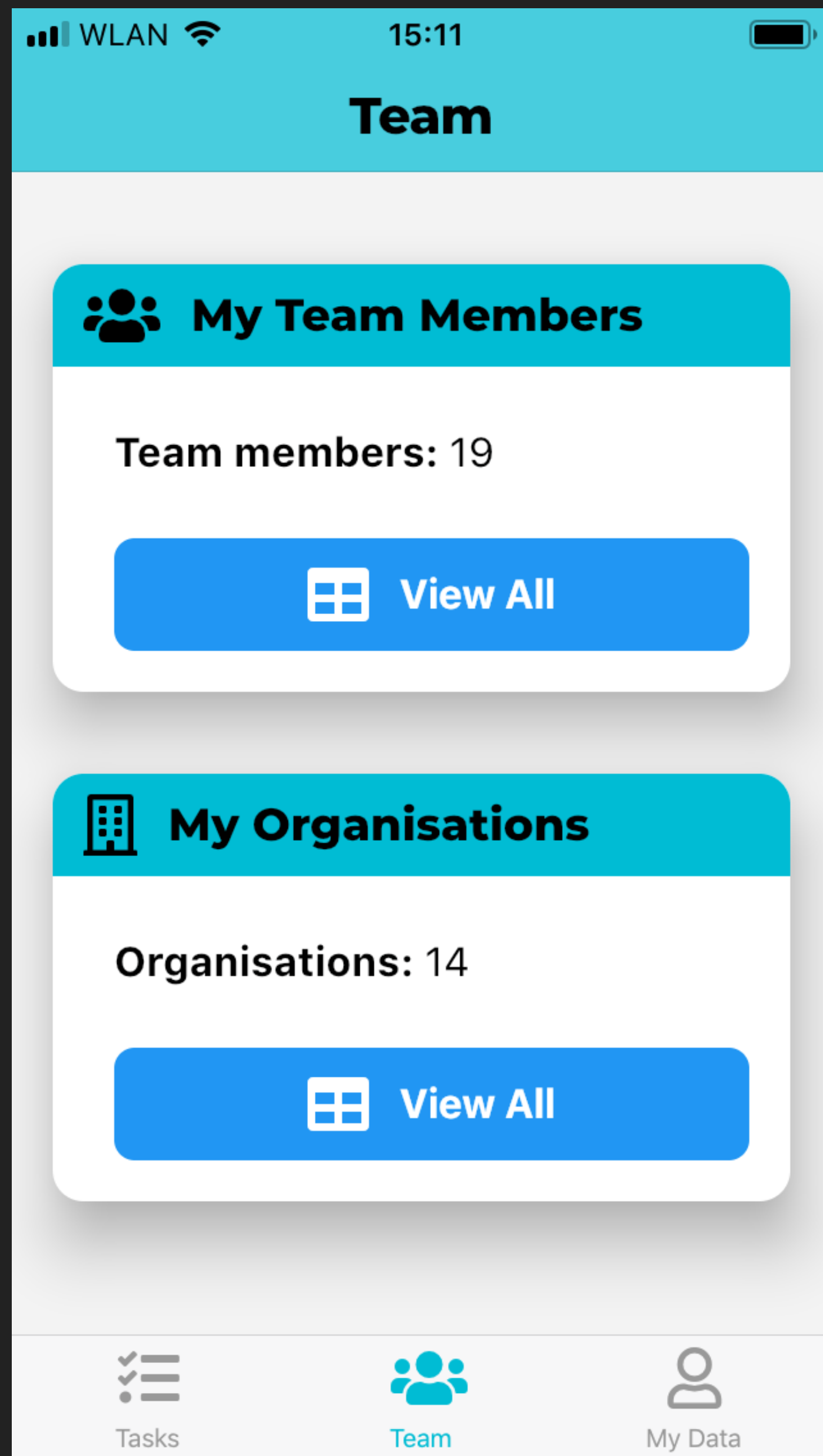
1.0

NO "WEB ELEMENTS + STYLING"

"CUSTOMIZE MATERIAL"

NPM

FLUTTER: WEB



ROTATE OR BIG

FLUTTER?

"BOOTSTRAP GRID"

RESPONSIVE DESIGN?

**COMPONENTS MISSING**

**TIME-CONSUMING**

**OWN COMPONENTS**

**NATIVE DESIGN FOR MOBIL**

**ISSUES & TROUBLE**

**NEW PLATFORMS**

**NULL SAFETY**

**EXTERNAL DEVELOPERS**

**FLUTTER OVERWHELMED?**

WILL GOOGLE **KILL** FLUTTER?

FLUTTER  
**OVERWHELMED?**

**NOT** ALL WITH **1** CODEBASE

**RESPONSIVE** DESIGN?

MOBILE **NATIVE** DESIGN TIME-CONSUMING

SUM-UP: **BAD** FLUTTER



**WISH LIST: MOBILE**

JAVA FLU

WEB REA

FAST FLU

DECLARATIVE –

MOBILE –

NATIVE  
FUNCTIONALITY FLU

SAFE REA

DESKTOP –

1 CODEBASE FLU

POPULAR REA

EXTENSIONS ???

FAST BUILD, ???  
DEPLOY & DEBUG

**1. FLUTTER**

**2. REACT NATIVE**

**WINNER: MOBIL**

REACT NATIVE

"REACT WINS" => REACT NATIVE

JOB

YOUR WINNER?

**EXISTING:** KEEP FLUTTER, REACT NATIVE;  
ELSE: MIGRATION?

**NEW/MIGRATION:** REACT: REACT NATIVE, FLUTTER;  
ELSE: FLUTTER, REACT NATIVE

**ADVICE:** MOBILE

**MOBILE**

~~HOW CAN WE BUILD FRONT ENDS TODAY?~~

~~WHAT DO WE **JAVA** DEVELOPERS WISH FOR?~~

~~**WEB.** NEW WEB APPLICATION~~

~~**MOBILE.** NEW NATIVE IOS & ANDROID APPS~~

**DESKTOP:** GOT WEB APPLICATION – WHAT NOW?

**NO GOOD OPTION**

**CHANGE**

**EXPENSIVE**

**WEB GOOD ENOUGH**

**DESKTOP**



KEEP **WEB** APPLICATION

MATERIAL UI ELEMENTS + FLUTTER:  
FLUTTER FOR DESKTOP?

**ADVICE:** DESKTOP

~~HOW CAN WE BUILD FRONT ENDS TODAY?~~

~~WHAT DO WE **JAVA** DEVELOPERS WISH FOR?~~

~~WEB. NEW WEB APPLICATION~~

~~MOBILE. NEW NATIVE IOS & ANDROID APPS~~

~~DESKTOP. GOT WEB APPLICATION WHAT NOW?~~

WEB: **YES** – ANGULAR, LEARN REACT

MOBILE: **YES** – FLUTTER

DESKTOP: **YES** – WEB APPLICATION

**FOLLOW MY OWN ADVICE?**

# SUMMARY

**EXISTING:** KEEP REACT, ANGULAR, VUE.JS;  
ELSE: MIGRATE?

**NEW/MIGRATE:** REACT, ANGULAR, VUE.JS

**ADVICE:** WEB

**EXISTING:** KEEP FLUTTER, REACT NATIVE;  
ELSE: MIGRATION?

**NEW/MIGRATE:** REACT: REACT NATIVE, FLUTTER;  
ELSE: FLUTTER, REACT NATIVE

**ADVICE:** MOBILE

KEEP **WEB** APPLICATION

MATERIAL UI ELEMENTS + FLUTTER:  
FLUTTER FOR DESKTOP?

**ADVICE:** DESKTOP



*The End*



**ADVERTISEMENT**

**OCTOBER 2021**

**FULL-STACK **JAVA**: SPRING BOOT, ANGULAR, FLUTTER**

**CONTRACTOR/FIXED-TERM EMPLOYEE**

**MILTON KEYNES, LONDON, OR **REMOTE****

**LOOKING FOR **PROJECT!****



**SLIDES & VIDEOS**

**EXTRA INFORMATION**

**FEEDBACK**

**GET STARTED!**

**NEWSLETTER**

**[HTTPS://BPF.LI/APT](https://bpf.li/apt)**