



KARSTEN SILZ

OCTOBER 6, 2021



BETTER PROJECTS
FASTER

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

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



**SLIDES &
MORE**

BPF.LI/JAX

JAVA DEVELOPER **WISH LIST** FOR FRONT-ENDS

WEB: NEW WEB APPLICATION

MOBILE: NEW NATIVE IOS & ANDROID APPS

DESKTOP: GOT WEB APPLICATION – WHAT NOW?

WHAT'S MY **ANGLE?**



22 YEARS, 3 PROJECTS

INFOQ WRITER

12 CRITERIA

NO SELLING/AFFILIATION

ANGULAR + FLUTTER

YOUR CRITERIA/RATING

YOUR ENVIRONMENT

YOUR DECISION

YOU DECIDE!

JAVA DEVELOPER **WISH LIST** FOR FRONT-ENDS

WEB: NEW WEB APPLICATION

MOBILE: NEW NATIVE IOS & ANDROID APPS

DESKTOP: GOT WEB APPLICATION – WHAT NOW?

JAVA DEVELOPER

WISH LIST

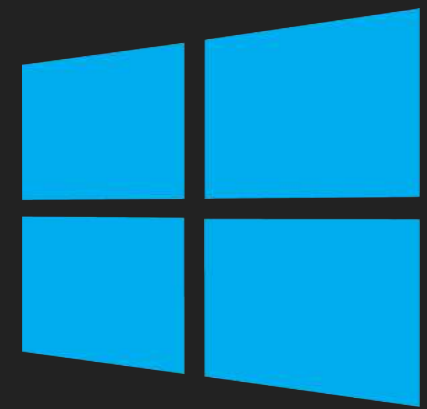
ENTERPRISE APPLICATIONS

FORMS, DATA GRIDS, REPORTS

NO GAMES/MEDIA APPS

APPLICATIONS

PC



MOBILE



DEVICES

**WHAT IS JAVA DEVELOPER
WISH LIST?**

JAVA

WEB

FAST

STATE OF THE ART

MOBILE

**NATIVE
FUNCTIONALITY**

SAFE

DESKTOP

1 CODEBASE

POPULAR

EXTENSIONS

**FAST BUILD,
DEPLOY & DEBUG**

CHANGE TECHNOLOGIES

JOB SECURITY

WHY STATE OF THE ART?

STATE OF THE ART:
DECLARATIVE

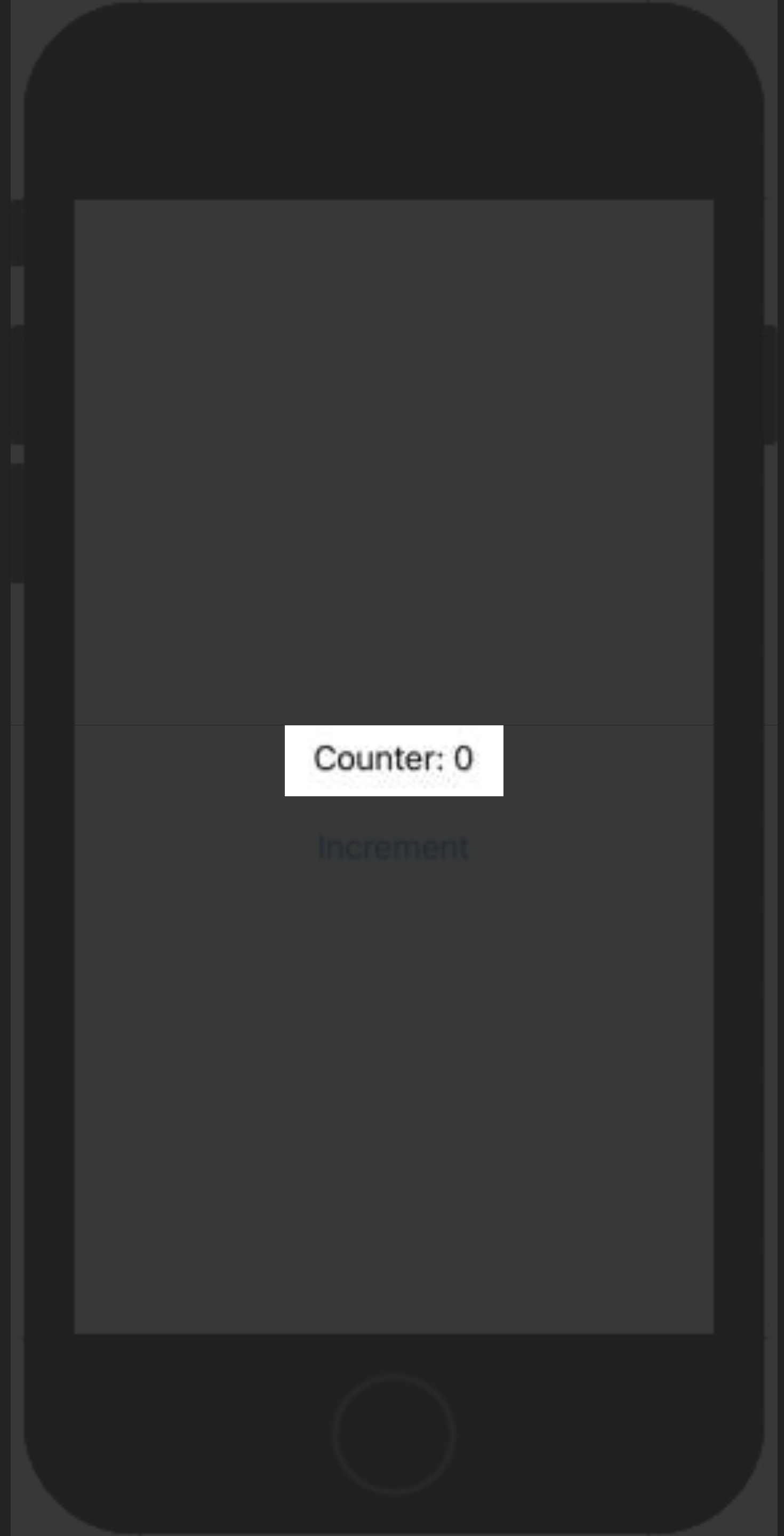
EXAMPLE:
APPLE SWIFTUI

Counter: 0

[Increment](#)

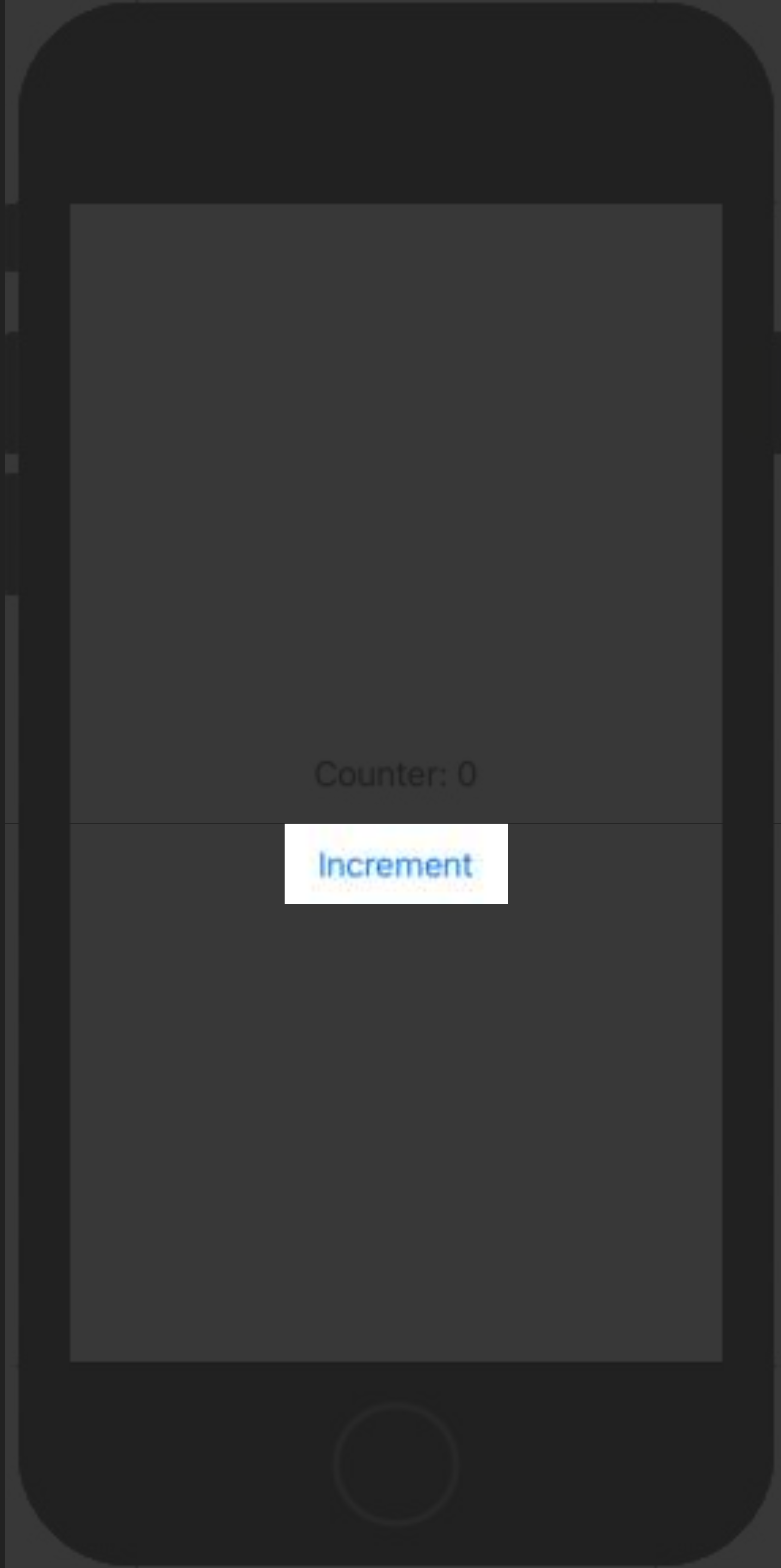
```
@State var count: Int = 0

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



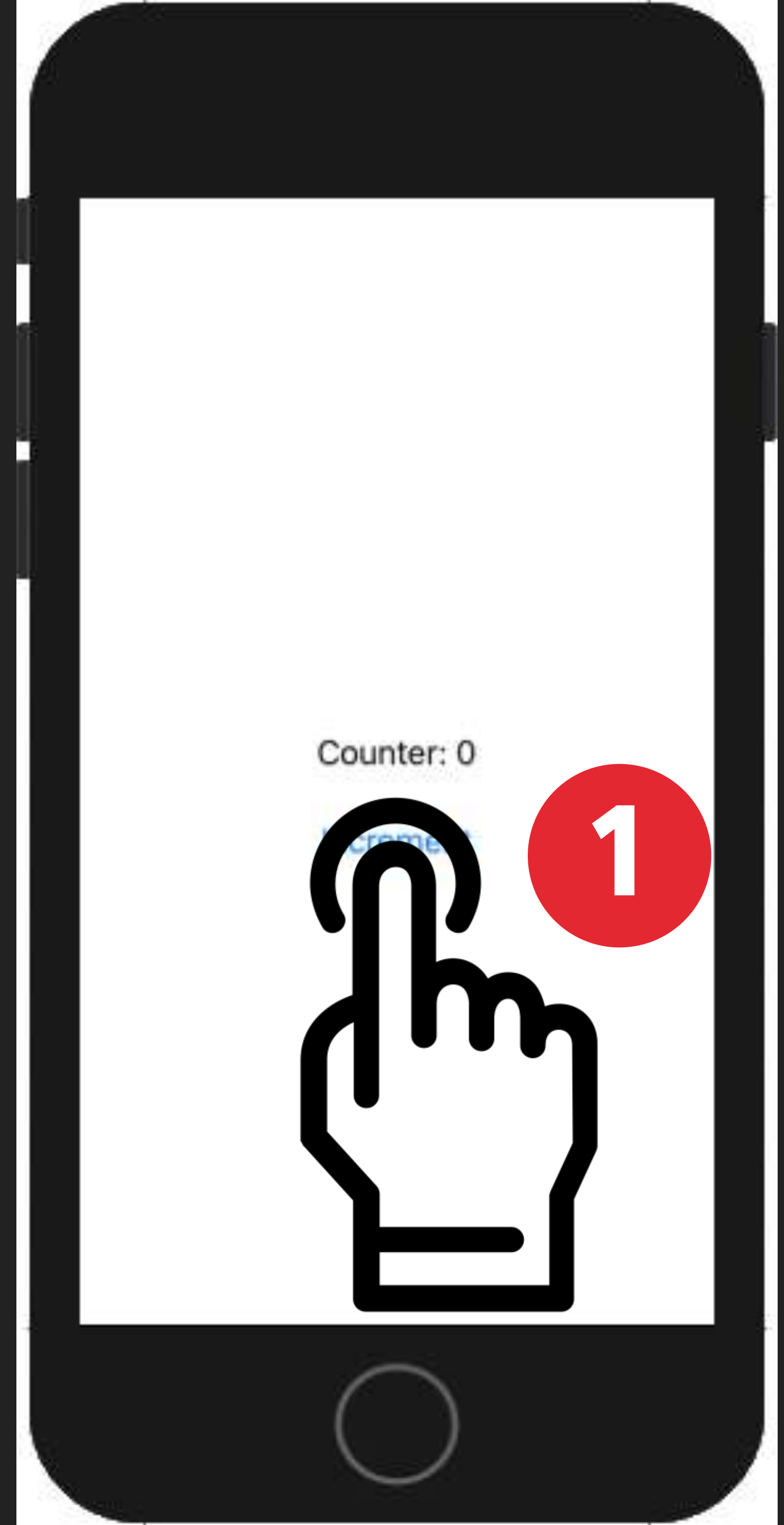
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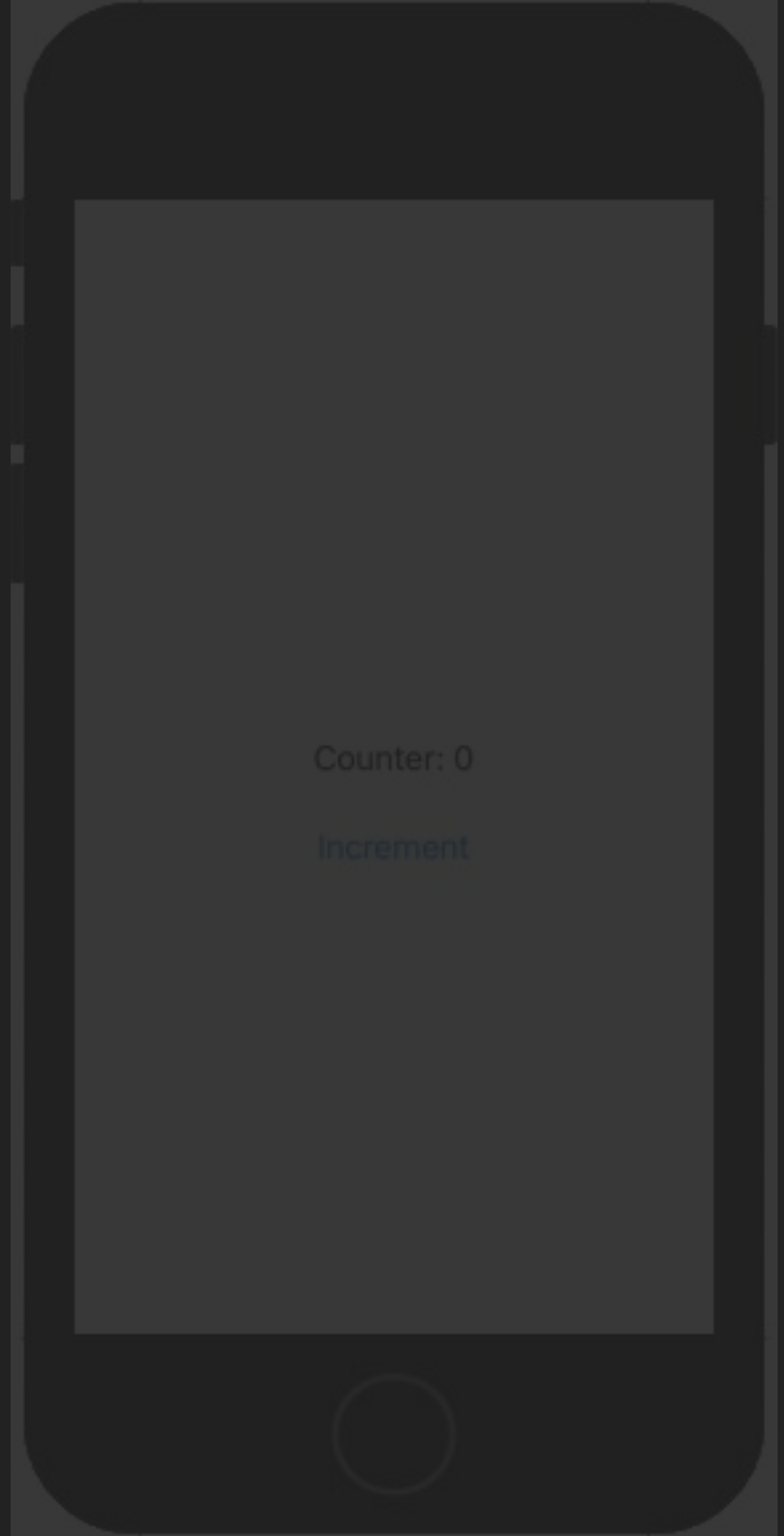
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2



```
@State var count: Int = 0
```

3

```
var body: some
```

```
View {
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    VStack(alignment: .center,
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        content: {
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            Text("Counter: \ (count) ")
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            }, label: {
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            })
```

```
        })
```

```
    }
```

Counter: 0

Increment

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

3

```
var body: some
```

```
View {
```

```
    VStack(alignment: .center,
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        content: {
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            Text("Counter: \ (count) ")
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            }, label: {
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                Text("Increment")
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            })
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        })
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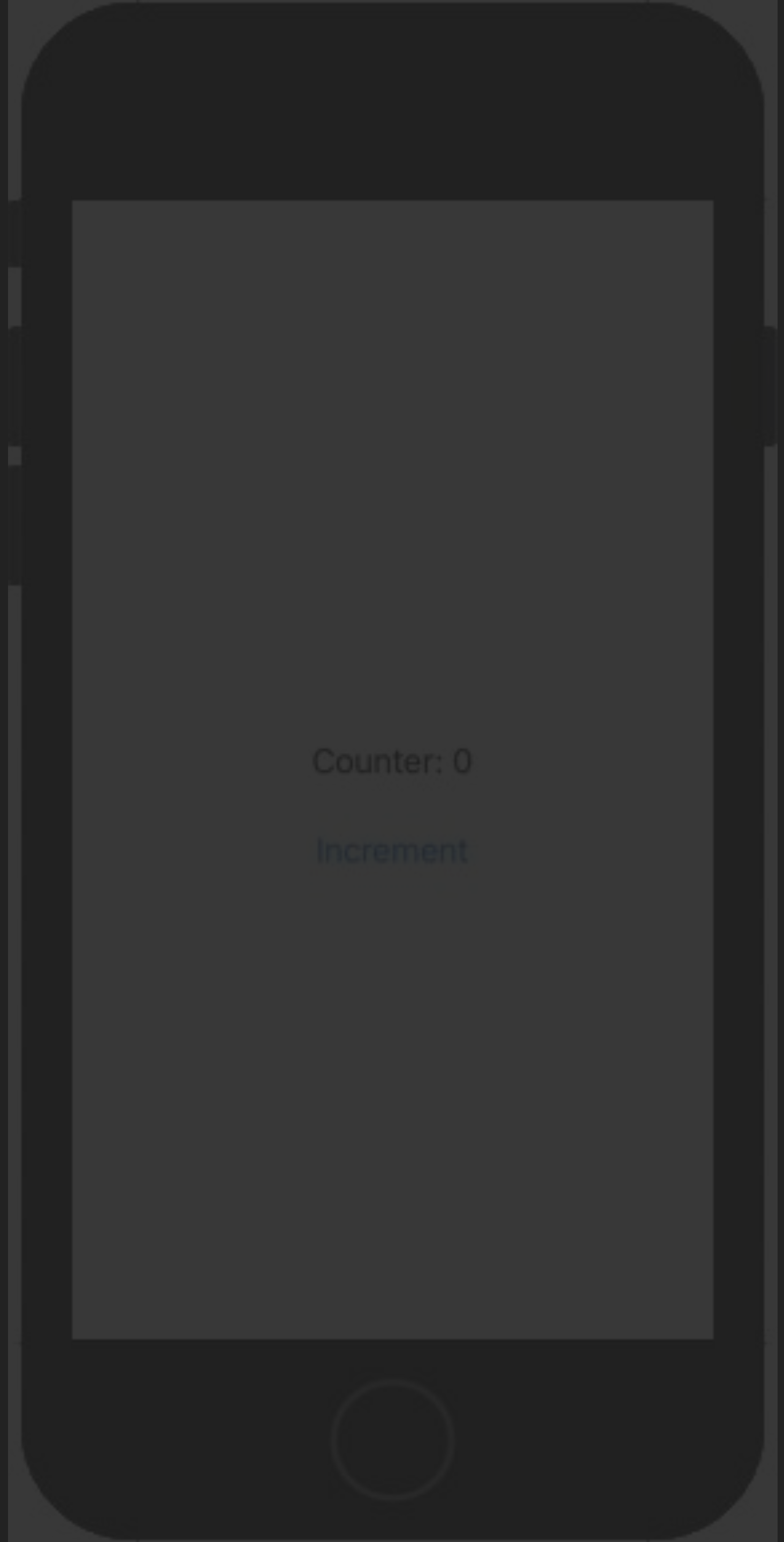
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    }
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Counter: 0

Increment

```
@State var count: Int = 1

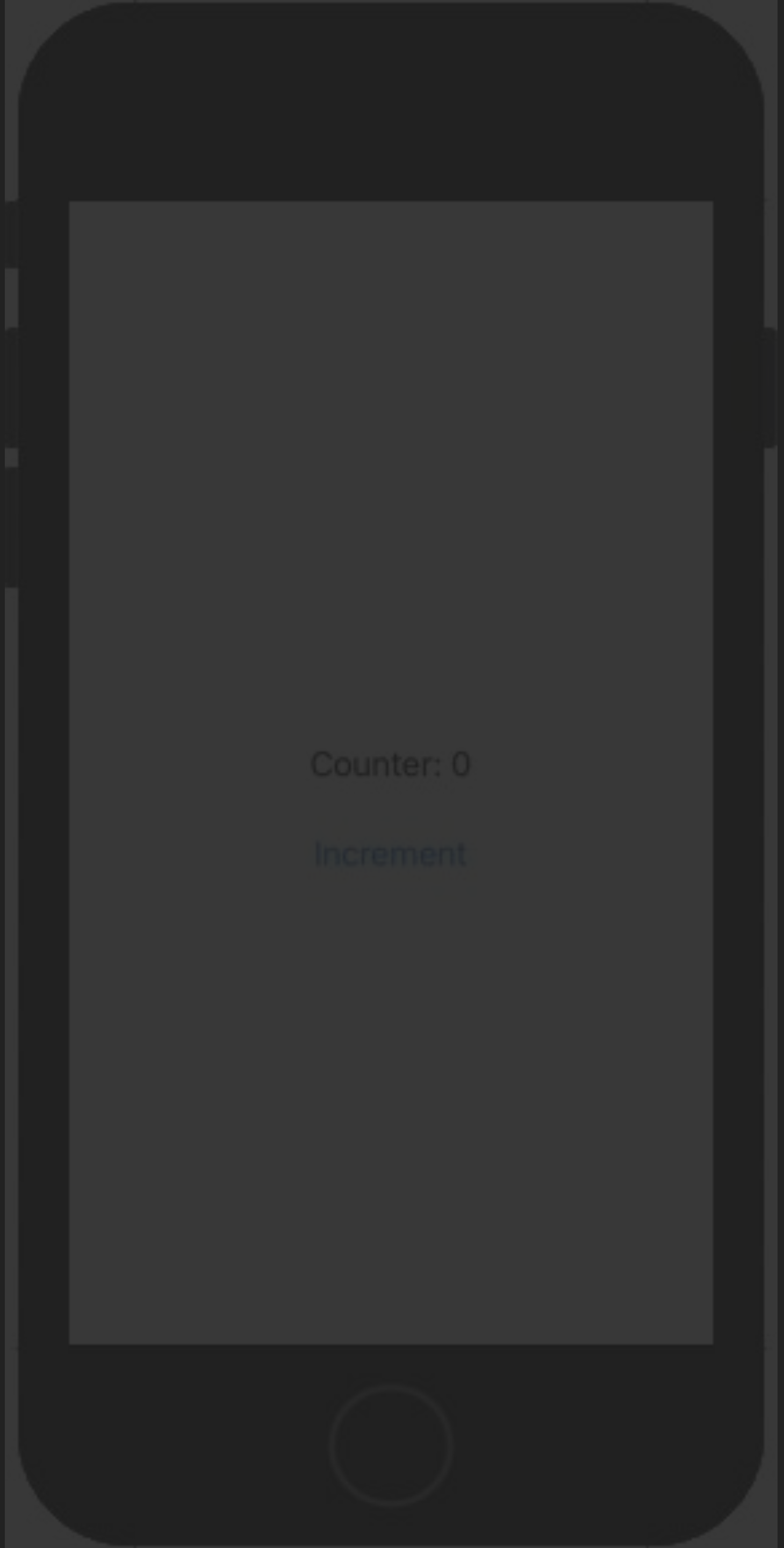
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View 4
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        self.count += 1
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        Text("Increment")
      })
    })
  })
}
```



```
@State var count: Int = 1

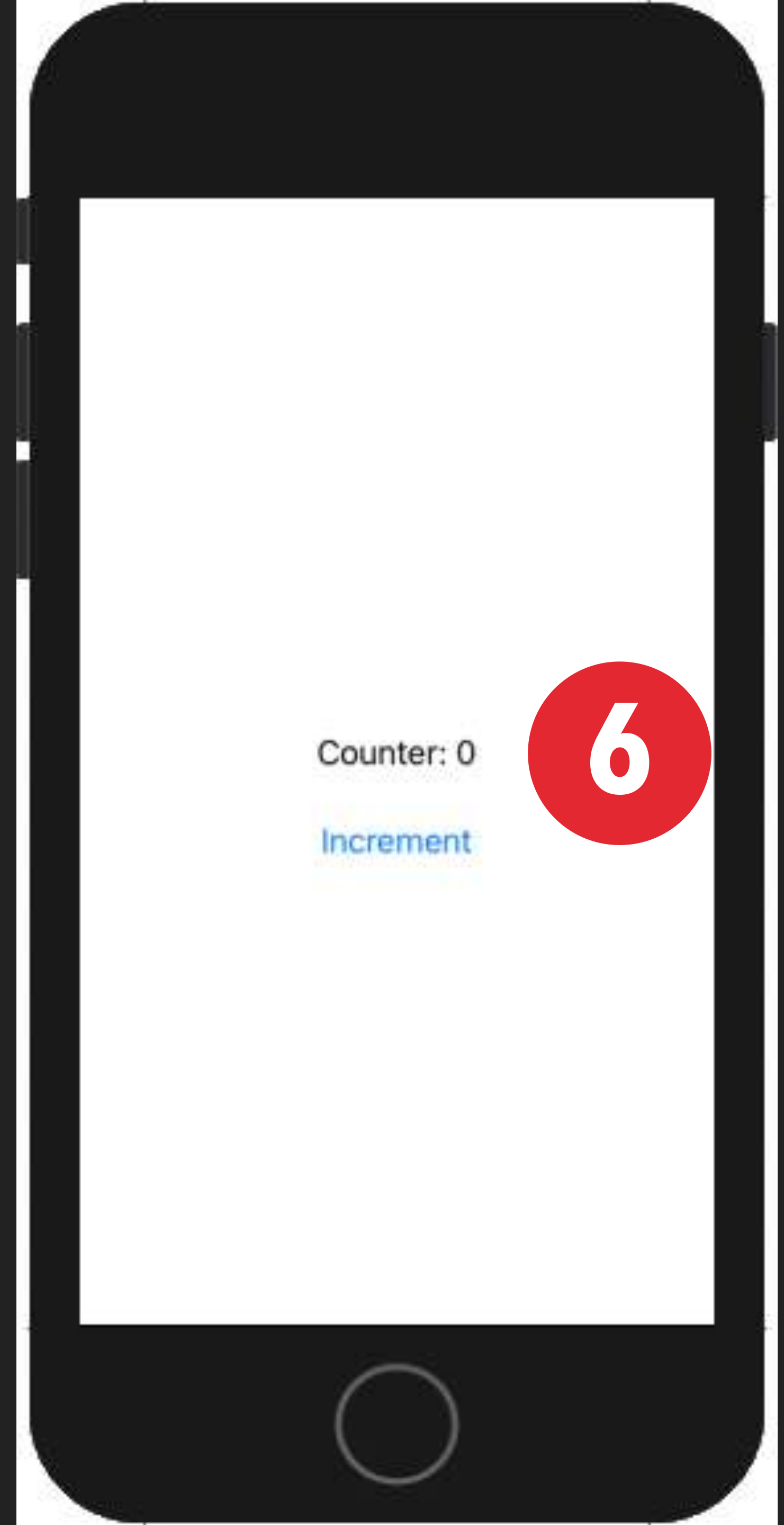
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5



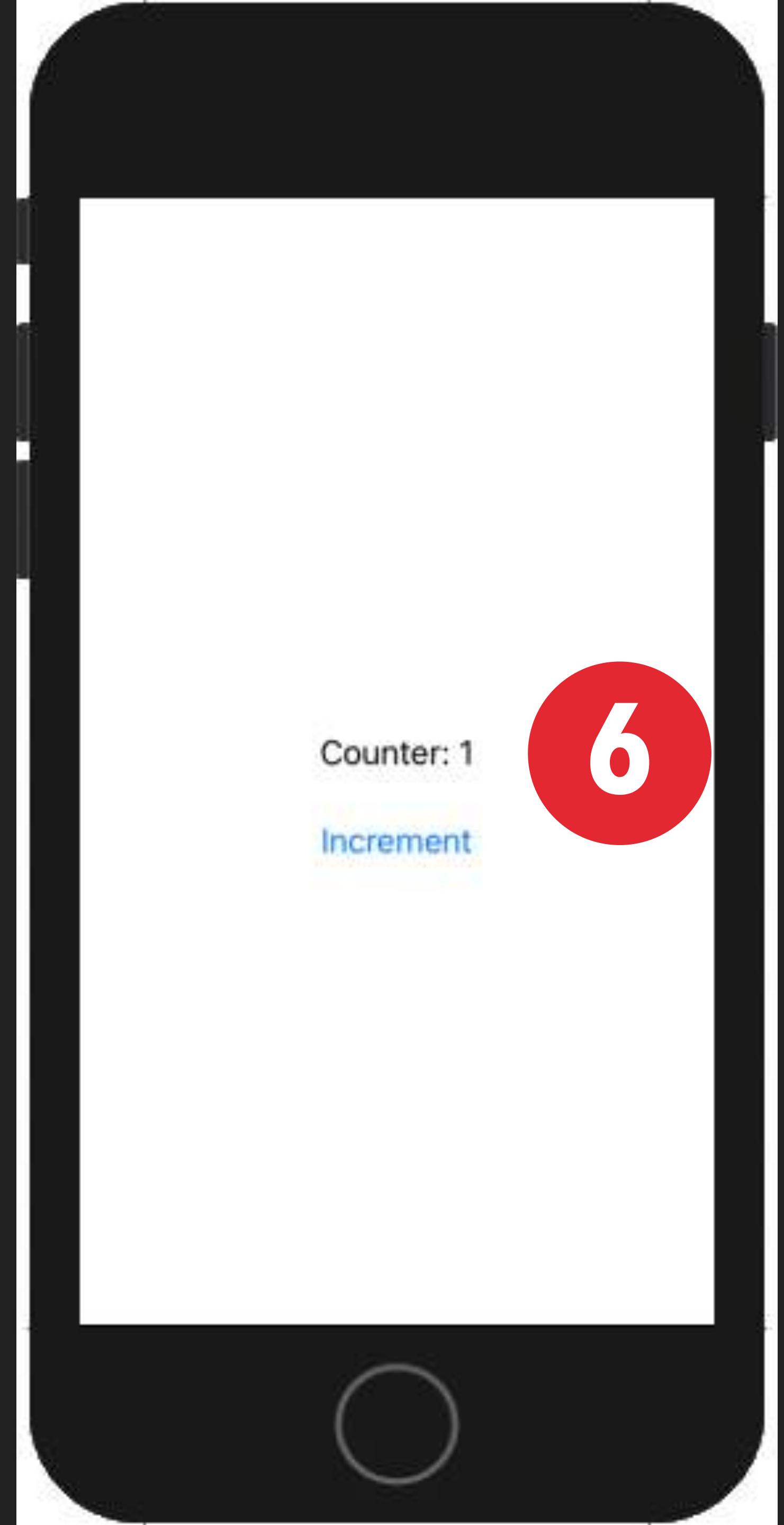
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                self.count += 1
            }, label: {
                Text("Increment")
            })
        })
    })
}
```



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
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            })
        })
    })
}
```

UI AS CODE

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@State var count: Int = 0

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                .padding()
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            })
        })
    })
}
```

STATUS & EVENTS

```
@State var count: Int = 0

var body: some
View
    VStack(alignment: .center,
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            Text("Counter: \ (count) ")
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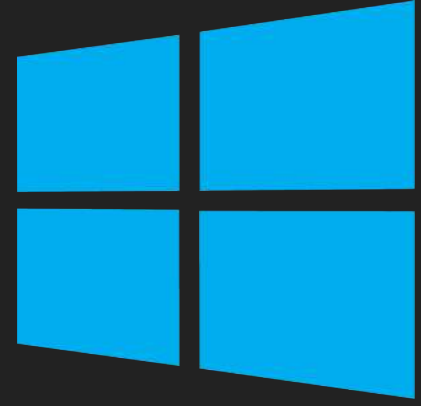
FRAMEWORK DRIVES UPDATES

UI AS CODE

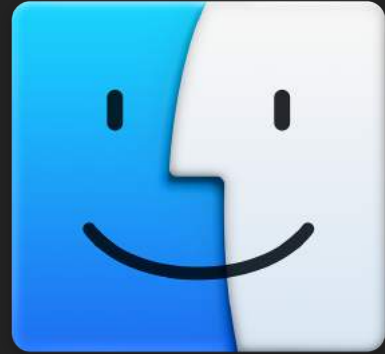
STATUS & EVENTS

FRAMEWORK DRIVES UPDATES

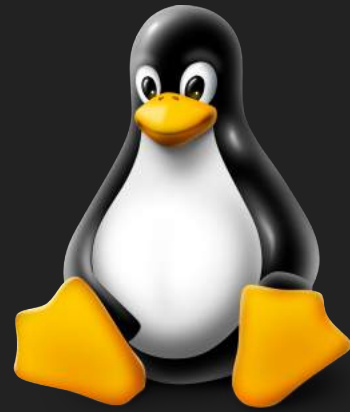
DECLARATIVE



.NET MAUI (Q2/2022)



SWIFTUI (2019)



REACT (2013)



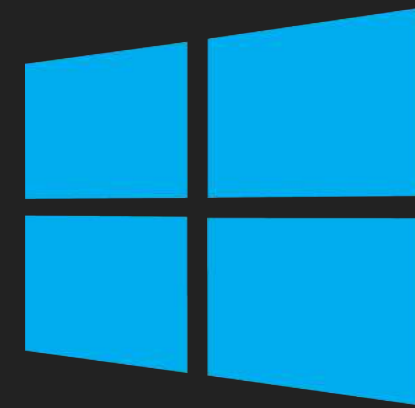
SWIFTUI (2019)



JETPACK COMPOSE (JULY 2021)



RECOMMENDED



OPTION

DECLARATIVE

STATE OF THE ART:
DECLARATIVE

JAVA

WEB

FAST

DECLARATIVE

MOBILE

**NATIVE
FUNCTIONALITY**

SAFE

DESKTOP

1 CODEBASE

POPULAR

EXTENSIONS

**FAST BUILD,
DEPLOY & DEBUG**

"STILL HERE IN 5 YEARS"

CONFIDENCE

SAFE

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?

GOOGLE SEARCHES

UDEMY COURSE BUYERS

STACK OVERFLOW QUESTIONS

MENTIONS IN JOB ADS

HOW POPULAR?

INTERESTED

GOOGLE SEARCHES

EVALUATE

UDEMY COURSE BUYERS

APPLY

STACK OVERFLOW QUESTIONS

BUY

MENTIONS IN JOB ADS

TECHNOLOGY ADOPTION

NOW

GOOGLE SEARCHES

UDEMY COURSE BUYERS

STACK OVERFLOW QUESTIONS

1-2 YEARS

MENTIONS IN JOB ADS

TIME



100 PEOPLE

GOOGLE SEARCHES

UDEMY COURSE BUYERS

STACK OVERFLOW QUESTIONS

1-2 PEOPLE

MENTIONS IN JOB ADS

QUANTITY



MORE = BETTER

INDEED.COM

63 COUNTRIES

92% OF GLOBAL GDP

MULTIPLE MENTIONS PER AD

JOB ADS

JAVA

WEB

FAST

DECLARATIVE

MOBILE

**NATIVE
FUNCTIONALITY**

SAFE

DESKTOP

1 CODEBASE

POPULAR

EXTENSIONS

**FAST BUILD,
DEPLOY & DEBUG**

ENTERPRISE APPLICATIONS FOR PC & MOBILE

WISH LIST: 12 CRITERIA FOR JAVA DEVS

STATE OF THE ART: DECLARATIVE FRONT-ENDS

MEASURE POPULARITY

SUM-UP: WISH LIST

~~JAVA DEVELOPER WISH LIST FOR FRONT ENDS~~

WEB: NEW WEB APPLICATION

MOBILE: NEW NATIVE IOS & ANDROID APPS

DESKTOP: GOT WEB APPLICATION – WHAT NOW?

NEW WEB APPLICATION

WEB FRAMEWORKS?

THYMELEAF, JSF: NOT **DECLARATIVE**

NOT **POPULAR**

THYMELEAF, VAADIN: NOT **SAFE**

JSF, THYMELEAF, VAADIN:
OUT

ANGULAR (GOOGLE)

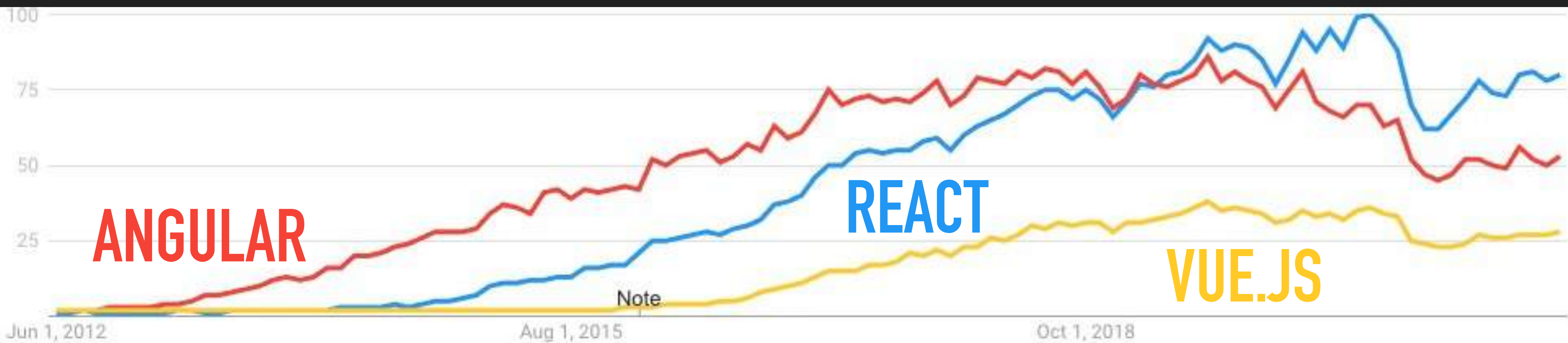
REACT (FACEBOOK)

VUE.JS

WEB FRAMEWORKS!

POPULARITY

GOOGLE SEARCHES

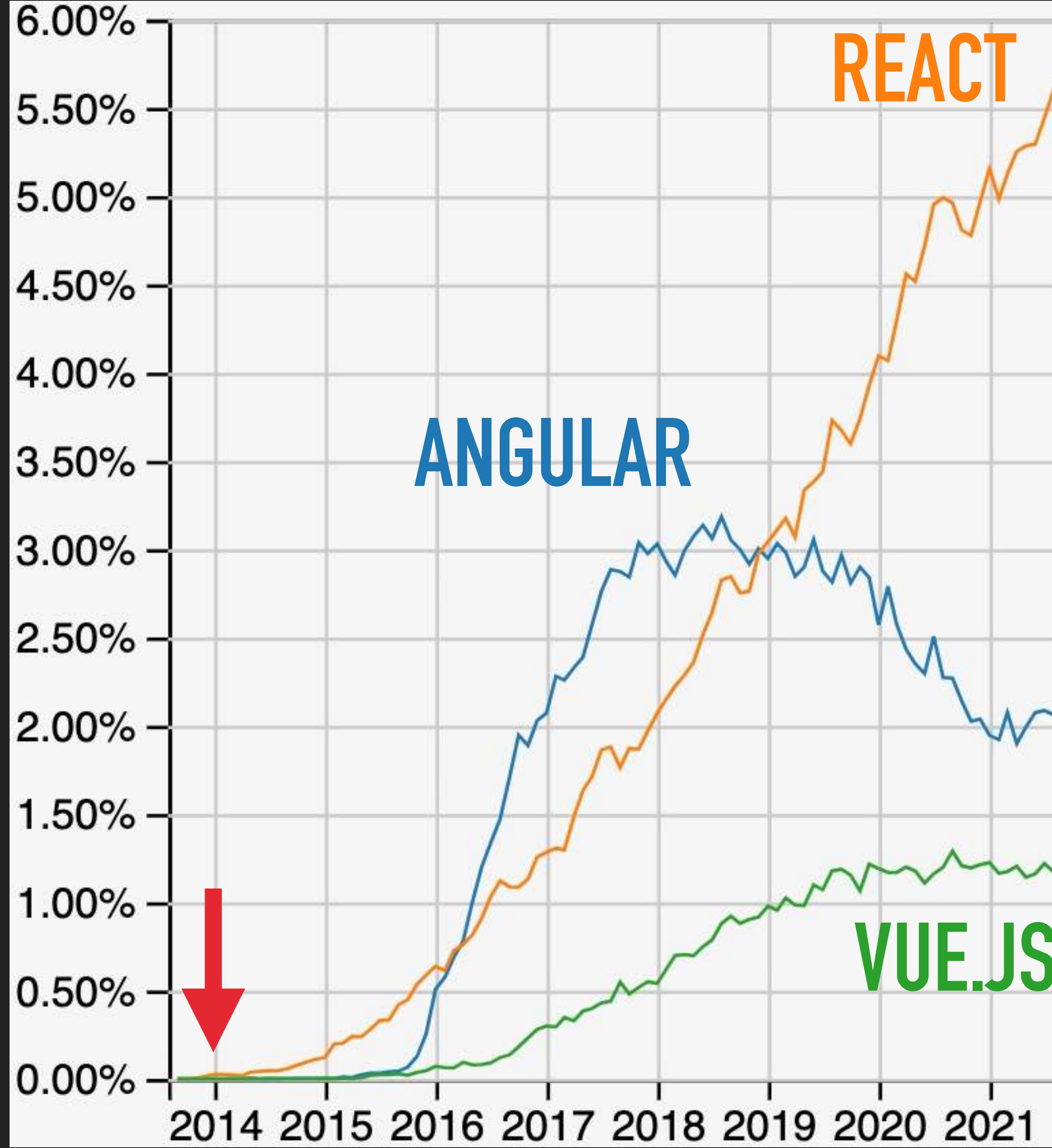


→ VUE.JS: 1

→ ANGULAR: 1.9

→ REACT: 2.9

STACK OVERFLOW QUESTIONS



REACT

↗ **REACT: 4.6**

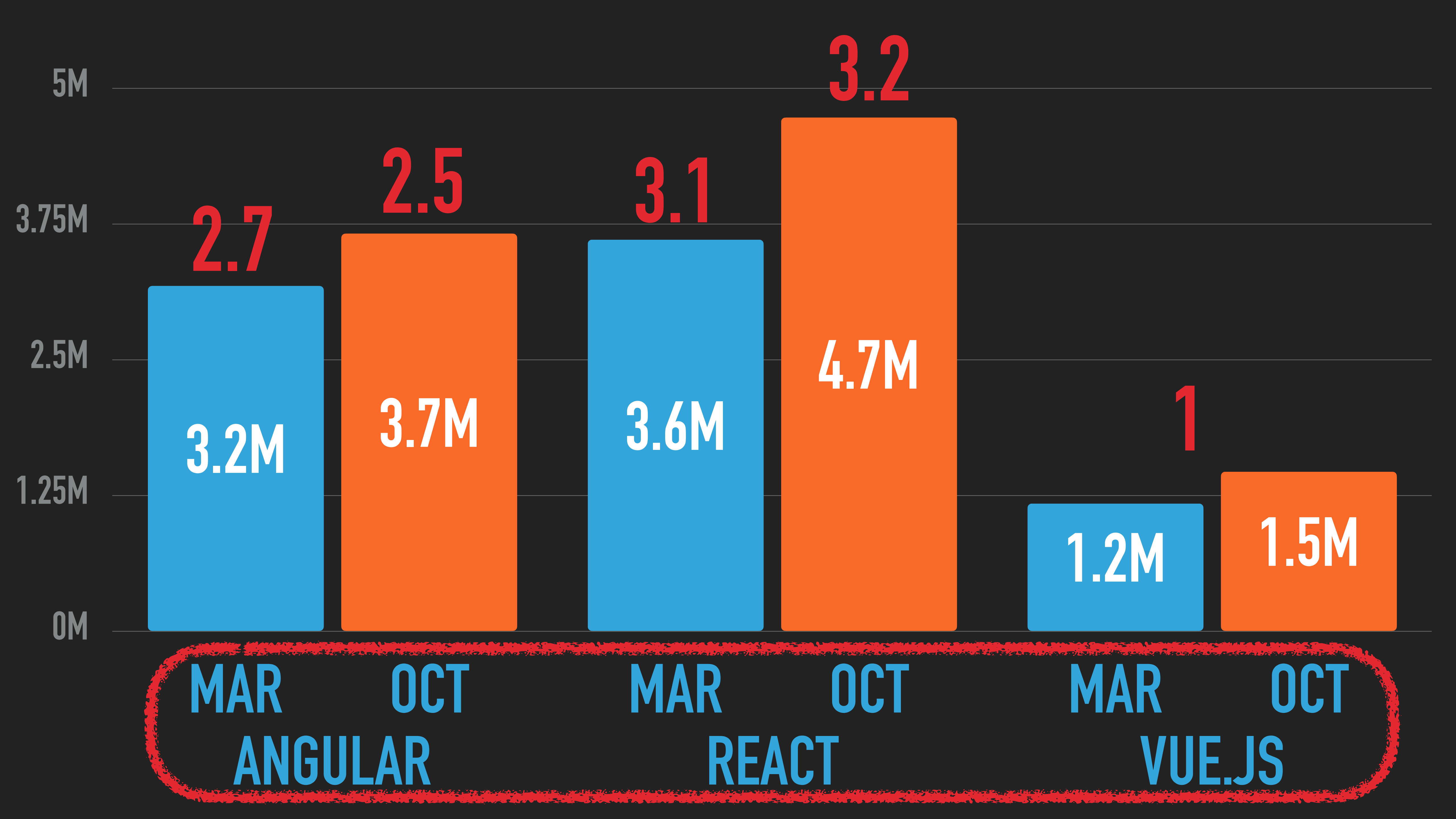
ANGULAR

↘ **ANGULAR: 1.7**

VUE.JS

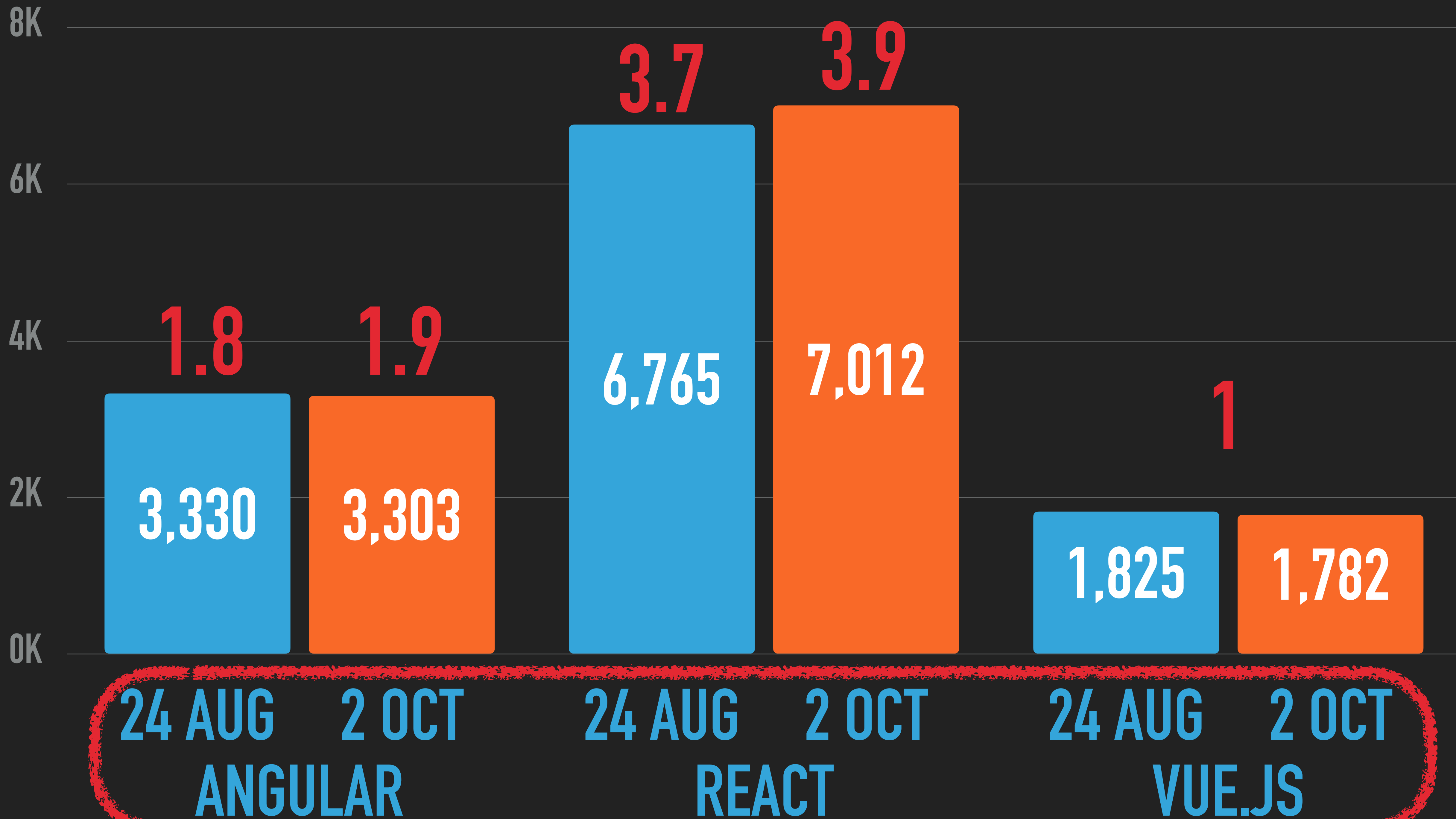
→ **VUE.JS: 1**

UDEMY COURSE STUDENTS



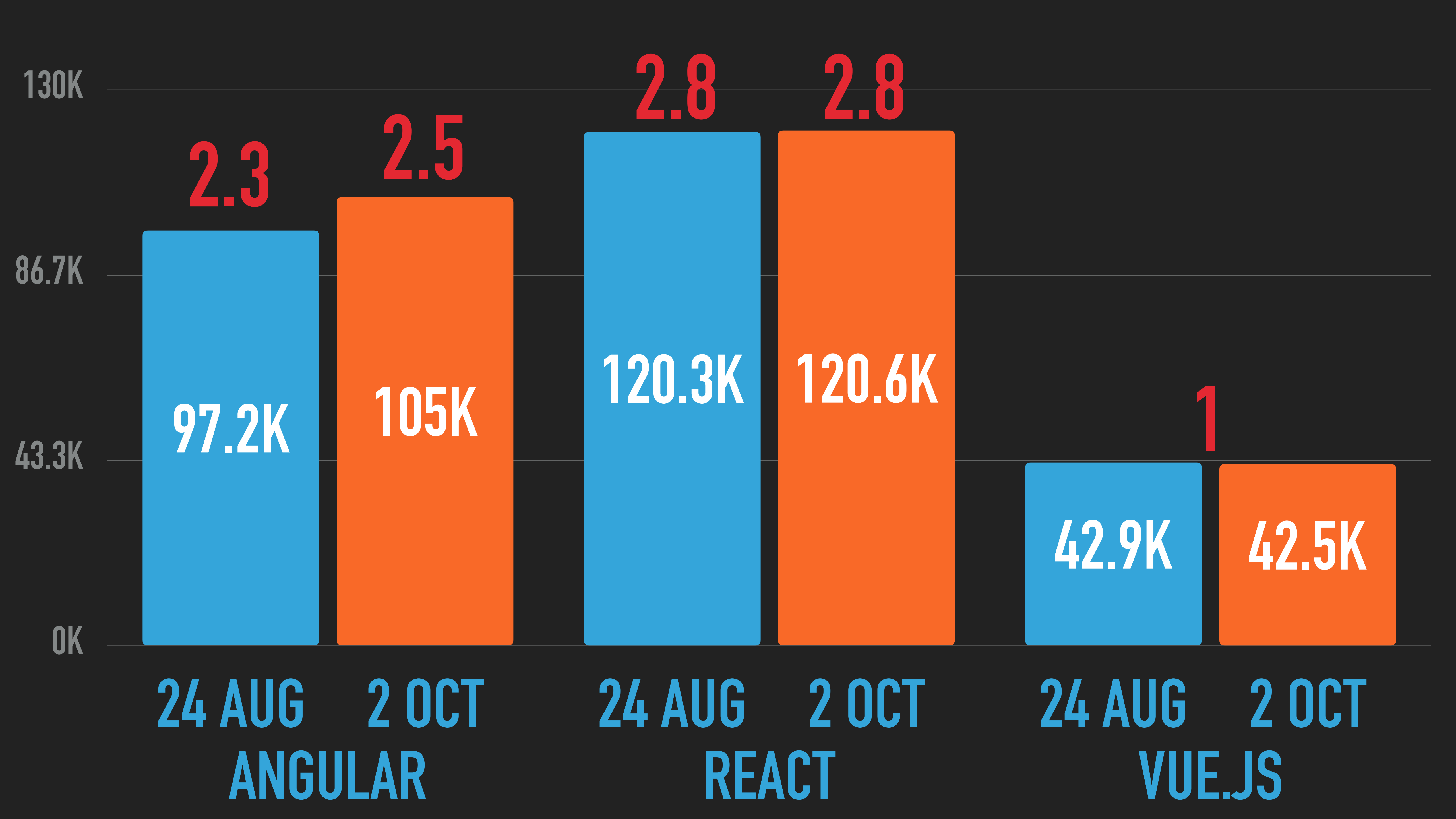
INDEED JOB AD MENTIONS

UK



INDEED JOB AD MENTIONS

WORLD



1. REACT

2. ANGULAR

3. VUE.JS

POPULARITY: 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, ^{???}
DEPLOY & DEBUG

1. REACT

2. ANGULAR

3. VUE.JS

WINNER: WEB

USED BEFORE: KEEP REACT, ANGULAR, VUE.JS

NEW: REACT, ANGULAR, VUE.JS

ADVICE: WEB

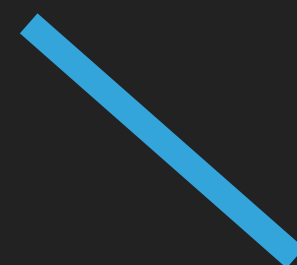
~~JAVA DEVELOPER WISH LIST FOR FRONT ENDS~~

~~WEB: NEW WEB APPLICATION~~

MOBILE: NEW NATIVE IOS & ANDROID APPS

DESKTOP: GOT WEB APPLICATION – WHAT NOW?

HOW NEW
IOS & ANDROID APPS?



WEB



NATIVE



NATIVE



⊕ 1 CODEBASE

⊖ SLOWER

⊖ FEWER FEATURES

⊖ JAVASCRIPT

⊖ DIFFICULT DEBUGGING

⊖ 2 CODEBASES

⊕ FAST

⊕ ALL FEATURES

⊖ 2 LANGUAGES

⊕ EASY DEBUGGING

WEB

VS.

NATIVE

- ⊕ 1 CODEBASE
- ⊕ FAST
- ⊕ ALL FEATURES
- ⊕ EASY DEBUGGING

CROSS-PLATFORM!

**CROSS-PLATFORM
FRAMEWORKS?**

NOT DECLARATIVE

NOT POPULAR

JAVAFX: NOT SAFE

XAMARIN: .NET, REWRITE, DELAYED

XAMARIN & JAVAFX: OUT

UI: NATIVE

BUSINESS LOGIC: KOTLIN

WAY TOO EXPENSIVE

KOTLIN NATIVE: OUT

GOOGLE: ANDROID

JETBRAINS: WEB, DESKTOP (ALPHA)

IOS?

NOT SAFE

JETPACK COMPOSE: OUT

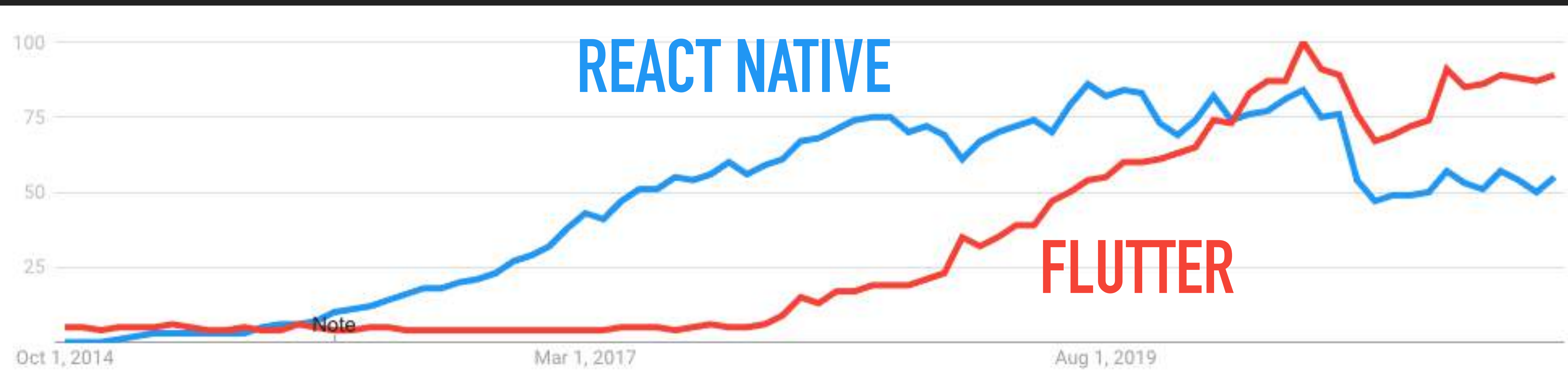
FLUTTER (GOOGLE)

REACT NATIVE (FACEBOOK)

**CROSS-PLATFORM
FRAMEWORKS!**

POPULARITY

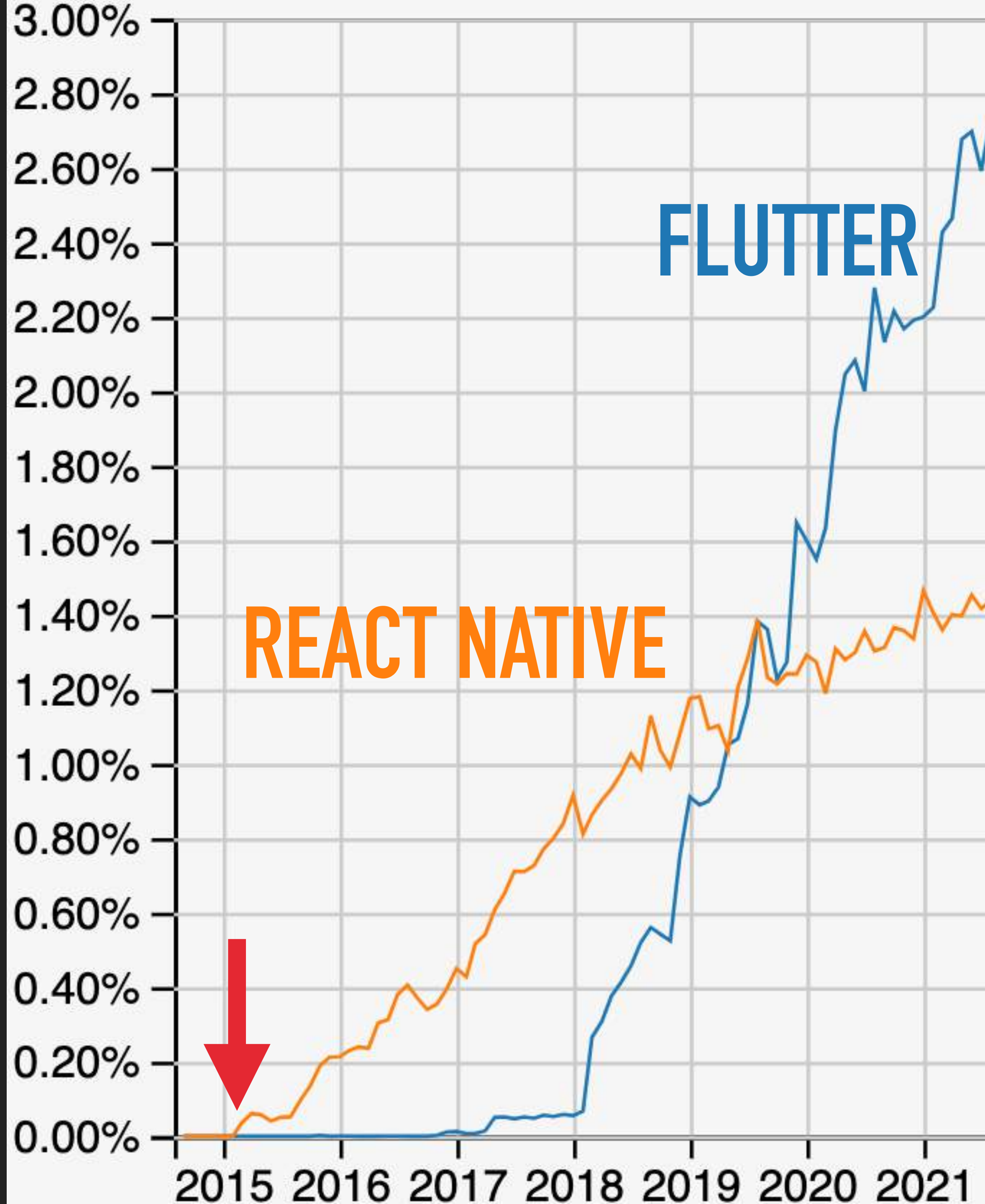
GOOGLE SEARCHES



→ **REACT NATIVE: 1**

→ **FLUTTER: 1.6**

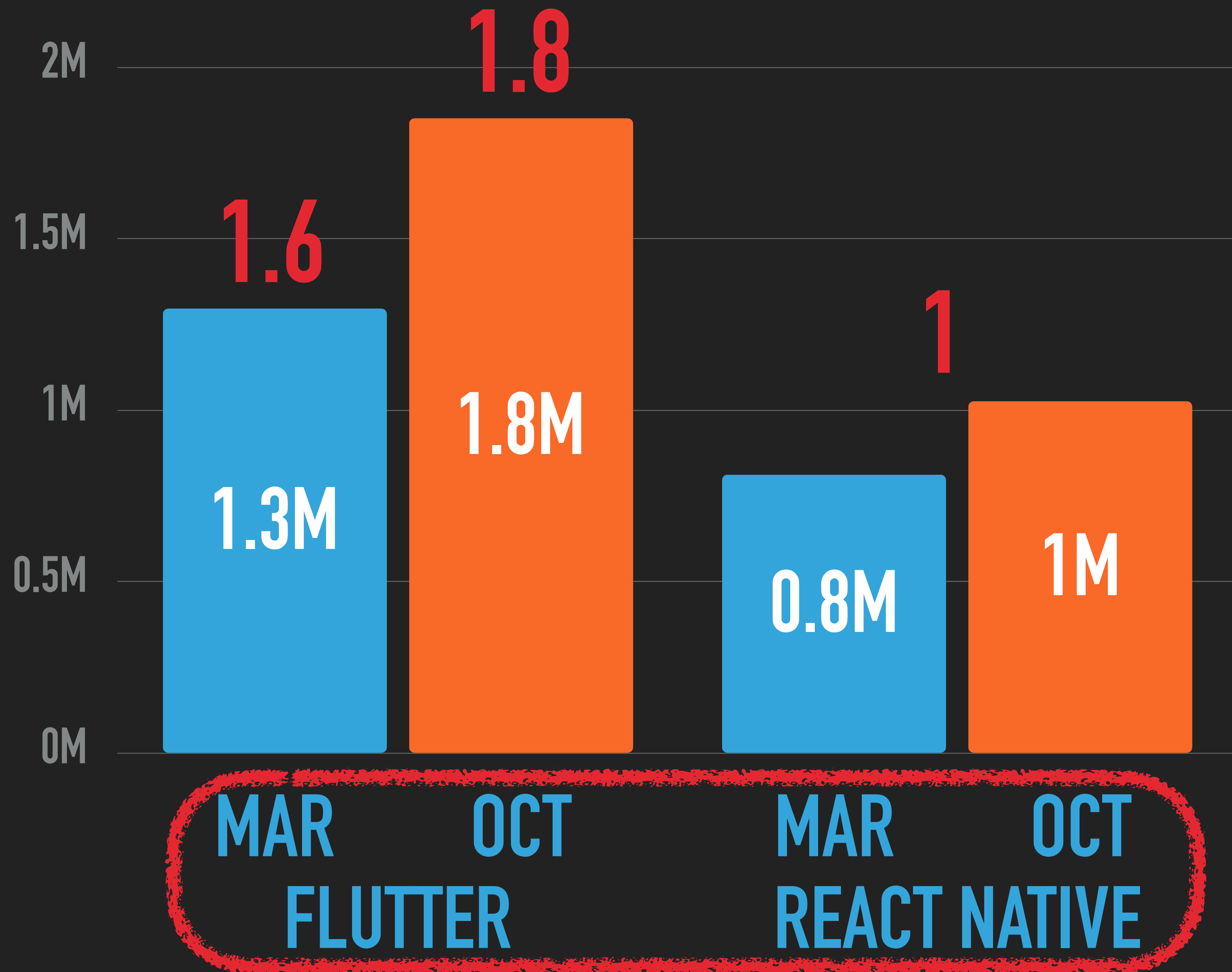
STACK OVERFLOW QUESTIONS



↗ **FLUTTER: 1.9**

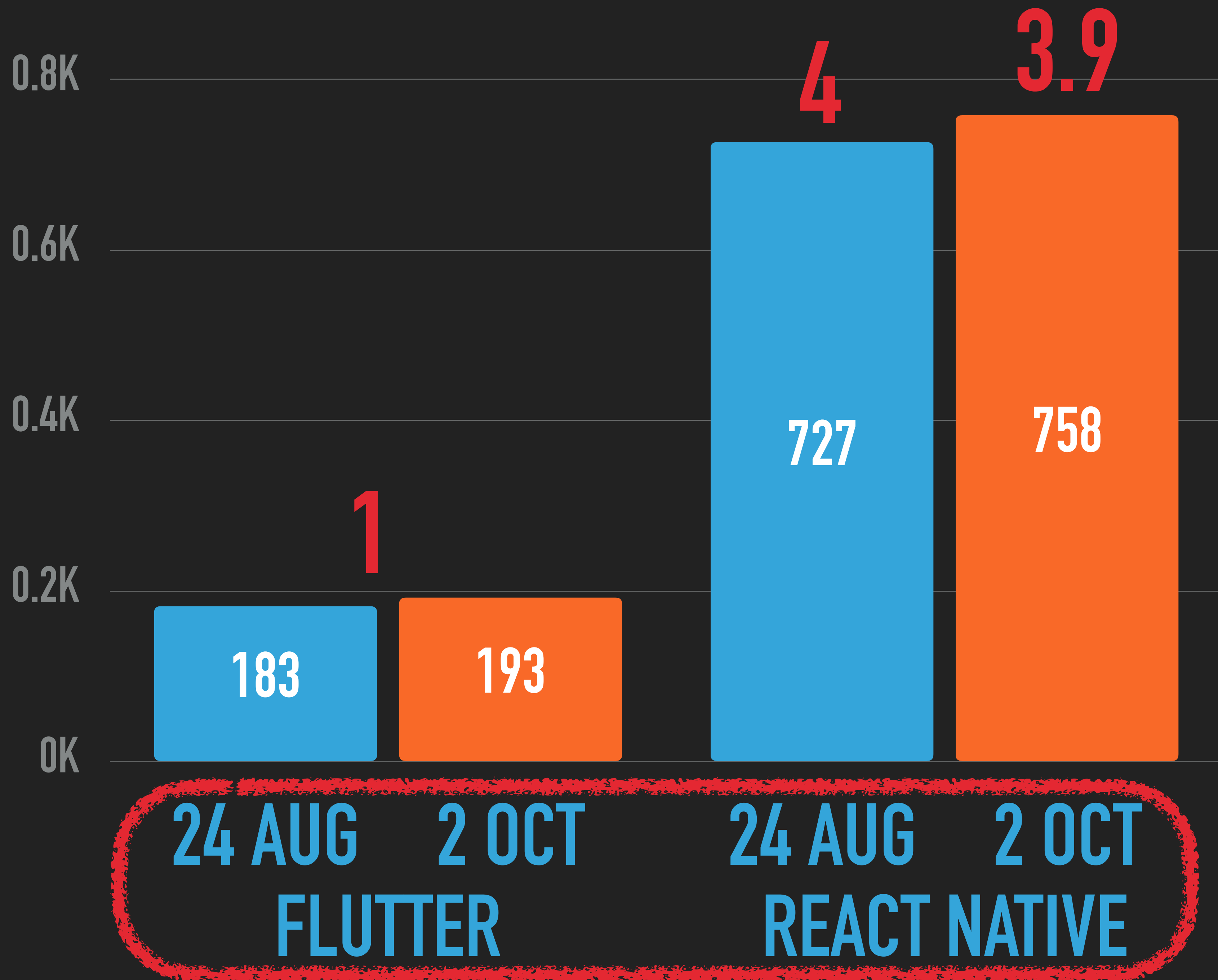
↗ **REACT NATIVE: 1**

UDEMY COURSE STUDENTS



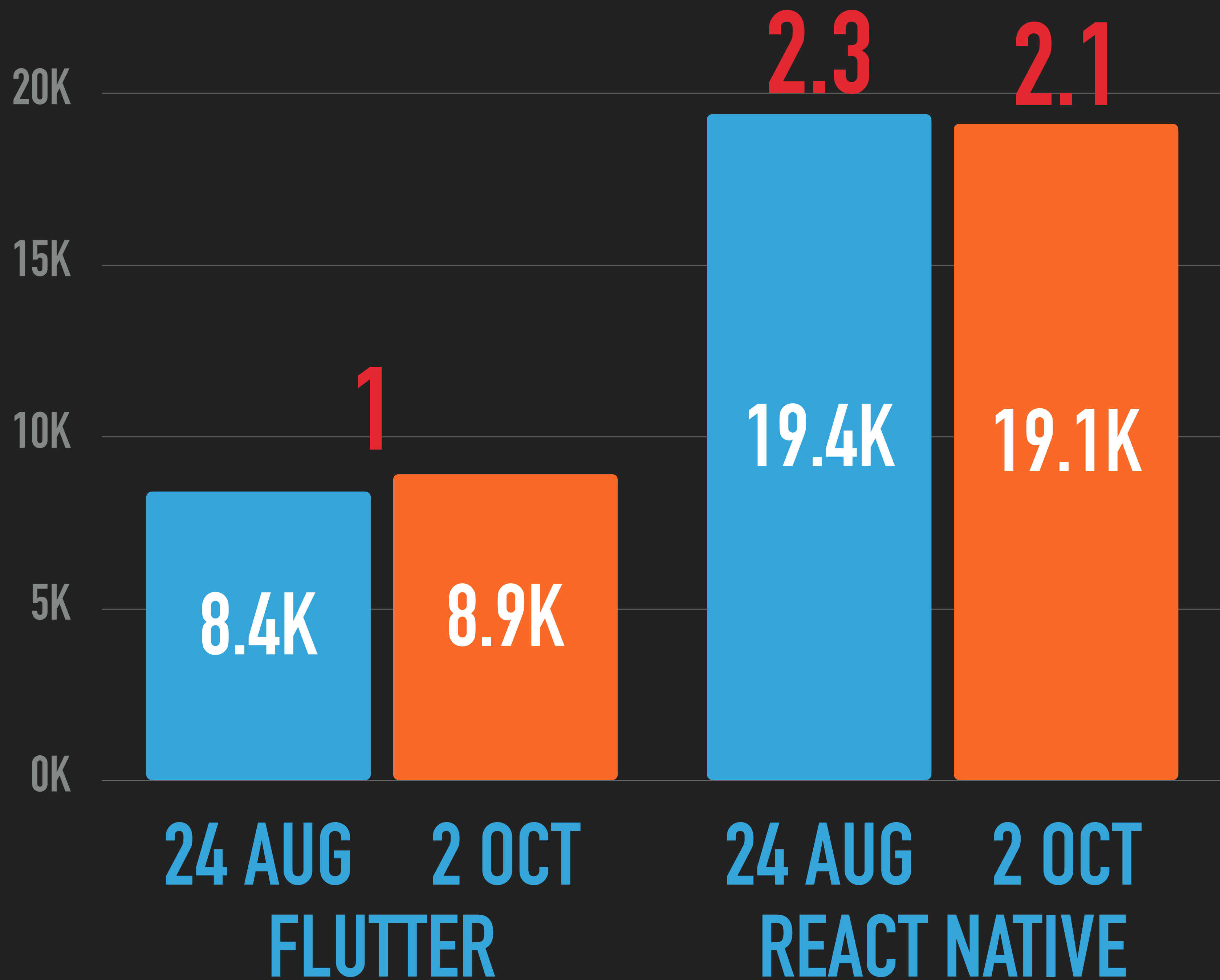
INDEED JOB AD MENTIONS

UK



INDEED JOB AD MENTIONS

WORLD



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."**

**"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)

⊖ 2 CODEBASES

+ DART

+ FASTER RENDERING

⊖ EMULATED UI ELEMENTS

+ WINDOWS, MAC, LINUX

+ 1 CODEBASE

REACT NATIVE VS. 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

SHAPES

THIRD-PARTY LIBRARIES

UI ELEMENTS

STAND-ALONE

SCREENS

HOW DOES FLUTTER RUN?

PLUGINS

NATIVE SCREENS

CHANNELS & C API

NATIVE INTEGRATION

SLOW IOS/ANDROID BUILDS

HOT RESTART

HOT RELOAD

FAST BUILD & DEPLOY!

20K

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

Search

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.

⊖ IN-HOUSE COMPETITION

⊕ POPULAR

⊕ 200K+/2.8M APPS IN PLAY STORE

⊕ FUCHSIA

WE DON'T KNOW!

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

NO

1.0

"CUSTOMIZE MATERIAL UI"

WEB: COMPONENT LIBRARIES

WEB: > 1M NPM LIBRARIES

FLUTTER: WEB

PREVIEW

"CUSTOMIZE MATERIAL UI"

NATIVE UI ELEMENTS?

FLUTTER: DESKTOP

1 CODEBASE != 1 UI

SCREEN SIZE CHANGE LAYOUT

RESPONSIVE DESIGN

Team

My Team Members

Team members: 19

 View All

My Organisations

Organisations: 14

 View All



Tasks



Team



My Data

Team

My Team Members

Team members: 19

 View All

My Organisations

Organisations: 14

 View All



Tasks



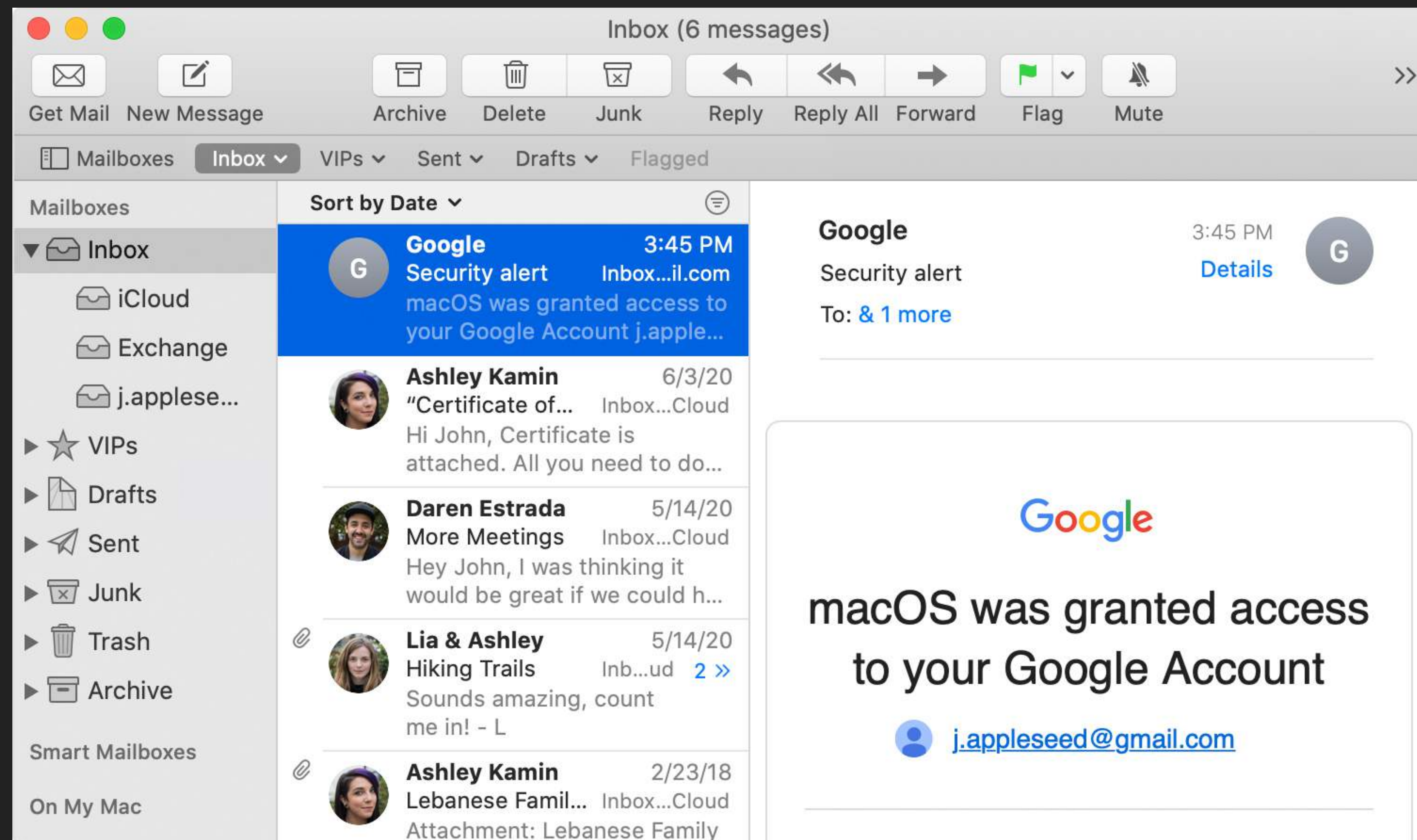
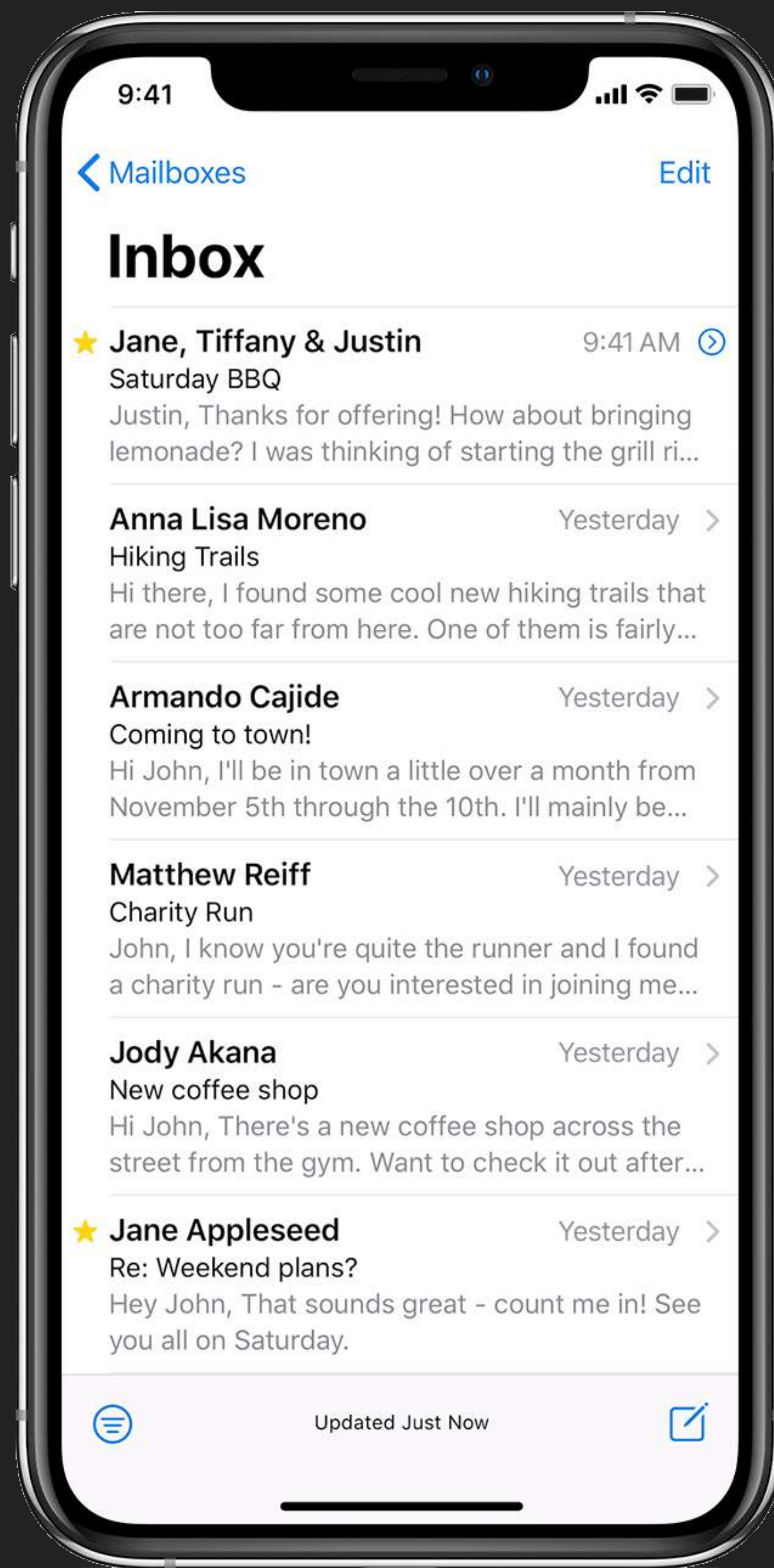
Team



My Data

DEVICE CHANGES UI

ADAPTIVE DESIGN



IF (WIDTH > X) THEN ... ELSE ...

CSS GRID/FLEX, SIZE CLASSES, ...

BOOTSTRAP GRID PLUGIN

RESPONSIVE DESIGN?

IPHONE: IOS ELEMENTS, ANDROID: MATERIAL UI

IOS COMPONENTS MISSING

TIME-CONSUMING

MOBILE **NATIVE** DESIGN

WILL GOOGLE **KILL** FLUTTER?

NOT ALL WITH **1** CODEBASE

RESPONSIVE DESIGN?

MOBILE NATIVE DESIGN **TIME-CONSUMING**

SUM-UP: BAD FLUTTER

WISH LIST: MOBILE

JAVA

WEB

FAST

DECLARATIVE

MOBILE

**NATIVE
FUNCTIONALITY**

SAFE

DESKTOP

1 CODEBASE

POPULAR

EXTENSIONS

**FAST BUILD,
DEPLOY & DEBUG**

JAVA FLU

FAST FLU

DECLARATIVE – MOBILE –

NATIVE
FUNCTIONALITY FLU

SAFE REA

1 CODEBASE –

POPULAR REA

EXTENSIONS ???

FAST BUILD, ???
DEPLOY & DEBUG

1. FLUTTER

2. REACT NATIVE

WINNER: MOBIL

REACT NATIVE

"REACT WINS" => REACT NATIVE

JOB

YOUR WINNER?

USED BEFORE: KEEP FLUTTER, REACT NATIVE

NEW & USED REACT: REACT NATIVE, FLUTTER

ELSE: FLUTTER, REACT NATIVE

ADVICE: MOBILE

~~JAVA DEVELOPER WISH LIST FOR FRONT ENDS~~

~~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: WEB APPLICATION

KEEP **WEB** APPLICATION

FLUTTER CONSTRAINTS OK:
EVALUATE FLUTTER FOR DESKTOP

ADVICE: DESKTOP

~~JAVA DEVELOPER WISH LIST FOR FRONT ENDS~~

~~WEB. NEW WEB APPLICATION~~

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

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

SUMMARY

USED BEFORE: KEEP REACT, ANGULAR, VUE.JS

NEW: REACT, ANGULAR, VUE.JS

ADVICE: WEB

USED BEFORE: KEEP FLUTTER, REACT NATIVE

NEW & USED REACT: REACT NATIVE, FLUTTER

ELSE: FLUTTER, REACT NATIVE

ADVICE: MOBILE

KEEP **WEB** APPLICATION

FLUTTER CONSTRAINTS OK:
EVALUATE FLUTTER FOR DESKTOP

ADVICE: DESKTOP

ADVERTISEMENT

FEBRUARY 2022

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

CONTRACTOR/FIXED-TERM EMPLOYEE

MILTON KEYNES, **LONDON, OR REMOTE**

LOOKING FOR **PROJECT**

The End



SLIDES & VIDEOS

EXTRA INFORMATION

FEEDBACK

GET STARTED!

NEWSLETTER

BPF.LI/JAX