KARSTEN SILZ

JUNE 14, 2022

FLUTTER FOR ANGULAR DEVELOPERS: MOBILE, WEB & DESKTOP FROM 1 CODEBASE

BUILD MOBILE, WEB & DESKTOP FRONTENDS WITH FLUTTER & 1 CODEBASE?

YES, WE CAN...

. . . BUT WE SHOULDN'T!

MOBILE: 👍🏻

WEB: 👎🏻

DESKTOP: 👎🏻

MOBILE:
REACT NATIVE > FLUTTER

WHY FLUTTER?

HOW FLUTTER WORKS

MY FLUTTER EXPERIENCES

FLUTTER VS. REACT NATIVE

WHO MADE ME THE EXPERT?

FLUTTER APP IN APP STORES

INFOQ JAVA EDITOR, PC QCON LONDON

23 YEARS JAVA, 4 YEARS ANGULAR,
2 YEARS FLUTTER – NOT ASSOCIATED

BETTER
PROJECTS
FASTER

SLIDES & MORE

BPF.LI/ANG

WHY FLUTTER?

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MY FLUTTER EXPERIENCES

FLUTTER VS. REACT NATIVE

WHY FLUTTER?

PC

MOBILE

ANGULAR

ENTERPRISE & CONSUMER APPS – NO GAMES

HARD RESTRICTIONS: NO PUSH NOTIFICATIONS ON IOS, LOCAL STORAGE ABOUT 50 MB, NOT ALL NATIVE FEATURES

MOBILE POWER EASIER TO USE FROM NATIVE APPS

ISSUES: WEB ON MOBILE

TikTok

EDIT VIDEOS!

1:40
FORTNITE

PLAY ONLINE MULTIPLAYER GAMES!

GIGABYTE OF LOCAL STORAGE

LOCAL SQL/NOSQL DATABASE

CPU POWER SIMILAR TO PCS

CALL BACK-ENDS WITH REST/GRAPHQL...

NATIVE APP POWER

MORE "DESKTOP APPLICATION", LESS "WEB APPLICATION"

HARD RESTRICTIONS: NO PUSH NOTIFICATIONS ON IOS, LOCAL STORAGE ABOUT 50 MB, NOT ALL NATIVE FEATURES

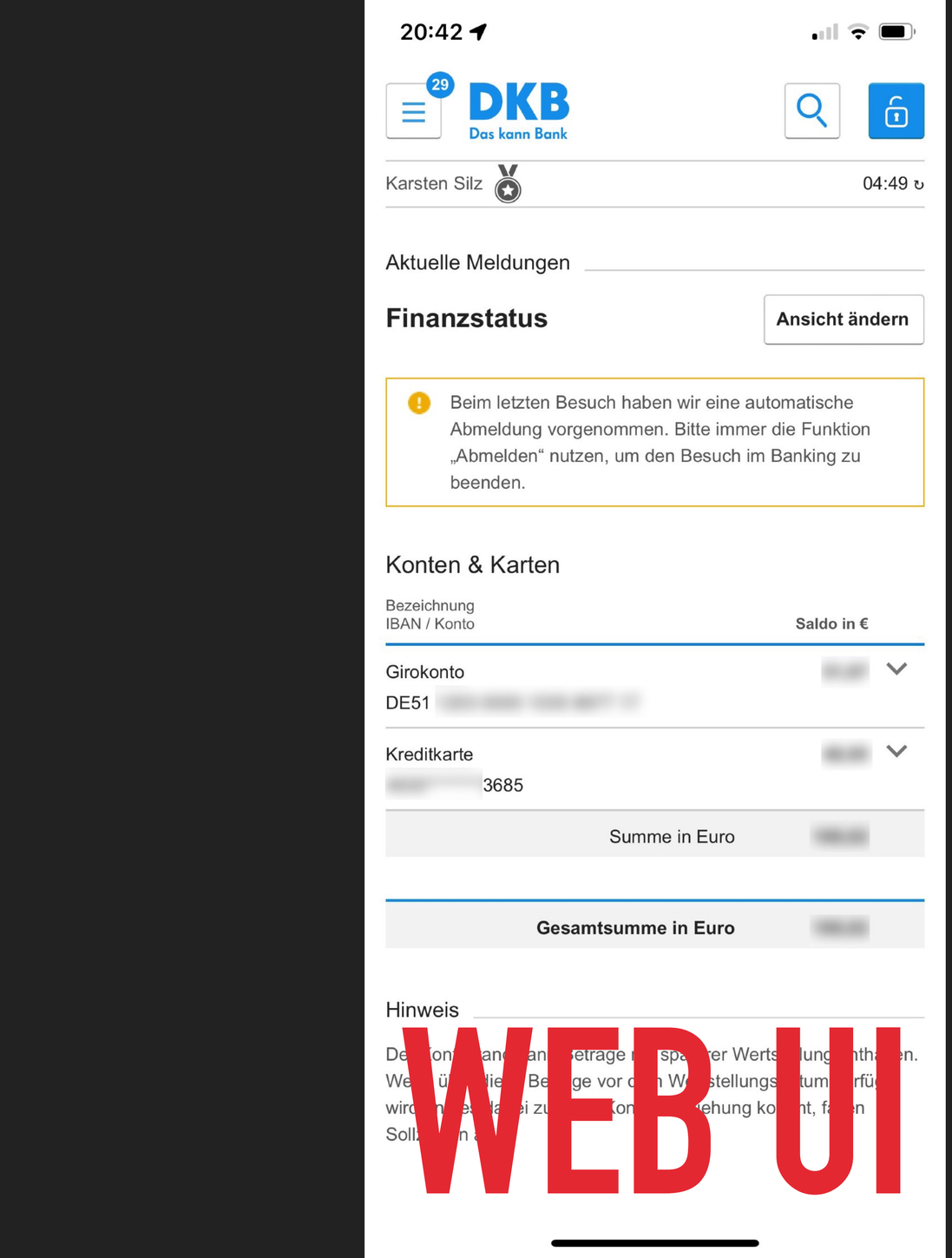
MOBILE POWER EASIER TO USE FROM NATIVE APPS

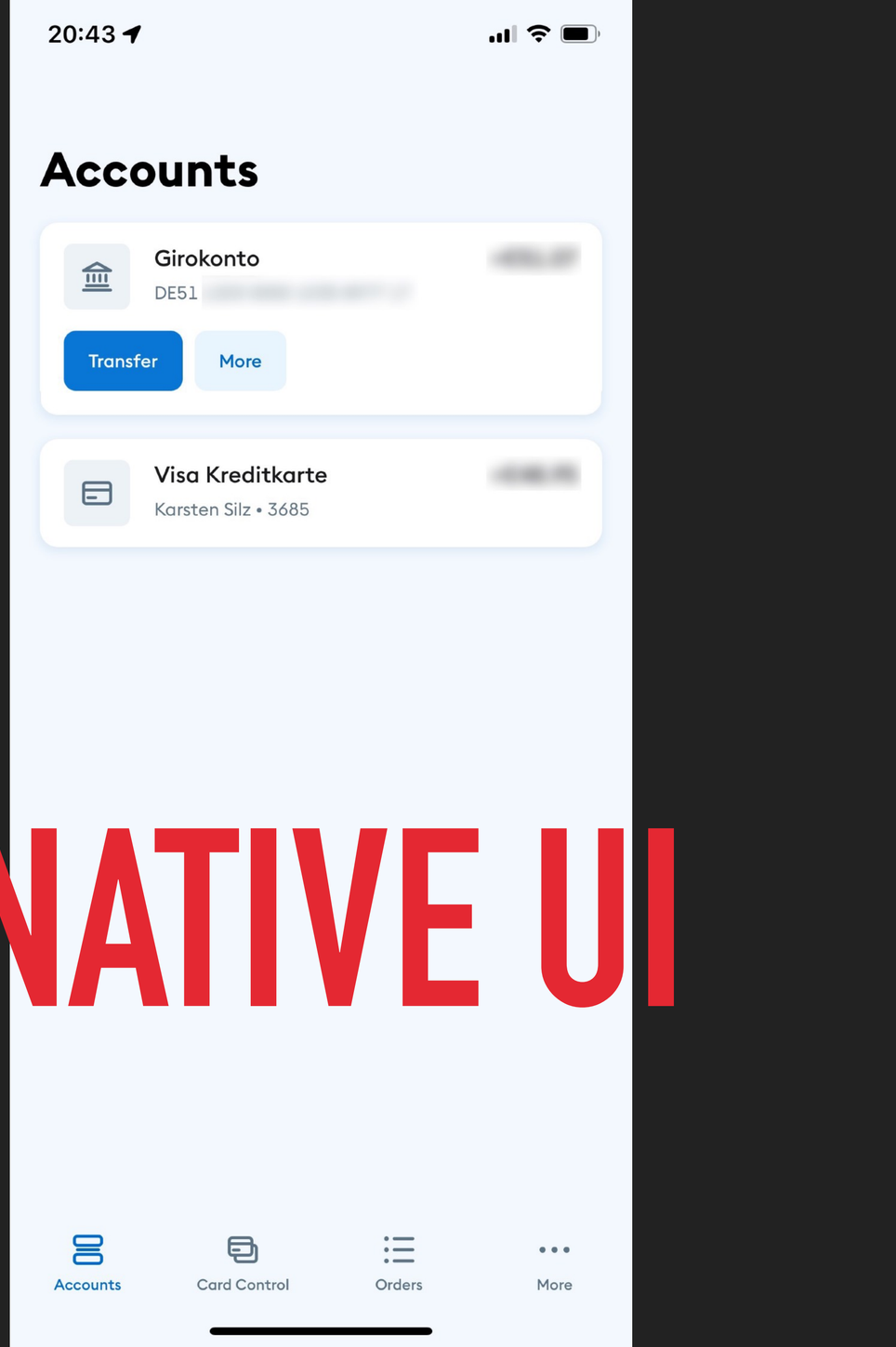
NO NATIVE LOOK & FEEL

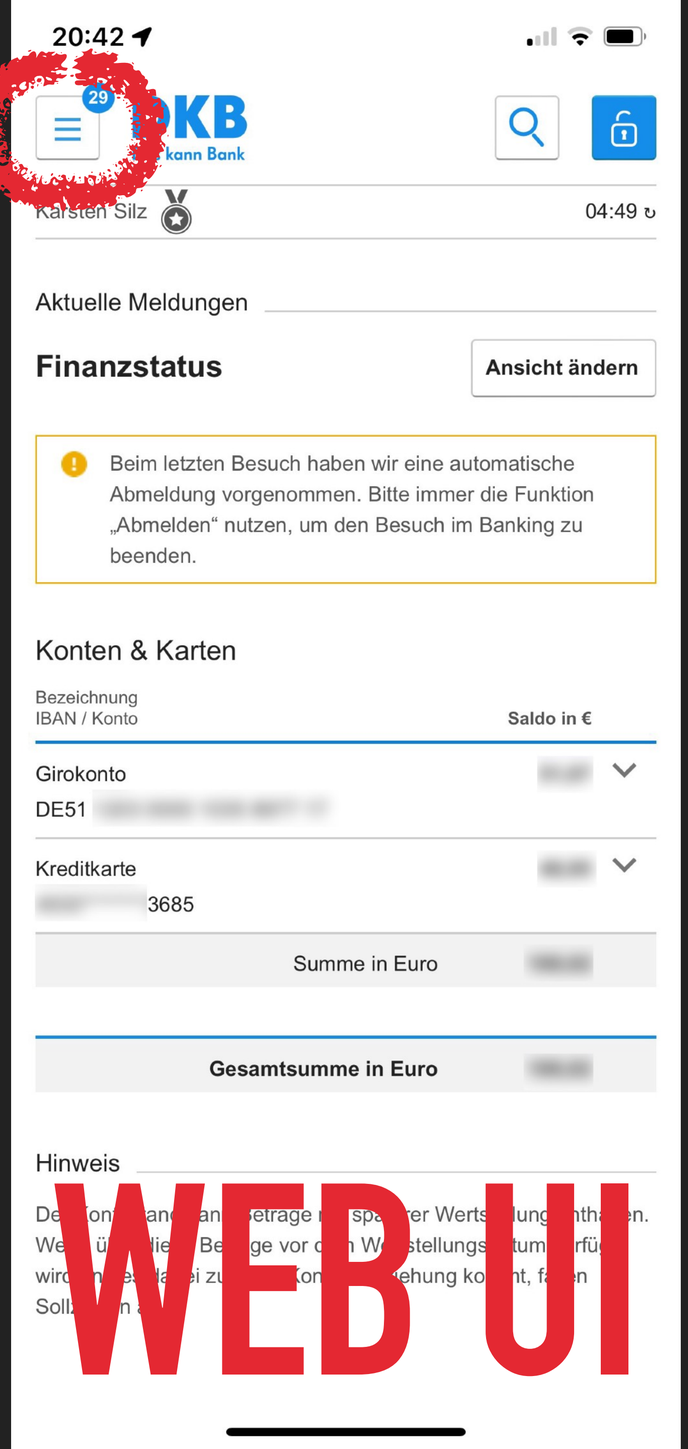
ISSUES: WEB ON MOBILE

WHY NATIVE LOOK & FEEL?

GERMAN ONLINE BANKING APP


20:42
29
DKB
Das kann Bank
Karsten Silz
04:49
Aktuelle Meldungen
Finanzstatus
Ansicht ändern
Beim letzten Besuch haben wir eine automatische Abmeldung vorgenommen. Bitte immer die Funktion „Abmelden“ nutzen, um den Besuch im Banking zu beenden.
Konten & Karten
Bezeichnung
IBAN / Konto
Saldo in €
Girokonto
DE51
Kreditkarte
3685
Summe in Euro
Gesamtsumme in Euro
Hinweis
WEB UI


20:43
Accounts
Girokonto
DE51
Transfer
More
Visa Kreditkarte
Karsten Silz • 3685
NATIVE UI
Accounts
Card Control
Orders
More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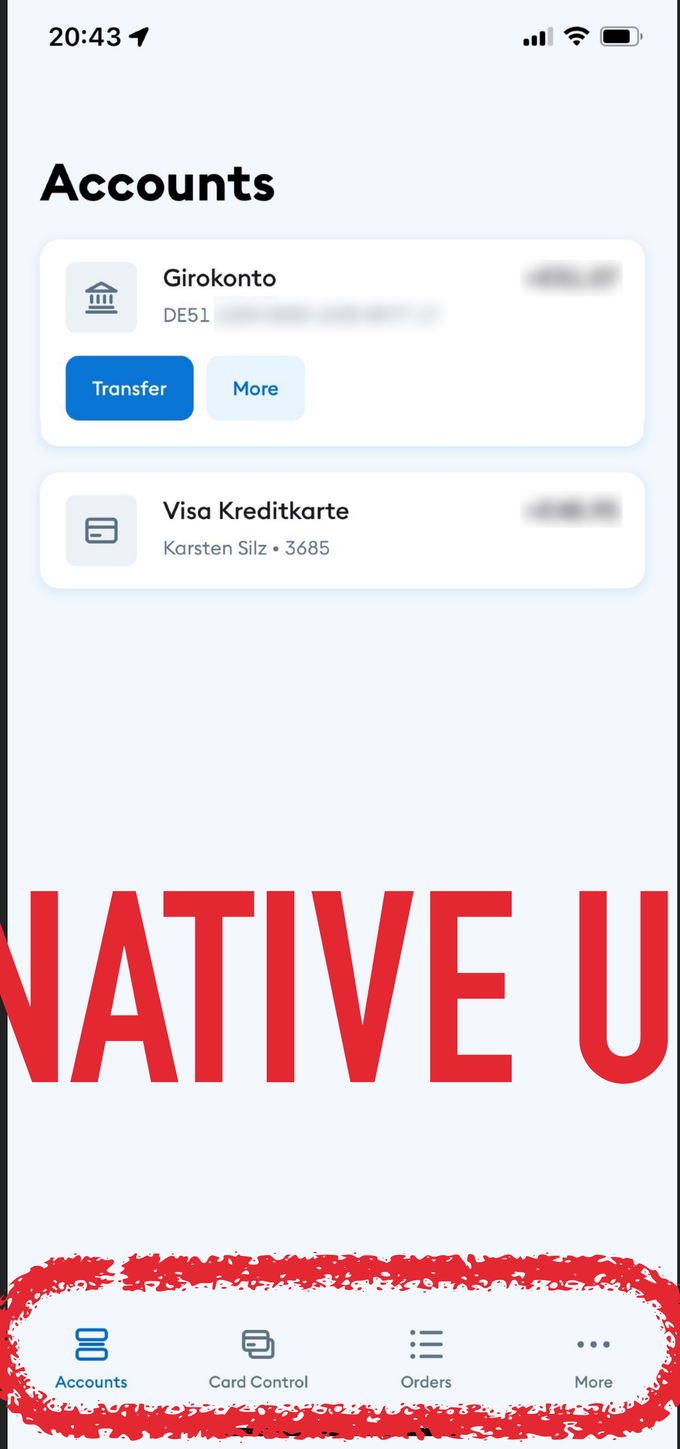
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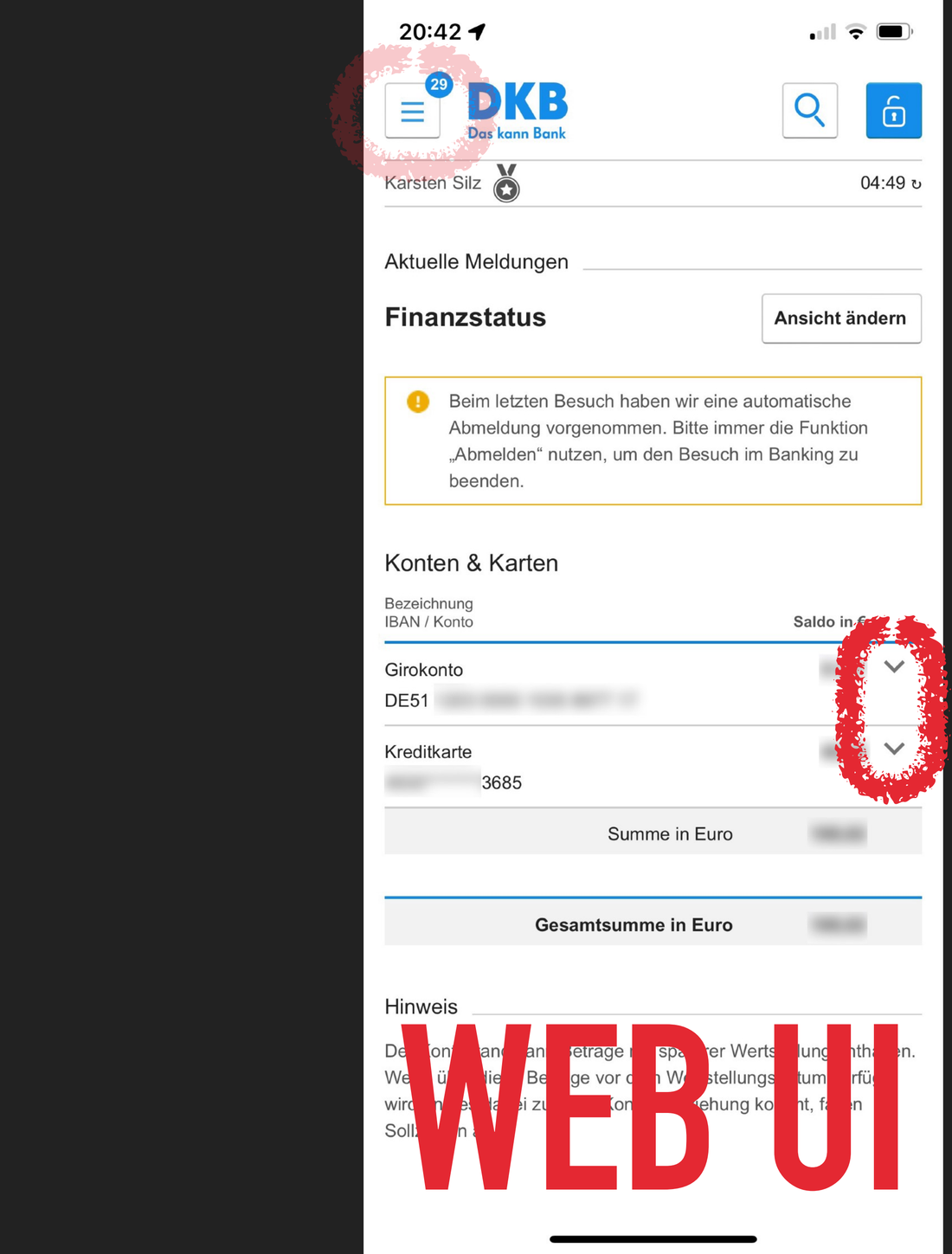
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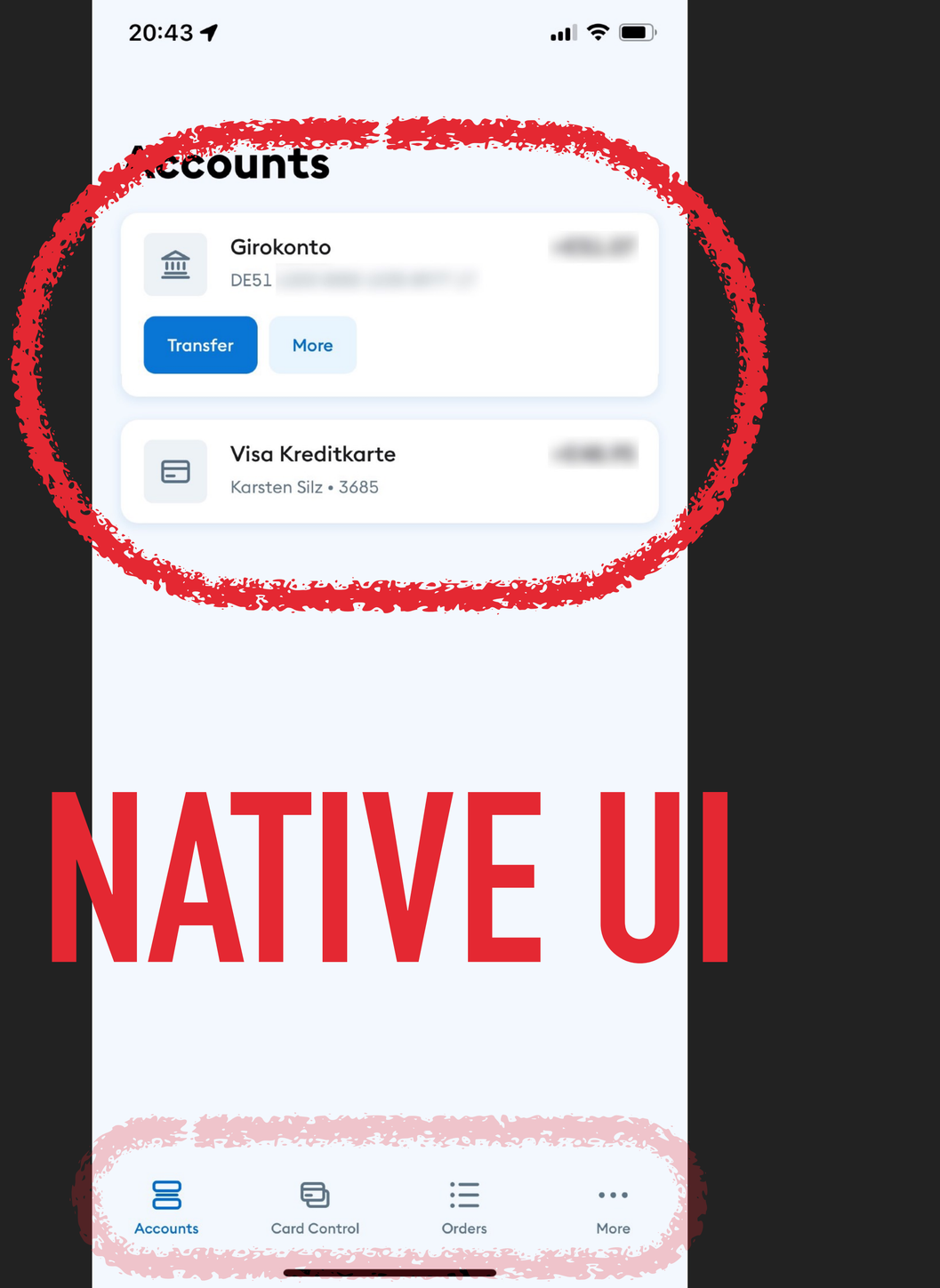
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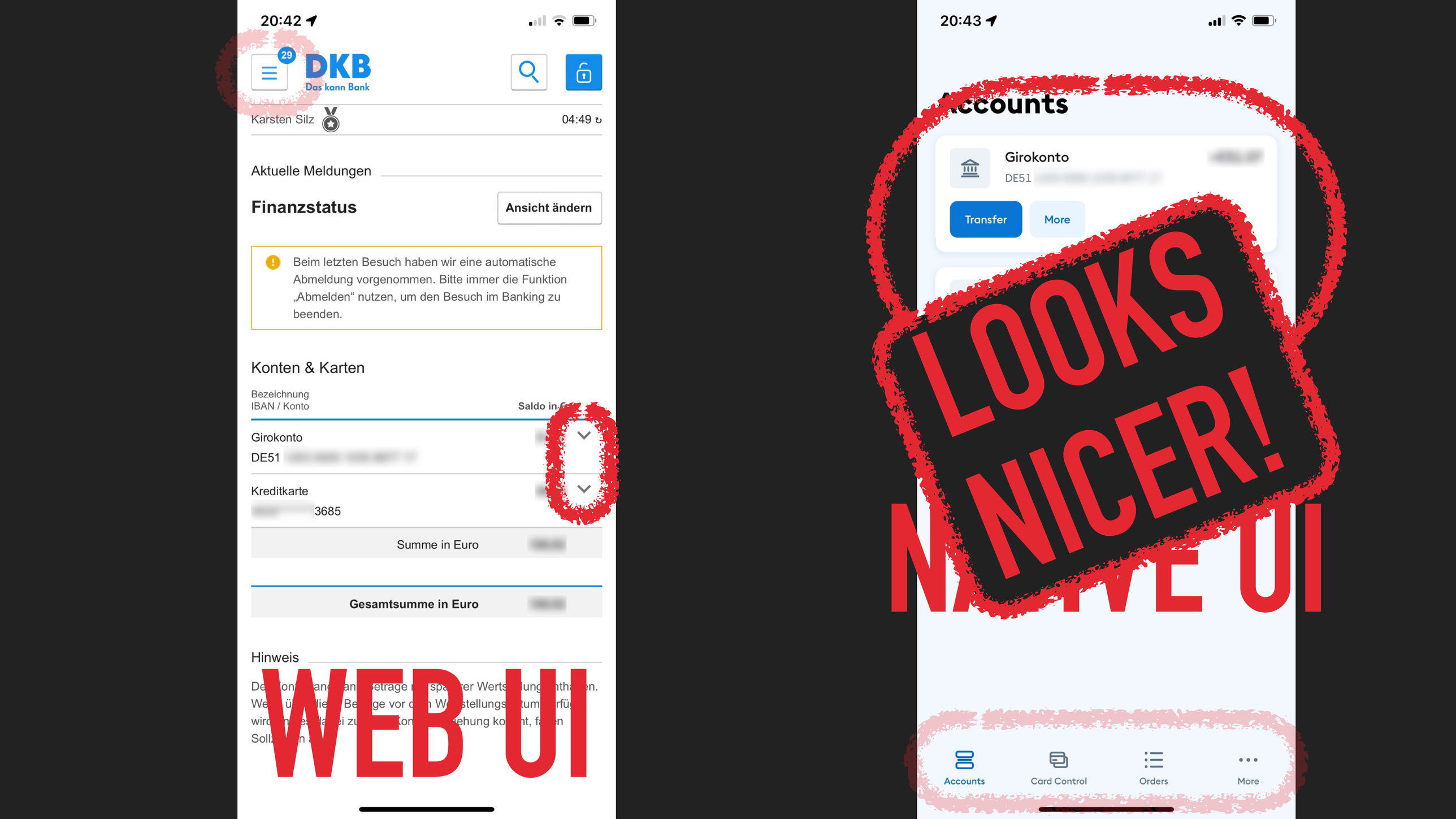
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LOOKS NICER!
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More

NATIVE LOOK & FEEL:
EASIER TO USE ("LIKE OTHER APPS"), LOOKS NICER

GOOGLE APPS ON IOS:
MATERIAL UI =>
NATIVE IOS UI

"REALLY MAKE PRODUCTS FEEL GREAT ON APPLE PLATFORMS"

JEFF VERKOEYEN, GOOGLE

PC

ANGULAR

MOBILE

NATIVE CROSS-PLATFORM

RUNS NATIVELY, IN APP STORES

NATIVE LOOK & FEEL

ACCESS TO NATIVE PLATFORM FEATURES

DEFINE: "NATIVE"

NATIVE MOBILE CROSS-PLATFORM FRAMEWORKS?

MANY FRAMEWORKS: "1 APP FOR IOS & ANDROID"!

FLUTTER (GOOGLE, 2017)

REACT NATIVE (META, 2015)

XAMARIN/.NET MAUI (MICROSOFT, 2011/2022)

OPEN-SOURCE & POPULAR

SECTION SUMMARY

MOBILE WEB: HARD RESTRICTIONS, CAN'T FULLY USE MOBILE POWER, NO NATIVE LOOK & FEEL

NATIVE ON MOBILE: RUN, LOOK & FEEL, ACCESS

WHY FLUTTER?

~~WHY FLUTTER?~~

HOW FLUTTER WORKS

MY FLUTTER EXPERIENCES

FLUTTER VS. REACT NATIVE

HOW FLUTTER WORKS

MASCOT DASH

WILL GOOGLE KILL FLUTTER?

Killed by Google

Search

All (267)

Follow @killedbygoogle on Twitter.

March 2023

Google Currents (2019)

Like a fork stuck in the outlet in 11 months, Google Currents was service that provided social media features similar to Google+ for Google Workspace customers. It will be almost 4 years old.

December 2022

YouTube Originals

Sentenced to death in 8 months, YouTube Originals was a variety of original content including scripted series, educational videos, and music and celebrity programming. It will be over 6 years old.

December 2022

Google OnHub

Getting unplugged in 7 months, Google OnHub was a series of residential wireless routers manufactured by Asus and TP-Link that were powered by Google software, managed by Google apps, and offered enhanced special features like Google Assistant. It will be over 7 years old.

August 2022

YouTube Go

Going poof in 3 months, YouTube Go was an app aimed at making YouTube easier to access on mobile devices in emerging markets through special features like downloading video on wifi for viewing later. It will be over 5 years old.

June 2022

Google Chrome Apps

Off to the glue factory in about 2 months, Google Chrome Apps were hosted or packaged web applications that ran on the Google Chrome browser. It will be over 11 years old.

- IN-HOUSE COMPETITION: ANGULAR, JETPACK COMPOSE
- EXTERNAL COMMITMENT: TOYOTA, UBUNTU
- POPULAR: SEE LATER SECTION

WE DON'T KNOW!

WHICH PLATFORM
STABLE SINCE WHEN?

PC

FEB
2022

MAY
2022

WEB

MAR
2021

MOBILE

DEC
2018

PROGRAMMING LANGUAGE: DART

ORIGINALLY FOR BROWSER

"SIMPLIFIED JAVA FOR UI DEVELOPMENT"

SOUND NULL SAFETY (LIBRARIES) & ASYNC/AWAIT

1 MAIN THREAD, CREATE THREADS (ISOLATES)

DART

```
class MyClass extends AnotherClass {
  var firstName = "Karsten";
  var yearsOfJava = 23;
  var myList = <String>[];

  sayHello(String name) => "Hello, $name";
}
```

DART

```
export class MyClass extends AnotherClass {
  firstName = 'Karsten';
  yearsOfJava = 23;
  myList: string[] = [];

  sayHello(name: string) {
    return `Hello, ${name}`;
  }

}
```

TYPESCRIPT

```
class MyClass extends AnotherClass {
  var firstName = "Karsten";
  var yearsOfJava = 23;
  var myList = <String>[];

  sayHello(String name) => "Hello, $name";
}
```

DART

MAJOR RELEASE EVERY 3 MONTHS

3–5 MINOR RELEASES IN-BETWEEN

FLUTTER RELEASES INCLUDE DART RELEASES

RELEASES

LIBRARIES: PLUGINS

26K PLUGINS, NOT ALL FOR WEB/DESKTOP

MOST ARE OPEN-SOURCE

GOOD "PLUGIN SURVIVAL RATIO"

FORKING PLUGINS IS EASY

PLUGINS

UI ELEMENTS: WIDGETS

```
Column(
  mainAxisAlignment:
    MainAxisAlignment.center,
  children: <Widget>[
    Text('Pushed $_counter times'),
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      child: Icon(Icons.add),
    )
  ],
)
```

UI AS CODE

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```

UI AS CODE

UI AS CODE – NO GRAPHICAL UI BUILDER, NO CSS

CONFIGURE BUILT-IN WIDGETS, CREATE YOUR OWN

EMULATED – NO NATIVE SDK UI ELEMENTS:
"FLUTTER PAINTS PIXELS"

WIDGETS

LOOK & FEEL:
WIDGET SETS

BASE: CONTAINER, ROW, COLUMN, TEXT, IMAGES, . . .

BUILT-IN LOOK & FEEL: MATERIAL DESIGN, IOS

3RD-PARTY LOOK & FEEL: MACOS, WINDOWS, LINUX

WIDGETS SETS

SAMPLE FLUTTER APP: 5 NATIVE LOOK & FEEL WITH 1 CODEBASE

LIVE DEMO
SAMPLE FLUTTER APP

5 NATIVE LOOK & FEEL

SWITCH LOOK & FEEL

SAMPLE APP ON GITHUB

GLOBAL STATE MANAGEMENT: "PROVIDER"

WIDGET SET: MATERIAL/NATIVE/CUSTOM

RESPONSIVE LAYOUT (SCREEN SIZES & ORIENTATION): NO DEFAULT, 3RD PARTY PLUGIN

ARCHITECTURAL CHOICES

NATIVE INTEGRATION

PUT SOME FLUTTER SCREENS INTO NATIVE APPS

IOS/ANDROID: STABLE

WEB/DESKTOP: UNDER CONSTRUCTION?

FLUTTER IN NATIVE APPS

PLUGINS: CAMERA, PICTURES, LOCATION, . . .

MOBILE: SHOW NATIVE SCREENS + WEB VIEWS

MOBILE: CHANNELS (PUBLISH & SUBSCRIBE) TO NATIVE CODE & C-API

NATIVE CODE IN FLUTTER

RUN NATIVELY

ANDROID: ANDROID STUDIO, IOS/MACOS: MACOS + XCODE,
WINDOWS: WINDOWS + VISUAL STUDIO

FLUTTER ENGINE: JAVASCRIPT + C++ (WEB), C++ (ELSE)

FLUTTER APP: NATIVE ARM LIBRARY (MOBILE), JAVASCRIPT
(WEB), C++ (WINDOWS, LINUX), OBJECTIVE-C (MACOS)

PLATFORM TOOL CHAINS

CODE, BUILD & DEPLOY

"CREATE AN SDK THAT DEVELOPERS LOVE"

FLUTTER ROADMAP 2022

IDE: INTELLIJ/ANDROID STUDIO & VISUAL STUDIO CODE

DEV TOOLS: INSPECTOR, PROFILER FOR MEMORY, CPU & NETWORK, "JANK" DIAGNOSIS, WORK IN TERMINAL

CODE

MONOREPO: CODE FOR ALL PLATFORMS IN 1 GIT PROJECT

1 FOLDER FOR DART, 1 FOLDER PER PLATFORM (SOME PROJECTS – XCODE, ANDROID STUDIO)

NATIVE PLATFORM SHELLS (IOS: `APPDELEGATE.SWIFT`, ANDROID: `MAINACTIVITY.KT`)

PROJECT STRUCTURE

SLOW IOS/ANDROID BUILDS FOR EVERY CHANGE

HOT RESTART: APP STARTS OVER IN 3 SECONDS

HOT RELOAD: 1 SECOND FROM "SAVED" TO "RUNNING"

FAST BUILD & DEPLOY

FLUTTER
PLATFORM CHECK

- "2 APPS FOR PRICE OF 1"
- NATIVE LOOK & FEEL
- ACCESS TO NATIVE OS LIBRARIES
- FAST BUILD & DEPLOY

MOBILE: 👍🏻

- ONLY MATERIAL UI VS. WEB COMPONENTS & SKINS
- NO ACCESS TO NPMS
- TINY AMOUNT OF LIBRARIES VS. WEB & JAVASCRIPT

WEB: 👎

- WHY NOT WEB?
- WINDOWS, MAC & LINUX JUST GOT STABLE
- ACCESS TO NATIVE OS LIBRARIES
- WINDOWS & MACOS UI: INCOMPLETE, MAINTAINED?

DESKTOP: 👎🏻

SECTION SUMMARY

DART

PLUGINS

WIDGETS

WIDGETS SETS

NATIVE ACCESS

RUNS NATIVELY

CODE, BUILD & DEPLOY

PLATFORM CHECK

HOW FLUTTER WORKS

~~WHY FLUTTER?~~

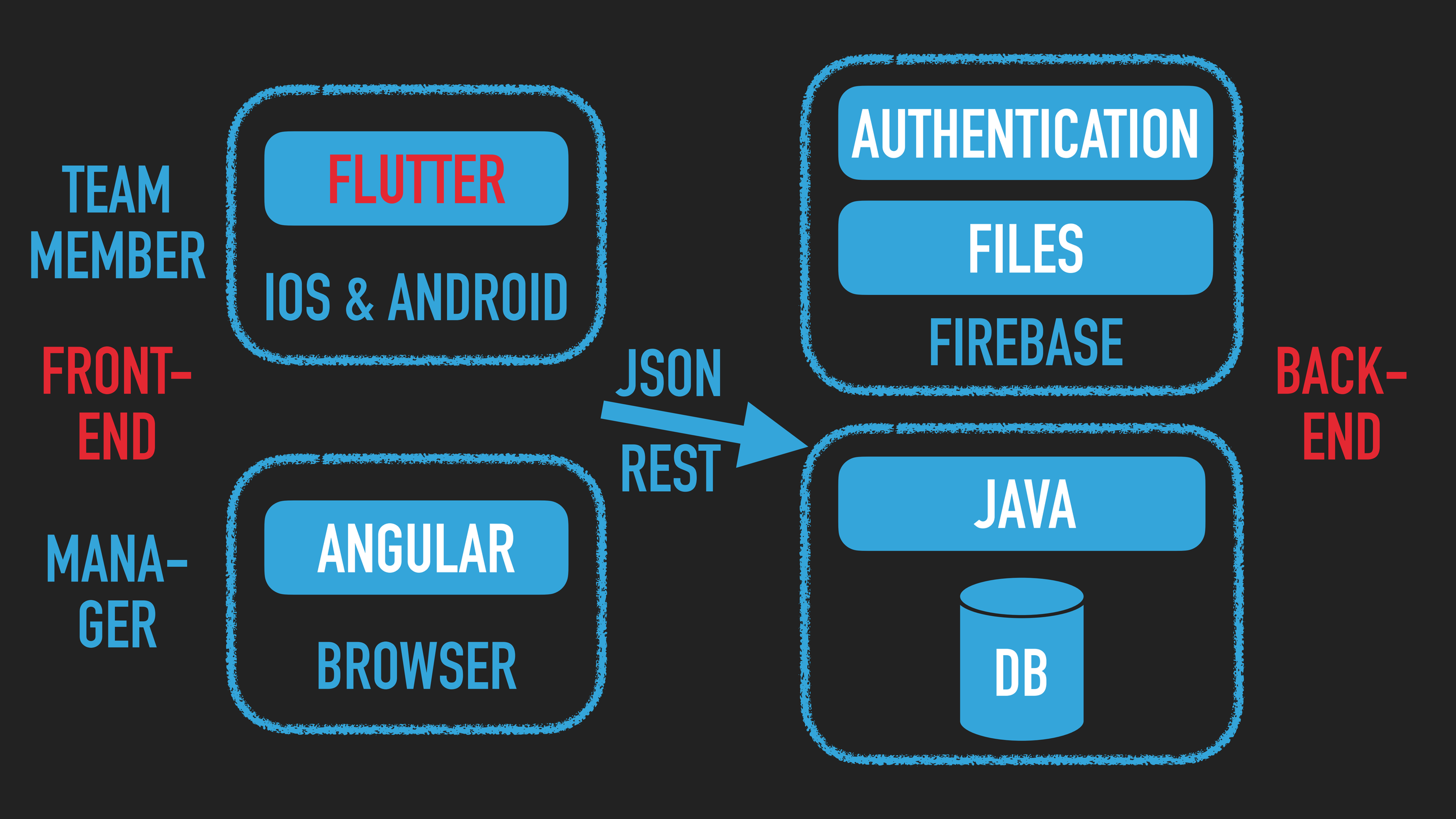
~~HOW FLUTTER WORKS~~

MY FLUTTER EXPERIENCES

FLUTTER VS. REACT NATIVE

MY FLUTTER EXPERIENCES

MY START-UP


TEAM MEMBER
FRONT-END
MANA-GER
FLUTTER
IOS & ANDROID
ANGULAR
BROWSER
JSON
REST
AUTHENTICATION
FILES
FIREBASE
JAVA
DB
BACK-END

UNLIMITED STORAGE, PUSH NOTIFICATIONS

AS FAST & EASY TO USE AS POSSIBLE => NATIVE UI

PRODUCTIVITY: DART + FAST CODE, BUILD & DEPLOY

FLUTTER BUSINESS CASE

FLUTTER 👍

NATIVE 👍

FIREBASE 👍

POWER

1 SOURCE

CONSISTENT

BASICS

MORE ON TALK PAGE

MY FLUTTER EXPERIENCES

~~WHY FLUTTER?~~

~~HOW FLUTTER WORKS~~

~~MY FLUTTER EXPERIENCES~~

FLUTTER VS. REACT NATIVE

FLUTTER VS. REACT NATIVE

POPULARITY

EASIER TO USE & LEARN

EASIER TO CONVINCE TEAMMATES/BOSSES

ALL ELSE EQUAL: USE MOST POPULAR

VERY UNPOPULAR: DON'T USE IT

WHY POPULARITY?

I MEASURE POPULARITY WITH 6 DATA POINTS

APPLE & GOOGLE APP STORE ANALYSIS (APPFIGURES, MAY 2022)

EMPLOYER POPULARITY: MENTIONED IN JOB ADS (INDEED IN 62 COUNTRIES, AUG 2021)

POPULARITY

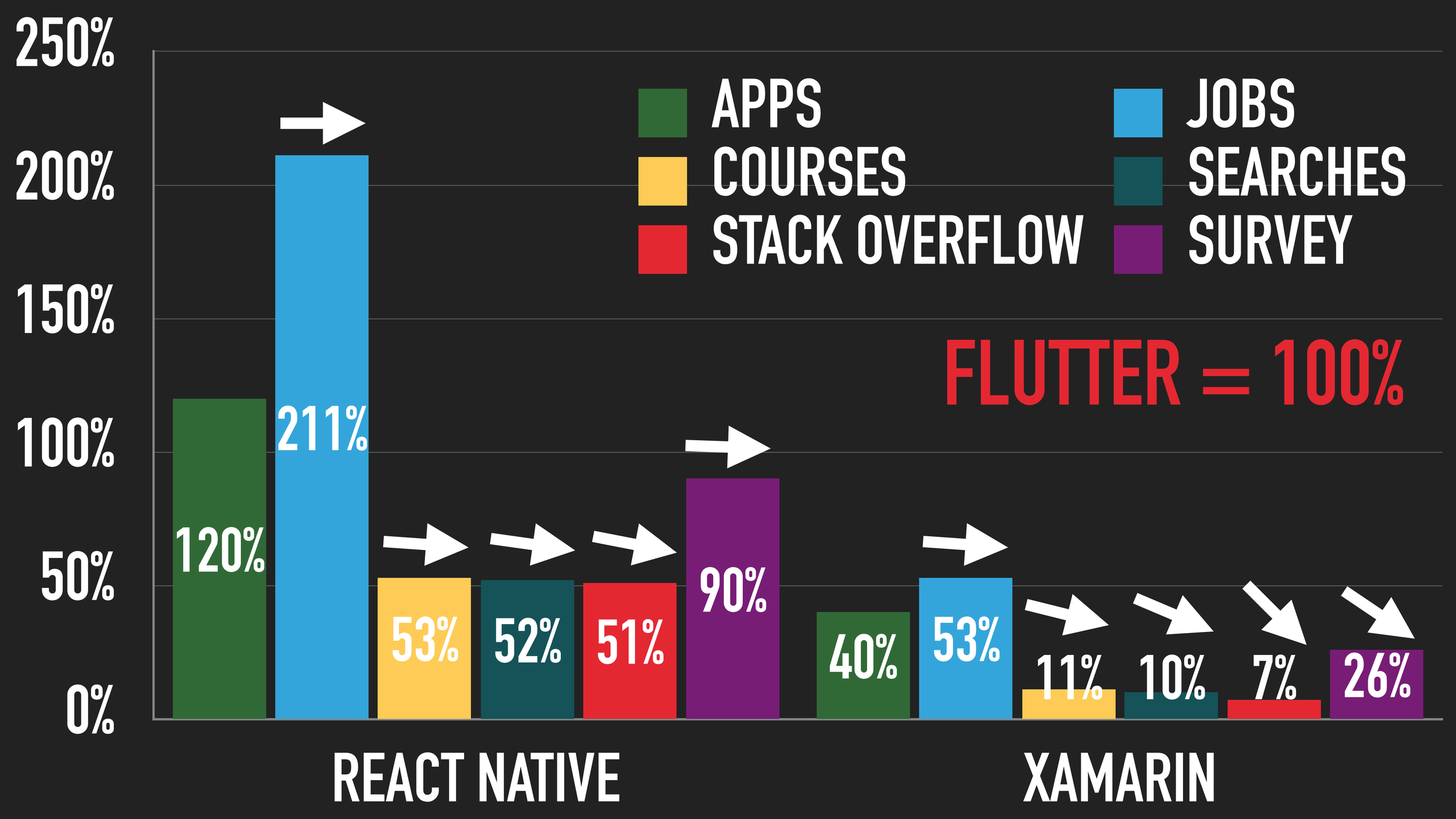
ONLINE TRAINING COURSES BOUGHT (UDEMY, MAR 2021)

GOOGLE SEARCHES

QUESTIONS AT STACK OVERFLOW

DEVELOPER SURVEY (32K RESPONSES, STATISTA, JUL 2021)

DEVELOPER POPULARITY


250%
200%
150%
100%
50%
0%
APPS
COURSES
STACK OVERFLOW
JOBS
SEARCHES
SURVEY
FLUTTER = 100%
120%
211%
53%
52%
51%
90%
40%
53%
11%
10%
7%
26%
REACT NATIVE
XAMARIN

EMPLOYER POPULARITY: REACT NATIVE WINS 2X, STAYING STEADY AGAINST FLUTTER

DEVELOPER POPULARITY: FLUTTER WINS UP TO 2X, PULLING AWAY FROM REACT NATIVE

POPULARITY

MY NEWSLETTER: JVM LANGUAGES & FRAMEWORKS, DATABASES, WEB FRAMEWORKS

CODE

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return
  Column(
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REACT NATIVE

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REACT NATIVE

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REACT NATIVE

STILL UI AS CODE – BUT MORE HTML-LIKE

JAVASCRIPT/TYPESCRIPT AS LANGUAGE

HTML SYNTAX FOR UI ELEMENTS

CSS-LIKE STYLING

REACT NATIVE

CSS FLEXBOX FOR LAYOUT

NPM LIBRARIES

EXPO CLI: CODE RUNS IN "EXPO GO" APP ON DEVICES

REACT NATIVE CLI/SIMULATORS: NATIVE TOOL CHAIN

REACT NATIVE

HTML-LIKE

SLOWER

NATIVE UI ELEMENTS

SEPARATE PROJECTS

DESKTOP: UNOFFICIAL

JAVA-LIKE

FASTER

EMULATED UI ELEMENTS

MONOREPO

DESKTOP: OFFICIAL

REACT NATIVE VS. FLUTTER

WHICH FRAMEWORK TO USE?

WEB: REACT NATIVE FIRST, THEN FLUTTER

.NET: .NET MAUI FIRST, THEN FLUTTER

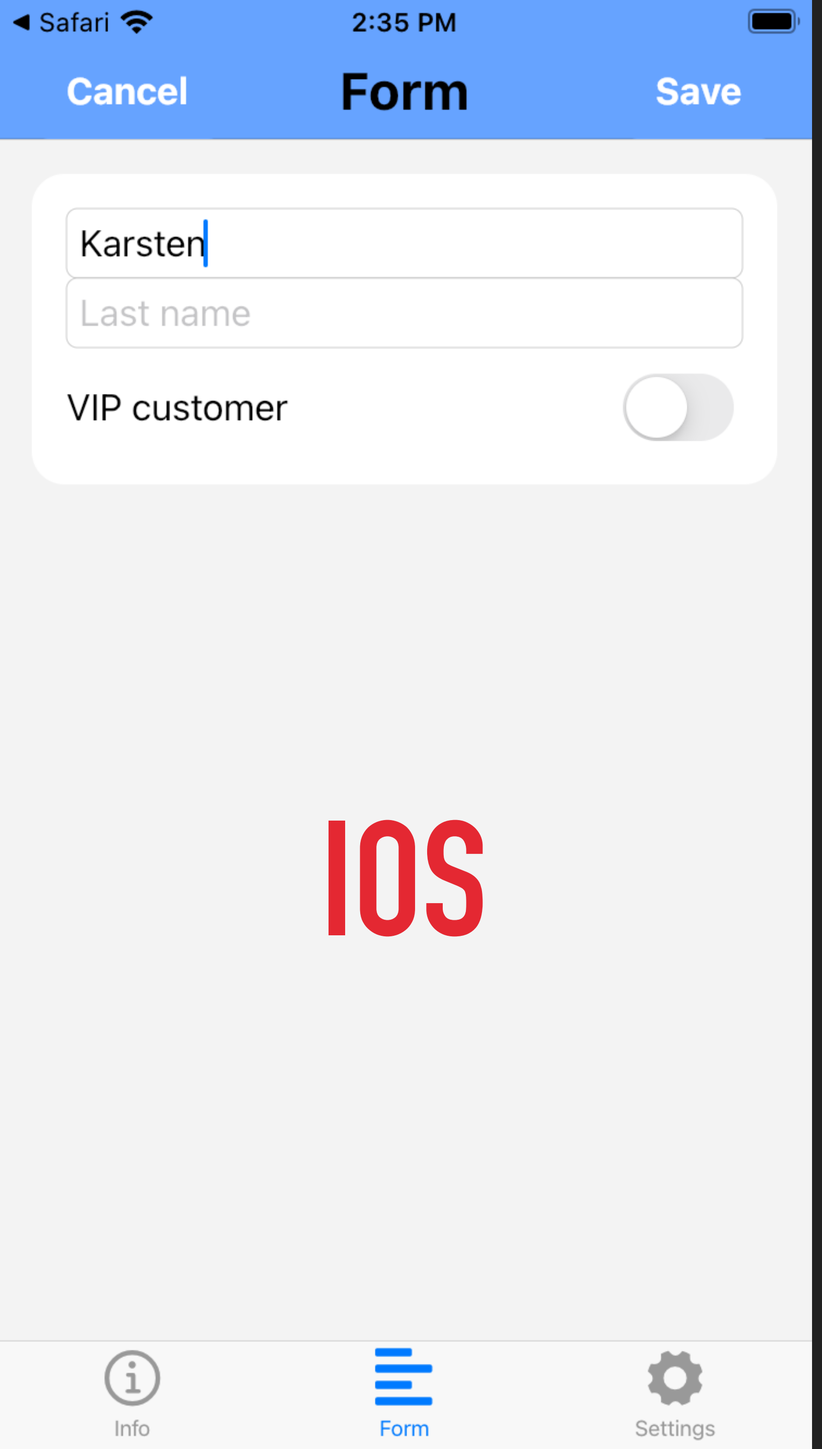
ELSE: FLUTTER FIRST, THEN REACT NATIVE

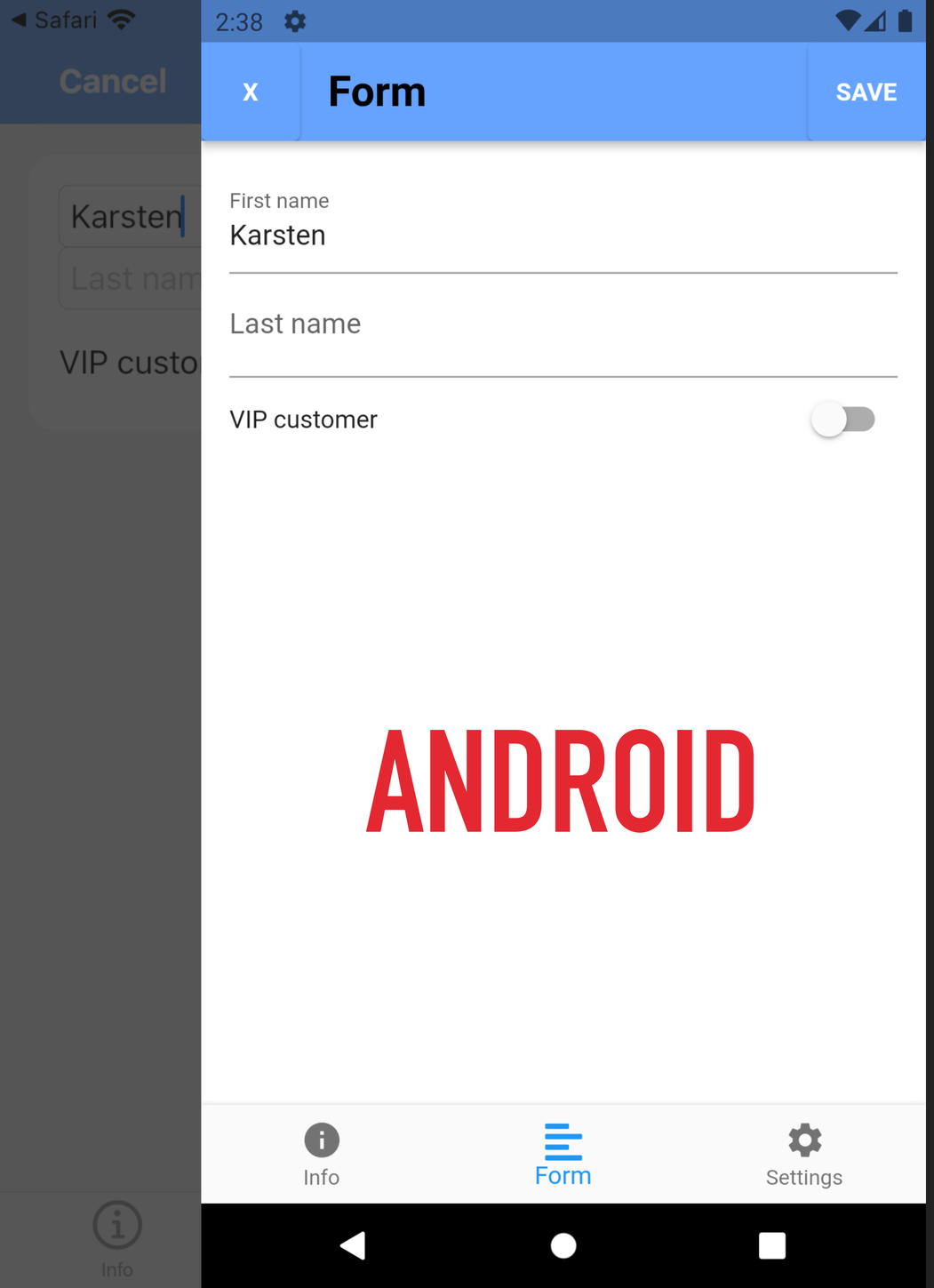
DEVELOPER BACKGROUND

BACK TO THE BIG QUESTION

BUILD MOBILE, WEB & DESKTOP FRONTENDS WITH FLUTTER & 1 CODEBASE?

YES, WE CAN


Safari
2:35 PM
Cancel
Form
Save
Karsten
Last name
VIP customer
IOS
Info
Form
Settings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First name
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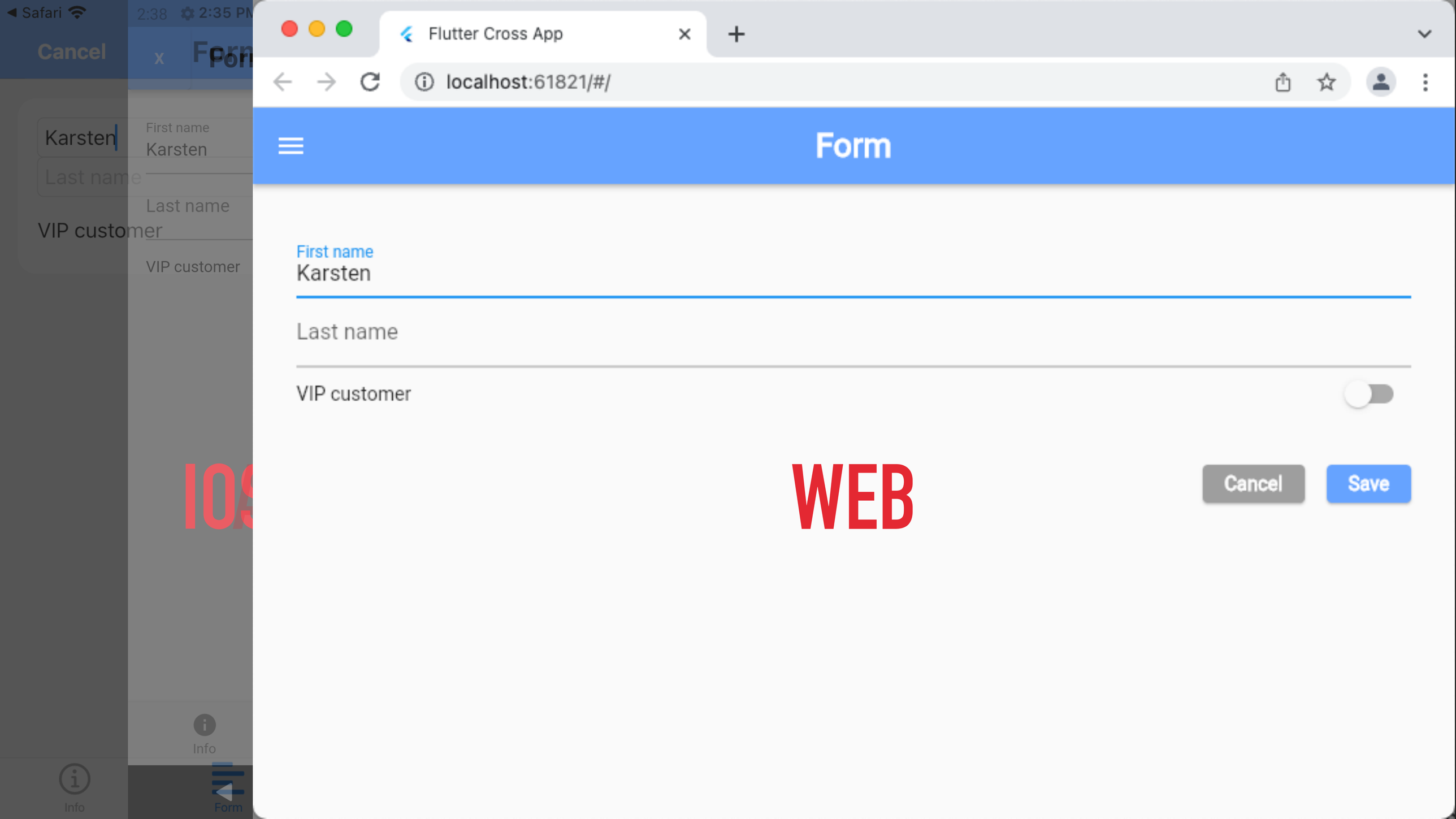
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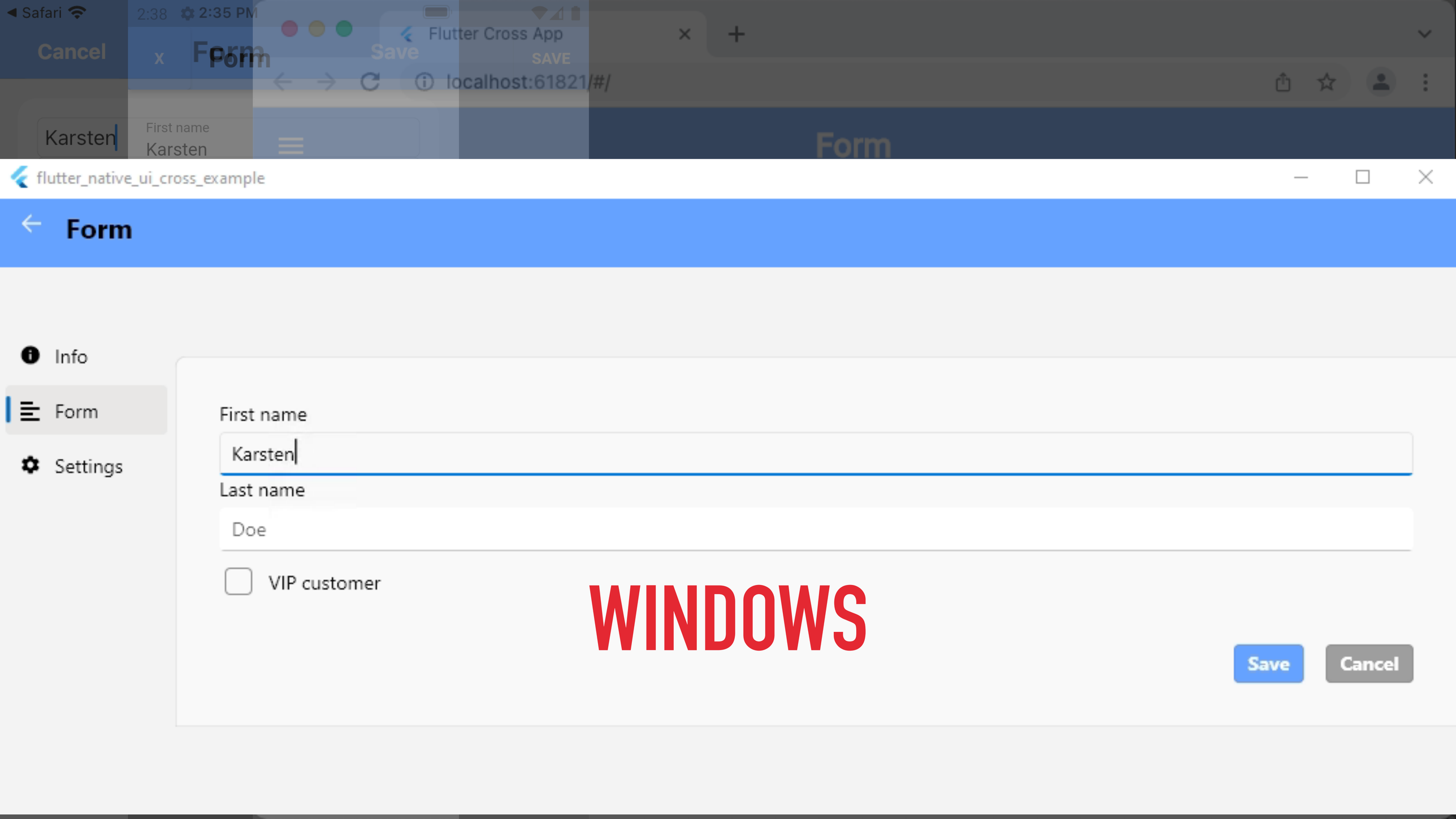
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flutter_native_ui_cross_example
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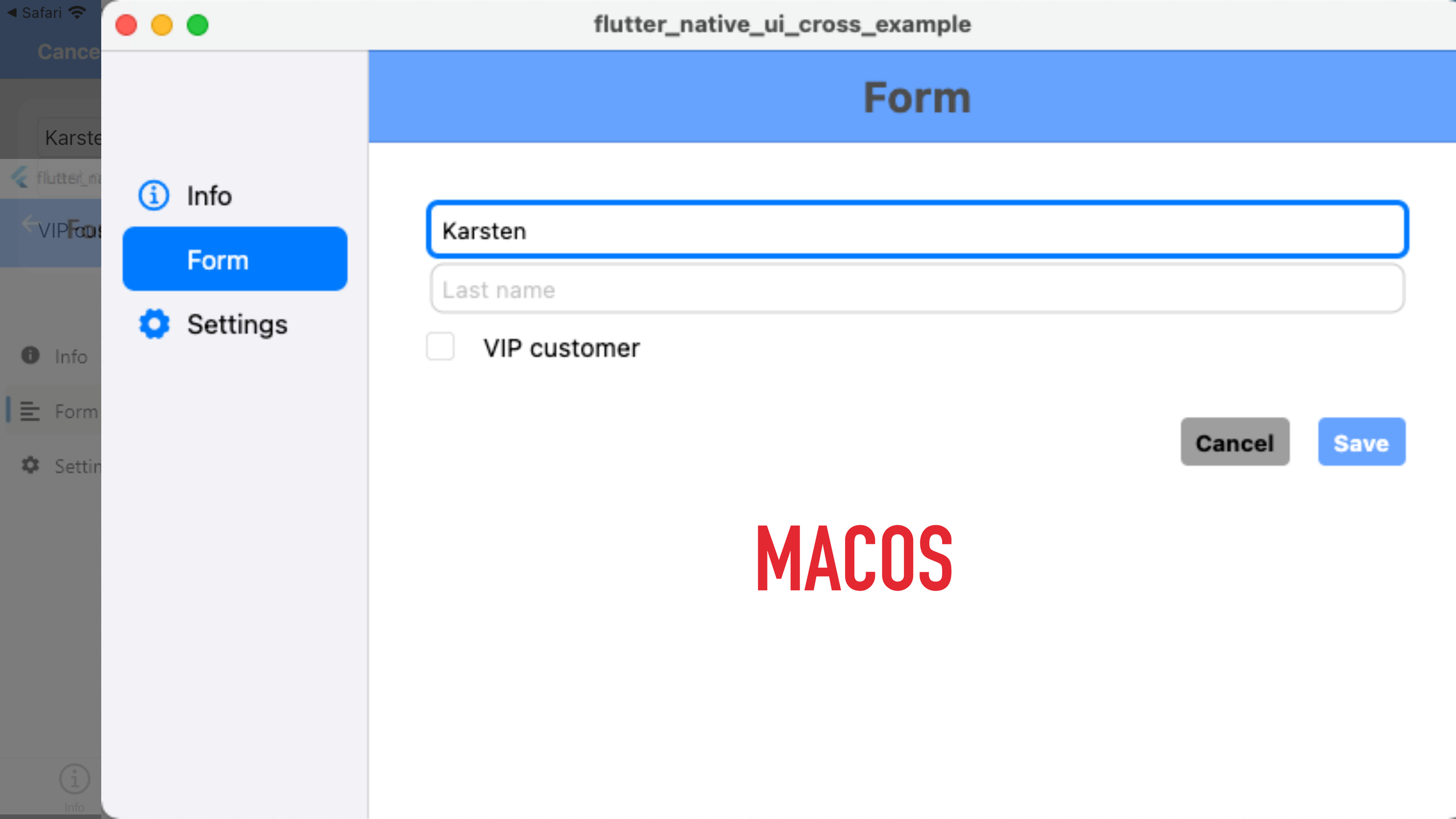
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Save
MACOS

BUT WE SHOULDN'T

MOBILE: 👍🏻

WEB: 👎🏻

DESKTOP: 👎🏻

MOBILE:
REACT NATIVE > FLUTTER

FLUTTER VS. REACT NATIVE

~~WHY FLUTTER?~~

~~HOW FLUTTER WORKS~~

~~MY FLUTTER EXPERIENCES~~

~~FLUTTER VS. REACT NATIVE~~

The End

MY TALK DOESN'T STOP WHEN I STOP TALKING!™

SLIDES & VIDEOS

ADDITIONAL INFORMATION

NATIVE UI SAMPLE APP

GET STARTED WITH FLUTTER

FEEDBACK & NEWSLETTER

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