

Flutter: Build More Apps in Less Time

Nava Sajiva Seminar by Erico Darmawan Handoyo



Erico Darmawan Handoyo
Private Training & Online School



Erico Darmawan Handoyo

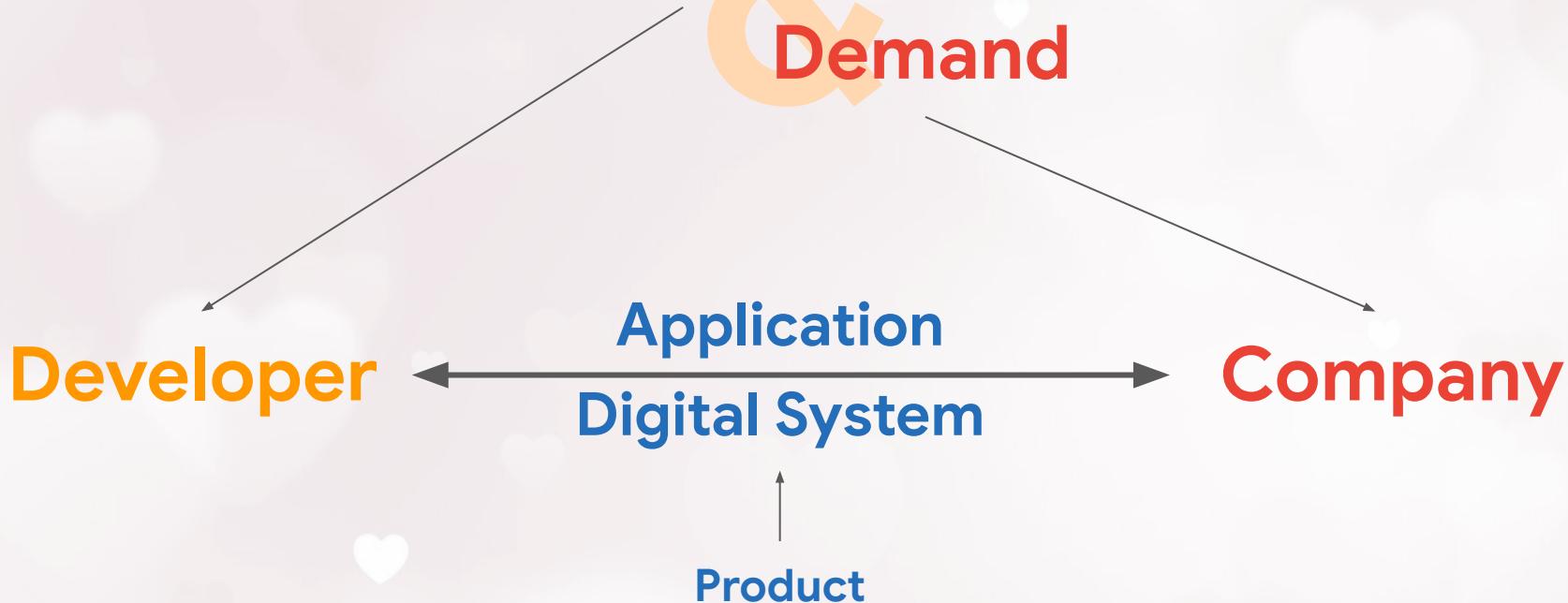
- Lecturer at Maranatha Christian University
- Content creator:
 - Flutter Tutorial YouTube Channel
 - Online Courses at Udemy
- Flutter Trainer

 **Flutter Tutorial YouTube Channel**
provides **300++** fundamental & tutorial videos

<https://youtube.com/@ericodarmawan>



Supply & Demand



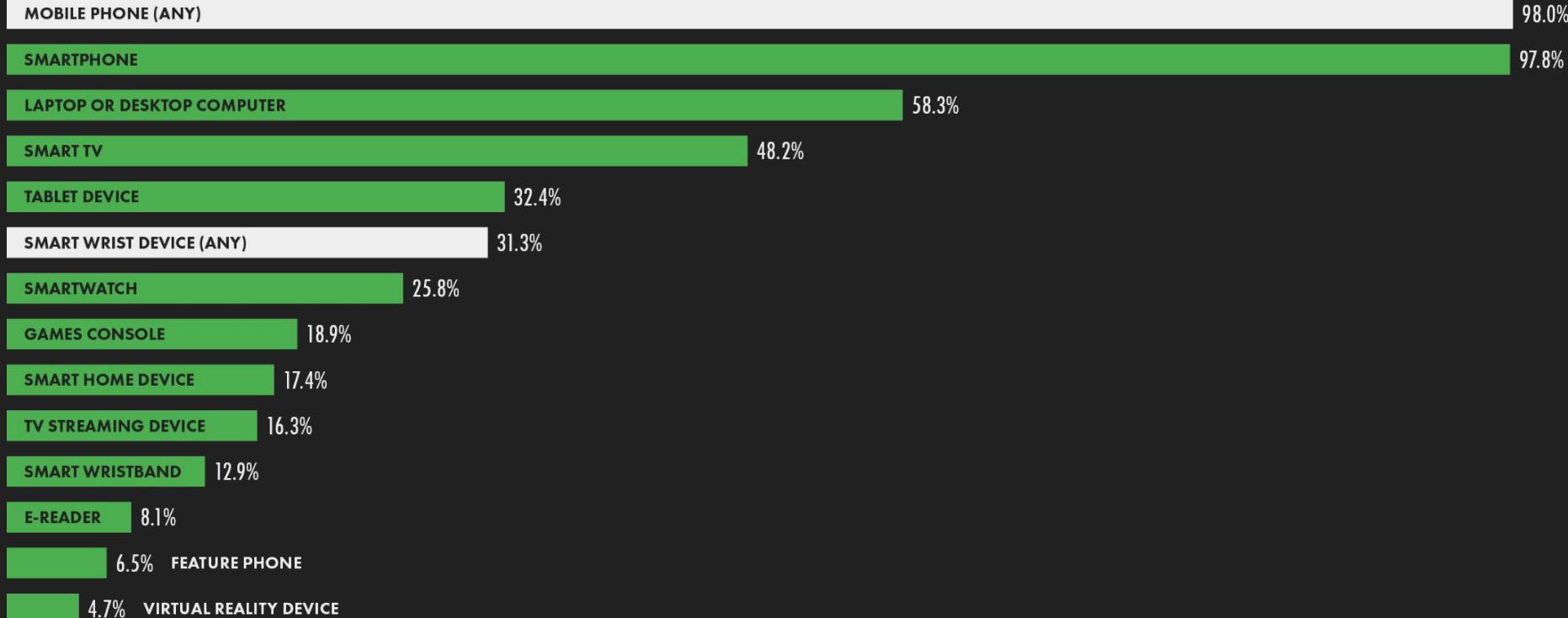
FEB
2025

DEVICE OWNERSHIP

PERCENTAGE OF INTERNET USERS AGED 16+ WHO OWN EACH KIND OF DEVICE



Erico Darmawan Handoyo
Private Training & Online School 



FEB
2025

ALTERNATIVE PERSPECTIVES ON INTERNET USE

FIGURES FOR INTERNET USE PUBLISHED BY DIFFERENT SOURCES



Erico Darmawan Handoyo
Private Training & Online School 

INDIVIDUALS USING THE
INTERNET: KEPIOS



5.56
BILLION

vs. POPULATION

67.9%

INDIVIDUALS USING THE
INTERNET: ITU



5.54
BILLION

vs. POPULATION

67.6%

INDIVIDUALS USING THE
INTERNET: WORLD BANK



5.52
BILLION

vs. POPULATION

67.4%

INDIVIDUALS USING THE
INTERNET: CIA WORLD FACTBOOK



5.41
BILLION

vs. POPULATION

66.0%

 Meltwater

 KEPIOS

 we
are
social

FEB
2025

DEVICES USED TO ACCESS THE INTERNET

PERCENTAGE OF INTERNET USERS AGED 16+ WHO USE EACH KIND OF DEVICE TO ACCESS THE INTERNET



Erico Darmawan Handoyo
Private Training & Online School 

MOBILE PHONE (ANY)

96.3%

SMARTPHONE

94.2%

LAPTOP OR DESKTOP (ANY)

61.5%

PERSONAL LAPTOP OR DESKTOP

53.6%

CONNECTED TELEVISION

31.7%

TABLET DEVICE

27.9%

WORK LAPTOP OR DESKTOP

26.8%

SMART HOME DEVICE

17.9%

GAMES CONSOLE

11.5%

4.5% FEATURE PHONE

4.3% VIRTUAL REALITY DEVICE

JAN
2024

DEVICE OWNERSHIP

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO OWN EACH KIND OF DEVICE



Erico Darmawan Handoyo
Private Training & Online School 

ANY KIND OF
MOBILE PHONE



99.4%

YEAR-ON-YEAR CHANGE
-0.1% (-10 BPS)

GWI.

SMART
PHONE



99.3%

YEAR-ON-YEAR CHANGE
-0.1% (-10 BPS)

K
KEPIOS

FEATURE
PHONE



9.5%

YEAR-ON-YEAR CHANGE
-32.6% (-460 BPS)

GWI.

LAPTOP OR
DESKTOP COMPUTER



57.8%

YEAR-ON-YEAR CHANGE
-6.3% (-390 BPS)

D
D

TABLET
DEVICE



14.6%

YEAR-ON-YEAR CHANGE
-19.8% (-360 BPS)

GAMES
CONSOLE



D
D

14.6%

YEAR-ON-YEAR CHANGE
-18.4% (-330 BPS)

SMART WATCH OR
SMART WRISTBAND



GWI.

17.8%

YEAR-ON-YEAR CHANGE
-6.3% (-120 BPS)

TV STREAMING
DEVICE



K
KEPIOS

6.8%

YEAR-ON-YEAR CHANGE
-19.0% (-160 BPS)

SMART HOME
DEVICE



GWI.

7.8%

YEAR-ON-YEAR CHANGE
-17.9% (-170 BPS)

VIRTUAL REALITY
DEVICE



5.6%

YEAR-ON-YEAR CHANGE
-11.1% (-70 BPS)

JAN
2024

OVERVIEW OF INTERNET USE

ESSENTIAL INDICATORS OF INTERNET ADOPTION AND USE



Erico Darmawan Handoyo
Private Training & Online School

TOTAL NUMBER OF
INTERNET USERS



185.3
MILLION



INDEXED INTERNET ADOPTION
vs. GLOBAL AVERAGE



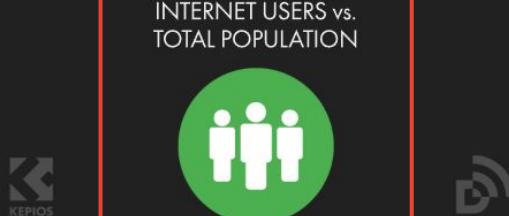
100.5



INTERNET USERS vs.
TOTAL POPULATION



66.5%



PERCENTAGE OF INTERNET USERS
ACCESSING VIA MOBILE PHONES



98.9%



YEAR-ON-YEAR CHANGE
IN TOTAL INTERNET USERS



+0.8%
+1.5 MILLION



YEAR-ON-YEAR CHANGE IN
INTERNET USERS vs. POPULATION



0%
[UNCHANGED]

AVERAGE DAILY TIME SPENT
USING THE INTERNET



7H 38M



YEAR-ON-YEAR CHANGE IN DAILY
TIME SPENT USING THE INTERNET



-1.0%
-4 MINS



JAN
2024

DEVICES USED TO ACCESS THE INTERNET

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO USE EACH KIND OF DEVICE TO
ACCESS THE INTERNET



Erico Darmawan Handoyo
Private Training & Online School

MOBILE
PHONE (ANY)



98.9%

YEAR-ON-YEAR CHANGE
+0.6% (+60 BPS)

LAPTOP OR
DESKTOP (ANY)



56.8%

YEAR-ON-YEAR CHANGE
-6.4% (-390 BPS)

SMART
PHONE



97.4%

YEAR-ON-YEAR CHANGE
-0.3% (-30 BPS)

FEATURE
PHONE



3.1%

YEAR-ON-YEAR CHANGE
-27.9% (-120 BPS)

TABLET
DEVICE



11.7%

YEAR-ON-YEAR CHANGE
-18.2% (-260 BPS)

PERSONAL LAPTOP
OR DESKTOP



KEPIOS

51.7%

YEAR-ON-YEAR CHANGE
-10.2% (-590 BPS)

WORK LAPTOP
OR DESKTOP



GWI.

15.6%

YEAR-ON-YEAR CHANGE
-10.3% (-180 BPS)

CONNECTED
TELEVISION



GWI.

19.4%

YEAR-ON-YEAR CHANGE
[UNCHANGED]

SMART HOME
DEVICE



GWI.

5.2%

YEAR-ON-YEAR CHANGE
-25.7% (-180 BPS)

GAMES
CONSOLE



GWI.

5.7%

YEAR-ON-YEAR CHANGE
-16.2% (-110 BPS)

Internet Users



±66-68%

User Who Use Smartphone to Access the Internet



±94-97%

User Who Use Laptop/Desktop Computer to Access the Internet



±57-61%

Digital Survey Jan 2024: <https://wearesocial.com/id/blog/2024/01/digital-2024>

Digital Survey Feb 2025: <https://wearesocial.com/id/blog/2025/02/digital-2025>

**Digital systems play a vital role in
today's business operations.**





Native

VS

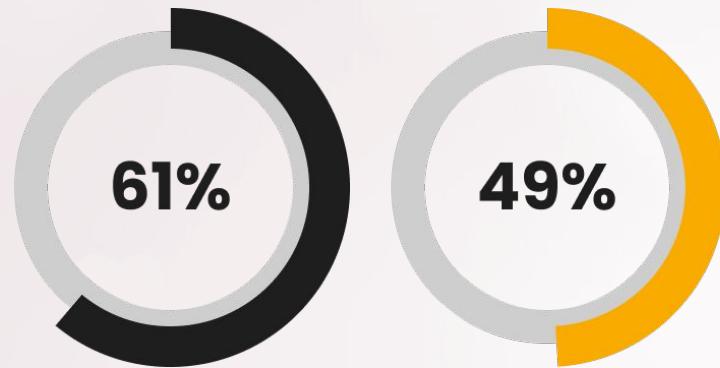


Cross-Platform



Erico Darmawan Handoyo
Private Training & Online School

How do you develop for mobile operating systems?



I use native tools.

I use cross-platform
technologies and
frameworks



Erico Darmawan Handoyo
Private Training & Online School

Source: <https://www.jetbrains.com/lp/devecosystem-2023/development>

Why Cross-Platform Frameworks Benefit Companies

- Companies have to ensure their digital system are available on **as many platforms as possible**, accessible via **smartphones** and **computers/laptops**.
- Companies **need to implement ideas faster** to stay ahead of the competition.
- Companies **must provide a consistent experience** to their users **on all platforms**.
- Companies love **time** and **cost efficiencies** a lot 😃😃😃.



Why Cross-Platform Frameworks Benefit Developers

- Developing apps for multiple platforms **doesn't require learning every single platform.**
- A **single fix/update applies to all platforms.**



Saving your time



- Learning more to **improve your skill.**
- Getting **more projects.**
- Doing **exercises.**
- Doing your **hobbies.**
- Spending your time **with the loved ones.**

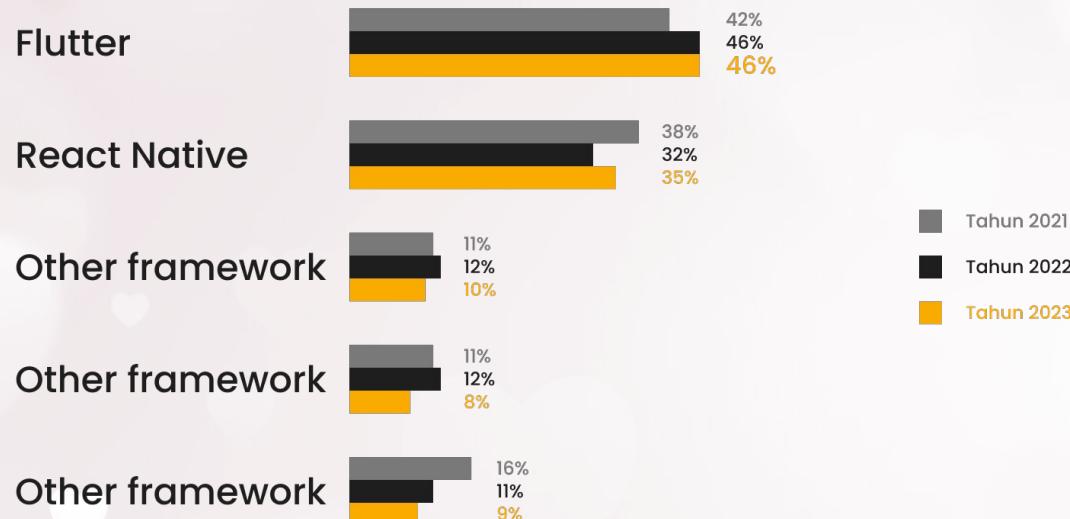


Flutter is The Most Popular Cross- Platform Framework



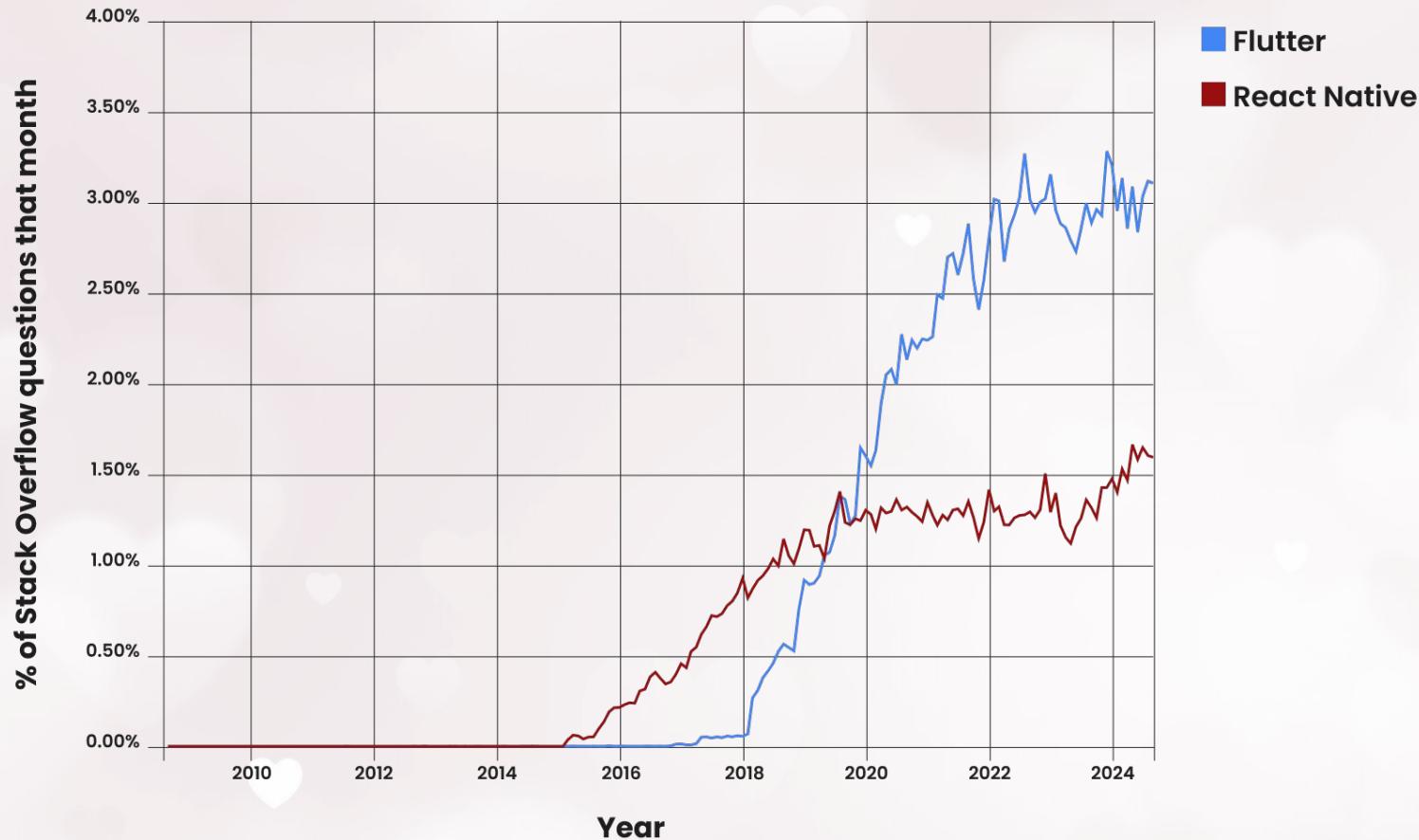
Erico Darmawan Handoyo
Private Training & Online School

Which cross-platform mobile frameworks do you use?



Source: <https://www.jetbrains.com/lp/devecosystem-2023/development>
<https://www.jetbrains.com/lp/devecosystem-2022/miscellaneous>





Top 10 public projects by contributors on GitHub	
Project	Contributor count
home-assistant/core	>21K
microsoft/vscode	>20K
ProvableHQ/leo	>20K
firstcontributions/first-contributions	>13k
flutter/flutter	>10K
NixOS/nixpkgs	>9K
vercel/next.js	>9K
langchain-ai/langchain	>8K
godotengine/godot	>7K
ollama/ollama	>7K

number 5 ➔

Source:

<https://github.blog/news-insights/octoverse/octoverse-2024/#the-most-popular-programming-languages>





The Most Popular Development SDKs

Type: Development

Category: Apps



App Store



Google Play



Flutter

13%



React Native

13%



Flutter

22%



React Native

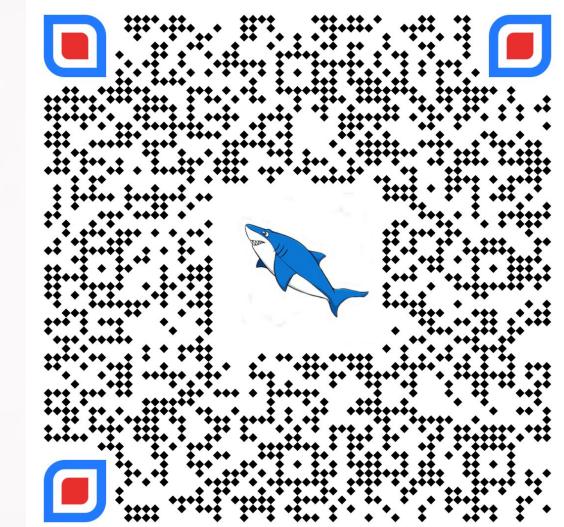
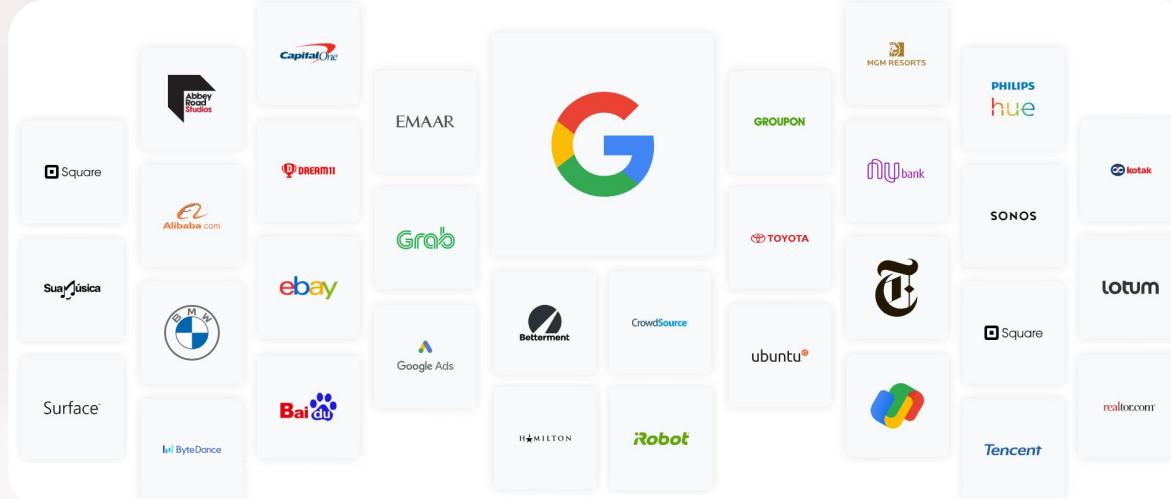
17%



Erico Darmawan Handoyo
Private Training & Online School

Source: <https://appfigures.com/top-sdks/development/apps>

Who use Flutter?

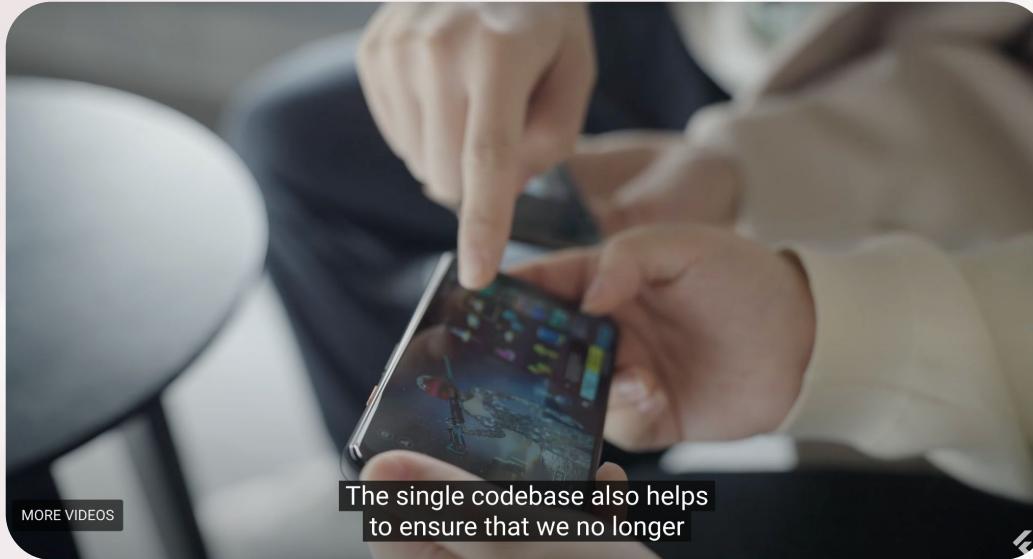


FlutterShark



Erico Darmawan Handoyo
Private Training & Online School

Community Module of PUBG Mobile



The single codebase also helps
to ensure that we no longer



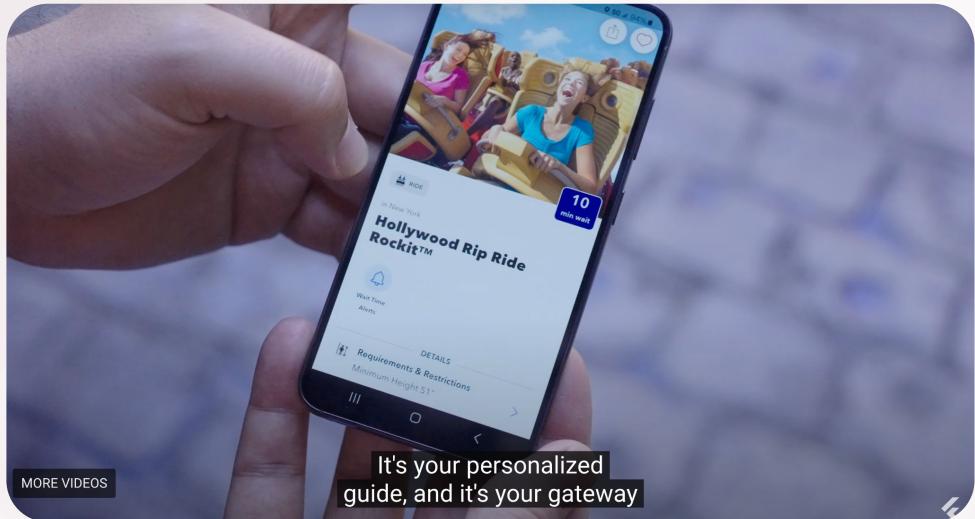
Erico Darmawan Handoyo
Private Training & Online School

 PUBG MOBILE (Flutter Dev Story)
<https://youtu.be/03ETVuWZiBc>

Universal Studios build next generation experiences with Flutter

 How Universal Destinations & Experiences build next generation experiences with Flutter

<https://youtu.be/JTk2Exr7FO4>



Erico Darmawan Handoyo
Private Training & Online School 

Who use Flutter?



BANKSULTRA



What is Flutter?

Flutter is an **open source framework** by **Google** for building **beautiful, natively compiled, multi-platform** applications from a **single codebase**.

 More information
<https://flutter.dev>



Multiplatform

Flutter app can be deployed on **Android, iOS, Web, Mac, Windows, Linux.**

- Reduce development/maintenance **time**.
- Reduce development/maintenance **cost**.
- **Same feels** on all platforms.

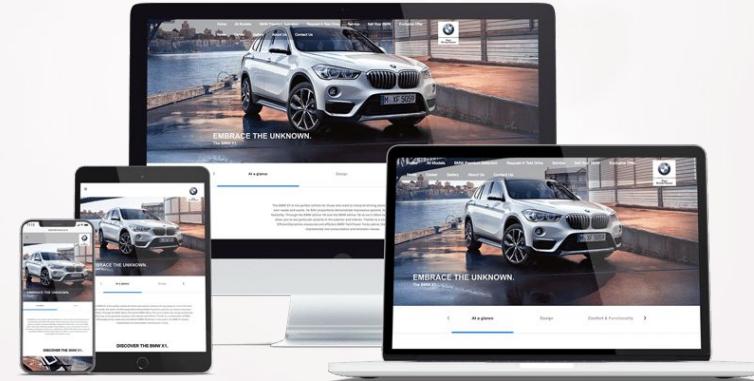
Tencent

When using Flutter, 90% of the code became multi-platform and only needed to be updated once.

Fei Song
Senior Software Engineer, Tencent



Erico Darmawan Handoyo
Private Training & Online School



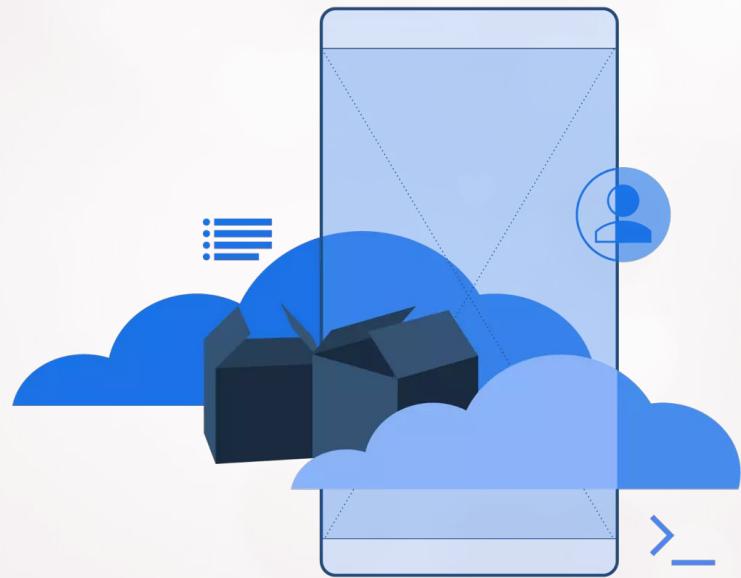
Open Source

- Everyone can contribute on Flutter development.
- There are many useful packages (49K+) on pub.dev.



Flutter Repository
<https://github.com/flutter/flutter>

Flutter & Dart packages
<https://pub.dev>



Erico Darmawan Handoyo
Private Training & Online School

Strong Ecosystem

- Numerous contributors to Flutter.
- Many Flutter events are hosted globally and locally.

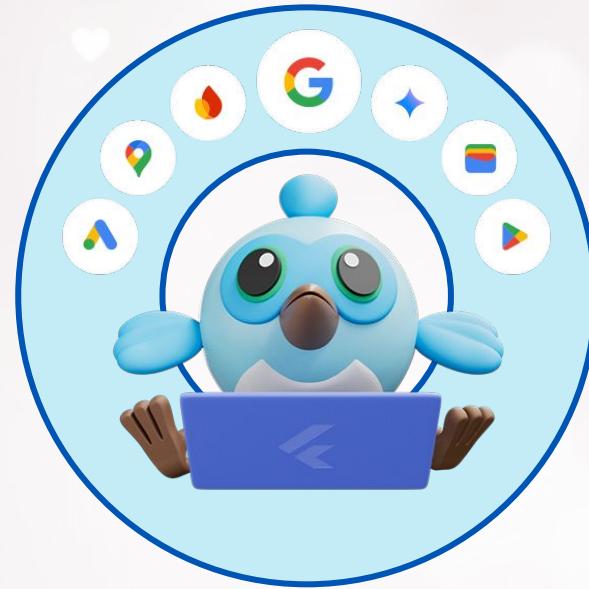


Erico Darmawan Handoyo
Private Training & Online School

Google Services Integration

Seamless integration with:

- Firebase
- Google Ads
- Google Play
- Google Pay
- Google Wallet
- Google Maps, and more.



Dart Language

- Learning Flutter & Dart is **easy** for Java, Python, or C# devs.
- Flutter & Dart has **excellent documentation**.
- Dart keeps **evolving**:
 - **Null Safety**: prevents null errors.
 - **Enhanced enum**: allow enum to have additional features.
 - **Dart 3 new class modifiers**: mixin, final, seal, base, & interface.
- Dart **backends**  Dart Frog  Serverpod



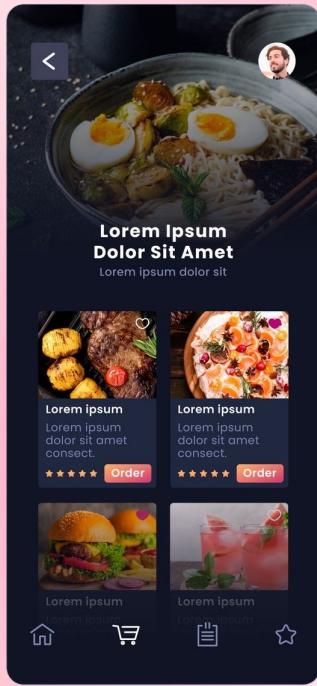
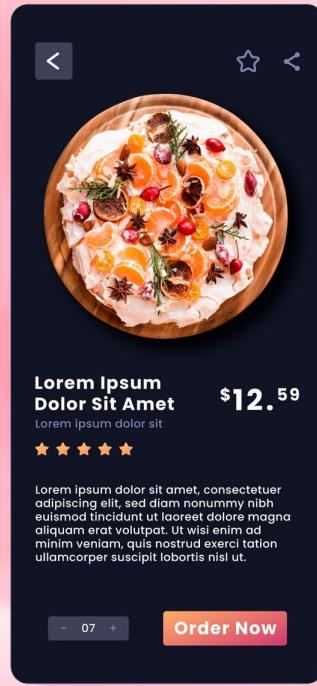
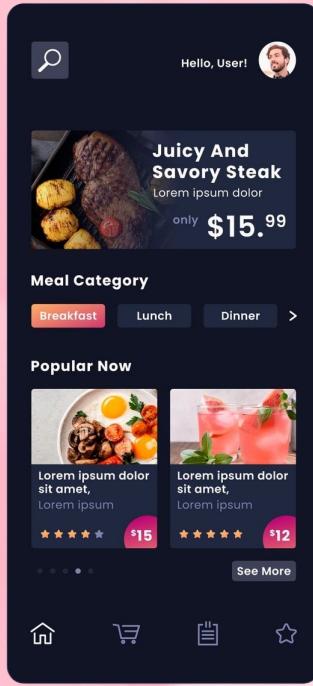
Dart Language

```
public class Person {  
    public String name;  
    public int age;  
  
    public Person(String name, int age) {  
        this.name = name;  
        this.age = age;  
    }  
  
    Person person = new Person("Alice", 30);
```

```
class Person:  
    def __init__(self, name, age):  
        self.name = name  
        self.age = age  
  
    person = Person("Alice", 30)
```

```
class Person {  
    final String name;  
    final int age;  
  
    Person({required this.name, required this.age});  
  
    Person person = Person(name: 'Alice', age: 30);
```





Demo Time!



Erico Darmawan Handoyo
Private Training & Online School

Recipe Generator using Gemini AI

Front end : Android, iOS, Mac OS, Web

Back end : Dart Frog deployed on globe.dev



Flutter x Gemini AI

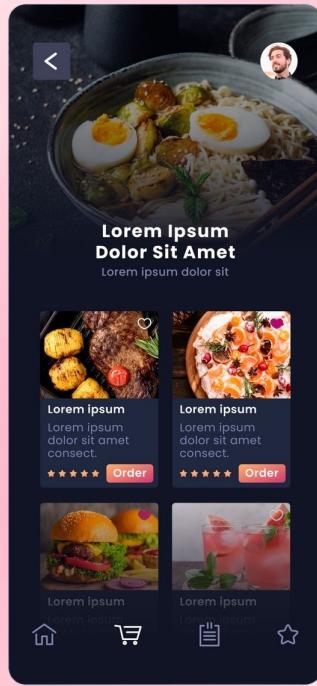
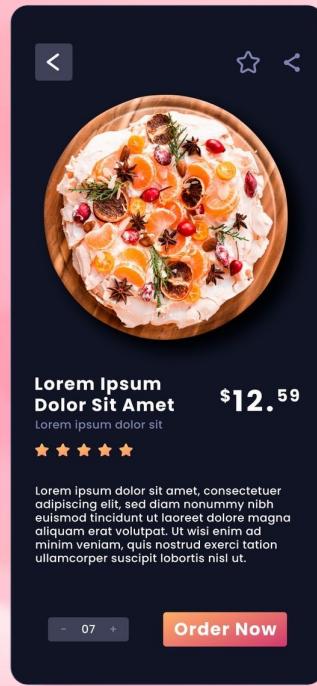
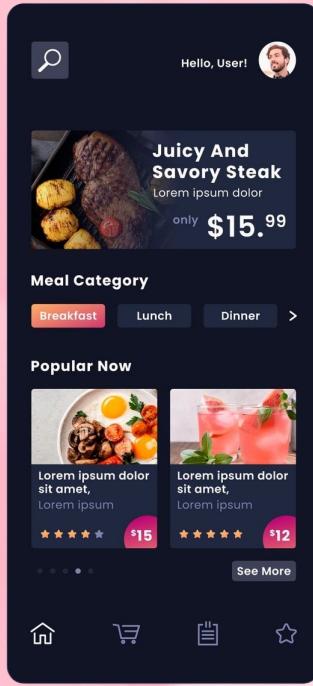
<https://youtu.be/PkqV3lmgAhs>

The screenshot displays four recipe cards generated by the Gemini AI system:

- Rosemary and Basil Roasted Chicken**
Yields: 4 servings Prep time: 10 minutes Cook time: 25 minutes
Ingredients:
 - 2 boneless, skinless chicken breasts
 - 1 tablespoon olive oil
 - 1/2 teaspoon black peppercorns, crushed
 - 1/4 teaspoon dried rosemary
 - 1/4 teaspoon dried basil
 - Salt to tasteInstructions:
 - Preheat oven to 400°F (200°C).
 - In a small bowl, combine olive oil, peppercorns, rosemary, basil, and salt.
 - Season chicken breasts with salt and rub the herb mixture onto them.
 - Place chicken breasts on a baking sheet lined with parchment paper.
 - Roast for 20-25 minutes, or until chicken reaches an internal temperature of 165°F (75°C).
 - Let chicken rest for 5 minutes before slicing and serving.
- Banana Apple Oatmeal**
Yields: 1 serving Prep time: 5 minutes Cook time: 5 minutes
Ingredients:
 - banana, appleInstructions: ...
- Beef with Rosemary and Peppercorn**
Yields: 4 servings Prep time: 10 minutes Cook time: 12 minutes
Ingredients:
 - 1.5 lbs beef sirloin, cut into 1-inch cubes
 - 1 tbsp olive oil
 - 1 large onion, chopped
 - 2 cloves garlic, minced
 - 1/2 tsp dried rosemary
 - 1/2 tsp black peppercorns, crushed
 - 1/2 cup beef broth
 - 1/4 cup red wine (optional)
 - 1 tbsp butter
 - Salt to tasteInstructions: ...
- Pan-Seared Fish with Lemon & Peppercorn**
Yields: 2 servings Prep time: 10 minutes Cook time: 10-12 minutes
Ingredients:
 - 4 fish fillets (cod, tilapia, or halibut work well)
 - 2 tablespoons olive oil
 - 1 teaspoon salt
 - 1/2 teaspoon black peppercorns, crushed
 - 4 lemon wedgesInstructions:
 - Pat the fish fillets dry with paper towels. Season with salt and pepper.
 - Heat the olive oil in a large skillet over medium-high heat.



Erico Darmawan Handoyo
Private Training & Online School



Want to Learn Flutter?



Erico Darmawan Handoyo
Private Training & Online School

Flutter Roadmap

FUNDAMENTALS

- Basic Programming Dart for Newbies
- Pemrograman Berorientasi Objek dart

FRONTEND (FLUTTER)

- Flutter Essentials
- Flutter Tutorial Part 1
- Flutter Tutorial Part 2

BACKEND

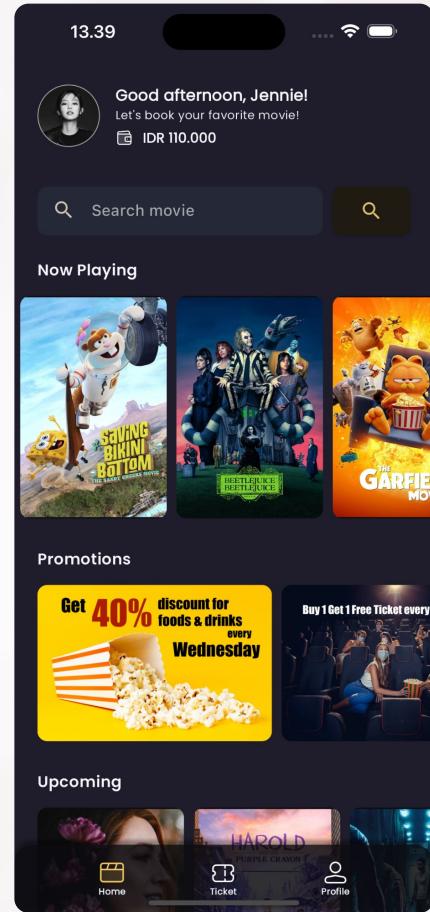
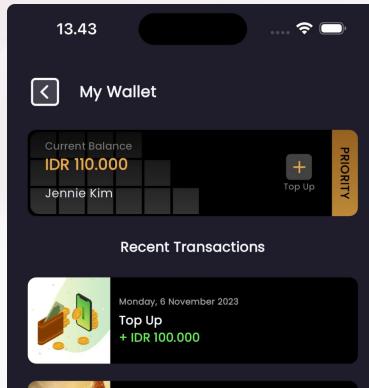
- Dart Frog (A fast, minimalistic backend framework for Dart)

 **Flutter Tutorial YouTube Channel**
provides **300++** fundamental & tutorial videos
<https://youtube.com/@ericodarmawan>



Full Stack Flutter: FlixID

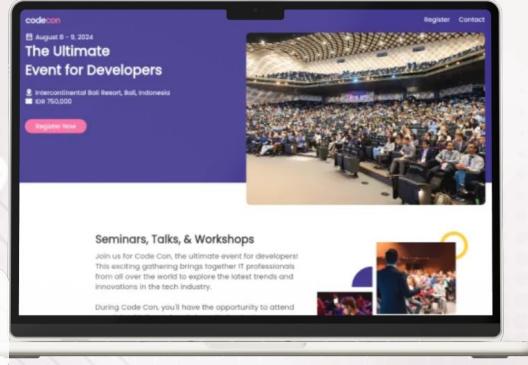
- Separation of Concerns
- Clean Architecture
- Riverpod State Management
- Firebase Auth, Storage, & Firestore
- GoRouter Navigation



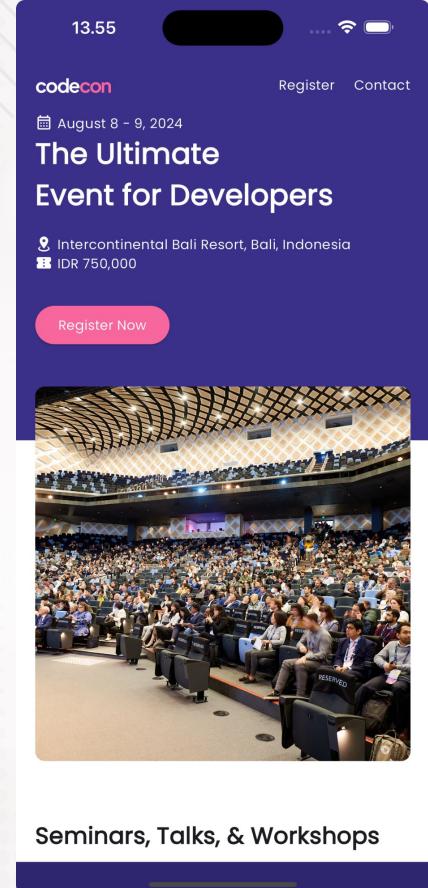
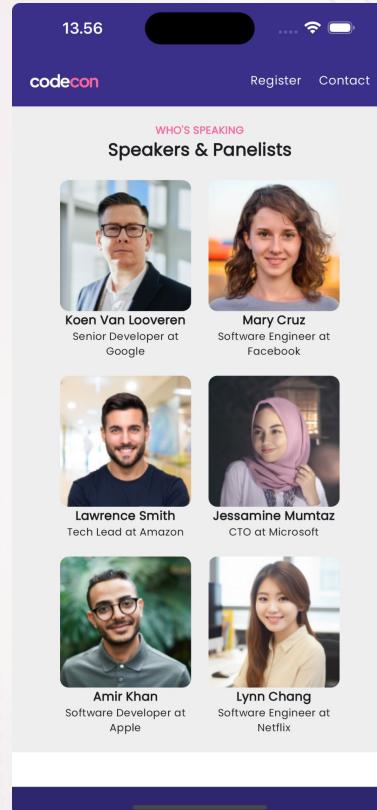
Erico Darmawanto Handoyo
Private Training & Online School

Full Stack Flutter: CodeCon

- Payment Gateway Integration
- Fullstack using Dart
- Flutter Web, iOS, Android, Mac OS
- Responsive Design
- Airtable as data storage



Erico Darmawan Handoyo
Private Training & Online School





Erico Darmawan Handoyo
Private Training & Online School



s.id/flixid



s.id/codecon

Discount Code:
AISHITERU