Flutter

Cross-Platform Development Made Easy

Content

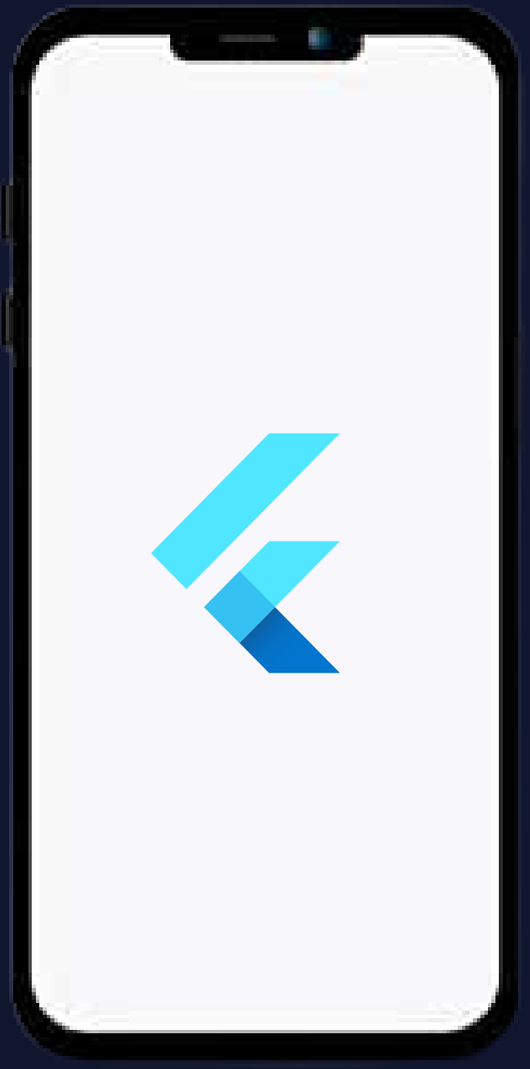
- Dart
- Flutter Widgets
- Api
- State Mangement
- Local Database
- Theming
- Localizations
- Shorebird (App Auto Update)
- Final Project

Intro to Flutter

Flutter is an open-source UI software development toolkit created by Google.

- It enables developers to build natively compiled mobile, web, and desktop applications from a single codebase.
- First released in 2017, Flutter is now widely adopted by startups and big tech companies.
- Uses **Dart** programming language for fast development and expressive UI.

Why choose Flutter



Single Codebase
Write once, run anywhere (Android, iOS, Web, Desktop

Fast Development
Hot Reload feature allows instant code updates

High performance
Compiles to native ARM code

Beautiful UIs
Rich set of built- in and customizable widgets

Core development tools

To support a smooth and efficient development experience, Flutter relies on a set of powerful tools and resources:

Flutter SDK & Dart SDK

Core software development kits that provide the necessary tools and libraries for building Flutter applications.

VS Code & Android Studio

Integrated Development Environments (IDEs) that provide excellent support for Flutter and Dart, with features like code completion and debugging.

pub.dev

Official package repository (packages are reusable libraries or components) where developers can find packages for various features.

Flutter Architecture

Framework Layer

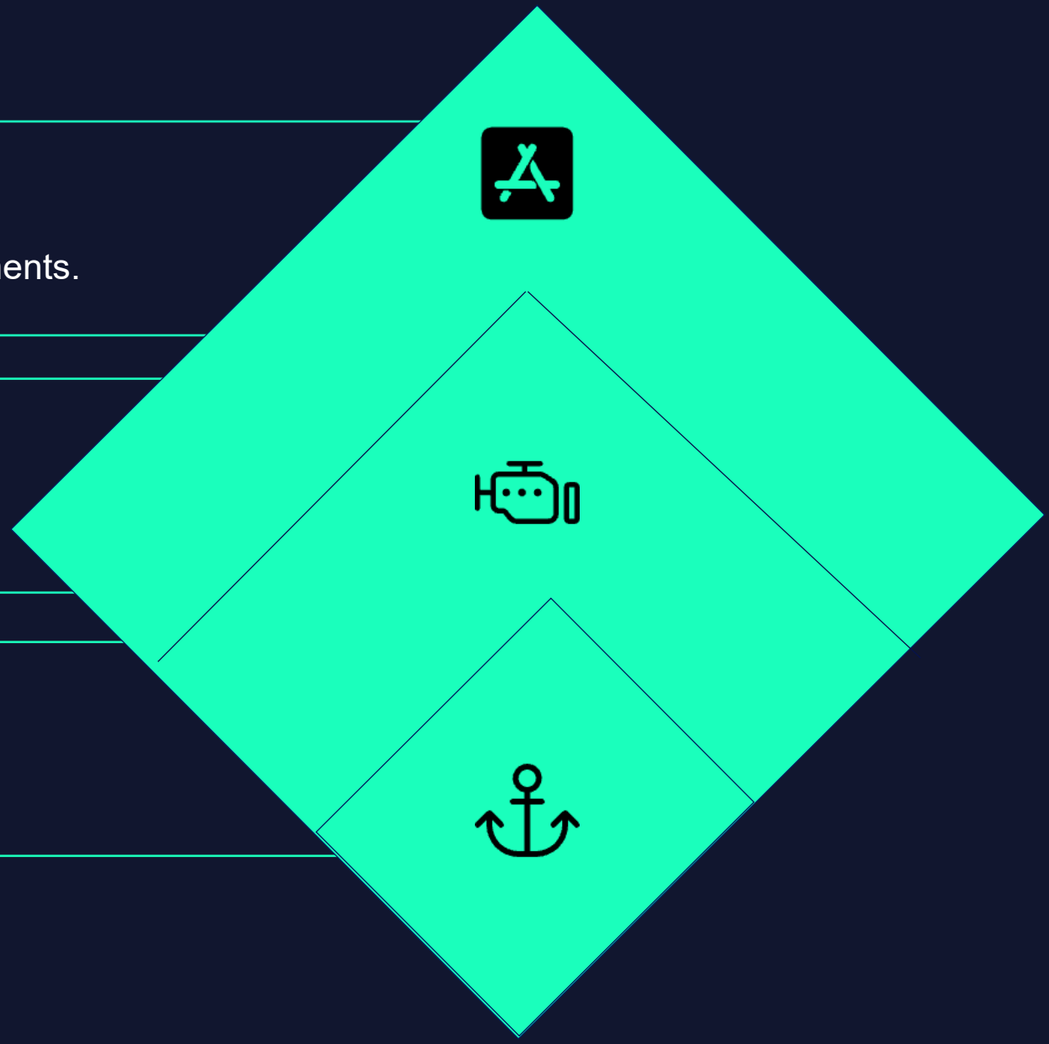
- ❑ Written in **Dart.**
- ❑ Provides a rich set of **widgets**, animation libraries, and UI components.

Engine Layer

- ❑ Written in **C++**.
- ❑ Handles **low-level rendering** using **Skia** (2D graphics engine)

Embedder Layer

- ❑ Platform-specific code that connects Flutter to **iOS, Android, Web, Desktop**.



Flutter Widgets

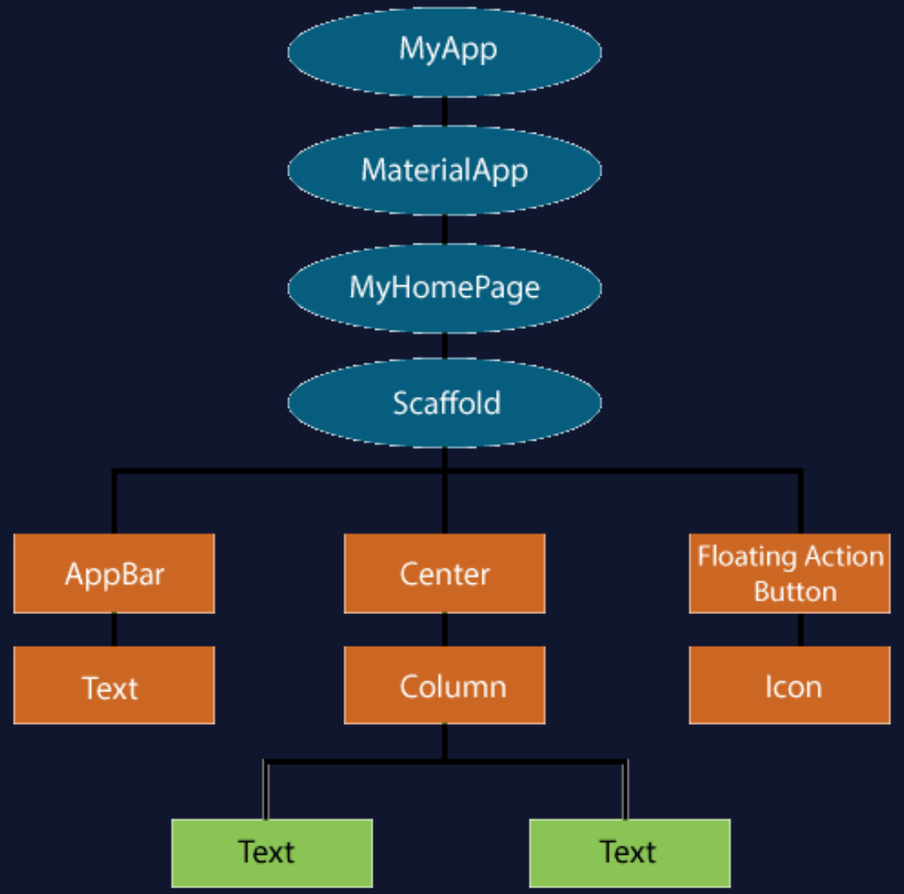
Everything in Flutter is a **Widget**

➢ Stateless Widget

- Immutable → does not change once built.
- Used for static content (labels, icons, fixed images).

➢ Stateful Widget

- Mutable → can change during runtime.
- Has a **State object** to store dynamic data (e.g., counter, forms).



Api

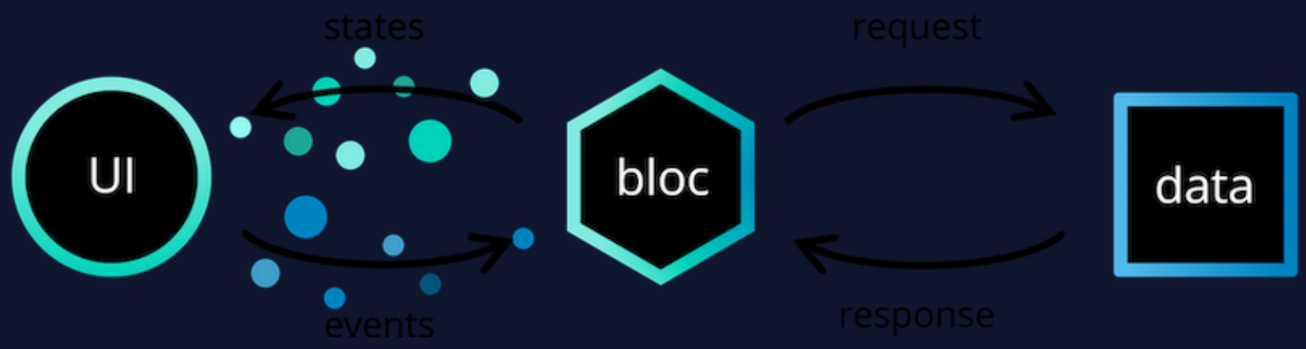
APIs allow communication with servers (data, auth, payments)

- Use http or dio package.
- Send requests → GET / POST.
- Decode JSON into Dart models.
- Display results in Widgets.

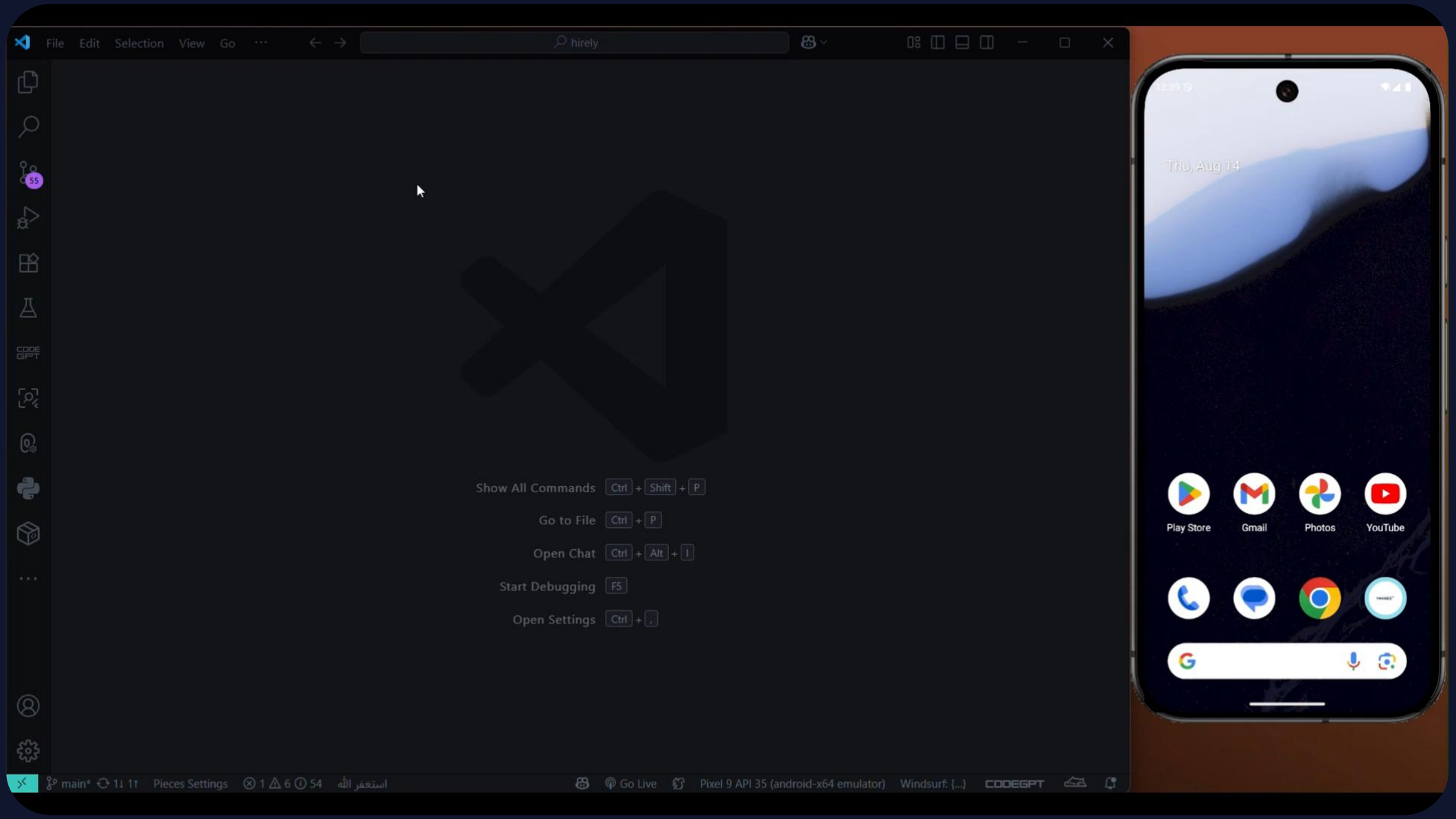
State Management

The way we store, update, and share that data across different parts of the app.

- ❑ setState
- ❑ Provider
- ❑ BLoC / Cubit
- ❑ Riverpod / GetX



First App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Real-World Apps

Flutter has been adopted by many leading companies to develop their applications, highlighting its power and flexibility in real-world production environments.