



Google Developer
Student Clubs
MNNIT ALLAHABAD

Introduction to

ANDROID
DEV



GOOGLE DEVELOPER STUDENT CLUBS
MNNIT ALLAHABAD

AGENDA

**WHAT IS ANDROID?
TECH STACK FOR ANDROID.
CLASSES AND OBJECTS.
STATELESS AND STATEFUL WIDGETS.**



GOOGLE DEVELOPER STUDENT CLUBS
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RESOURCES



FLUTTER DOCUMENTATIONS.



LOTS OF YOUTUBE TUTORIALS.



GEMINI.



WHAT IS ANDROID?

ANDROID IS AN OPEN SOURCE
AND LINUX BASED MOBILE
OPERATING SYSTEM FOR TOUCH
SCREEN DEVICES.



ANDROID VERSIONS



Android 1.0 Apple
Pie



Android 1.1 Banana
Bread/Petit Four



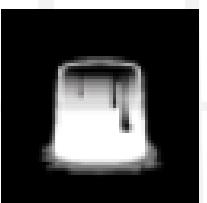
Android 1.5
Cupcake



Android 1.6 Donut



Android 2.0 Eclair



Android 2.1 Flan



Android 2.2 Froyo



Android 2.3
Gingerbread



Android 3.0
Honeycomb



Android 4.0 Ice
Cream Sandwich



Android 4.1 Jelly
Bean/Project
Jandycane



Android 4.4 KitKat



Android 4.5 Key
Lime Pie



Android 5.0 Lollipop



Android 6.0
Marshmallow



Android 7.0 Nougat



Android 8.0 Oreo



Android 8.1 Oreo



Android 9.0 Pie



Android 10 Queen
Cake



Android 11 Red
Velvet Cake



Android 12 Snow
Cone



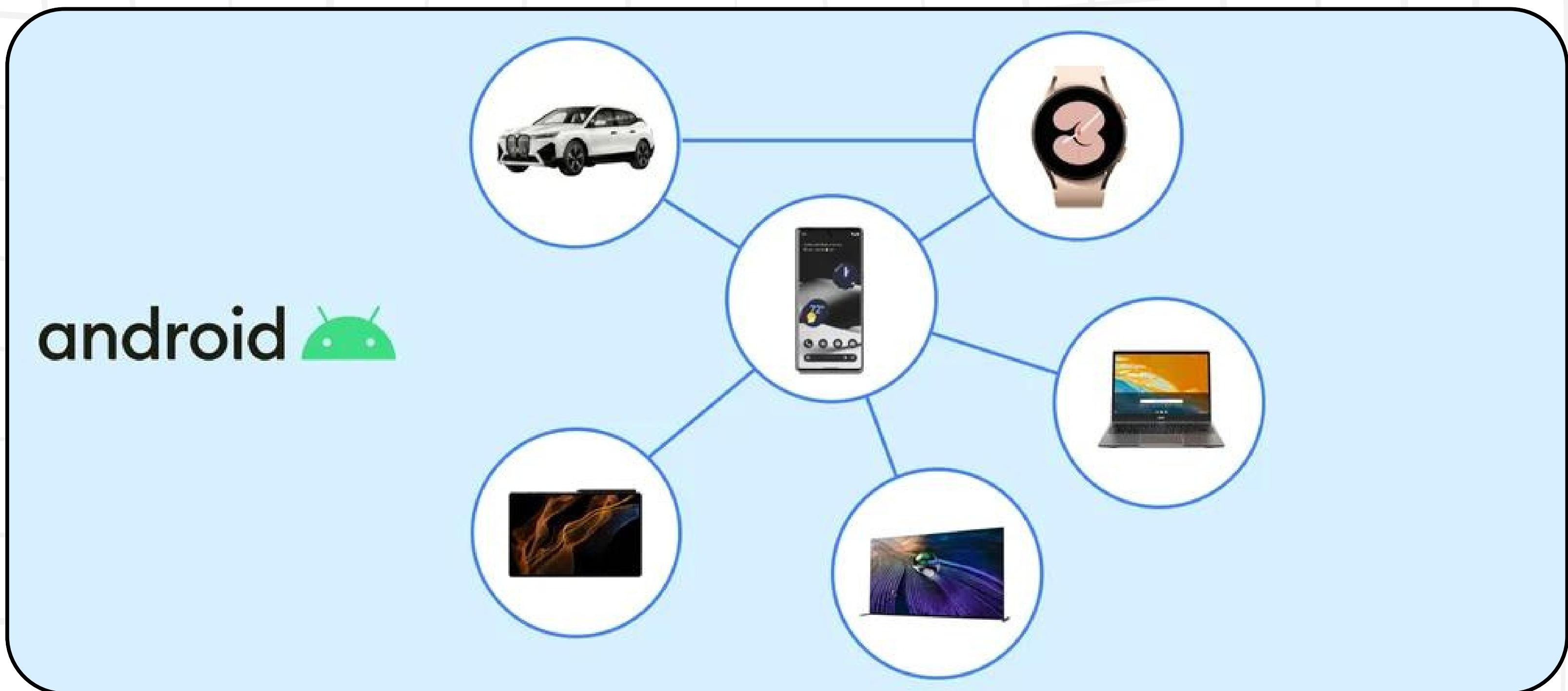
Android 13 Tiramisu



Android 14 Upside
Down Cake



WHAT IS ANDROID?





WHY FLUTTER?

F+L+U+T+T+E+R = 7

THALA FOR A REASON



WHY FLUTTER?

FOR KOTLIN YOU NEED JAVA AND
JAVA NEEDS TIME



SO WHY NOT VANILLA JAVA?
BECAUSE IT'S NOT A GOOGLE
TECHNOLOGY.

SOLUTION CHALLENGE ME KAM
NAHI AAAEGA.
FLUTTER IS BEGINNER-FRIENDLY.



WHY FLUTTER?



IT ALLOWS US TO
CREATE APPLICATIONS
FOR ANY PLATFORM
WITH ONE CODEBASE.
(CROSS PLATFORM)



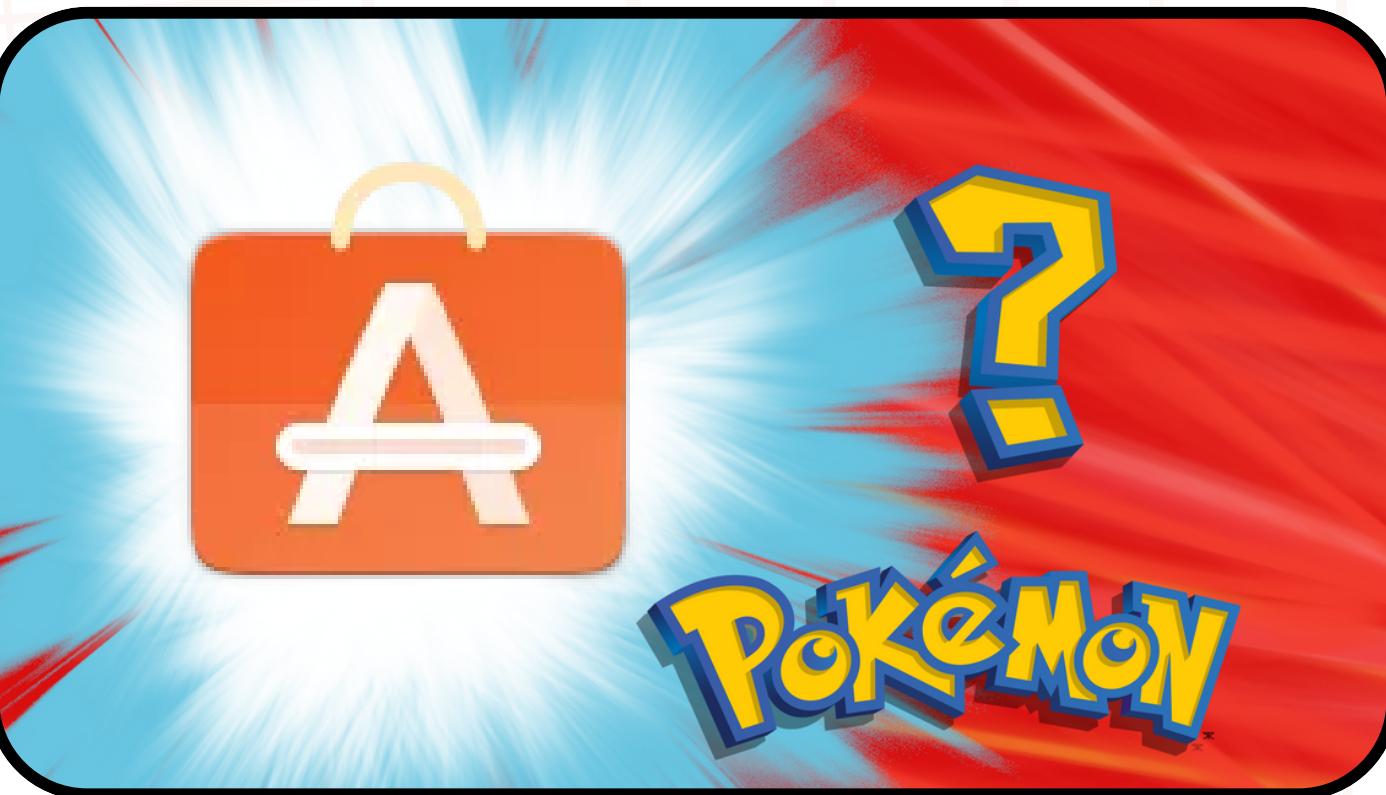
YOU CAN'T USE SAME
CODE FOR RUNNING ON
CHROME, DESKTOP, IOS
AND YOU MOBILE
PHONE.

ME: WHO IS A FLUTTER DEV





WHAT'S THAT APP?

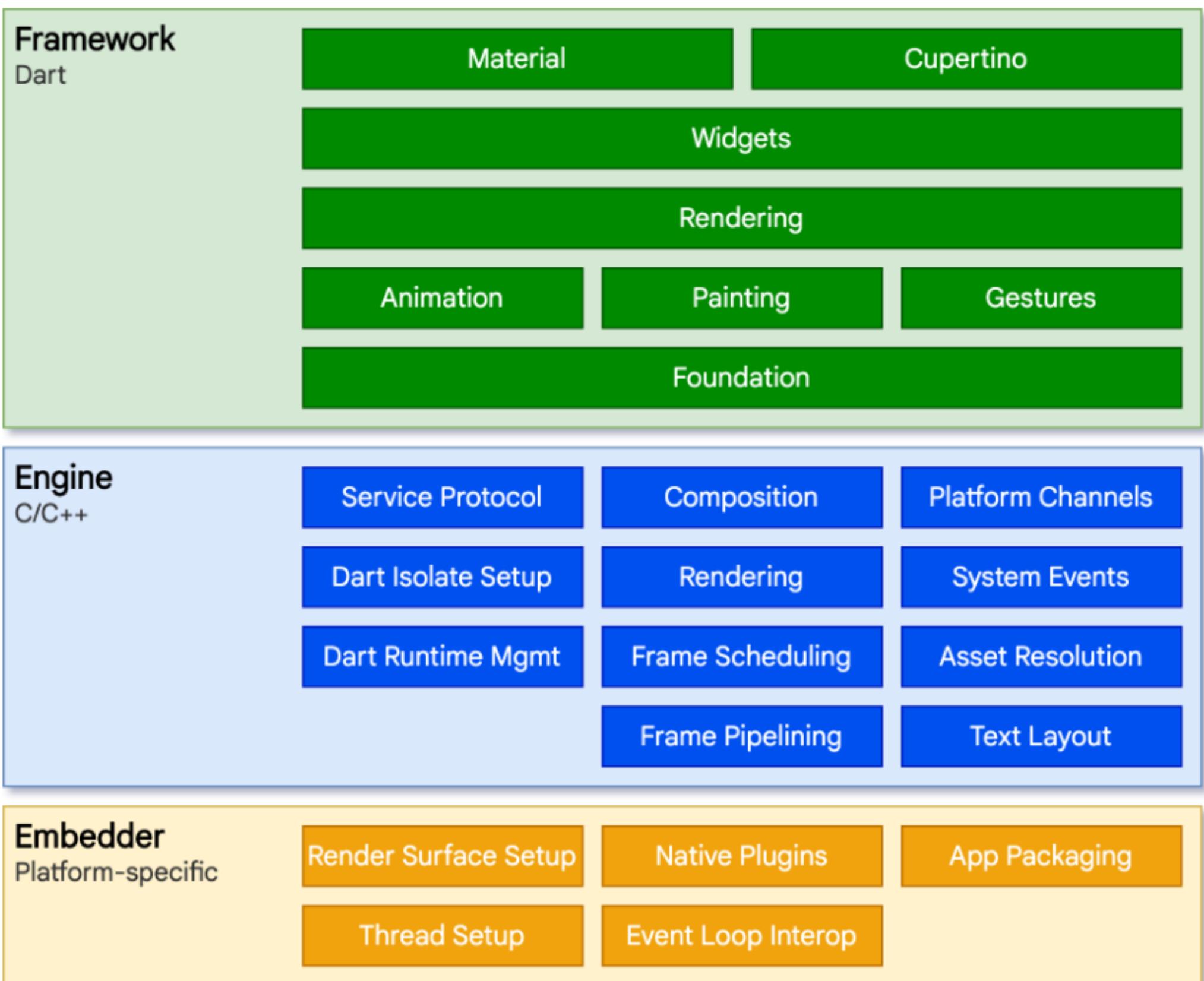




A BIT MORE DETAILS

PYTHON IS
WRITTEN IN C.

FLUTTER
FRAMEWORK
IS WRITTEN IN
DART.



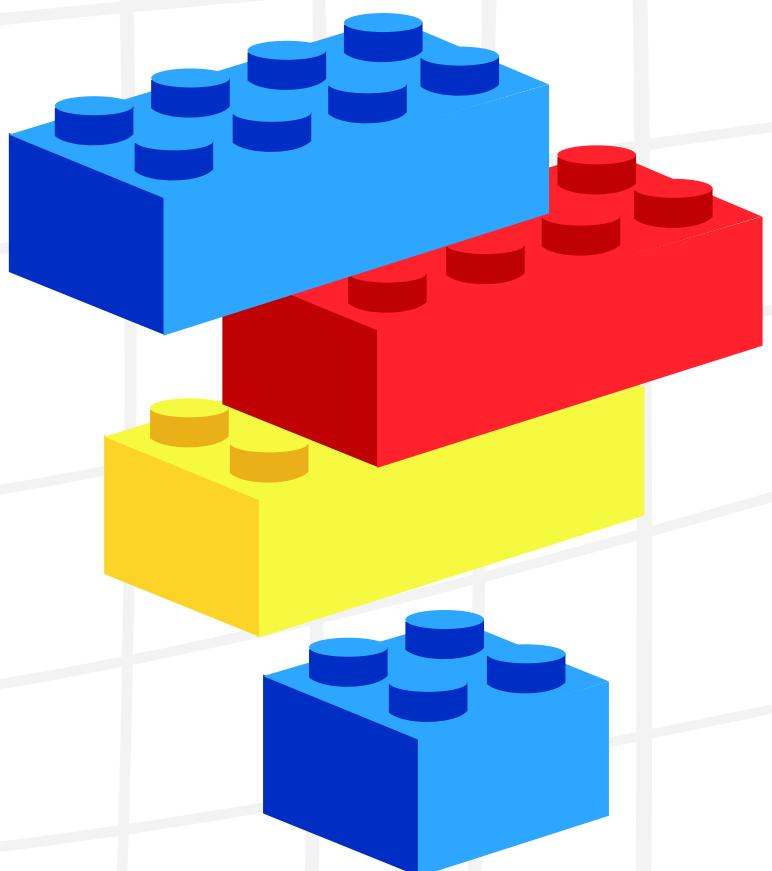


WIDGETS!



EVERYTHING IS WIDGET

EVERYTHING INSIDE
A FLUTTER APP IS A
WIDGET. AND YOU
BUILD WIDGETS
UPON WIDGETS JUST
LIKE LEGO BLOCKS
ON LEGO BLOCKS IN
ORDER TO CREATE
YOUR APP.





TYPES OF WIDGETS

Stateless Widget

WIDGET

Stateful Widget

WIDGET

VS.

STATE



STATELESS VS STATEFUL WIDGETS

WIDGET THAT DOES NOT REQUIRE A
MUTABLE STATE.

A STATELESS WIDGET IS A WIDGET
THAT DESCRIBES PART OF THE
USER INTERFACE BY BUILDING A
CONSTELLATION OF OTHER
WIDGETS THAT DESCRIBE THE USER
INTERFACE MORE CONCRETELY.

A WIDGET THAT HAS A MUTABLE
STATE.

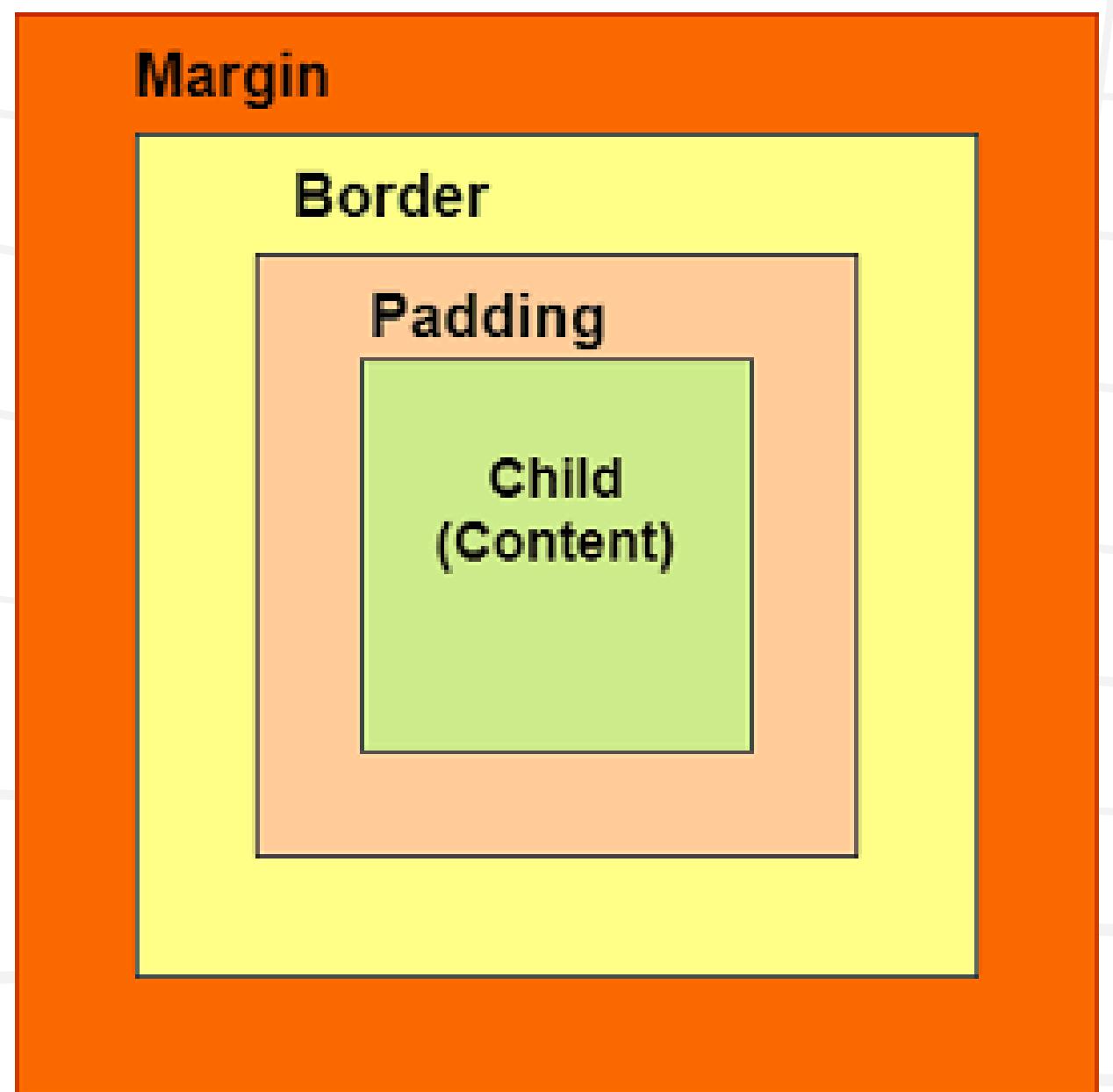
THE STATE IS INFORMATION THAT
CAN BE READ SYNCHRONOUSLY
WHEN THE WIDGET IS BUILT AND
MIGHT CHANGE DURING THE
LIFETIME OF THE WIDGET.



CONTAINER WIDGET

A CONTAINER IS A STATELESS WIDGET

Container



DEMO CODE:

```
CONTAINER(  
    MARGIN: CONST EDGEINSETS.ALL(10.0),  
    COLOR: COLORS.AMBER[600],  
    WIDTH: 48.0,  
    HEIGHT: 48.0,  
,
```



SCAFFOLD

APPBAR

CONTAINER

ICON
TEXT

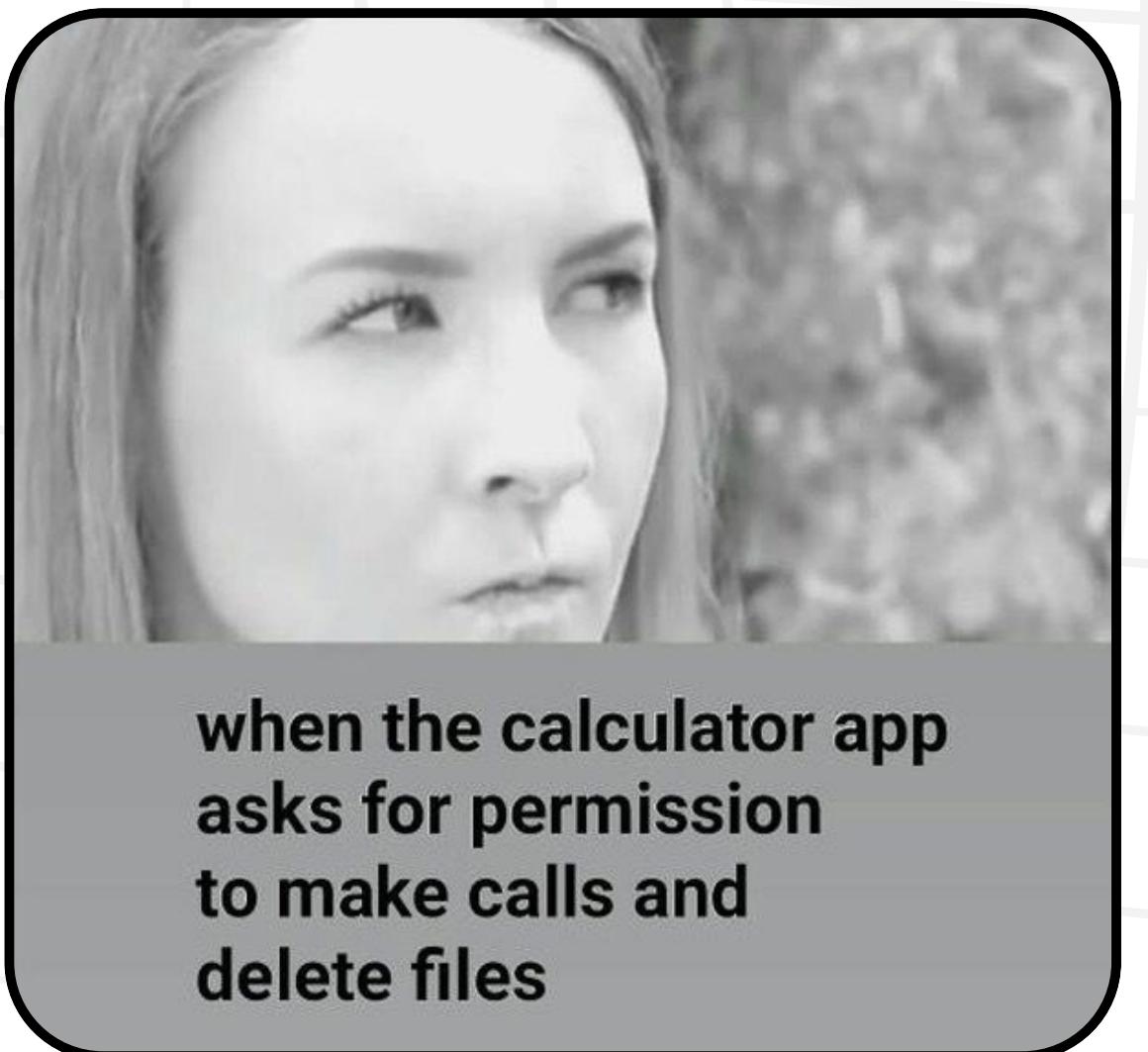
ICON

WIDGET TREE

A VISUAL REPRESENTATION OF
THE WHOLE APP OR SET OF
WIDGETS.



LET'S CREATE AN APP



MAKE SURE YOU HAVE
SUCCESSFULLY
INSTALLED FLUTTER.

TO TEST THIS OPEN CMD AND TYPE

flutter doctor





FLUTTER DOCTOR OUTPUT

```
PS C:\Users\vshub> flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[✓] Flutter (Channel stable, 3.16.9, on Microsoft Windows [Version 10.0.22621.3085], locale en-US)
[✓] Windows Version (Installed version of Windows is version 10 or higher)
[✓] Android toolchain - develop for Android devices (Android SDK version 34.0.0)
[✓] Chrome - develop for the web
[✗] Visual Studio - develop Windows apps
    ✗ Visual Studio not installed; this is necessary to develop Windows apps.
        Download at https://visualstudio.microsoft.com/downloads/.
        Please install the "Desktop development with C++" workload, including all of its default components
[✓] Android Studio (version 2022.2)
[✓] VS Code (version 1.86.0)
[✓] Connected device (3 available)
[✓] Network resources
```

VISUAL STUDIO AND ANDROID STUDIO IS NOT NECESSARY TO INSTALL.

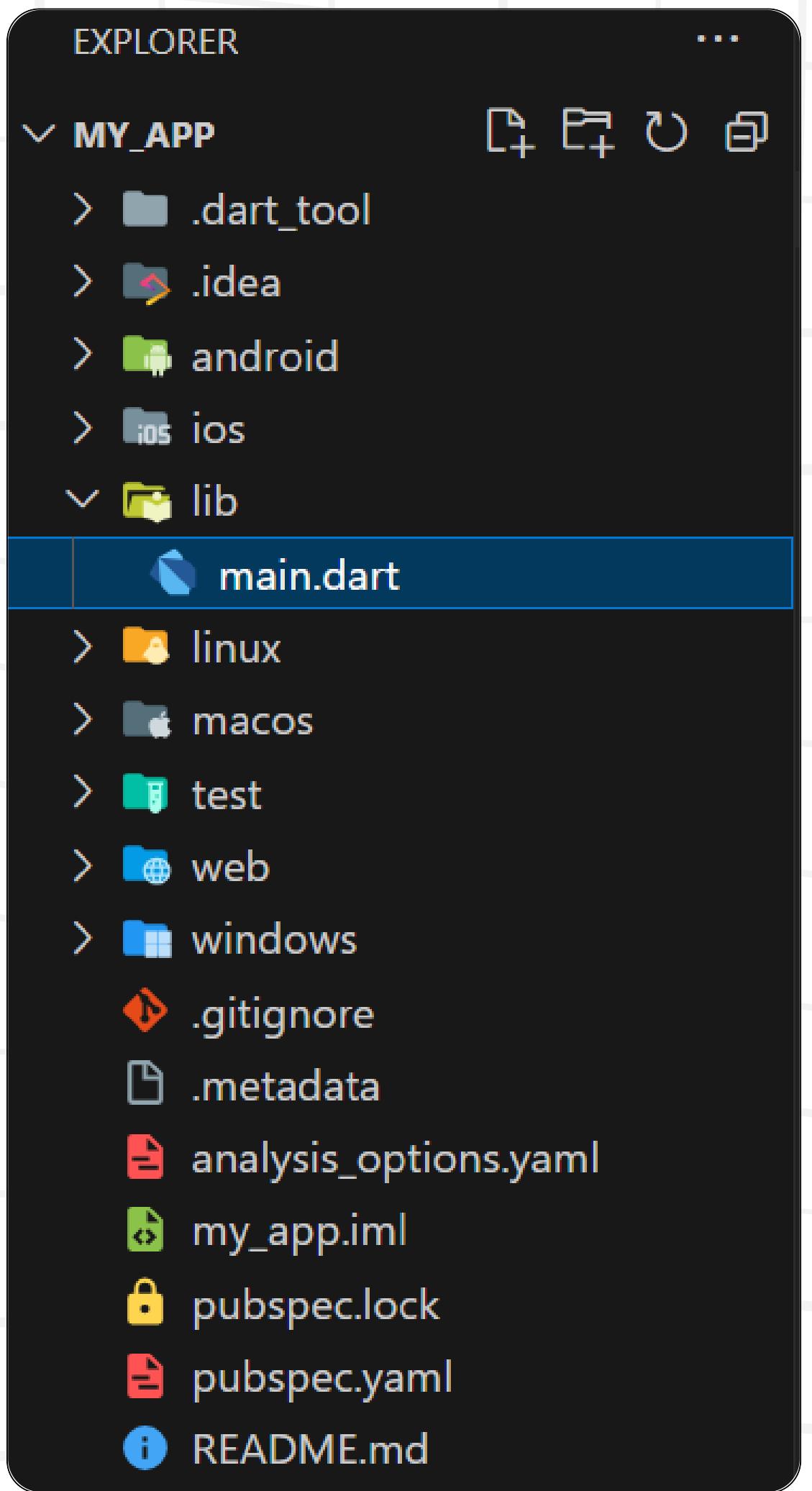


FEW MORE COMMANDS

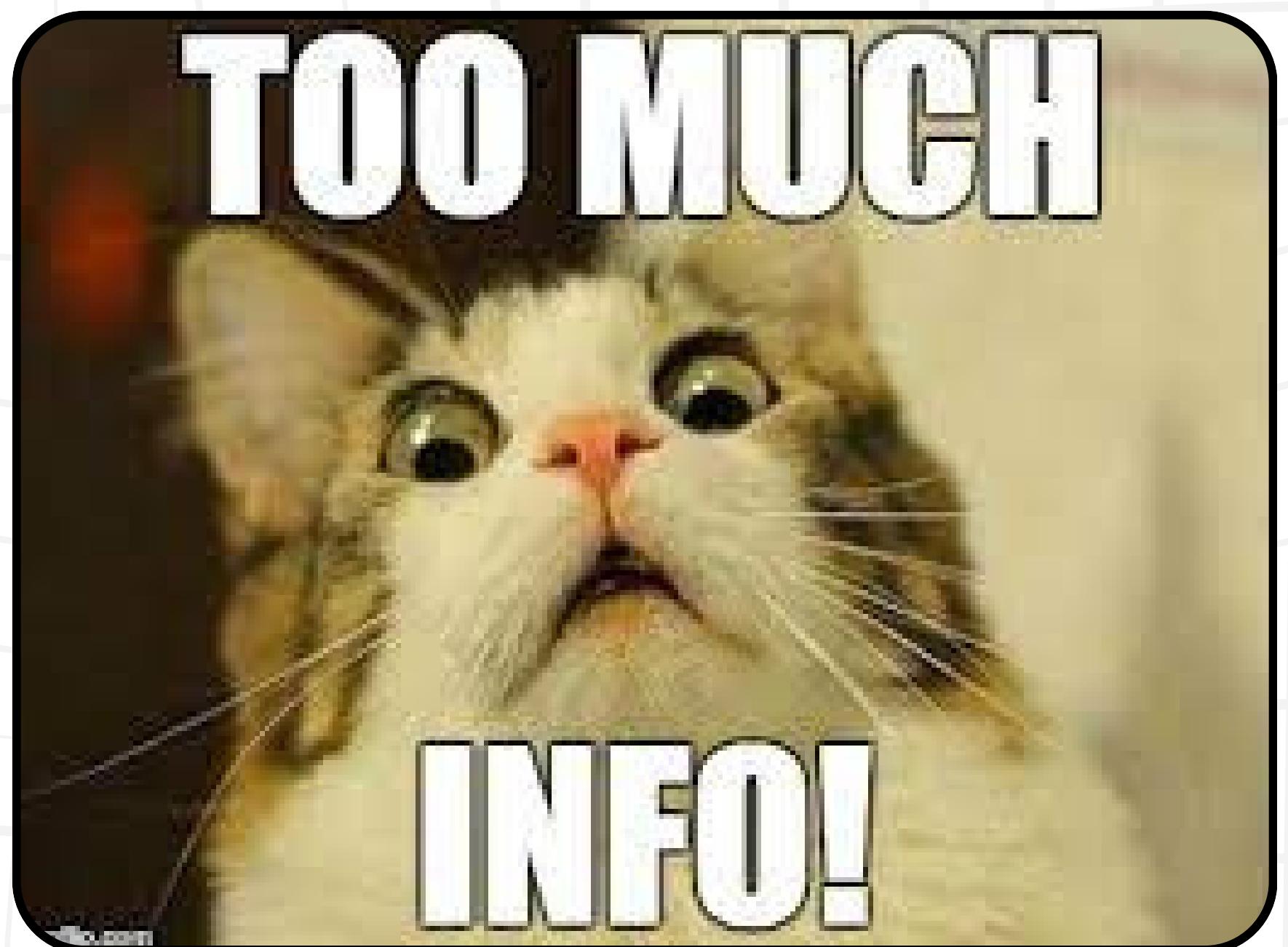
TO CREATE NEW APP : `flutter create my_app`

TO OPEN IT ON VS CODE : `code my_app`

THIS SHOULD OPEN YOUR PROJECT IN A VS CODE WINDOW



FLUTTER FILE STRUCTURE





RUNNING FLUTTER APP

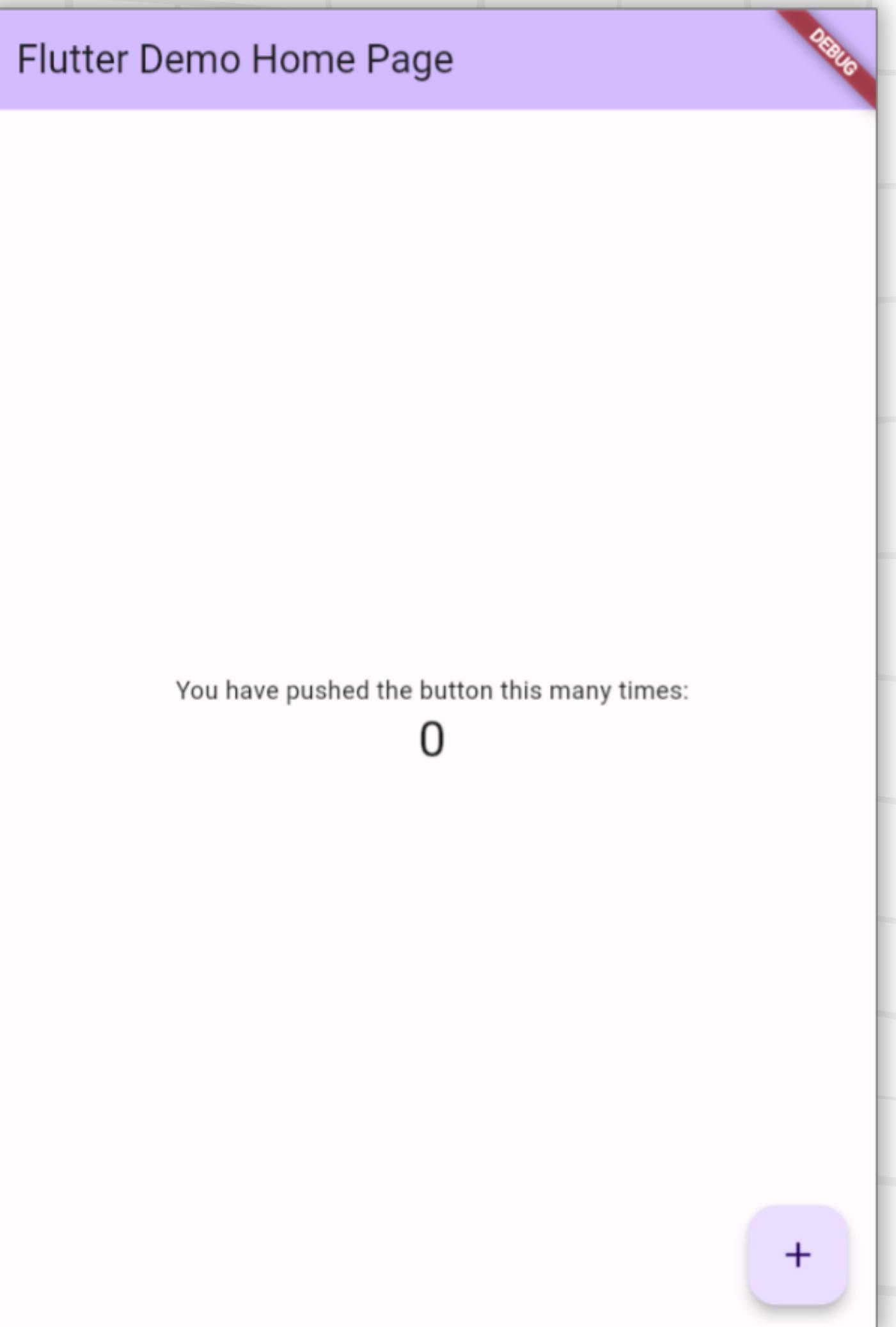
OPEN TERMINAL IN VS CODE:

CTRL+J

TO RUN FLUTTER APP:

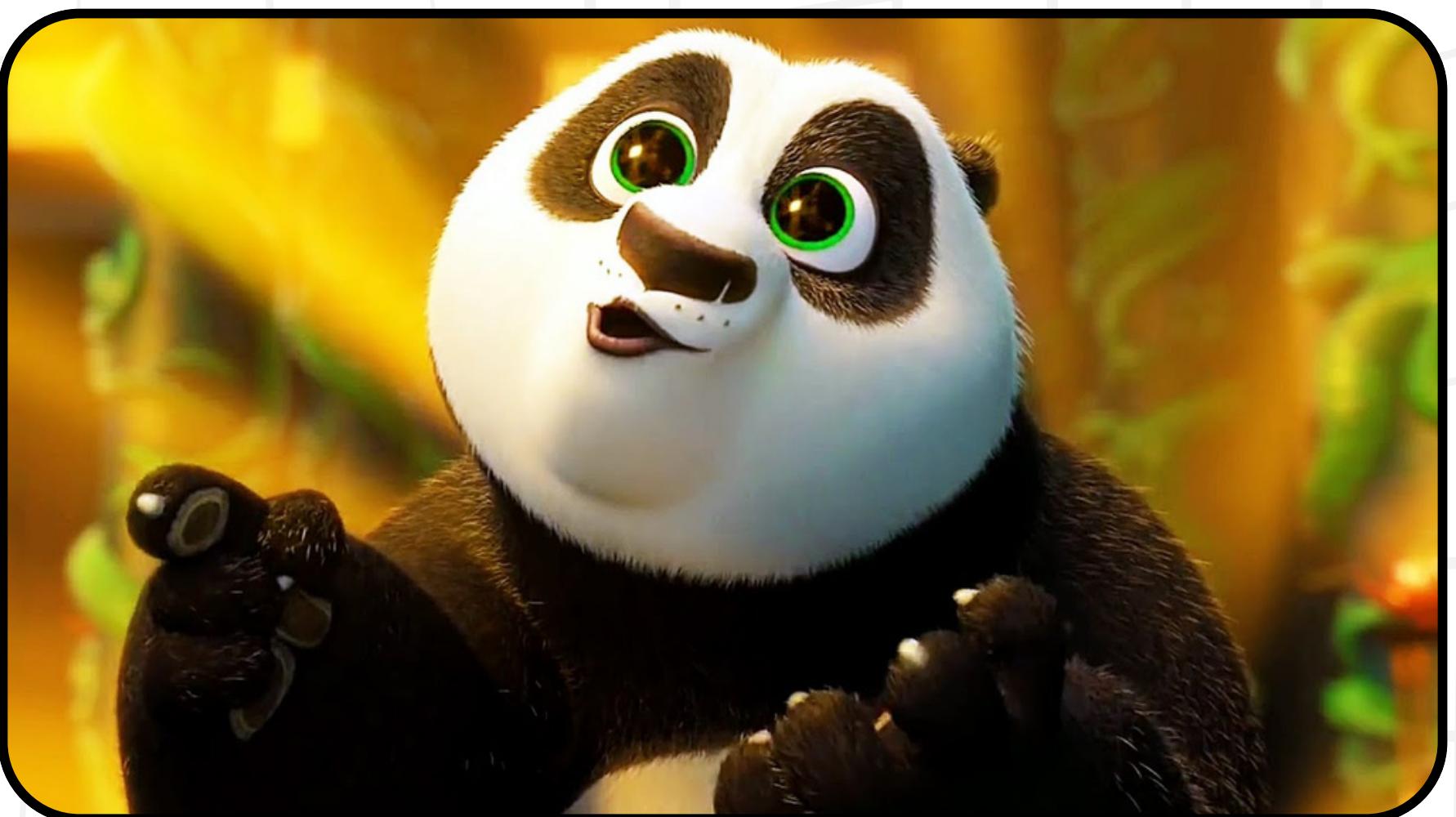
flutter run

TO RUN ON CROME: Press 2 (open in chrome)



FLUTTER APP

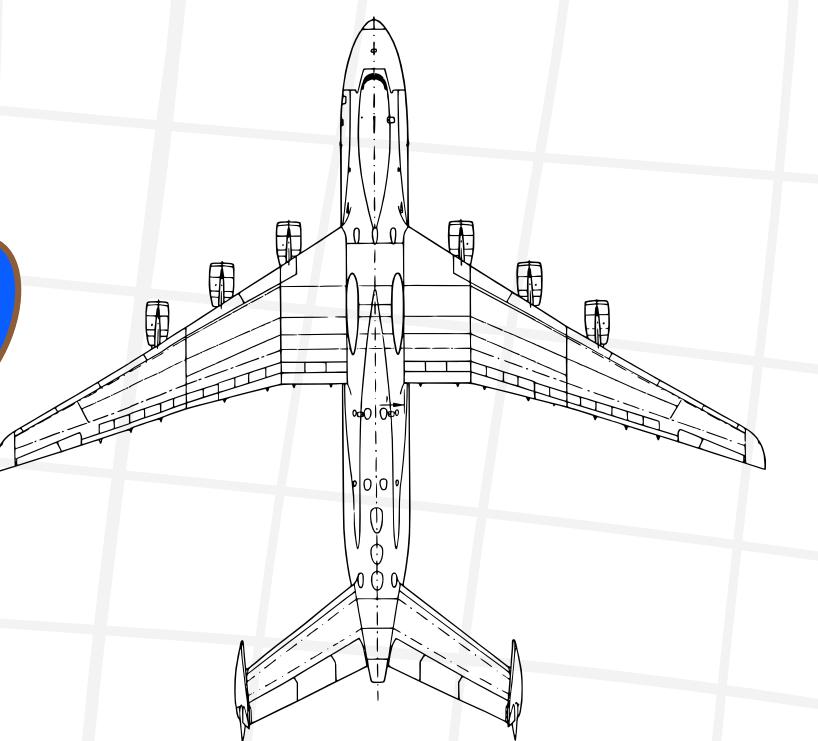
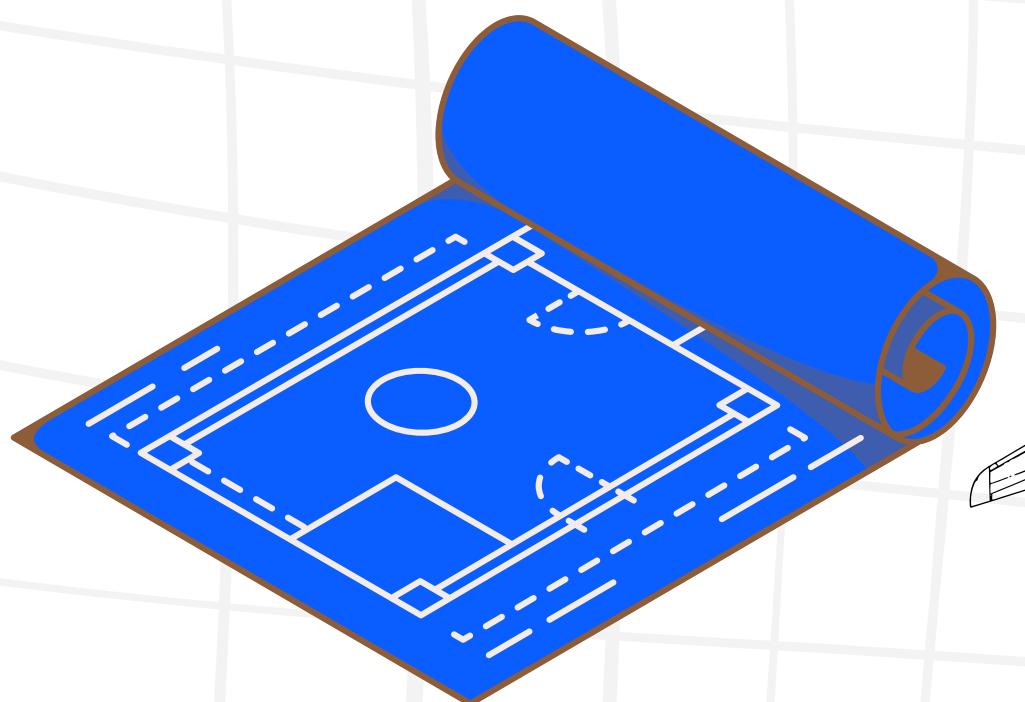
YOU SHOULD NOW SEE
THE FOLLOWING SCREEN
ON CHROME



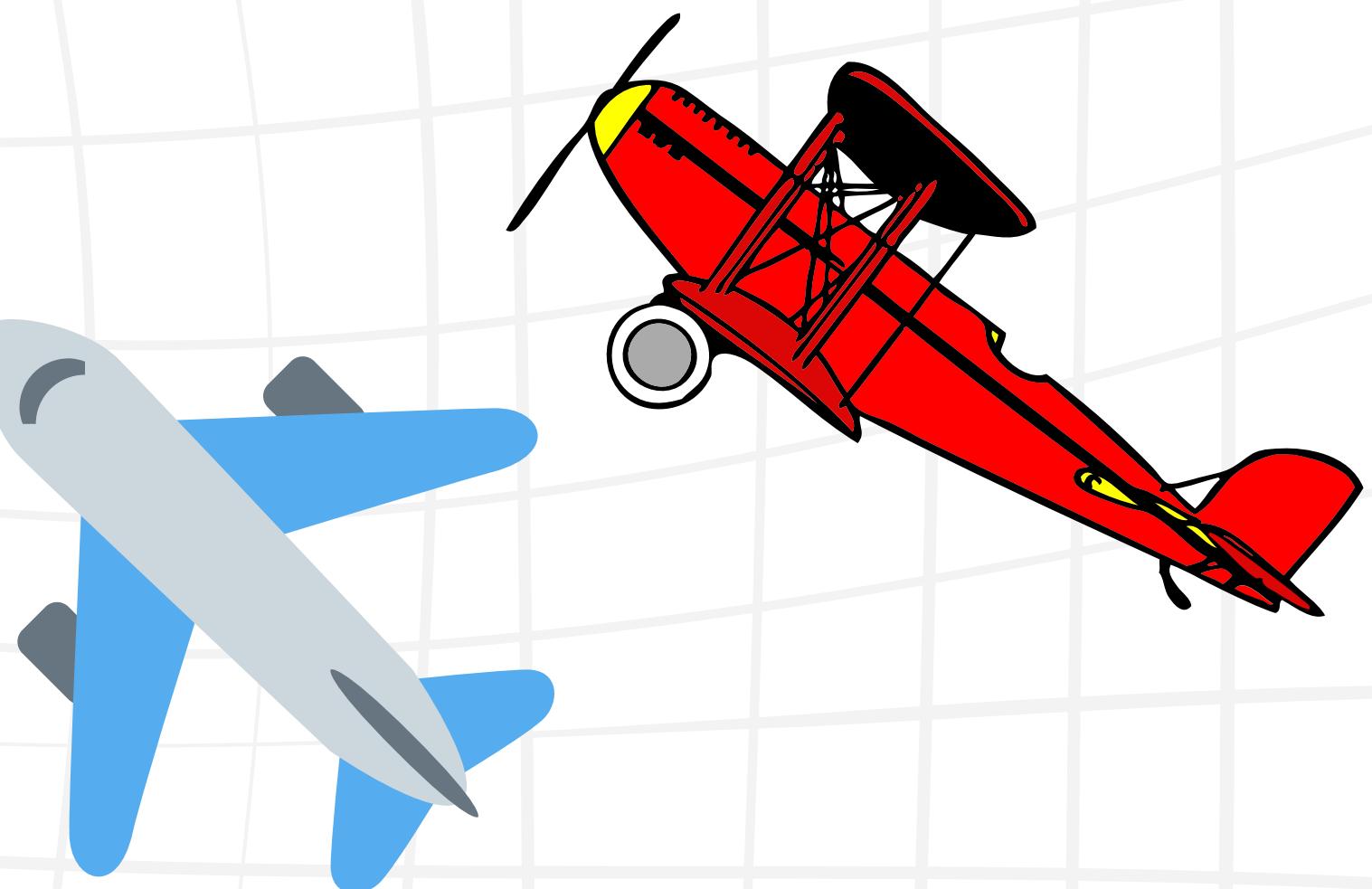


CLASS VS OBJECT

CLASS IS JUST A BLUEPRINT



OBJECT IS THE REAL THING



Contains general
information



Flutter Demo Home Page

DEBUG

MATERIALAPP IS A WIDGET THAT IMPLEMENTS THE BASIC MATERIAL DESIGN VISUAL LAYOUT STRUCTURE. THE MATERIALAPP WIDGET PROVIDES A WRAPPER AROUND OTHER MATERIAL WIDGETS. WE CAN ACCESS ALL THE OTHER COMPONENTS AND WIDGETS PROVIDED BY FLUTTER SDK.

+

UNDERSTANDING MATERIAL APP



EXPLORE THE BEAUTY OF MATERIAL UI 3.0



UNDERSTANDING CONTAINERS

THE **CONTAINER** WIDGET IS A VERSATILE AND COMMONLY USED ELEMENT FOR CREATING VISUAL BOXES OR CONTAINERS THAT CAN CONTAIN OTHER WIDGETS. IT ALLOWS YOU TO CUSTOMIZE THE APPEARANCE AND LAYOUT OF ITS CHILD WIDGETS, INCLUDING PROPERTIES LIKE PADDING, MARGIN, DECORATION, AND CONSTRAINTS.



UNDERSTANDING COLUMN

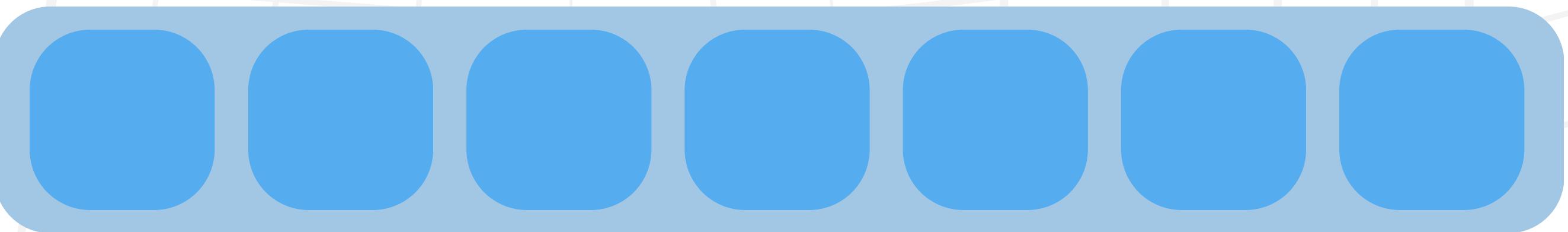


A **COLUMN** WIDGET
ALLOWS YOU TO
ARRANGE CONTENT
VERTICALLY IN A
STRUCTURED
MANNER, OFTEN
FACILITATING THE
CREATION OF
MULTI-COLUMN
LAYOUTS



UNDERSTANDING ROW

A **ROW** IS A WIDGET USED TO CREATE A HORIZONTAL ARRANGEMENT OF CHILD WIDGETS. IT ALLOWS YOU TO ORGANIZE UI ELEMENTS IN A ROW, FROM LEFT TO RIGHT





UNDERSTANDING SCAFFOLD

APPBAR

BODY:

SCAFFOLD WIDGET IS A BASIC STRUCTURE THAT PROVIDES A VISUAL FRAMEWORK FOR IMPLEMENTING THE BASIC MATERIAL DESIGN LAYOUT STRUCTURE. IT SERVES AS THE TOP-LEVEL CONTAINER FOR A FLUTTER APPLICATION AND PROVIDES A CONSISTENT VISUAL STRUCTURE, INCLUDING ELEMENTS LIKE AN APP BAR, A BODY, AND A FLOATING ACTION BUTTON.

FLOATING
ACTION
BUTTON



UNDERSTANDING GESTURES

GESTURES SUCH AS TAP ARE USED TO INTERACT WITH AN APPLICATION. IT IS GENERALLY USED IN TOUCH-BASED DEVICES TO PHYSICALLY INTERACT WITH THE APPLICATION.



ON TAP

THE GESTUREDETECTOR WIDGET IN FLUTTER IS USED TO DETECT PHYSICAL INTERACTION WITH THE APPLICATION ON THE UI



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FOLLOW US ON INSTAGRAM



CONNECT WITH US ON LINKEDIN



ADD OUR GITHUB REPO TO YOUR FAVOURITES

THANK YOU