LeanCode

Flutter intro / Layouting 1

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Introduction

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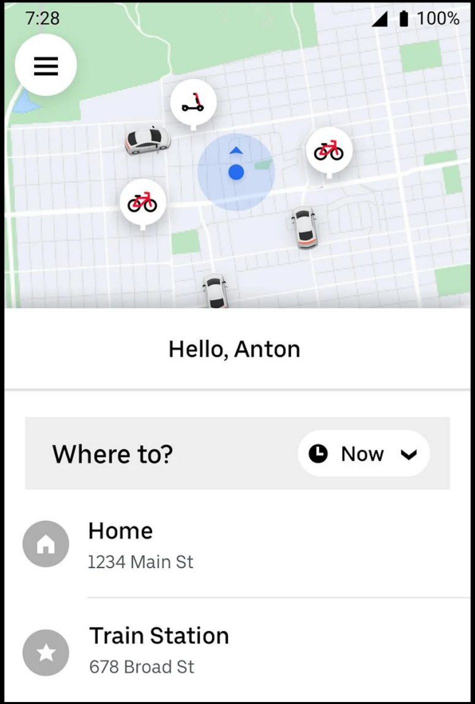
Choose your destination



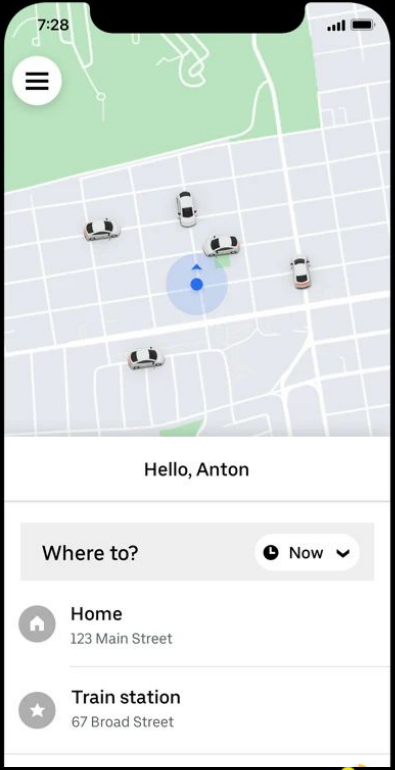
Hello, Anton

Where to? Now

Home
1234 Main St

Train Station
678 Broad St

Choose your destination



Hello, Anton

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Home
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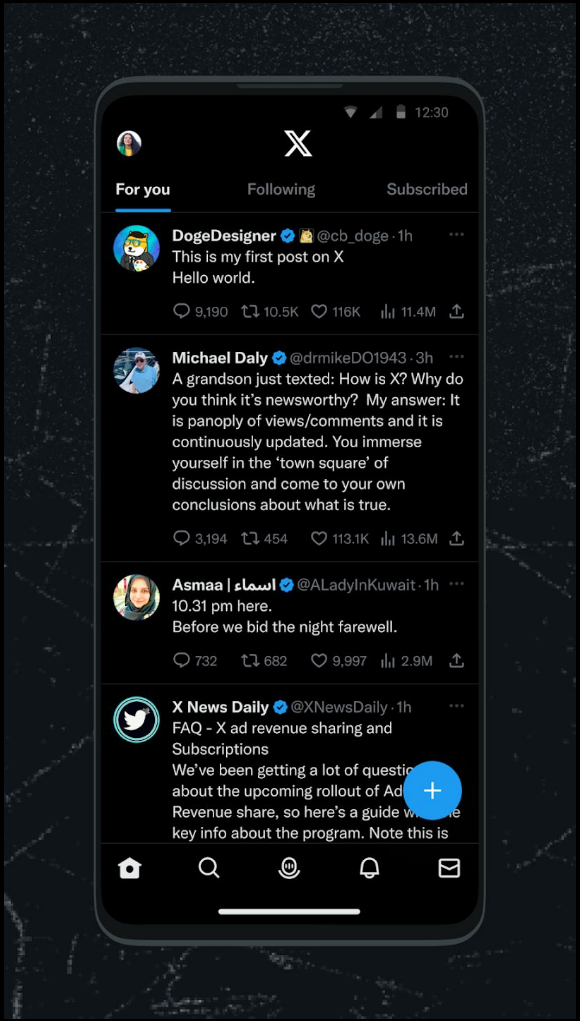

12:30

X

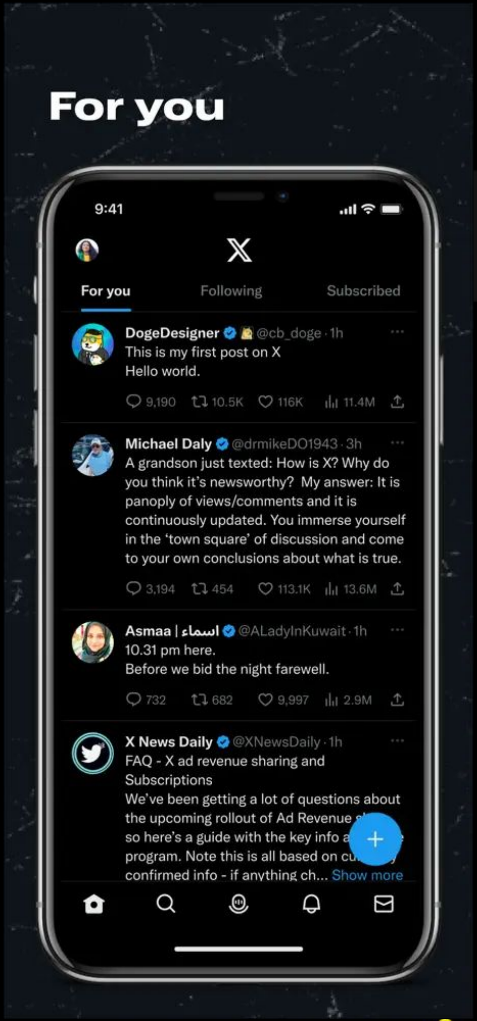
For you Following Subscribed

DogeDesigner @cb_doge · 1h
This is my first post on X
Hello world.
9,190 10.5K 116K 11.4M

Michael Daly @drmikeDO1943 · 3h
A grandson just texted: How is X? Why do you think it's newsworthy? My answer: It is panoply of views/comments and it is continuously updated. You immerse yourself in the 'town square' of discussion and come to your own conclusions about what is true.
3,194 454 113.1K 13.6M

Asmaa | اسماء @ALadyInKuwait · 1h
10.31 pm here.
Before we bid the night farewell.
732 682 9,997 2.9M

X News Daily @XNewsDaily · 1h
FAQ - X ad revenue sharing and Subscriptions
We've been getting a lot of questio… about the upcoming rollout of Ad… Revenue share, so here's a guide w… key info about the program. Note this is


For you

9:41

X

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Design systems are platform-independent

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Two separate dev teams

...and separate bugs, release cycles, deployments

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It costs a lot

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Xamarin

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APACHE CORDOVA™

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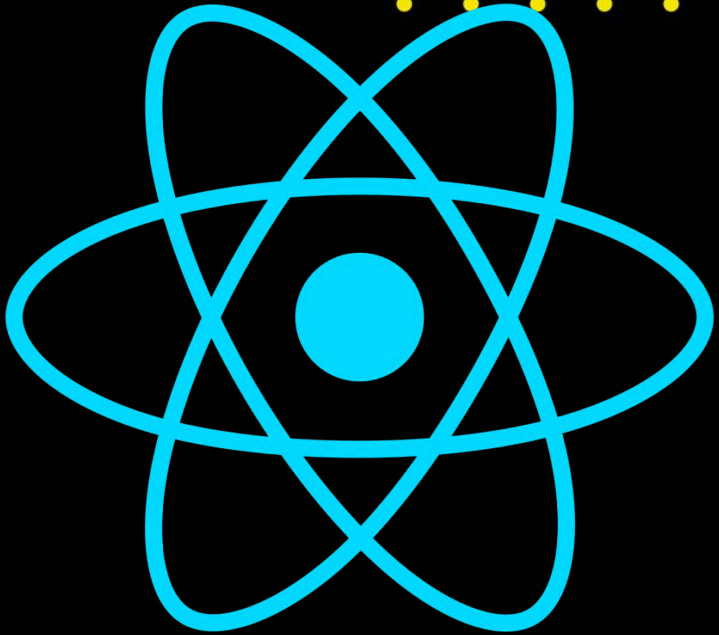
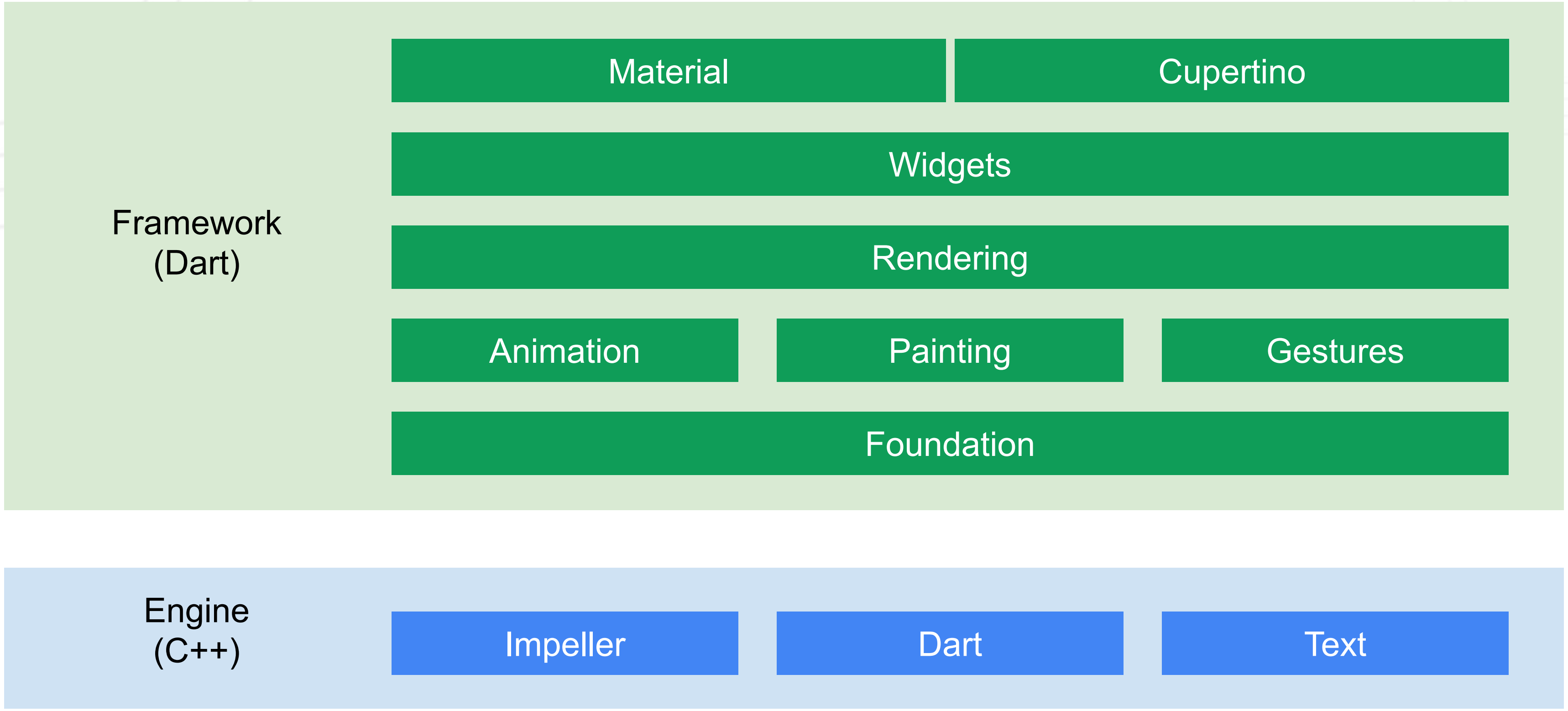
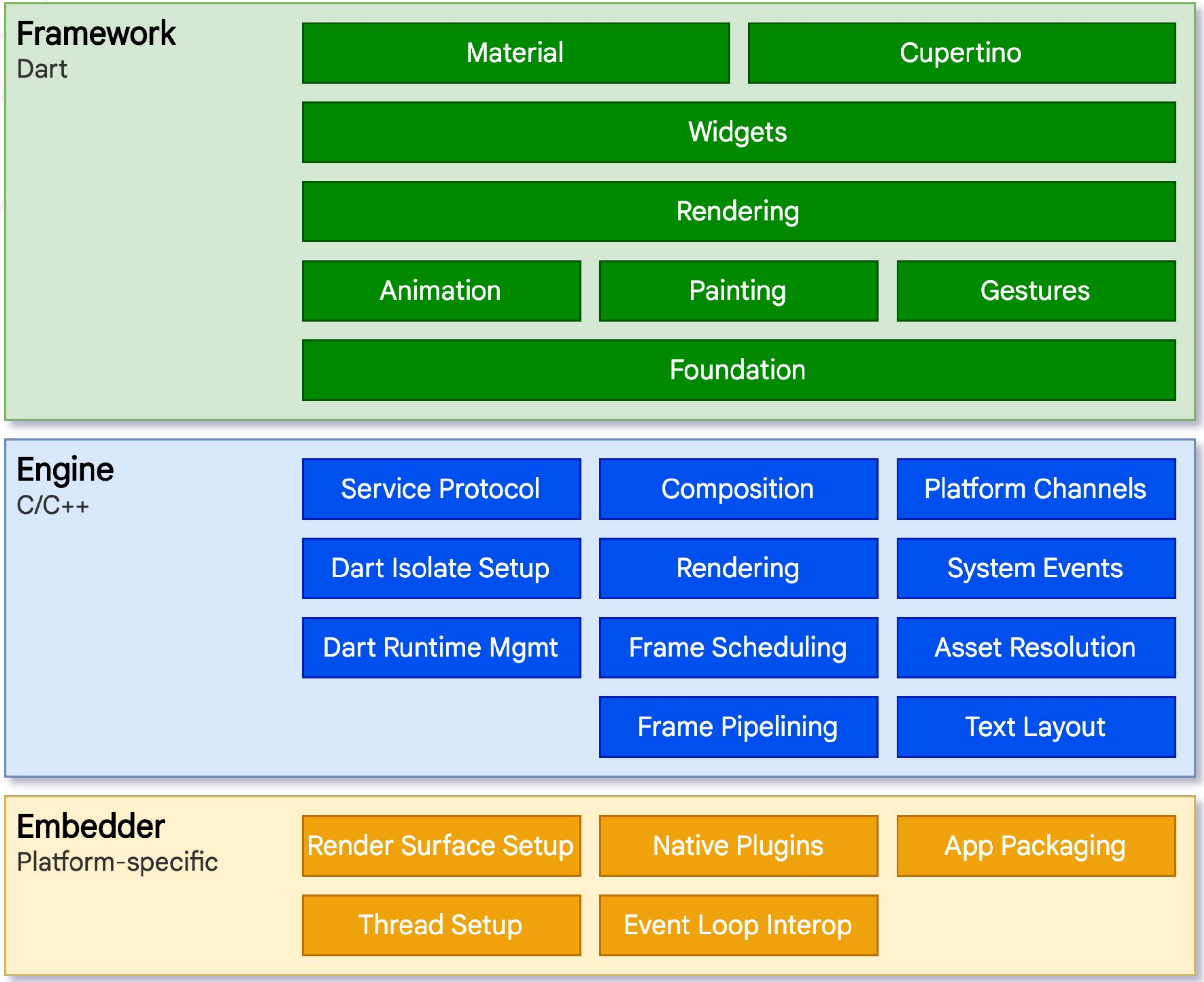
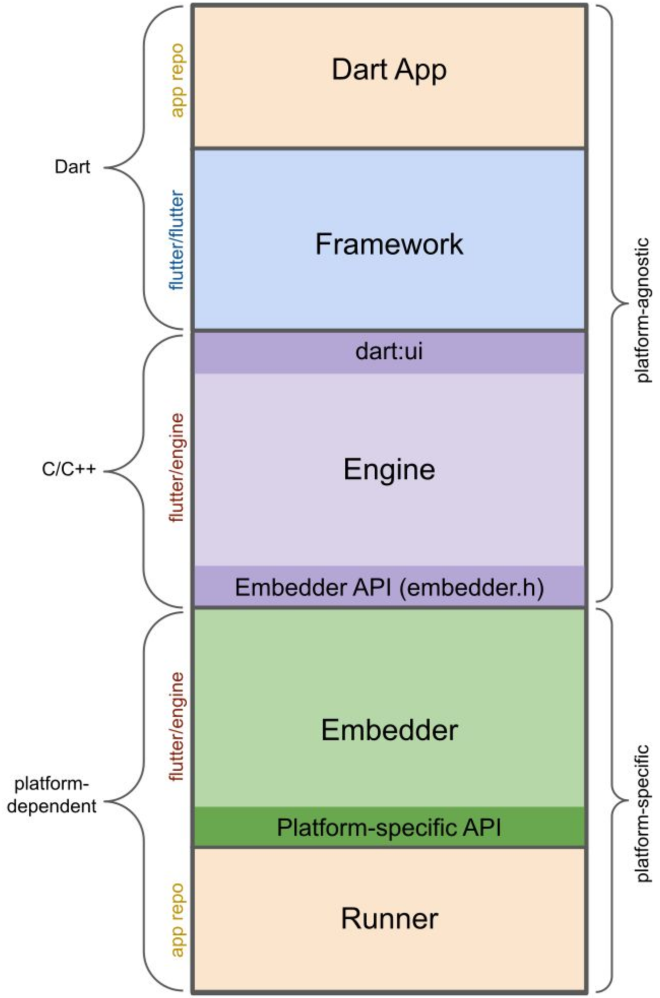


React Native

Flutter


Framework
(Dart)
Material
Cupertino
Widgets
Rendering
Animation
Painting
Gestures
Foundation
Engine
(C++)
Impeller
Dart
Text


Framework
Dart
Material
Cupertino
Widgets
Rendering
Animation
Painting
Gestures
Foundation
Engine
C/C++
Service Protocol
Composition
Platform Channels
Dart Isolate Setup
Rendering
System Events
Dart Runtime Mgmt
Frame Scheduling
Asset Resolution
Frame Pipelining
Text Layout
Embedder
Platform-specific
Render Surface Setup
Native Plugins
App Packaging
Thread Setup
Event Loop Interop


Dart
C/C++
platform-dependent
app repo
flutter/flutter
flutter/engine
flutter/engine
app repo
Dart App
Framework
dart:ui
Engine
Embedder API (embedder.h)
Embedder
Platform-specific API
Runner
platform-agnostic
platform-specific

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Skia is an open source 2D graphics library which provides common APIs that work across a variety of hardware and software platforms. It serves as the graphics engine for Google Chrome and Chrome OS, Android, Flutter, Mozilla Firefox and Firefox OS, and many other products.

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Now there’s also Impeller - the new default

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Flutter == multi-platform UI toolkit

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(Almost) everything is a widget

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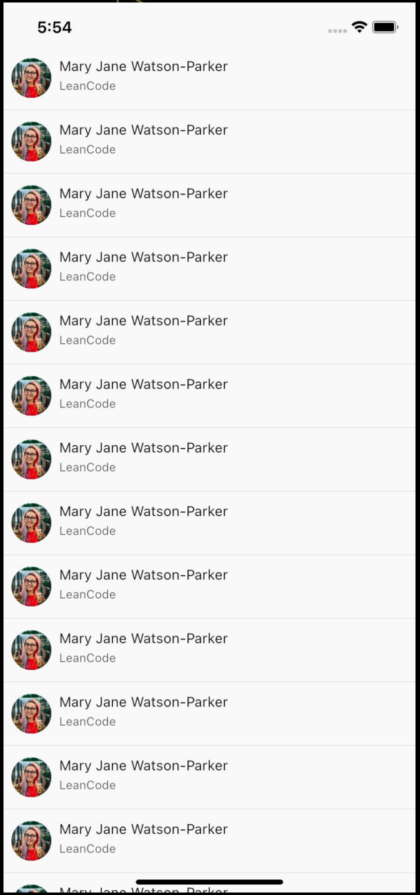
Widget in a widget


5:54

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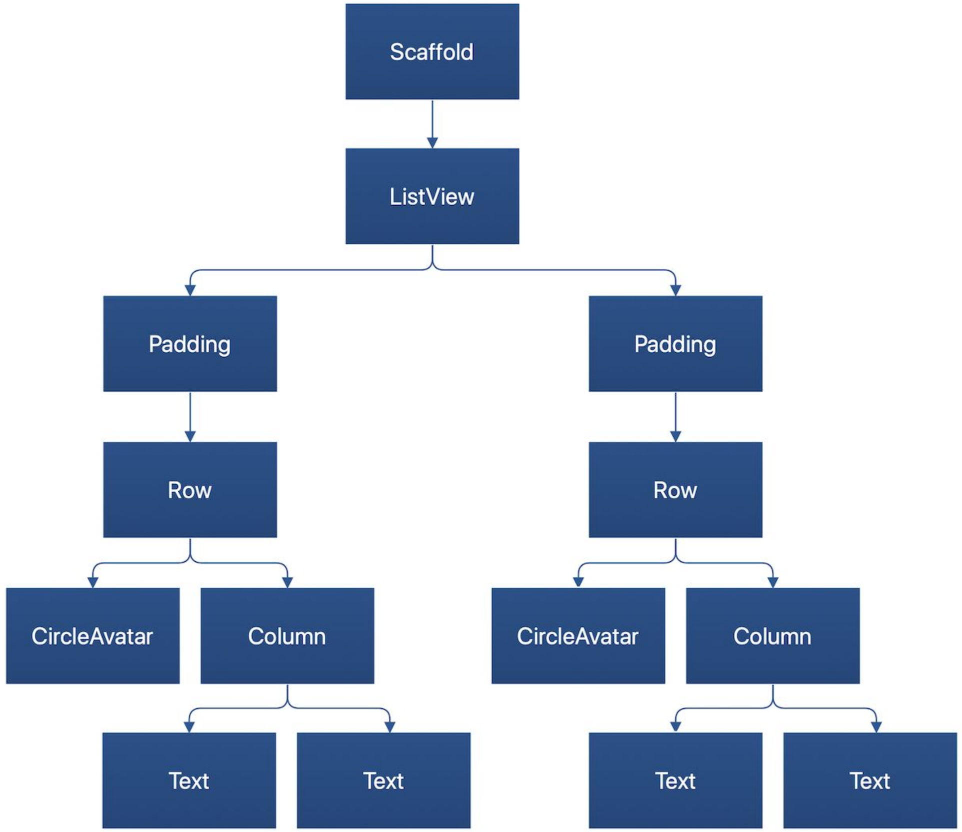
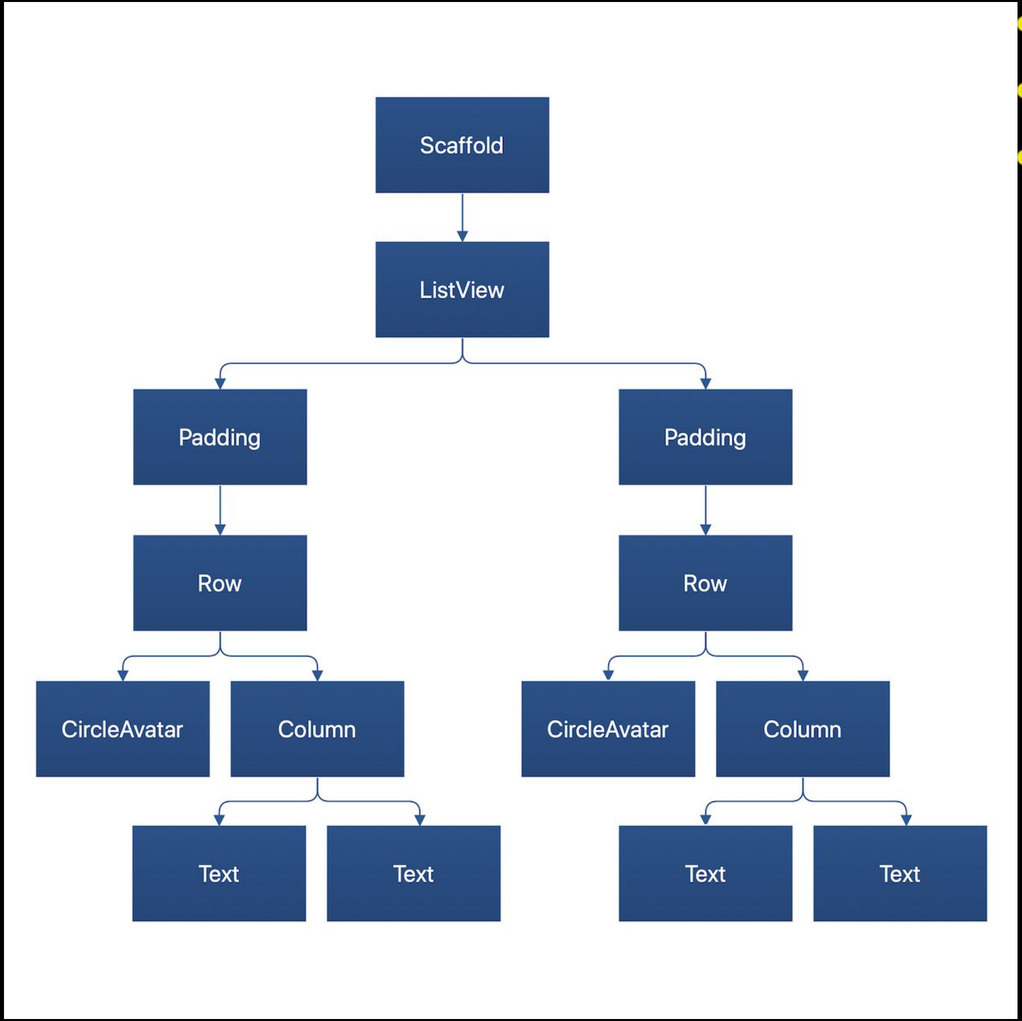

Scaffold
ListView
Padding
Padding
Row
Row
CircleAvatar
Column
CircleAvatar
Column
Text
Text
Text
Text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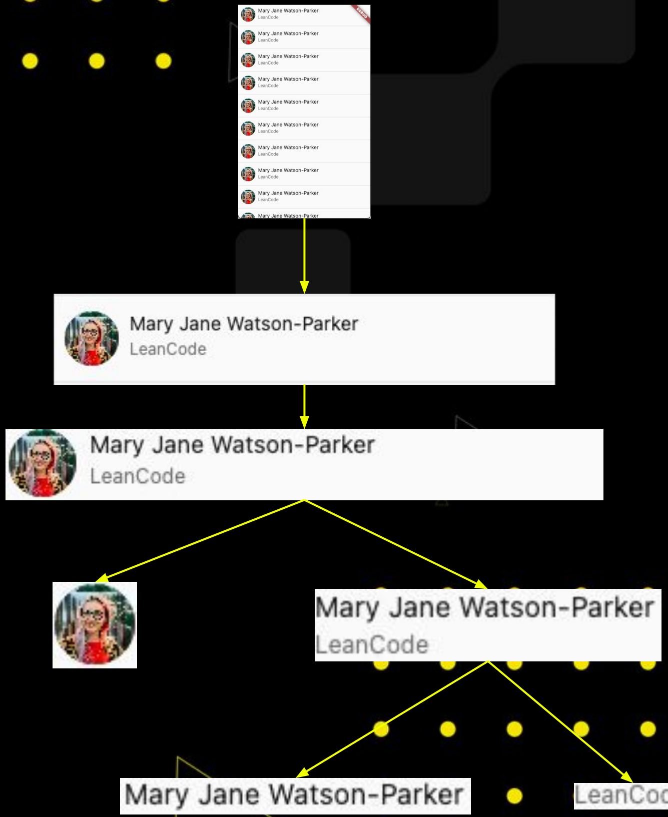
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Flutter Desktop

macOS + Windows + Linux

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Flutter Web

Now using **WebAssembly**

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Flutter Embedded

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What is Declarative UI?

Imperative UI

Windows Forms / Android / iOS / GTK

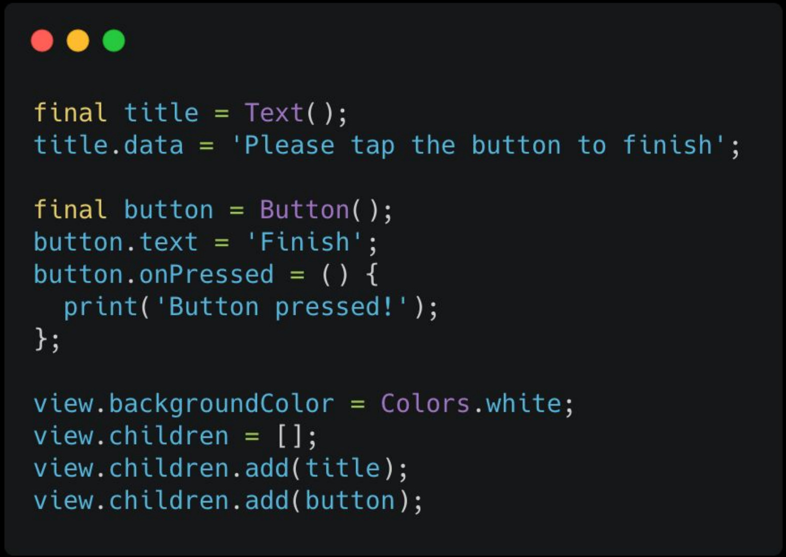
Add callback which on change does:

- Set color
- Remove child
- Add child
- Set position

Declarative UI

React / Flutter / Jetpack Compose / SwiftUI

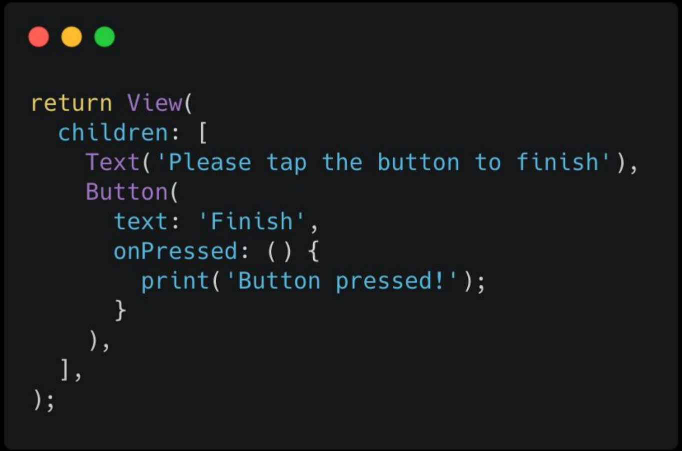
For this state return a View with red background color and children consisting of a text message and a button.



```
final title = Text();
title.data = 'Please tap the button to finish';

final button = Button();
button.text = 'Finish';
button.onPressed = () {
  print('Button pressed!');
};

view.backgroundColor = Colors.white;
view.children = [];
view.children.add(title);
view.children.add(button);
```



```
return View(
  children: [
    Text('Please tap the button to finish'),
    Button(
      text: 'Finish',
      onPressed: () {
        print('Button pressed!');
      }
    ),
  ],
);
```

Let’s make some Hello World!

We build digital products.

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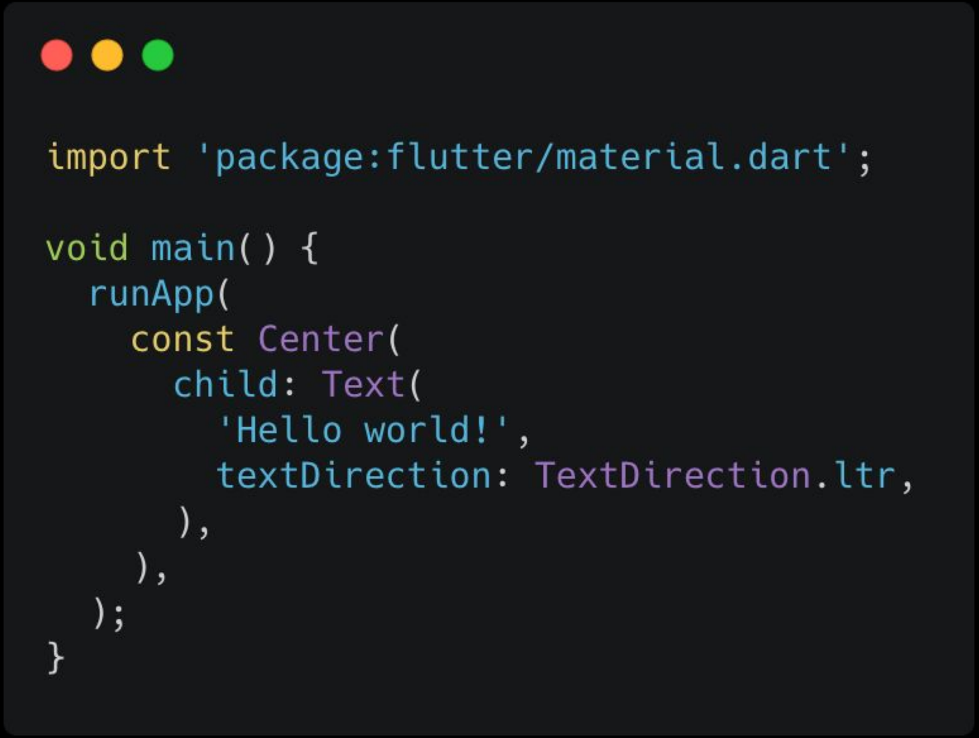
LeanCoc



```
import 'package:flutter/material.dart';

void main() {
  runApp(
    const Center(
      child: Text(
        'Hello world!',
        textDirection: TextDirection.ltr,
      ),
    ),
  );
}
```

Constraints go down. Sizes go up. Parent sets position.

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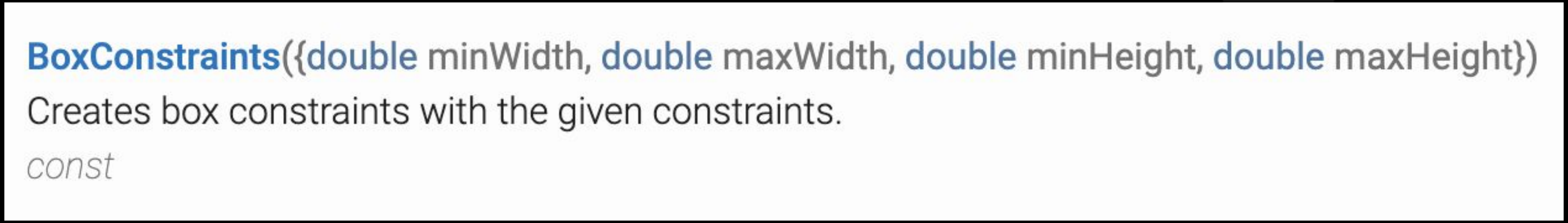

BoxConstraints({double minWidth, double maxWidth, double minHeight, double maxHeight})
Creates box constraints with the given constraints.
const

Layout algorithm

1. Widget gets constraints from its parent
2. For every child, it requests its size within given constraints (could be different from the first constraints)
3. Knowing children sizes, now the widget positions every of them
4. Knowing children sizes and positions, now the widget can pass its own size to its parent

Show me the code

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Thanks!

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