



Introduction to Cross Platform Development with Flutter

Instructor

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Full Stack Developer

Swimming
Cat Lover



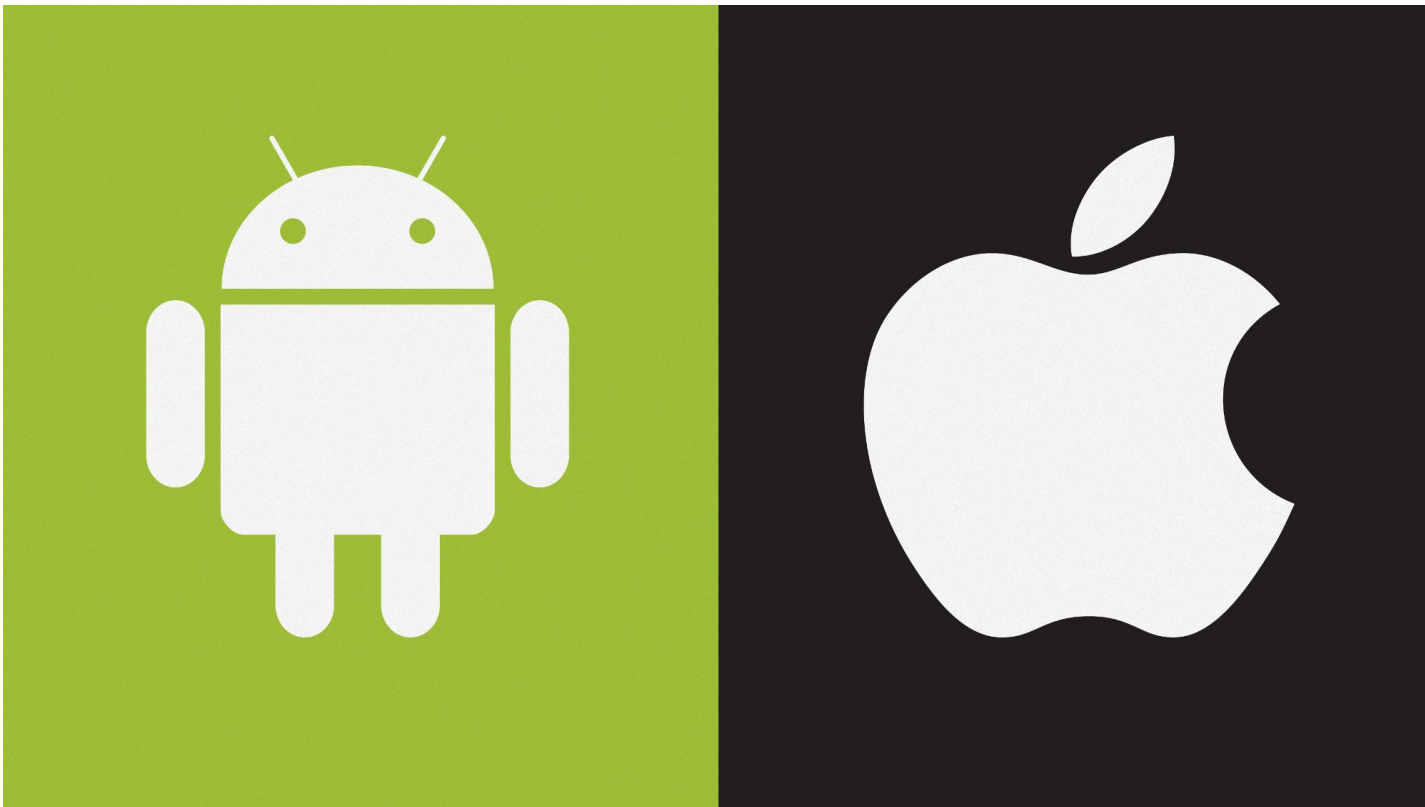
Course Objective

- Installing Flutter SDK
- Flutter's Development Tools (IDE, Simulator)
- Introduction to Dart Programming
- Basic Widget
- Layout
- Navigation
- State Management (SetState)

Chapter 1: Introduction to Flutter



Mobile



Proverb - สุภาษิต

“ยิงปืนนัดเดียวได้นกสองตัว”

เขียน Flutter ได้ สามารถสร้าง Product รันได้มากถึง 3 Platform*



Beautiful

Productive



Flutter

Fast

Open

Beautiful

No compromises for
your designers

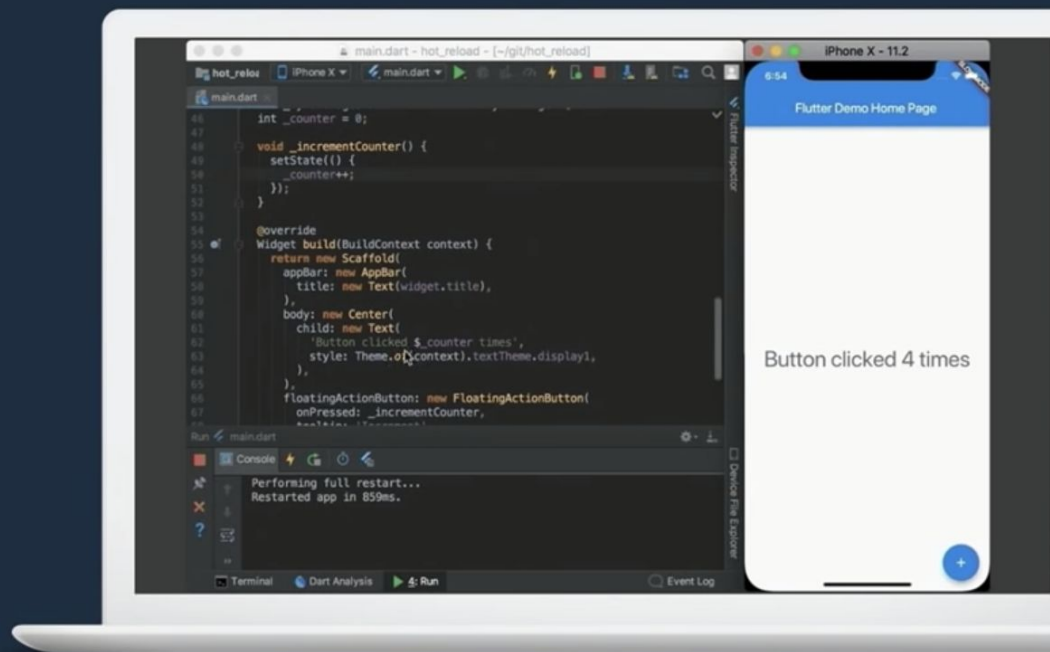


Fast

Take the speed limiter
off your app

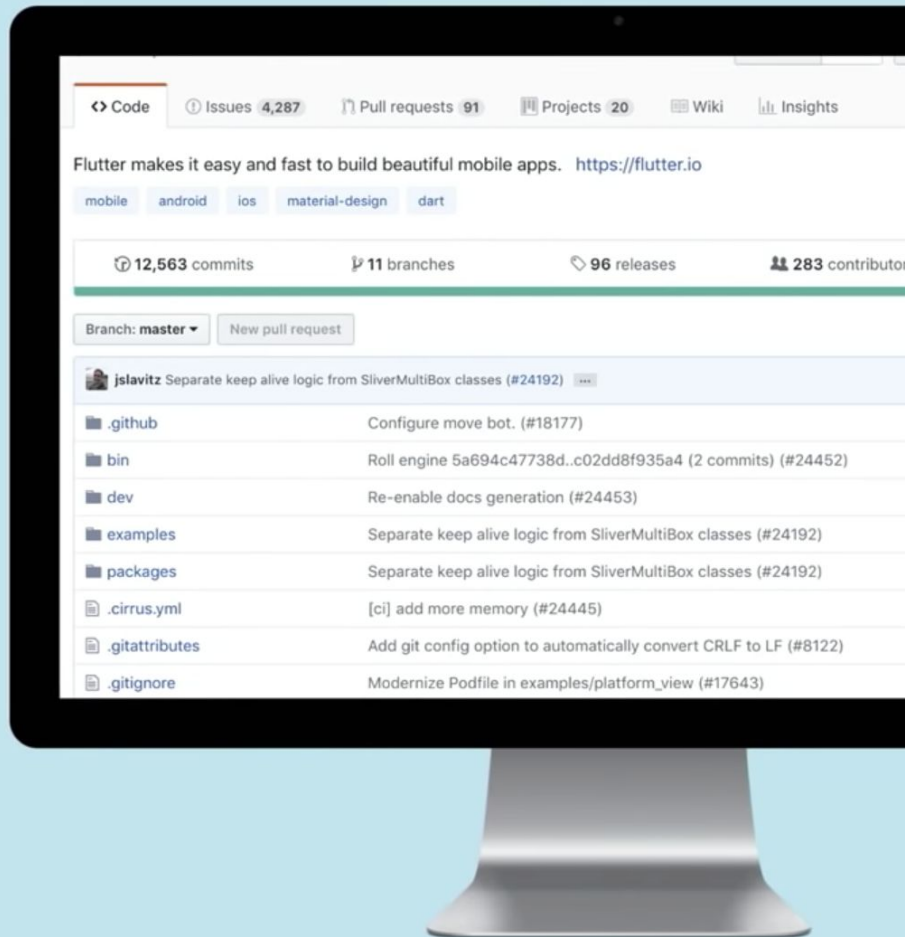


Productive
Develop while your
app is running



Open

Everything is free
and open source



From Native-Mobile Developer Perspective

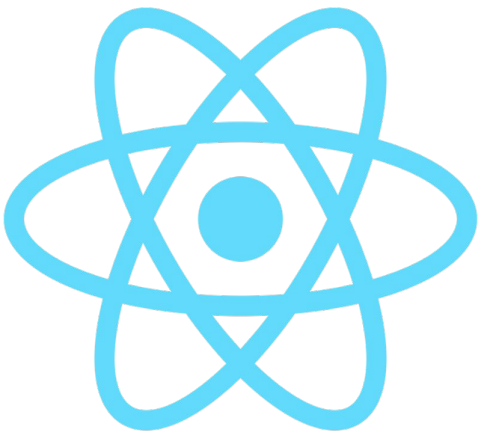
Both Xcode* and Android Studio are fully support for flutter (build and deploy)



**Android
Studio**

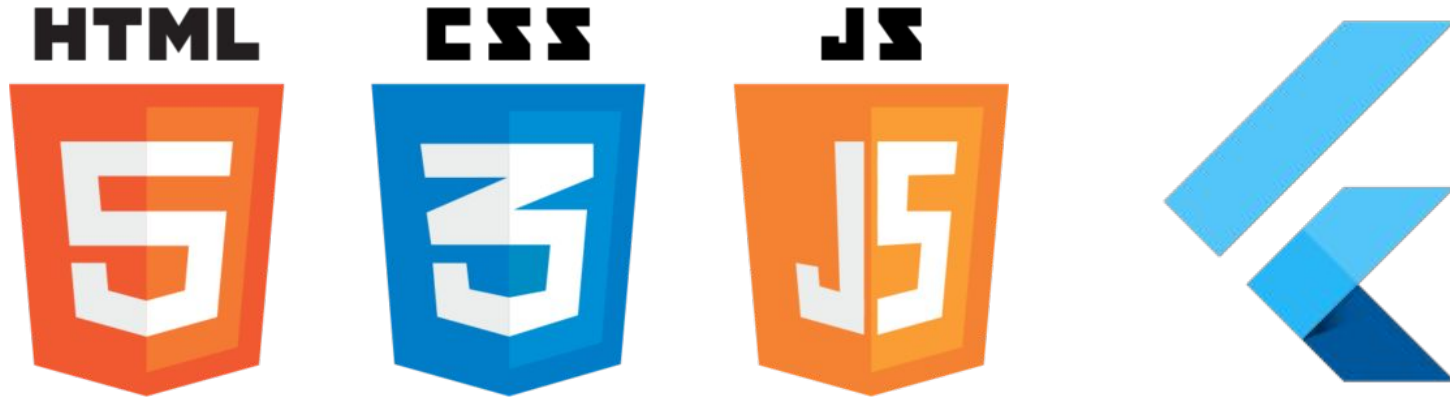
From React Native - JS Developer Perspective

Syntaxing, Code Structure (Concept Component, State Management etc)
similarities



From Web Developer Perspective

Maps HTML/CSS code snippets to Flutter/Dart code equivalents.



HTML/CSS

```
.greybox {  
  background-color: #e0e0e0; /* grey 300 */  
  width: 320px;  
  height: 240px;  
  font: 900 24px Georgia;  
}
```

```
.greybox {  
  
  ....  
  
  font-weight: bold;  
  
  font-family: Georgia;  
  
  font-size: 24px;  
  
  ....  
  
}
```

Flutter

```
var container = new Container( // grey box  
  child: new Text(  
    "Lorem ipsum",  
    style: new TextStyle(  
      fontSize: 24.0  
      fontWeight: FontWeight.w900,  
      fontFamily: "Georgia",  
    ),  
  ),  
  width: 320.0,  
  height: 240.0,  
  color: Colors.grey[300],  
);
```

```
<div class="greybox">  
  
  Lorem ipsum  
  
</div>
```



Chapter 2: Installation and Setup Flutter SDK

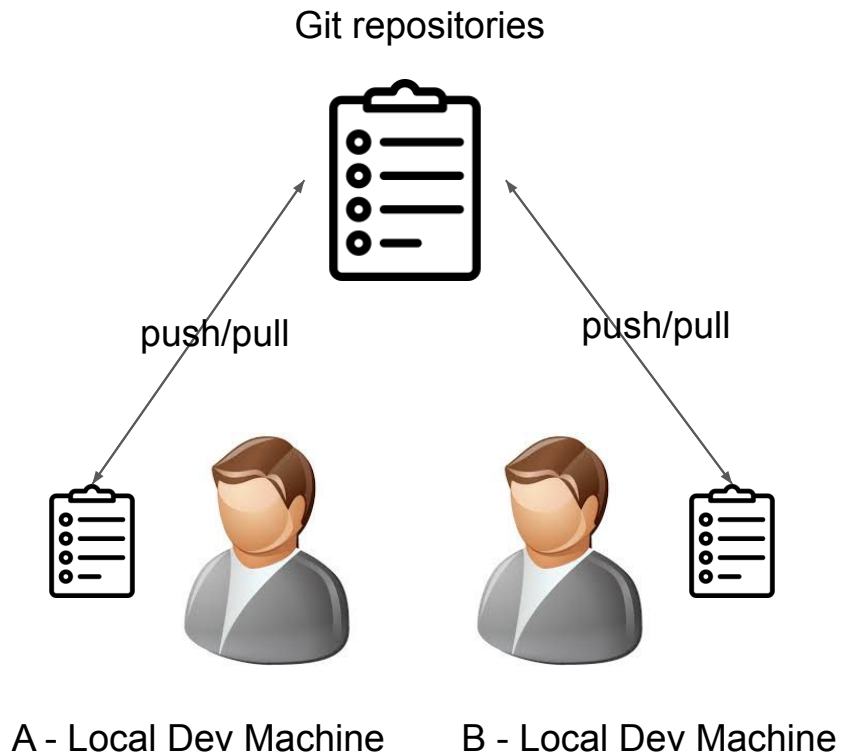
How do i start?

<https://flutter.dev/>

Additional Install

- Git - <https://git-scm.com>
- Git Account- <https://www.github.com>
- Command line - Terminal, Powershell
- Dartlang SDK

Git Concept/ Terminology



Repositories

Shared Code

Collaboration Tools

Working with Teams
(up to hundreds, thousand)

Origin - Local -
Master - Branches

Git commands

git clone <git repo>

git push <from> <to>

git pull <from> <to>

git add . (specific / all files)

git commit -m "any message"

git init -> start git tracking

git config --global user.name ""

git config --global user.email ""

POSTMAN

- Application Platform Interface (API)
- RESTAPI (get, post, put, delete)
 - get - Request Data,
 - post - Create Data,
 - put - Update Data,
 - delete - Remove Data,



<https://www.getpostman.com>
for more info/downloads

Official Support Editor

Note: additional
extension are
require.



Android
Studio

Installing Flutter SDK

Chapter 3: Installation and Setup Flutter SDK

Generating an example Flutter application

- Assume that you are already installed VSCode, Android Studio, etc
- Open VSCode
- Press CTRL+Shift+p
- Type “flutter”
- Select Options >> flutter: new project

flutter doctor -v

```
[✓] Flutter (Channel unknown, v1.5.8, on Mac OS X 10.14.6 18G103, locale en)
    • Flutter version 1.5.8 at /Users/Krseisenh/flutter
    • Framework revision 0ba67226ee (7 months ago), 2019-04-24 17:18:28 -0700
    • Engine revision c63d1cf9c9
    • Dart version 2.3.0 (build 2.3.0-dev.0.1 f1f592edce)
```

This sections tell you which Flutter and Dart sdk version you have installed in your machine.

```
[!] Android toolchain - develop for Android devices (Android SDK version 28.0.3)
    • Android SDK at /Users/Krseisenh/Library/Android/sdk
    • Android NDK location not configured (optional; useful for native profiling support)
    • Platform android-28, build-tools 28.0.3
    • Java binary at: /Applications/Android Studio.app/Contents/jre/jdk/Contents/Home/bin/java
    • Java version OpenJDK Runtime Environment (build 1.8.0_202-release-1483-b49-5587405)
    ! Some Android licenses not accepted. To resolve this, run: flutter doctor --android-licenses
```

This sections tell you is Android studio and any android SDK have been install on your machine

```
[!] iOS toolchain - develop for iOS devices (Xcode 10.3)
    • Xcode at /Applications/Xcode.app/Contents/Developer
    • Xcode 10.3, Build version 10G8
    • ios-deploy 1.9.4
    ✗ CocoaPods not installed.
      CocoaPods is used to retrieve the iOS platform side's plugin code that responds to your plugin usage.
      Without resolving iOS dependencies with CocoaPods, plugins will not work on iOS.
      For more info, see https://flutter.dev/platform-plugins
      To install:
        brew install cocoapods
        pod setup
```

This sections tell you is there any mobile device attach and ready to use as deploy device(s)

```
[✓] Android Studio (version 3.5)
    • Android Studio at /Applications/Android Studio.app/Contents
    • Flutter plugin version 39.0.3
    • Dart plugin version 191.8423
    • Java version OpenJDK Runtime Environment (build 1.8.0_202-release-1483-b49-5587405)
```

```
[✓] VS Code (version 1.40.0)
    • VS Code at /Applications/Visual Studio Code.app/Contents
    • Flutter extension version 3.6.0
```

This sections tell you is there any mobile device attach and ready to use as deploy device(s)

```
[✓] Connected device (1 available)
    • SM N950F • 988a1b41555751595930 • android-arm64 • Android 9 (API 28)
```

Chapter 4: Introduction to Dartlang

Dart - Programming language

- Made by Google
- use in Flutter as main develop language.
- Visited <https://dart.dev> for more detail.
- Install on your machine
 - brew install dart (macOS)
 - choco install dart-sdk (windows)



Dart

Chocolatey



The package manager for windows

Install ->

<https://www.chocolatey.org/install>

Further Study

- <https://flutter.dev>
- <https://dart.dev>

Recap

Introduction to Flutter -> <https://www.flutter.dev>

Install flutter on macOS and Windows

Setup Android Studio -> Tools for develop mobile application base on android operating system using java or kotlin, from Google,

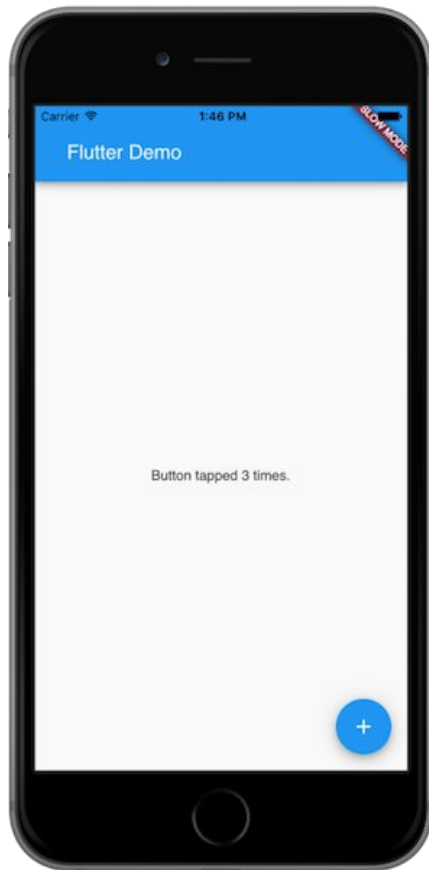
Setup Vscode -> Universal Code editor, from Microsoft

Generating an example flutter application

- Assume that you are already install VScode Android Studio, etc
- Open VScode
- Press ctrl + Shift + p
- Type flutter
- Select options -> flutter: new project
- Let the flutter create process to complete

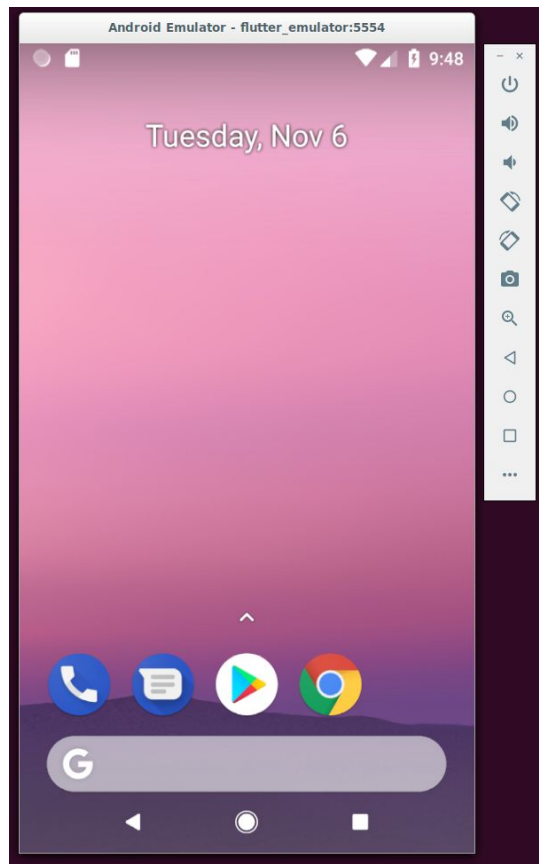
Flutter sample app

Counter sample app -> by clicking the add button at the bottom right corner (called Floating Actions Button) of the screen, it will update the tab counts and display as text in the middle of the screen



flutter run

- Install you flutter application to any connected device (physical, emulator, simulator)
- open -a Simulator (for mac user who want to deploy in iOS device)
- You can launch Android Emulator from **vscode** (this take awhile for the android emulator to startup, so be patient at this point :))
- Once every this is up, hits “flutter run” in your terminal (powershell)
- And wait for the magic



Other Flutter Commands

`flutter doctor -v` -> this command helps you identify if your computer is ready for develop flutter application.

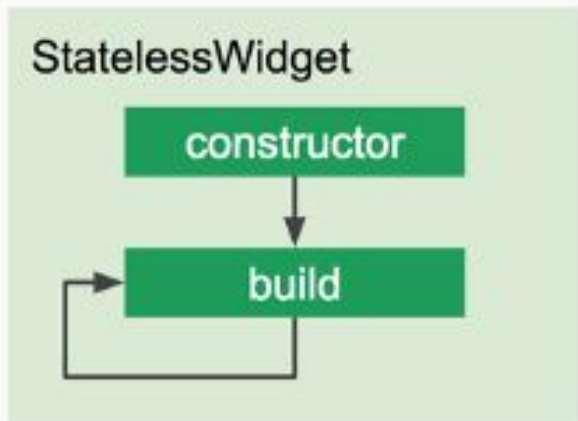
`flutter run` -> start flutter application on any device (physical, emulator, simulator)

`r` - hot reloads -> take an instant update to your flutter application

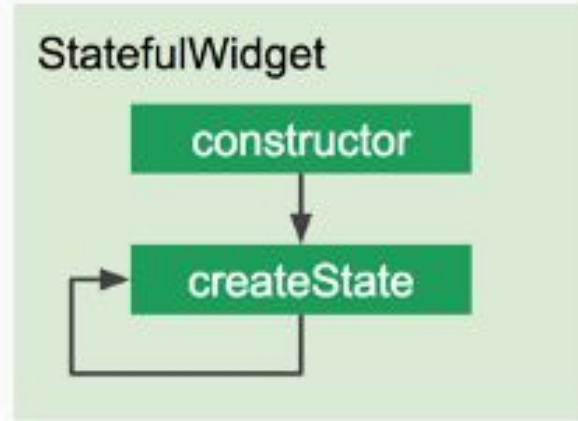
`shift + r` - hot restart -> restart your flutter application to the initial state

Chapter 5: Widgets

Stateless and Stateful Widgets

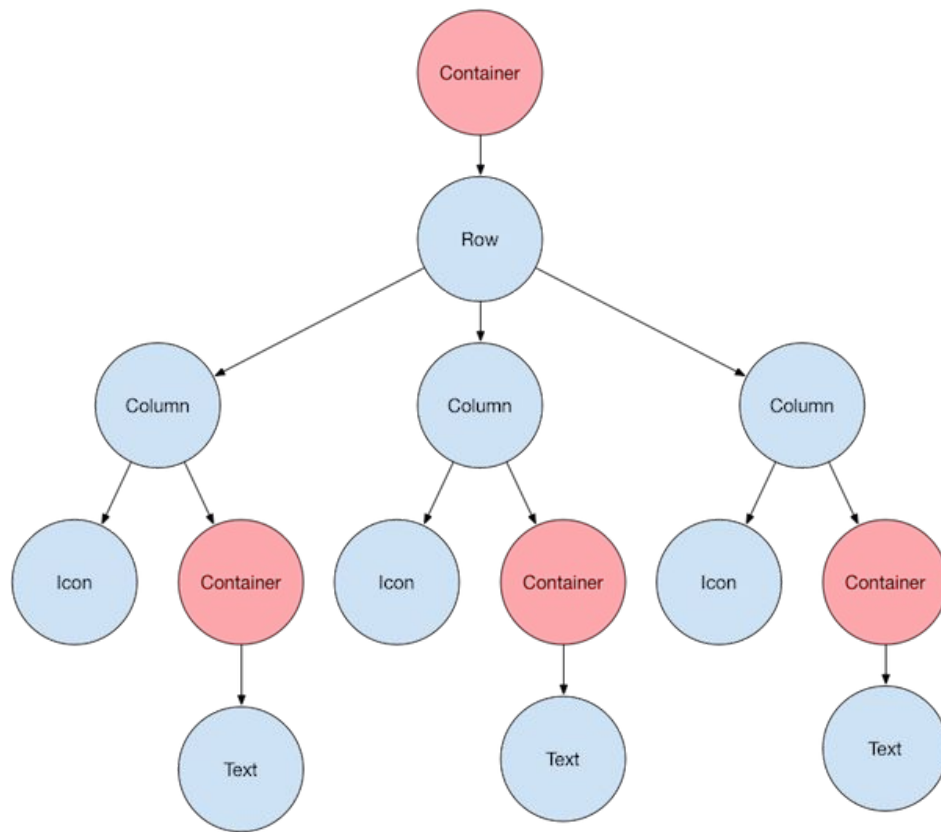


A single StatelessWidget can build in many different BuildContexts



A StatefulWidget creates a new State object for each BuildContext

Widget Tree



Widget: Container

```
Center(  
  child: Container(  
    margin: const EdgeInsets.all(10.0),  
    color: Colors.amber[600],  
    width: 48.0,  
    height: 48.0,  
  ),  
)
```

Widget: Text

```
Text(  
  'Hello, $_name! How are you?',  
  textAlign: TextAlign.center,  
  overflow: TextOverflow.ellipsis,  
  style: TextStyle(fontWeight: FontWeight.bold),  
)
```

Widget: Image

```
Image.asset('images/cat.png')
```

```
Image.network('https://flutter.github.io/assets-for-api-docs/assets/widgets/owl-2.jpg')
```

Widget: Column

```
Column(  
  crossAxisAlignment: CrossAxisAlignment.start,  
  mainAxisAlignment: MainAxisAlignment.min,  
  children: <Widget>[  
    Text('We move under cover and we move as one'),  
    Text('Through the night, we have one shot to live another day'),  
    Text('We cannot let a stray gunshot give us away'),  
    Text('We will fight up close, seize the moment and stay in it'),  
    Text('It's either that or meet the business end of a bayonet'),  
    Text('The code word is 'Rochambeau,' dig me?'),  
    Text('Rochambeau!', style: DefaultTextStyle.of(context).style.apply(fontSizeFactor: 2.0)),  
  ],  
)
```

Widget: Row

```
Row(  
  children: <Widget>[  
    Expanded(  
      child: Text('Deliver features faster', textAlign: TextAlign.center),  
    ),  
    Expanded(  
      child: Text('Craft beautiful UIs', textAlign: TextAlign.center),  
    ),  
    Expanded(  
      child: FittedBox(  
        fit: BoxFit.contain, // otherwise the logo will be tiny  
        child: const FlutterLogo(),  
      ),  
    ),  
  ],  
)
```

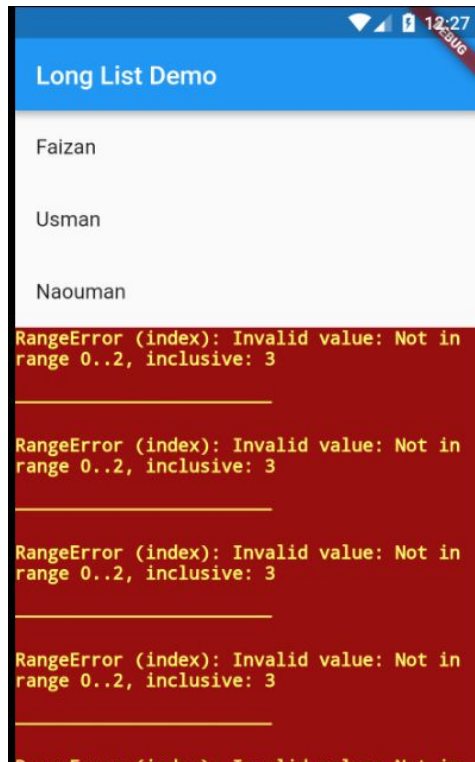
Widget: Buttons

```
const RaisedButton(  
  onPressed: null,  
  child: Text(  
    'Disabled Button',  
    style: TextStyle(fontSize: 20)  
  ),  
),
```

```
FlatButton(  
  color: Colors.blue,  
  textColor: Colors.white,  
  disabledColor: Colors.grey,  
  disabledTextColor: Colors.black,  
  padding: EdgeInsets.all(8.0),  
  splashColor: Colors.blueAccent,  
  onPressed: () {  
    /*...*/  
  },  
  child: Text(  
    "Flat Button",  
    style: TextStyle(fontSize: 20.0),  
  ),  
)
```


Error in Flutter

This is an errors dialog/screen when you got an errors in your flutter app



1st Mini Assignment

Button click running number

Init state from 0 to n then back to 0 with a single button

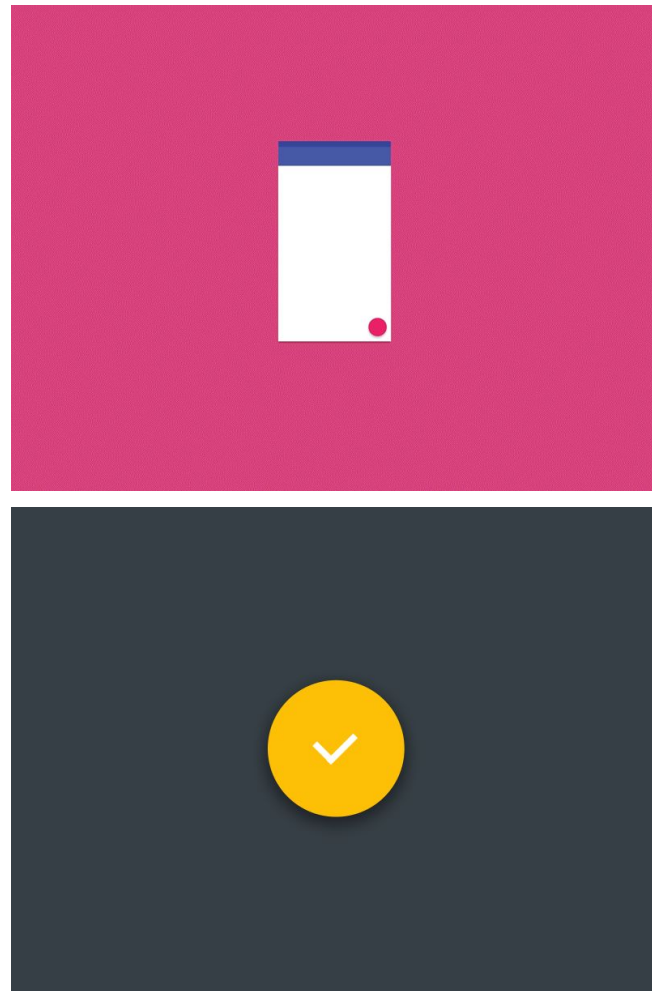
Chapter 6: Material Design

Introduction to Material Design

Material Design - <https://material.io/>

Design Principle consist of 3 rules

- Material - surface, edge shadows
- Intentional
- Motion



Chapter 7: ListView GridView Alignment

Widget: ListView

```
ListView(  
  padding: const EdgeInsets.all(8),  
  children: <Widget>[  
    Container(  
      height: 50,  
      color: Colors.amber[600],  
      child: const Center(child: Text('Entry A')),  
    ),  
    Container(  
      height: 50,  
      color: Colors.amber[500],  
      child: const Center(child: Text('Entry B')),  
    ),  
    Container(  
      height: 50,  
      color: Colors.amber[100],  
      child: const Center(child: Text('Entry C')),  
    ),  
  ],  
)
```

Widget: GridView

```
GridView.count(  
  primary: false,  
  padding: const EdgeInsets.all(20),  
  crossAxisSpacing: 10,  
  mainAxisSpacing: 10,  
  crossAxisCount: 2,  
  children: <Widget>[  
    Container(  
      padding: const EdgeInsets.all(8),  
      child: const Text("He'd have you all unravel at the"),  
      color: Colors.teal[100],  
    ),  
    Container(  
      padding: const EdgeInsets.all(8),  
      child: const Text('Heed not the rabble'),  
      color: Colors.teal[200],  
    ),  
  ],  
)
```

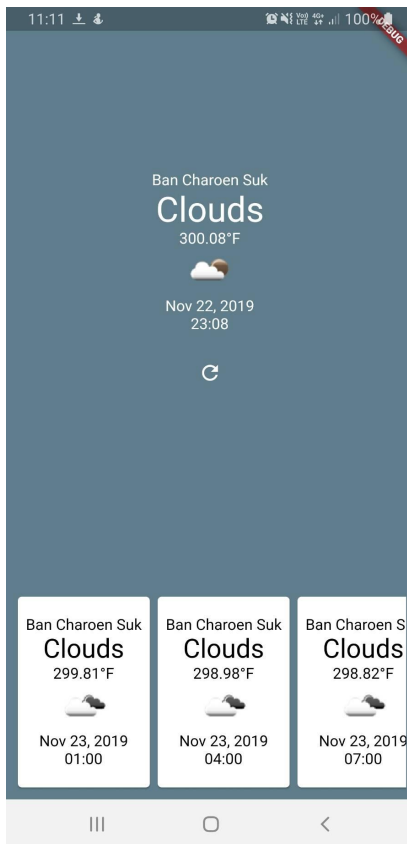
Alignments

Further Study =>

[Flutter Layout Cheat Sheet. Do you need simple layout samples for... | by Tomek Polański | Flutter Community](#)

Chapter 8: WorkShop 1 SPA

Today Weather Application



Flutter Weather App

- Clone from github -> git clone https://github.com/3IVv0w/today_weather.git
- cd today_weather
- Create an .env file
- Take a look at the code
- GET an API KEY <https://openweathermap.org/>
- In POSTMAN <https://getpostman.com> ->
`https://api.openweathermap.org/data/2.5/weather?APPID=${apiKey}&lat=12.67893&lon=101.133118`
- Ref. <https://github.com/dragosholban/FlutterWeatherApp>

Back to Code

Chapter 9: Introduction to State Management

Basic state management -> setState

```
@override  
  
void initState() {  
    super.initState();  
  
    loadWeather();  
  
}
```

```
setState(() {  
    isLoading = true;  
});
```

Chapter 10: Navigation

Chapter 10: Forms

Widget: TextFormField

```
TextFormField(  
  decoration: const InputDecoration(  
    icon: Icon(Icons.person),  
    hintText: 'What do people call you?',  
    labelText: 'Name *',  
  ),  
  onSave: (String value) {  
    // This optional block of code can be used to run  
    // code when the user saves the form.  
  },  
  validator: (String value) {  
    return value.contains('@') ? 'Do not use the @ char.' : null;  
  },  
)
```

Widget: Radio Button

```
leading: Radio(  
  value: SingingCharacter.lafayette,  
  groupValue: _character,  
  onChanged: (SingingCharacter value) {  
    setState(() { _character = value; });  
  },  
),
```

Widget: CheckBox

```
Checkbox(  
  value: monVal,  
  onChanged: (bool value) {  
    setState(() {  
      monVal = value;  
    });  
  },  
)
```

Chapter 12: WorkShop 2

Covid Patient Form

7:01 4G+ 97%

Patient Form

Firstname

Lastname

Age

Gender

Male ☐ Female ☐

Symtoms

ไอ ☐

เจ็บคอ ☐

มีไข้ ☐

Save

Covid Patient Form

- Objective -> Create a form and pass data between pages.
- Use Widget
 - Form
 - TextFormField
 - RadioButton
 - CheckBox
 - Navigation between page
- Final code at here -> https://github.com/Krseisenh/covid_form

Chapter 13: Introduction to Flutter CI/CD

Codemagic

<https://codemagic.io/>