



Build Your IT Skill

ណែនាំស្តាប់ពី FLUTTER (អំរិត *Hello World*)



រៀបរាងដោយ៖

គ្រូរោយធីចិត្តន្ត

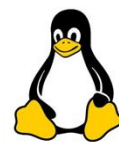
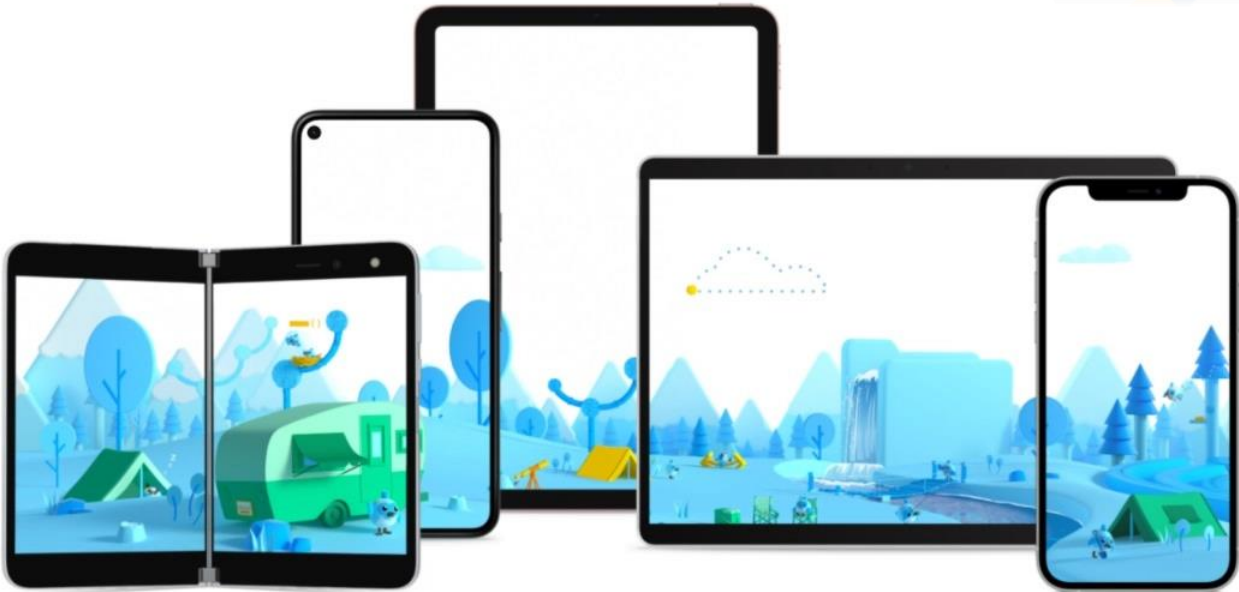
អនុបណ្ឌិត RUPP, TKU

(Software Engineering)

រៀបរៀងដោយ៖

Mr. Pha Phanna, Bs IT

Widget & MaterialApp



I. ណែនាំស្តាប់ពី Flutter

Flutter គឺជា Technology មួយដែលបង្កើតឡើងដោយក្រុមហ៊ុន Google និងត្រូវបាន release ក្នុងខែឧសភា ឆ្នាំ2017 និងប្រើប្រាស់ ភាសា Dart ក្នុងការសរសេរ Flutterនេះ។ Flutter មានសមត្ថភាពក្នុង ការប្រើប្រាស់លើ Multiple OS (Windows , MacOS , Linux , Chrome OS) និងអាចអោយ Developer build application បានជា Multi- Platform :

- ✚ Mobile App (Android & IOS)
- ✚ Desktop App (Mac , Windows , Linux)
- ✚ Web App
- ✚ Embedded System

I. Understand Widget

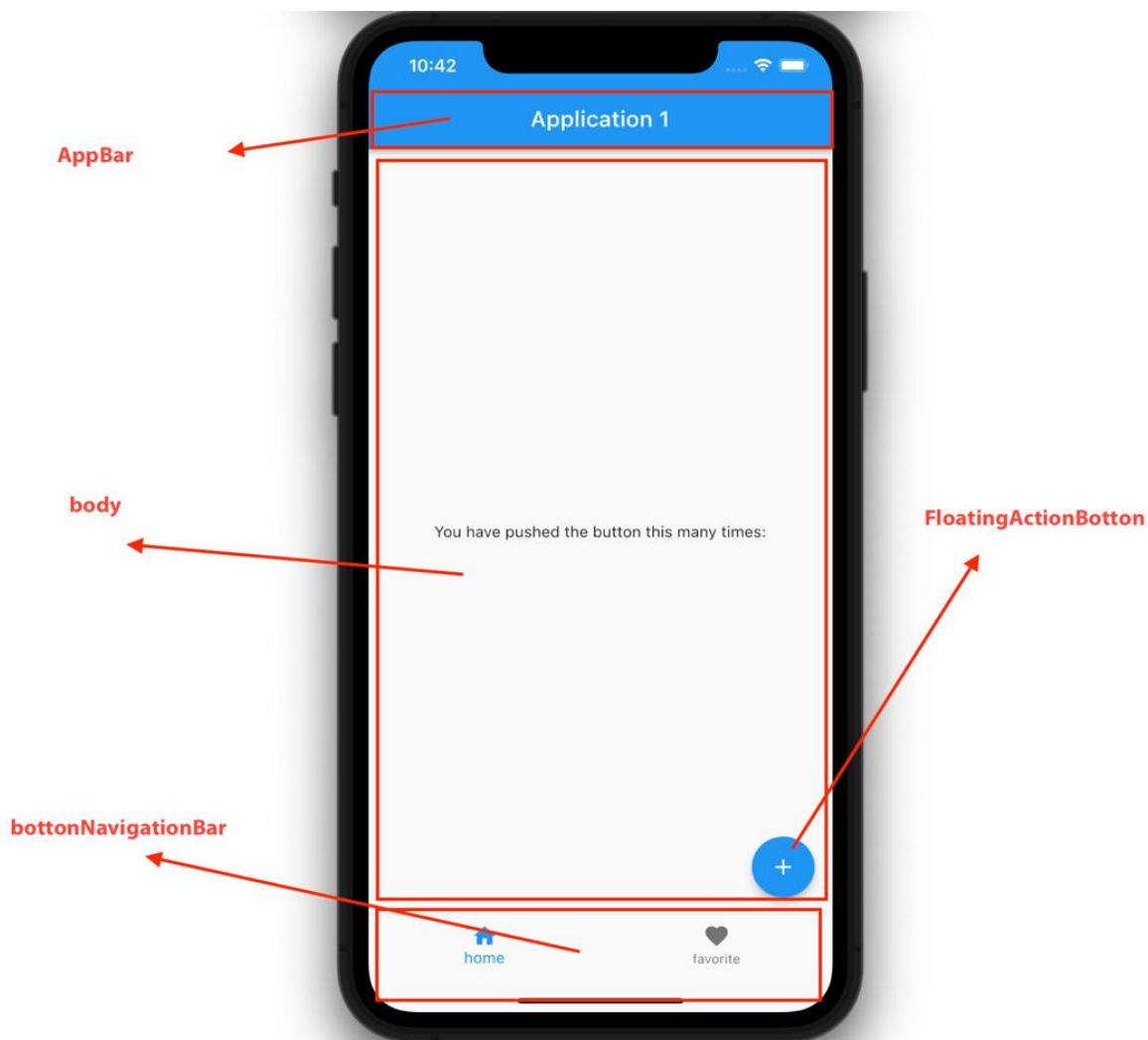
StatelessWidget	StatefullWidget
<ul style="list-style-type: none">• Shortcut (stl)• Can't change state	<ul style="list-style-type: none">✚ Shortcut (stf)• Can change state and have overriding method [initState(),didChangeDependencies(),setState(),didUpdateWidget(),dispose() ,.....]

II. MaterialApp

❖ Scaffold

Scaffold គឺជា widget in Flutter ដែលប្រើក្នុងការ implements the basic material design visual layout structure។

ឧទាហរណ៍ :



❖ main , MaterialApp & Scaffold

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

void main() {
  runApp(const MyApp());
}

class MyApp extends StatelessWidget {
  const MyApp({Key? key}) : super(key: key);

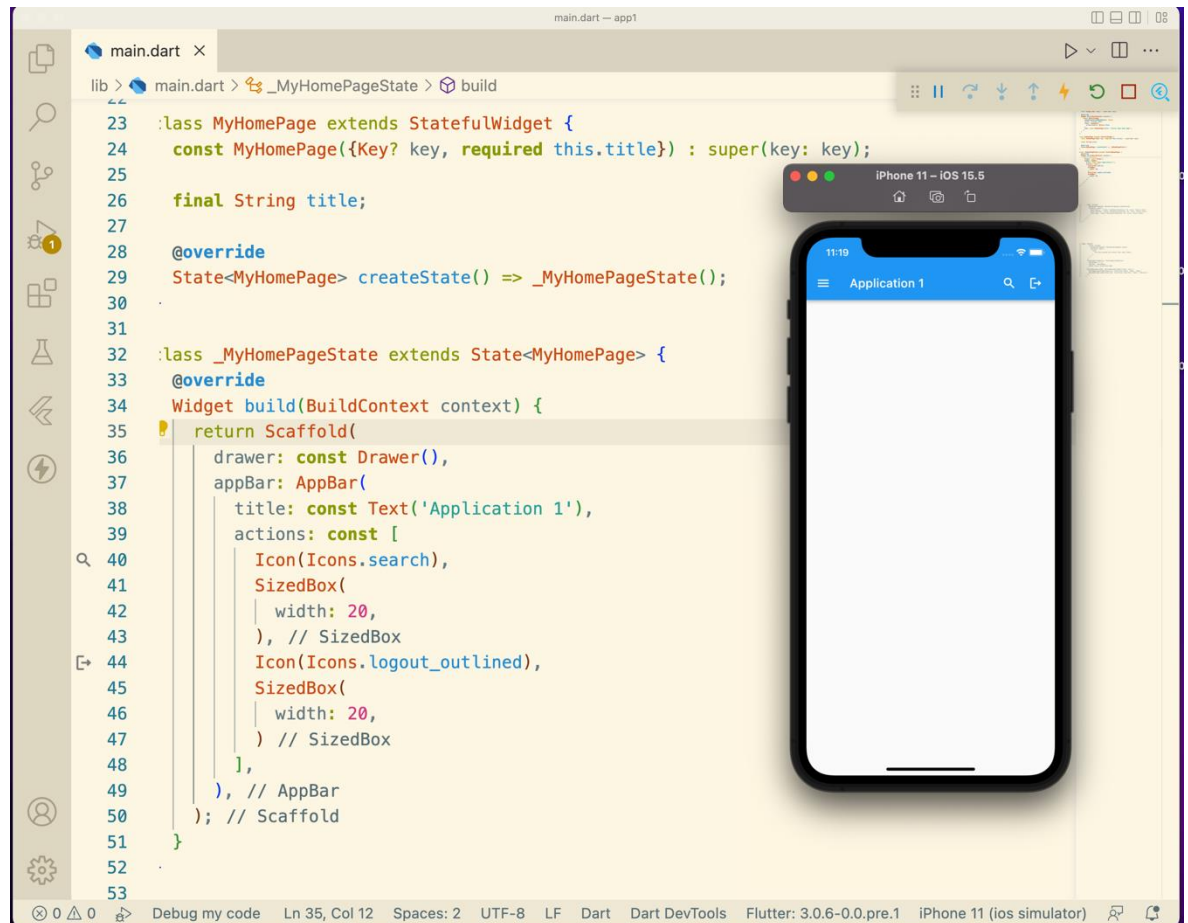
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
    );
  }
}
```

- ✚ **main()** ជាផ្នែកគោលសំខាន់ក្នុងការធ្វើអោយProgramដែលបានសរសេរអាច Run ចេញជា Application បាន
- ✚ **MaterialApp()** MaterialApp() មាន property សំខាន់មួយចំនួនដូចជា
- ✚ **debugShowCheckedModeBanner: false** សម្រាប់ ដក DebugនៅលើUI ចេញ
- ✚ **home:** សម្រាប់ហៅ class បន្ទាប់មកប្រើ
- ✚ **theme:** សម្រាប់ដាក់ពណ៌ទៅលើ MaterialApp ទាំងមូល
 - ✚ Scaffold ជាផ្នែកដែលសរសេរចេញជា App UI និង property ដូចជា :
- ✚ **Drawer:Drawer()**
- ✚ **appBar:AppBar()**
- ✚ **Body:**
- ✚ **floatingActionButton:FloatingActionBotton()**

i. AppBar & Drawer

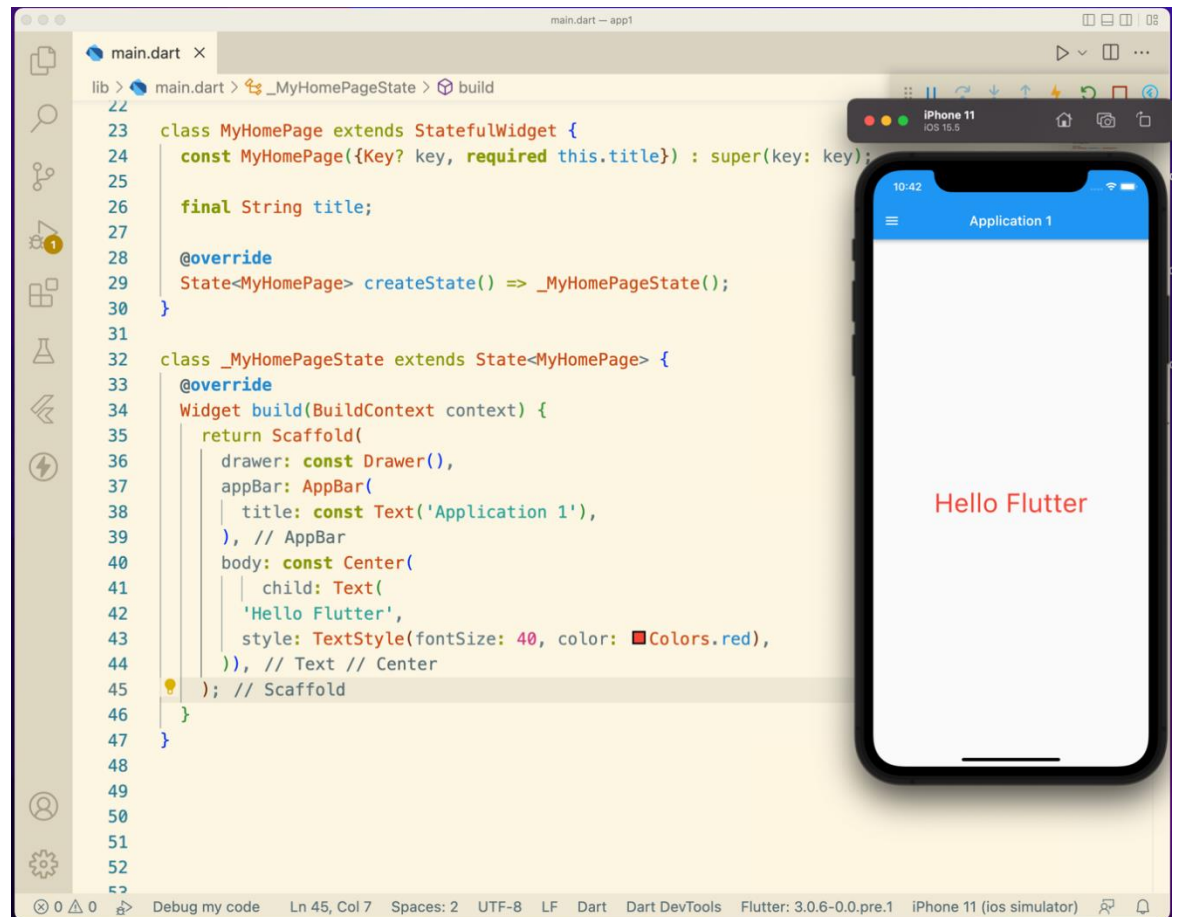
AppBar មាន property ដូចជា :

- ✚ leading:
- ✚ title:
- ✚ bottom:
- ✚ backgroundColor:
- ✚ action:[]

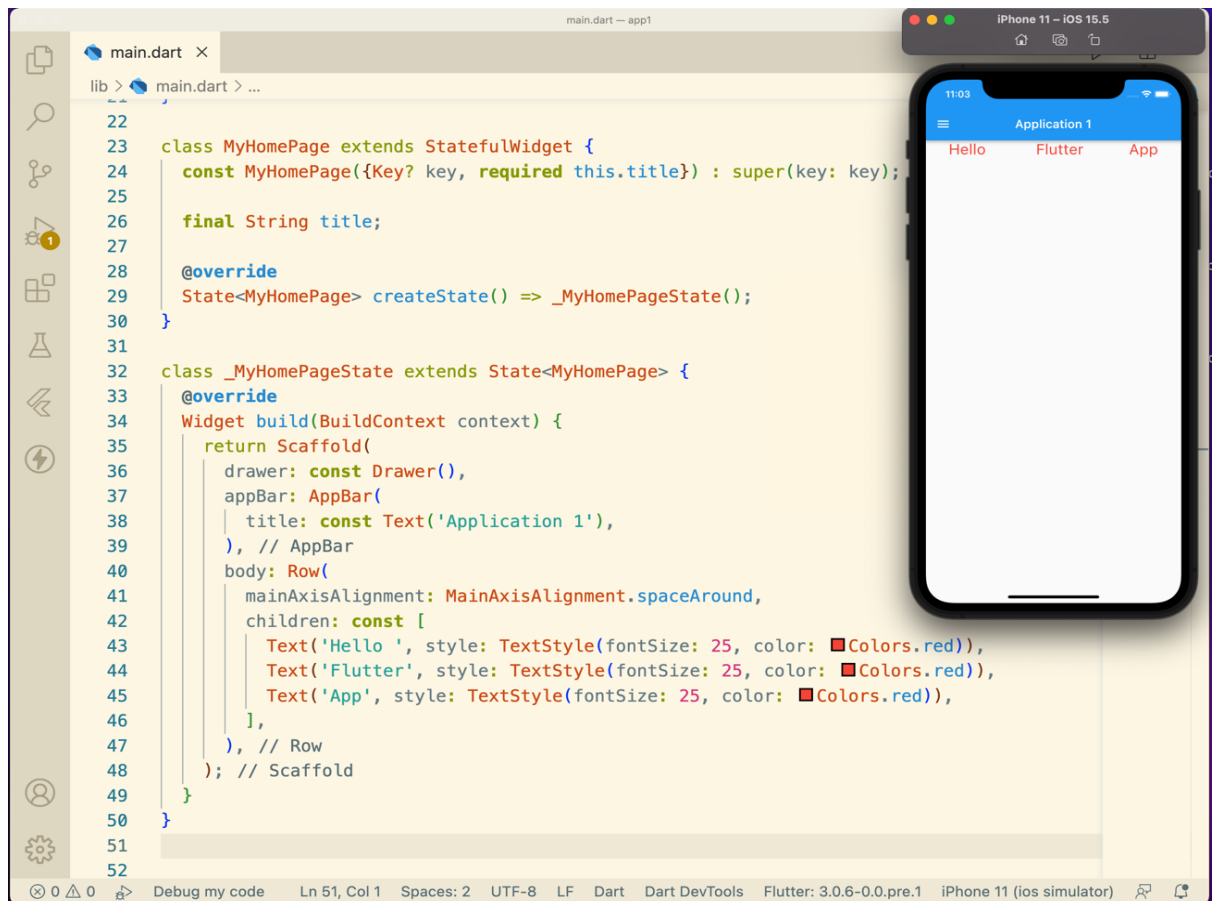


ii. Body

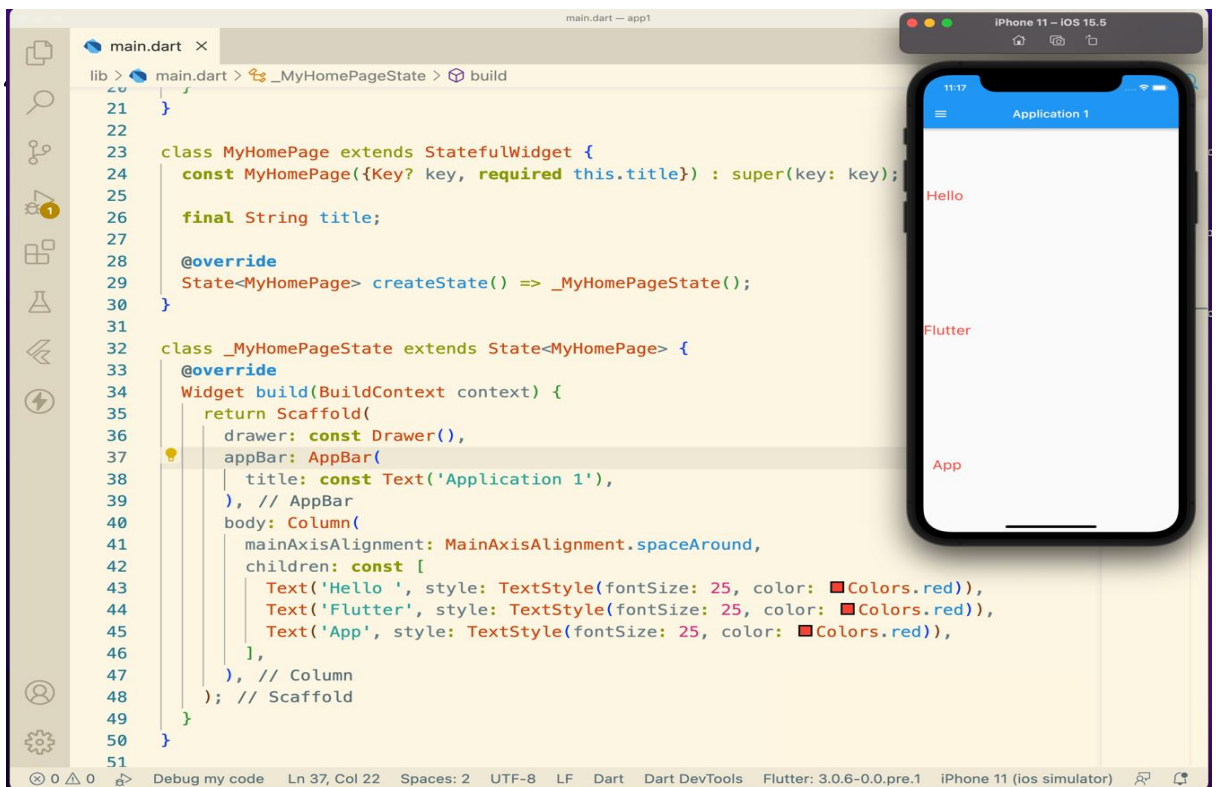
1. Text and Center



2. Row and Column

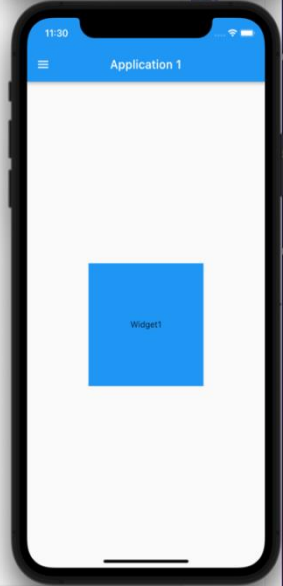


3. Container



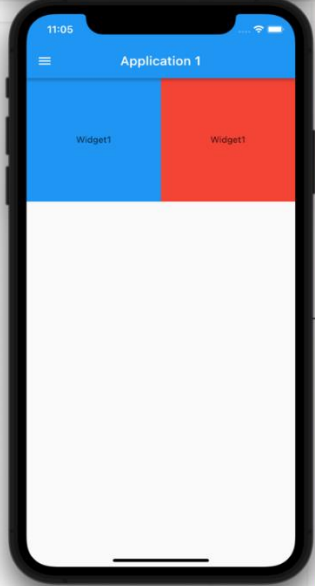


```
main.dart x
lib > main.dart > _MyHomePageState > build
23 class MyHomePage extends StatefulWidget {
24   const MyHomePage({Key? key, required this.title}) : super(key: key);
25
26   final String title;
27
28   @override
29   State<MyHomePage> createState() => _MyHomePageState();
30 }
31
32 class _MyHomePageState extends State<MyHomePage> {
33   @override
34   Widget build(BuildContext context) {
35     return Scaffold(
36       drawer: const Drawer(),
37       appBar: AppBar(
38         title: const Text('Application 1'),
39       ), // AppBar
40       body: Center(
41         child: Container(
42           height: 200,
43           width: 200,
44           color: Colors.blue,
45           child: const Center(
46             child: Text('Widget1'),
47           ), // Center
48         ), // Container
49       ), // Center
50     ); // Scaffold
51   }
52 }
53
```

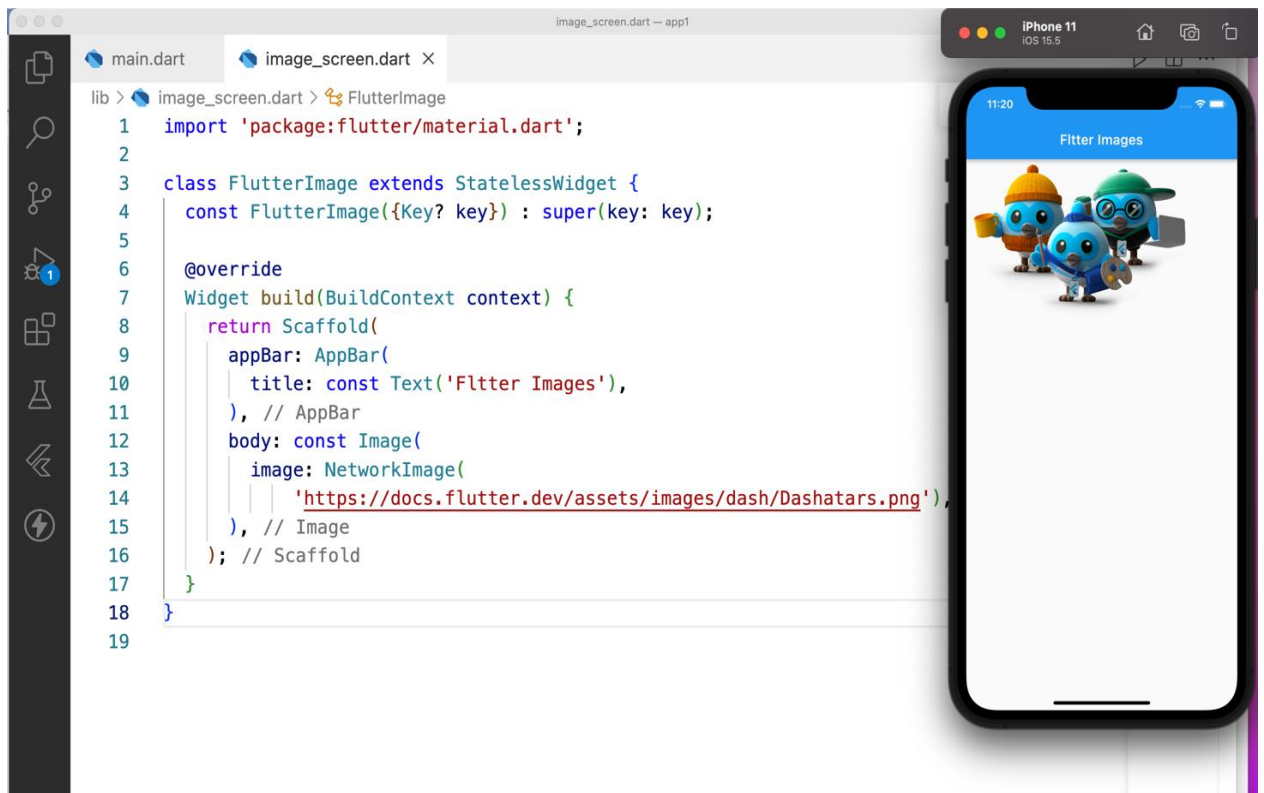


```
main.dart x
lib > main.dart > _MyHomePageState > build
23 class MyHomePage extends StatefulWidget {
24   const MyHomePage({Key? key}) : super(key: key);
25   @override
26   State<MyHomePage> createState() => _MyHomePageState();
27 }
28
29 class _MyHomePageState extends State<MyHomePage> {
30   @override
31   Widget build(BuildContext context) {
32     return Scaffold(
33       drawer: const Drawer(),
34       appBar: AppBar(
35         title: const Text('Application 1'),
36       ), // AppBar
37       body: Row(
38         children: [
39           Expanded(
40             child: Container(
41               height: 200,
42               color: Colors.blue,
43               child: const Center(
44                 child: Text('Widget1'),
45               ), // Center
46             ), // Container
47           ), // Expanded
48           Expanded(
49             child: Container(
50               height: 200,
51               color: Colors.red,
52               child: const Center(
53                 child: Text('Widget1'),
54               ), // Center
55             ), // Container
56           ), // Expanded
57         ],
58       ), // Row
59     ); // Scaffold
60   }
61 }

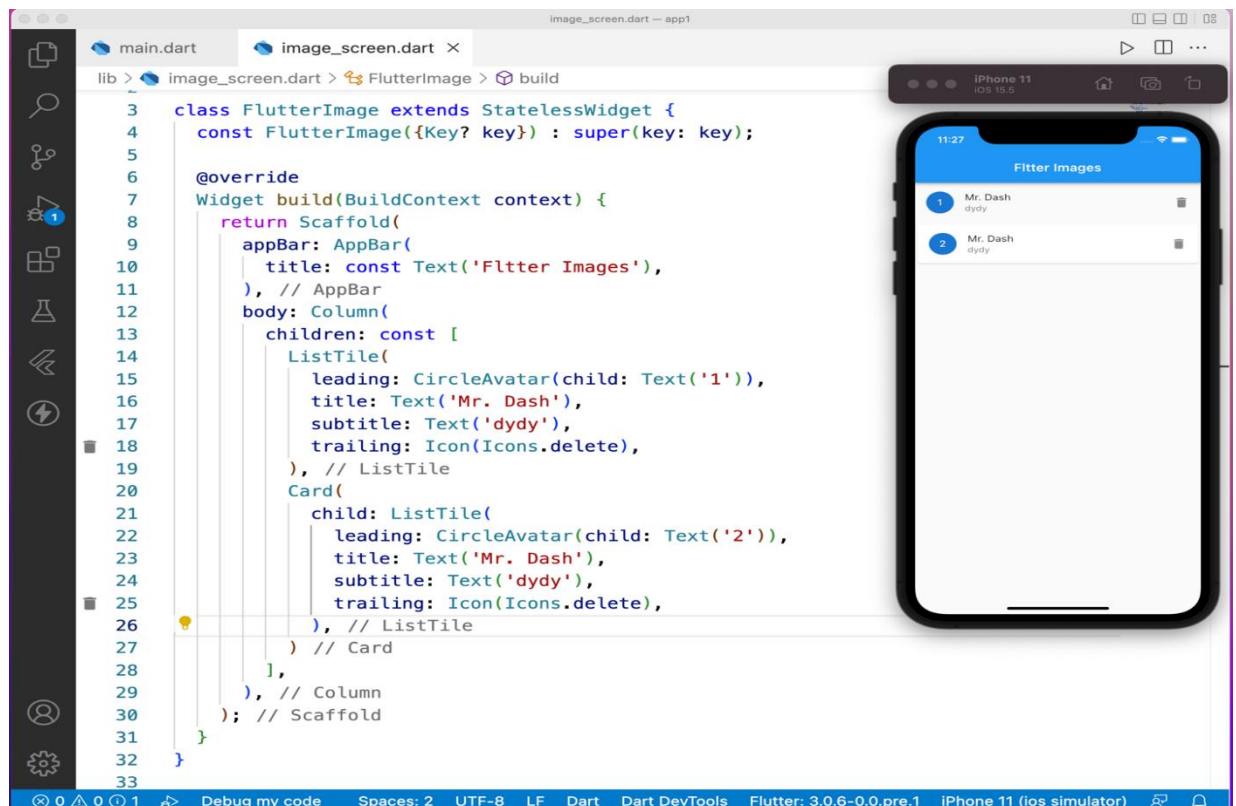
```



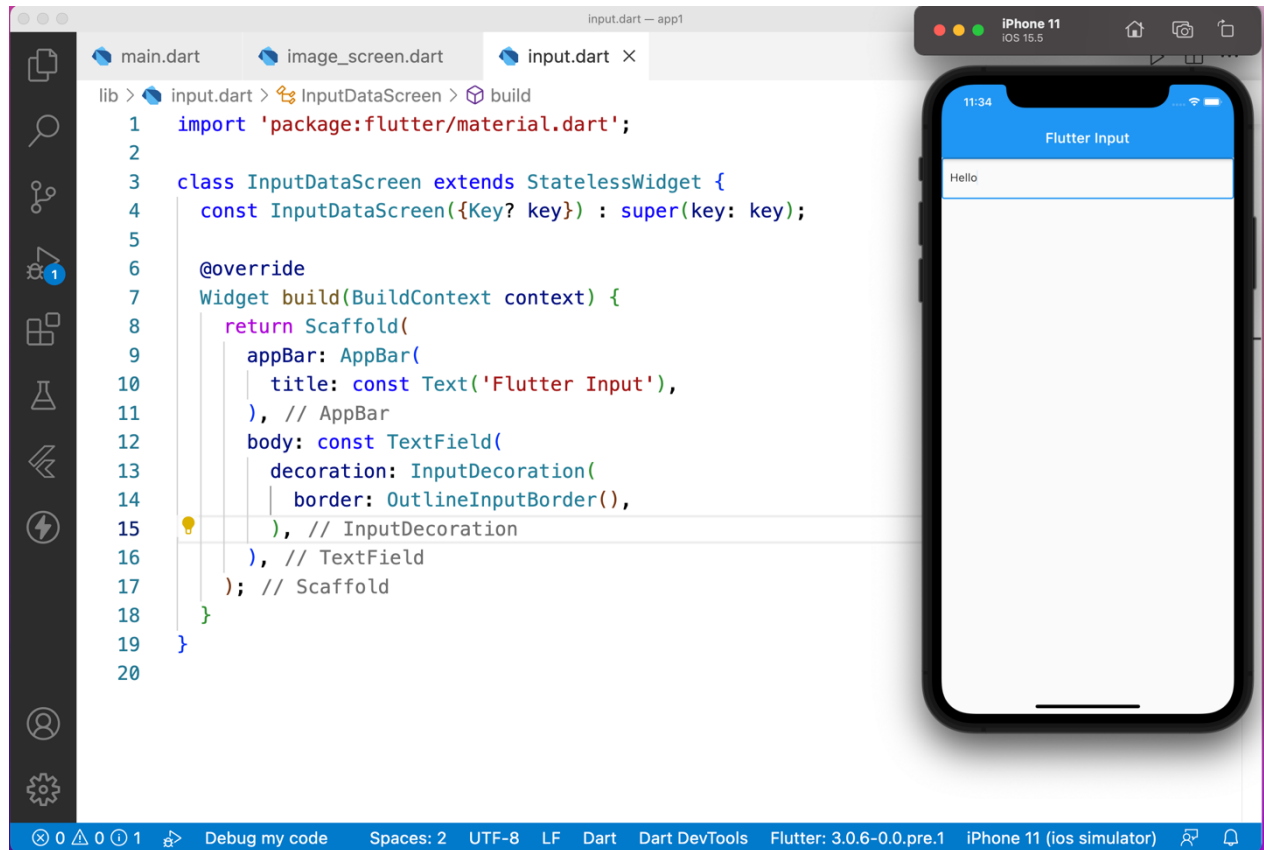
5. Image



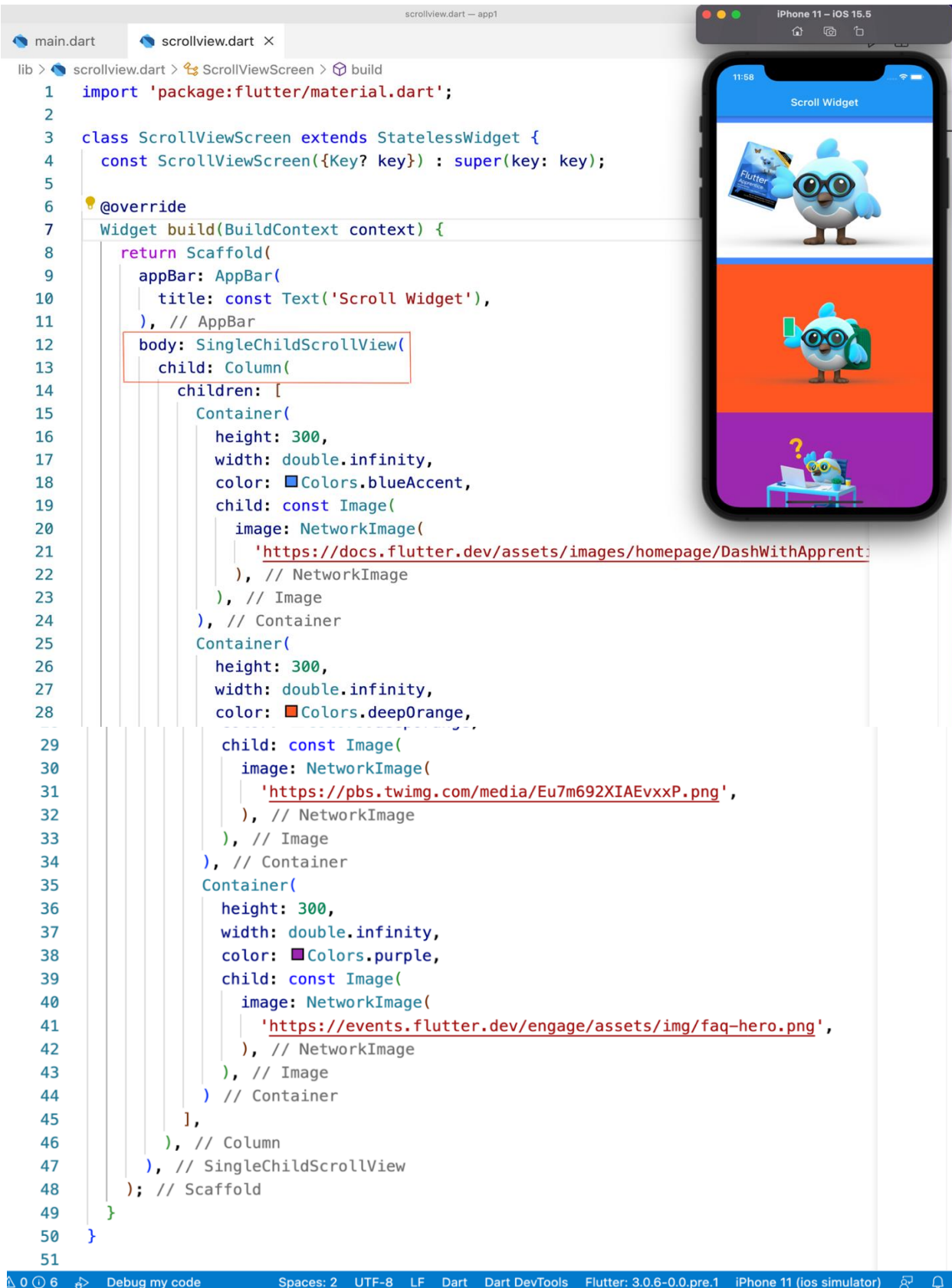
6. ListTile , Card



7. TextField



8. SingleChildScrollView



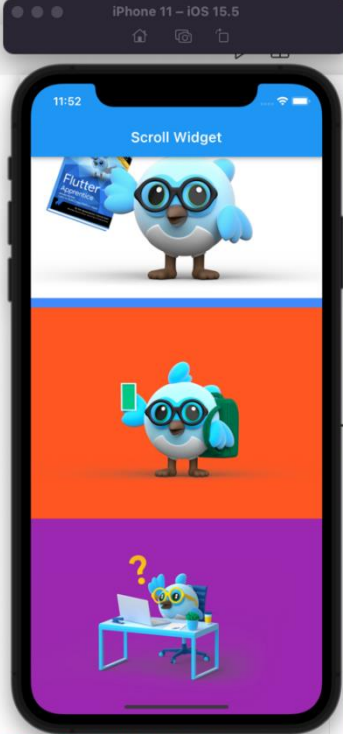
The image shows a code editor with a Dart file named `scrollview.dart` and a mobile simulator displaying the result. The code defines a `ScrollViewScreen` class that extends `StatelessWidget`. It uses a `Scaffold` with an `AppBar` titled "Scroll Widget". The main content is a `SingleChildScrollView` containing a `Column` of three containers, each 300 pixels high. The first container has a blue background and a book image. The second has an orange background and a character image. The third has a purple background and a character image with a question mark.

```
lib > scrollview.dart > ScrollViewScreen > build
1  import 'package:flutter/material.dart';
2
3  class ScrollViewScreen extends StatelessWidget {
4    const ScrollViewScreen({Key? key}) : super(key: key);
5
6    @override
7    Widget build(BuildContext context) {
8      return Scaffold(
9        appBar: AppBar(
10         title: const Text('Scroll Widget'),
11       ), // AppBar
12       body: SingleChildScrollView(
13         child: Column(
14           children: [
15             Container(
16               height: 300,
17               width: double.infinity,
18               color: Colors.blueAccent,
19               child: const Image(
20                 image: NetworkImage(
21                   'https://docs.flutter.dev/assets/images/homepage/DashWithApprentice.png',
22                 ), // NetworkImage
23               ), // Image
24             ), // Container
25             Container(
26               height: 300,
27               width: double.infinity,
28               color: Colors.deepOrange,
29               child: const Image(
30                 image: NetworkImage(
31                   'https://pbs.twimg.com/media/Eu7m692XIAEvxxP.png',
32                 ), // NetworkImage
33               ), // Image
34             ), // Container
35             Container(
36               height: 300,
37               width: double.infinity,
38               color: Colors.purple,
39               child: const Image(
40                 image: NetworkImage(
41                   'https://events.flutter.dev/engage/assets/img/faq-hero.png',
42                 ), // NetworkImage
43               ), // Image
44             ), // Container
45           ],
46         ), // Column
47       ), // SingleChildScrollView
48     ); // Scaffold
49   }
50 }
51
```

The mobile simulator (iPhone 11 - iOS 15.5) shows the app running. The title bar is "Scroll Widget". The screen displays three vertically stacked sections: a blue section with a book, an orange section with a character, and a purple section with a character and a question mark.

9. ListView

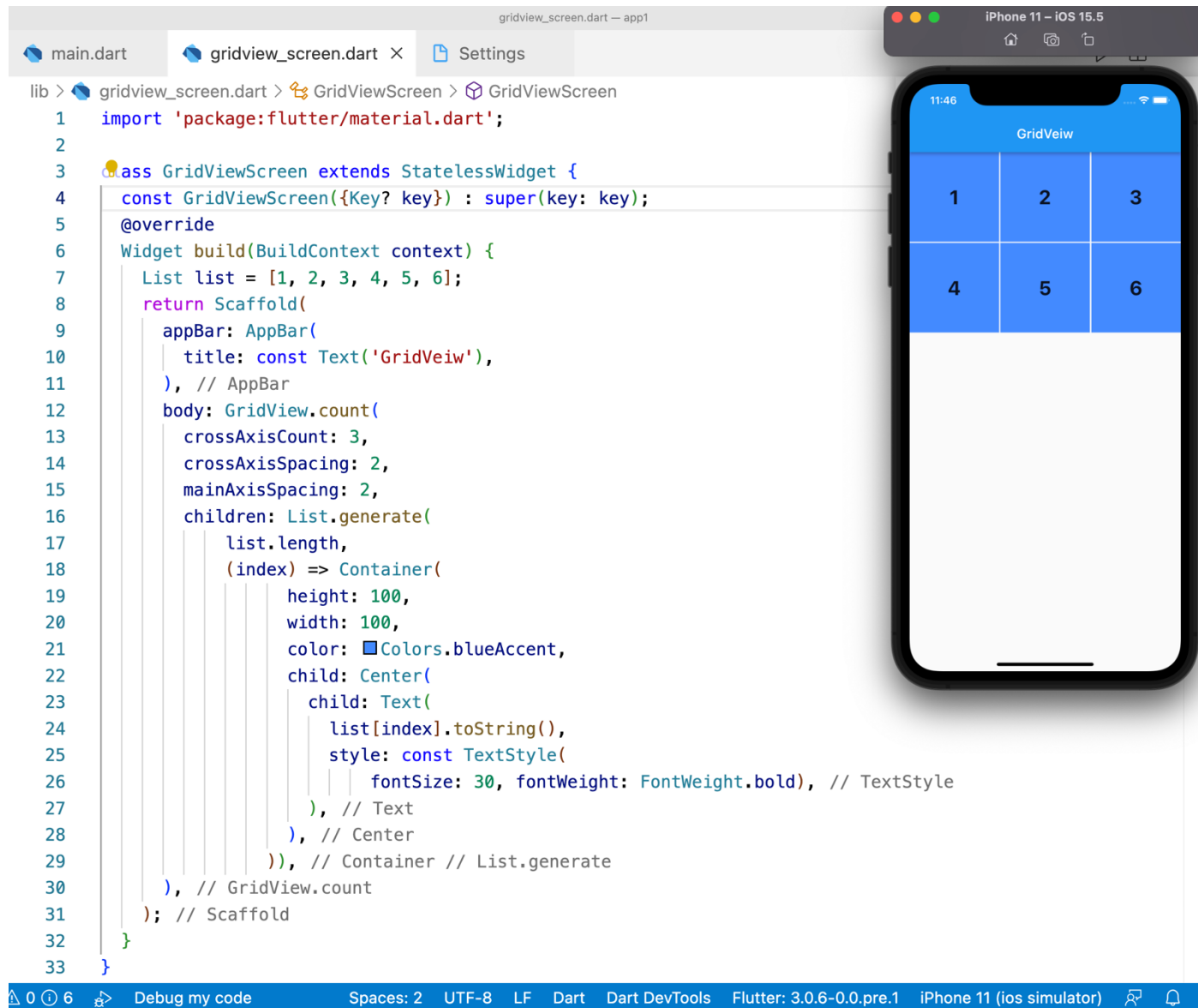
```
main.dart  scrollview.dart x
lib > scrollview.dart > ScrollViewScreen > build
1  import 'package:flutter/material.dart';
2
3  class ScrollViewScreen extends StatelessWidget {
4    const ScrollViewScreen({Key? key}) : super(key: key);
5
6    @override
7    Widget build(BuildContext context) {
8      return Scaffold(
9        appBar: AppBar(
10         title: const Text('Scroll Widget'),
11       ), // AppBar
12       body: ListView(
13         children: [
14           Container(
15             height: 300,
16             width: double.infinity,
17             color: Colors.blueAccent,
18             child: const Image(
19               image: NetworkImage(
20                 'https://docs.flutter.dev/assets/images/homepage/DashWithAppBar',
21               ), // Container
22             Container(
23               height: 300,
24               width: double.infinity,
25               color: Colors.deepOrange,
26               child: const Image(
27                 image: NetworkImage(
28                   'https://pbs.twimg.com/media/Eu7m692XIAEvxxP.png'), // Network
29             ), // Container
30             Container(
31               height: 300,
32               width: double.infinity,
33               color: Colors.purple,
34               child: const Image(
35                 image: NetworkImage(
36                   'https://events.flutter.dev/engage/assets/img/faq-hero.png'),
37             ), // Container
38           ],
39         ), // ListView
40       ); // Scaffold
41     }
42   }
43
```



10. GridView

ចំពោះ GridView មានដូចជា

- ✚ GridView.count()
- ✚ GridView.builder()
- ✚ GridView.extent()
- ✚ GridView.custom()

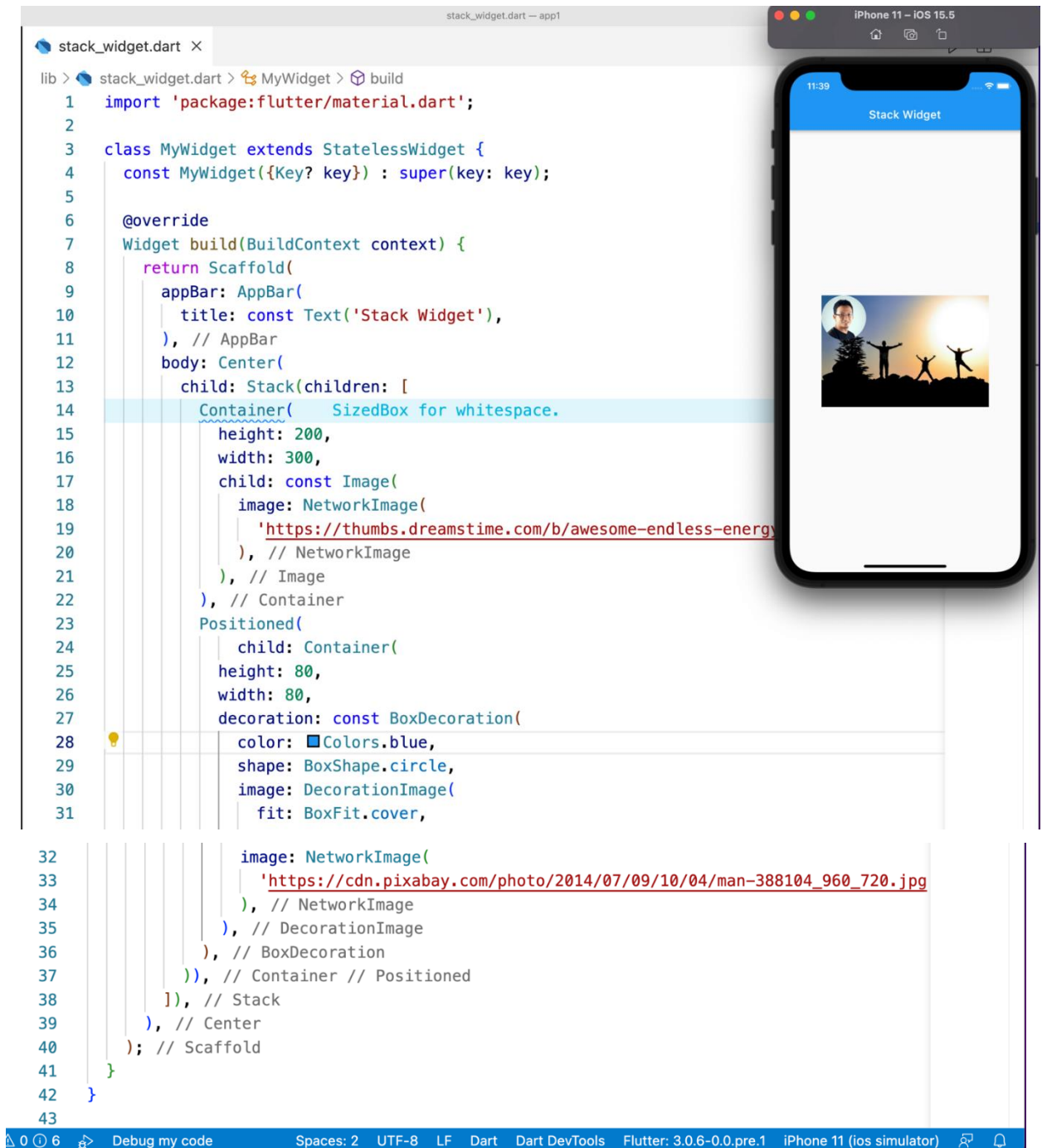


The screenshot displays an IDE with the following components:

- File Explorer:** Shows `main.dart`, `gridview_screen.dart`, and `Settings`.
- Code Editor:** Contains the Dart code for `GridViewScreen`.

```
lib > gridview_screen.dart > GridViewScreen > GridViewScreen
1 import 'package:flutter/material.dart';
2
3 class GridViewScreen extends StatelessWidget {
4   const GridViewScreen({Key? key}) : super(key: key);
5   @override
6   Widget build(BuildContext context) {
7     List list = [1, 2, 3, 4, 5, 6];
8     return Scaffold(
9       appBar: AppBar(
10        title: const Text('GridVeiw'),
11      ), // AppBar
12      body: GridView.count(
13        crossAxisCount: 3,
14        crossAxisSpacing: 2,
15        mainAxisSpacing: 2,
16        children: List.generate(
17          list.length,
18          (index) => Container(
19            height: 100,
20            width: 100,
21            color: Colors.blueAccent,
22            child: Center(
23              child: Text(
24                list[index].toString(),
25                style: const TextStyle(
26                  fontSize: 30, fontWeight: FontWeight.bold), // TextStyle
27              ), // Text
28            ), // Center
29          ), // Container // List.generate
30        ), // GridView.count
31      ); // Scaffold
32    }
33  }
```
- Mobile Simulator:** Displays the rendered app on an iPhone 11 (iOS 15.5). The screen shows a blue header with the title "GridVeiw" and a 2x3 grid of blue boxes containing the numbers 1 through 6. The status bar at the top shows the time 11:46.
- Bottom Bar:** Includes a debug toolbar with icons for running, debugging, and other IDE functions, along with text like "Debug my code", "Spaces: 2", "UTF-8", "LF", "Dart", "Dart DevTools", "Flutter: 3.0.6-0.0.pre.1", and "iPhone 11 (ios simulator)".

11. Stack



```

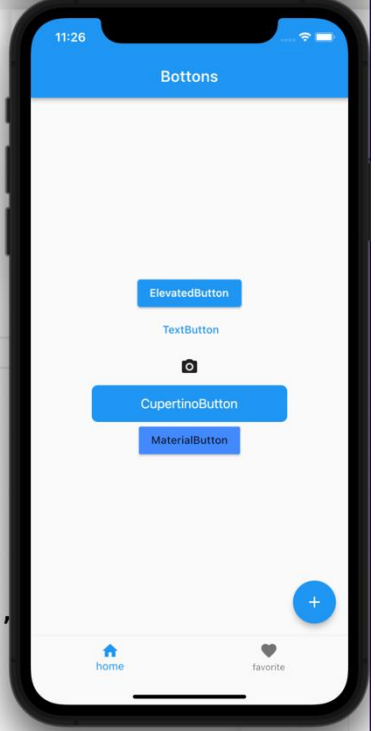
stack_widget.dart x
lib > stack_widget.dart > MyWidget > build
1  import 'package:flutter/material.dart';
2
3  class MyWidget extends StatelessWidget {
4    const MyWidget({Key? key}) : super(key: key);
5
6    @override
7    Widget build(BuildContext context) {
8      return Scaffold(
9        appBar: AppBar(
10         title: const Text('Stack Widget'),
11       ), // AppBar
12       body: Center(
13         child: Stack(children: [
14           Container(
15             height: 200,
16             width: 300,
17             child: const Image(
18               image: NetworkImage(
19                 'https://thumbs.dreamstime.com/b/awesome-endless-energy',
20               ), // NetworkImage
21             ), // Image
22           ), // Container
23           Positioned(
24             child: Container(
25               height: 80,
26               width: 80,
27               decoration: const BoxDecoration(
28                 color: Colors.blue,
29                 shape: BoxShape.circle,
30                 image: DecorationImage(
31                   fit: BoxFit.cover,
32                   image: NetworkImage(
33                     'https://cdn.pixabay.com/photo/2014/07/09/10/04/man-388104_960_720.jpg',
34                   ), // NetworkImage
35                 ), // DecorationImage
36               ), // BoxDecoration
37             ), // Container // Positioned
38           ), // Stack
39         ), // Center
40       ); // Scaffold
41     }
42   }
43

```


i. FlaottingActonBotton & BottonNavigationBar

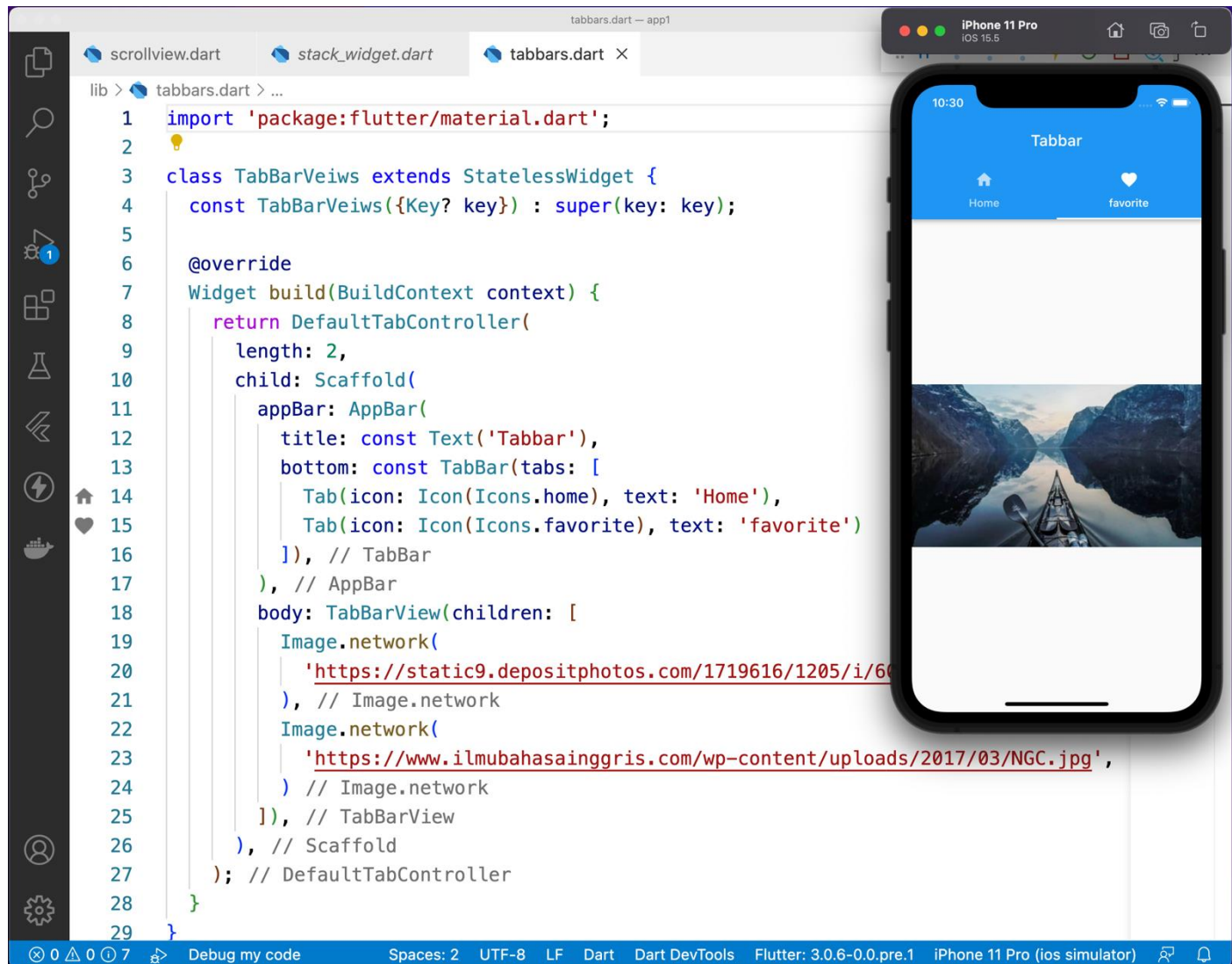
```

lib > button_screen.dart > TestButtonScreen > build
1  import 'package:flutter/cupertino.dart';
2  import 'package:flutter/material.dart';
3
4  class TestButtonScreen extends StatelessWidget {
5    const TestButtonScreen({Key? key}) : super(key: key);
6
7    @override
8    Widget build(BuildContext context) {
9      return Scaffold(
10       appBar: AppBar(
11         title: const Text('Buttons'),
12       ), // AppBar
13       body: Center(
14         child: Column(
15           mainAxisAlignment: MainAxisAlignment.center,
16           children: [
17             ElevatedButton(
18               onPressed: () {}, child: const Text('ElevatedButton')),
19             TextButton(
20               onPressed: () {},
21               child: const Text(
22                 'TextButton',
23               )), // Text // TextButton
24             IconButton(onPressed: () {}, icon: const Icon(Icons.camera_alt)),
25             CupertinoButton(
26               color: Colors.blue,
27               child: const Text('CupertinoButton'),
28               onPressed: () {}), // CupertinoButton
29             MaterialButton(
30               color: Colors.blueAccent,
31               onPressed: () {},
32               child: const Text('MaterialButton'),
33             ) // MaterialButton
34           ],
35         ), // Column
36       ), // Center
37       floatingActionButton: FloatingActionButton(
38         onPressed: () {},
39         tooltip: 'Increment',
40         child: const Icon(Icons.add),
41       ), // FloatingActionButton
42       bottomNavigationBar: BottomNavigationBar(items: const [
43         BottomNavigationBarItem(icon: Icon(Icons.home), label: 'home'),
44         BottomNavigationBarItem(icon: Icon(Icons.favorite), label: 'favorite')
45       ]), // BottomNavigationBar
46     ); // Scaffold
47   }
48 }
          
```



0 1 6 Debug my code Spaces: 2 UTF-8 LF Dart Dart DevTools Flutter: 3.0.6-0.0.pre.1 iPhone 11 (ios simulator)

ii. Tabbar & TabbarView



iii. Widget with Packet

Website ដែលអាចទាញយក package ជាច្រើន របស់ Dart

<https://pub.dev/>

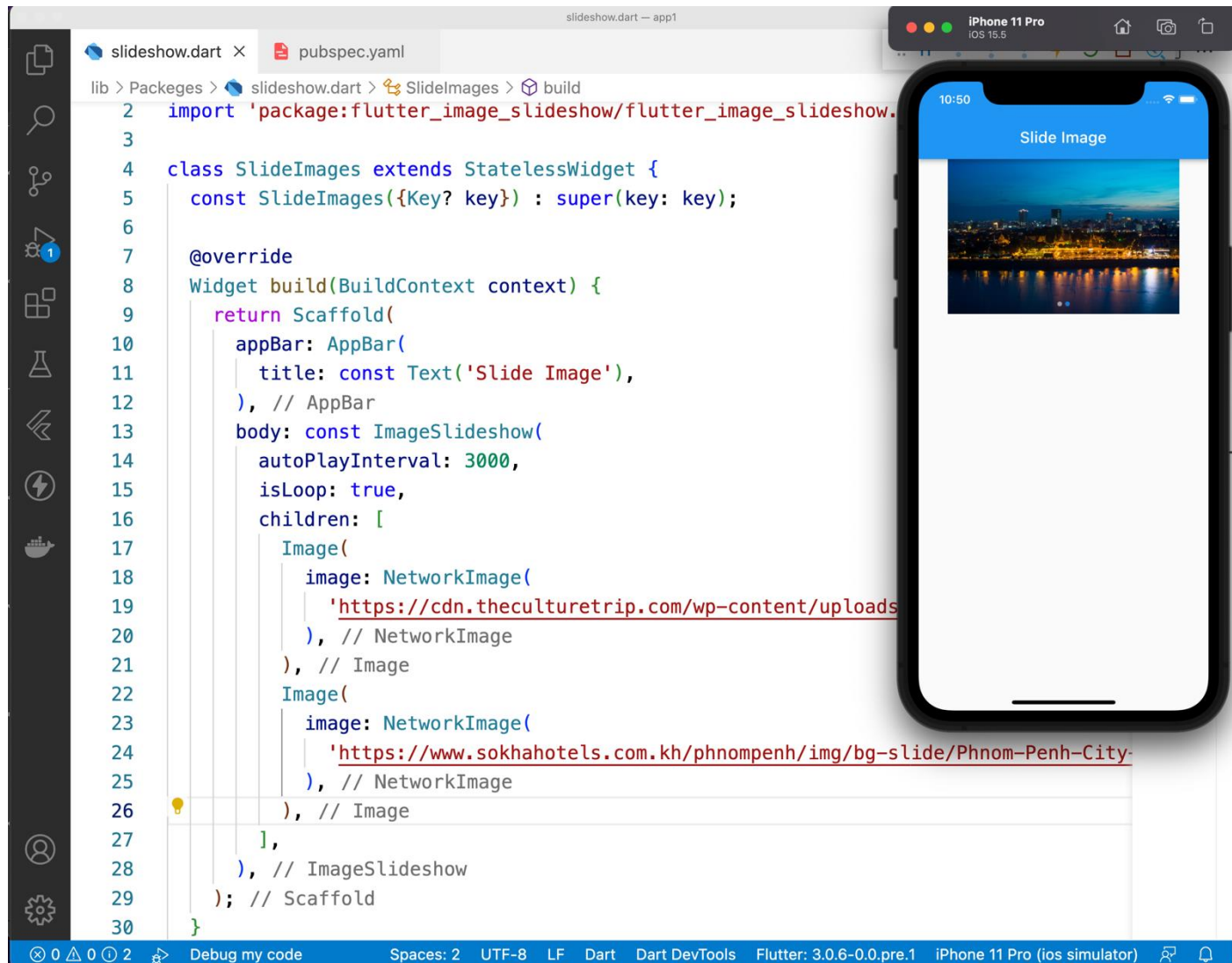
1. Image slideshow



```
slideshow.dart  pubspec.yaml ×
pubspec.yaml
28 # versions available, run `flutter pub outdated`.
29 dependencies:
30   flutter_image_slideshow: ^0.1.3
31   flutter:
32     sdk: flutter
33
34
```

Add packages to pubspace.yaml

ឧទាហរណ៍



2. Open camera and Gallery

Add packages

image_picker: ^0.8.5+3

Android config

ទីតាំង `Android>app>src>main>AndroidManifest.xml`

`android:requestLegacyExternalStorage="true"`

IOS config

ទីតាំង ios>Runner>Infor.plist

```
<key>UISupportedInterfaceOrientations</key>

<key>NSCameraUsageDescription</key>

<string> To choose user profile image</string>

<key>NSMicrophoneUsageDescription</key>

<string>Use to capture audio for image picker plugin</string>
```

Code:

```
Future<void> getImagefromCamera() async {

  final image = await ImagePicker().pickImage(

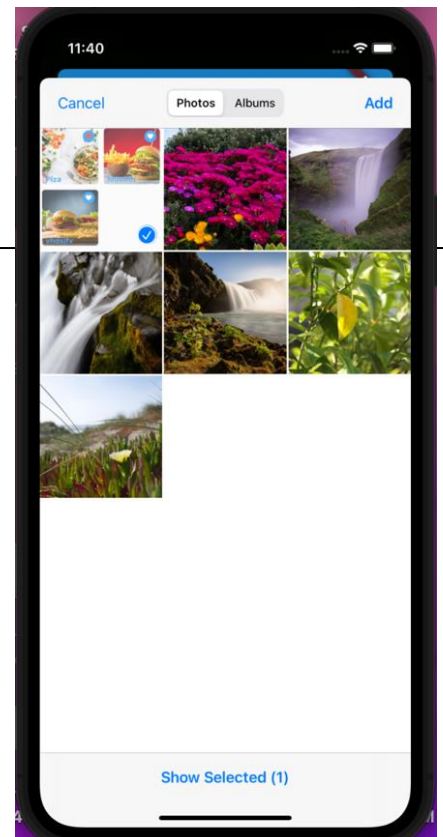
    source: ImageSource.camera, imageQuality: 100);

  setState(() {

    _image = File(image!.path);

  });

}
```





3. Google Map

1. Add Package

dependencies:

google_maps_flutter: ^2.1.10

flutter:

sdk: flutter

2. Config android phone

minSDK

```
android {  
    defaultConfig {  
        minSdkVersion 20  
    }  
}
```

Link API key

[Google Developers Console](#)

```
<manifest ...  
<application ...  
    <meta-data android:name="com.google.android.geo.API_KEY"  
        android:value="YOUR KEY HERE"/>
```

3 .IOS

```
import UIKit  
import Flutter  
import GoogleMaps  
  
@UIApplicationMain  
@objc class AppDelegate: FlutterAppDelegate {  
    override func application(  
        _ application: UIApplication,
```

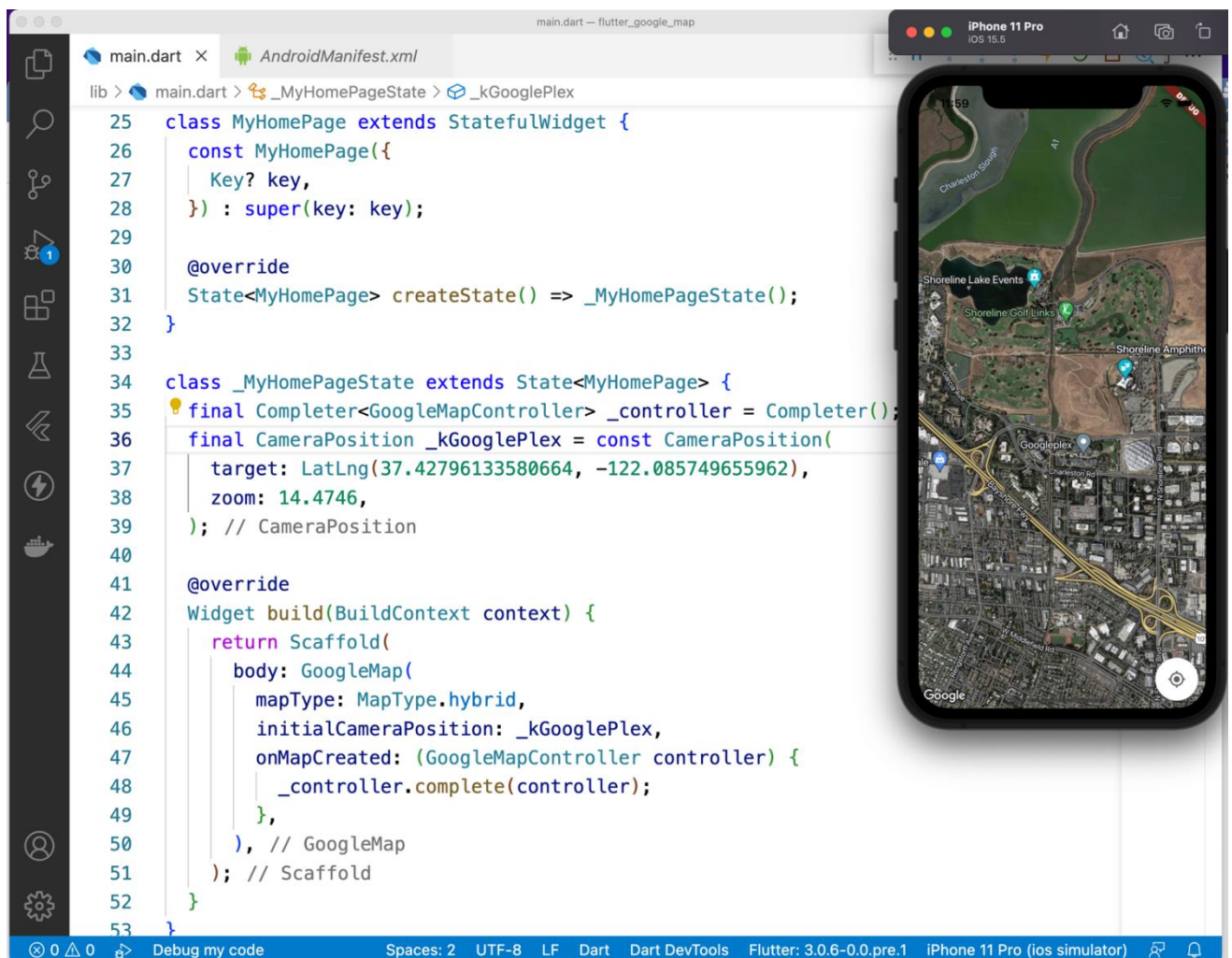

didFinishLaunchingWithOptions launchOptions: [UIApplication.LaunchOptionsKey: Any] ?

```

) -> Bool {
  GMSServices.provideAPIKey( "YOUR KEY HERE" )
  GeneratedPluginRegistrant.register( with: self )
  return super.application( application, didFinishLaunchingWithOptions:
launchOptions )
}
}

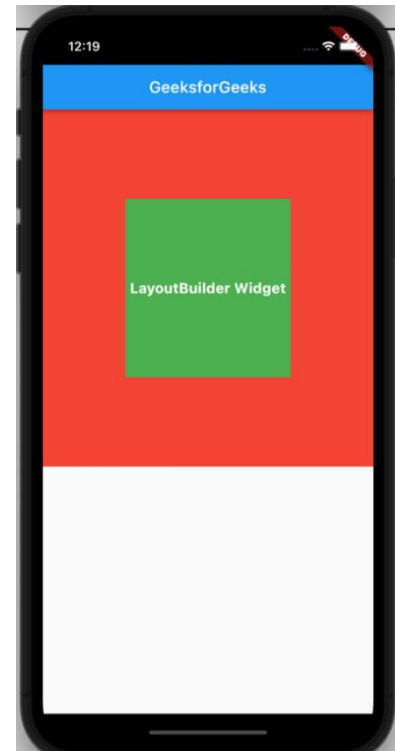
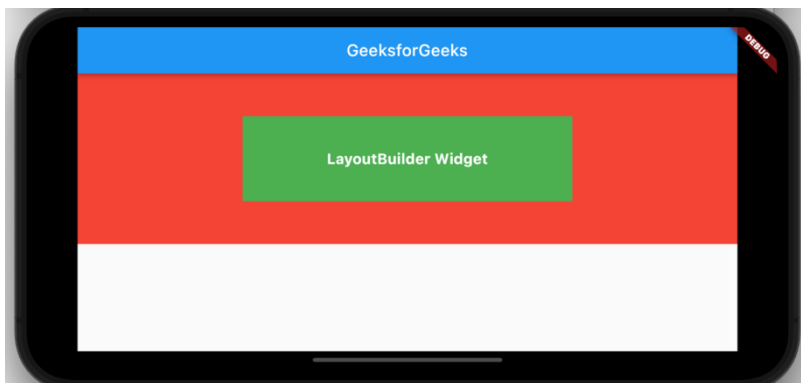
```

ឧទាហរណ៍



III. Responsive Widget

```
@override  
void initState() {  
  super.initState();  
  SystemChrome.setPreferredOrientations([  
    DeviceOrientation.portraitUp,  
    DeviceOrientation.landscapeRight,  
    DeviceOrientation.landscapeLeft
```



```
main.dart — resonsize7_8
main.dart × gridviews.dart screensize.dart
lib > main.dart > _MyHomePageState
46
47 @override
48 Widget build(BuildContext context) {
49   double sizeScreen = MediaQuery.of(context).size.width;  The value of the loca
50
51   return SafeArea(
52     child: Scaffold(
53       appBar: AppBar(title: const Text('GeeksforGeeks')),
54       body: Container(
55         color: Colors.red,
56         height: MediaQuery.of(context).size.height * 0.5,
57         width: MediaQuery.of(context).size.width,
58         alignment: Alignment.center,
59         child: LayoutBuilder(
60           builder: (BuildContext ctx, BoxConstraints constraints) {
61             return Container(
62               color: Colors.green,
63               alignment: Alignment.center,
64               height: constraints.maxHeight * 0.5,
65               width: constraints.maxWidth * 0.5,
66               child: const Text('LayoutBuilder Widget',
67                 style: TextStyle(
68                   fontSize: 18,
69                   fontWeight: FontWeight.bold,
70                   color: Colors.white,
71                 )), // TextStyle // Text
72             ); // Container
73           }, // LayoutBuilder
74         ), // Container
75       ), // Scaffold
76     ); // SafeArea
77   }
```



Example2:

main.dart

gridviews.dart x

screensize.dart

lib > gridviews.dart > DataGridViewState > build

```
23 List list = [1, 4, 2, 5, 6, 3, 2, 6, 7, 8, 3, 4, 2, 3, 5, 3, 64, 232,
24
25 @override
26 Widget build(BuildContext context) {
27   return Scaffold(
28     appBar: AppBar(),
29     body: GridView.count(
30       scrollDirection:
31         MediaQuery.of(context).orientation == Orientation.portrait
32           ? Axis.vertical
33           : Axis.horizontal,
34       crossAxisCount: 2,
35       mainAxisSpacing: 3,
36       crossAxisSpacing: 3,
37       children: List.generate(
38         list.length,
39         (index) => Container(
40           height: 100,
41           width: 100,
42           color: Colors.blueAccent,
43           child: Center(
44             child: Text(
45               list[index].toString(),
46               style: TextStyle(fontSize: 30), // Prefer const with constant constructs
47             ), // Text
48           ), // Center
49         ), // Container
50       ), // List.generate
51     ), // GridView.count
52   ); // Scaffold
53 }
```

iPhone 11 - iOS 15.5

12:36

1	4
2	5
6	3
2	6

2 6 | 2 | 7 | 3 |

5 3 | 6 | 8 | 4 |

គ្រូបង្រៀនបច្ចេកទេសកុំព្យូទ័រ: គ្រូបង្រៀនបច្ចេកទេសកុំព្យូទ័រ អគ្គនាយកដ្ឋានបច្ចេកទេសកុំព្យូទ័រ អគ្គនាយកដ្ឋានបច្ចេកទេសកុំព្យូទ័រ

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