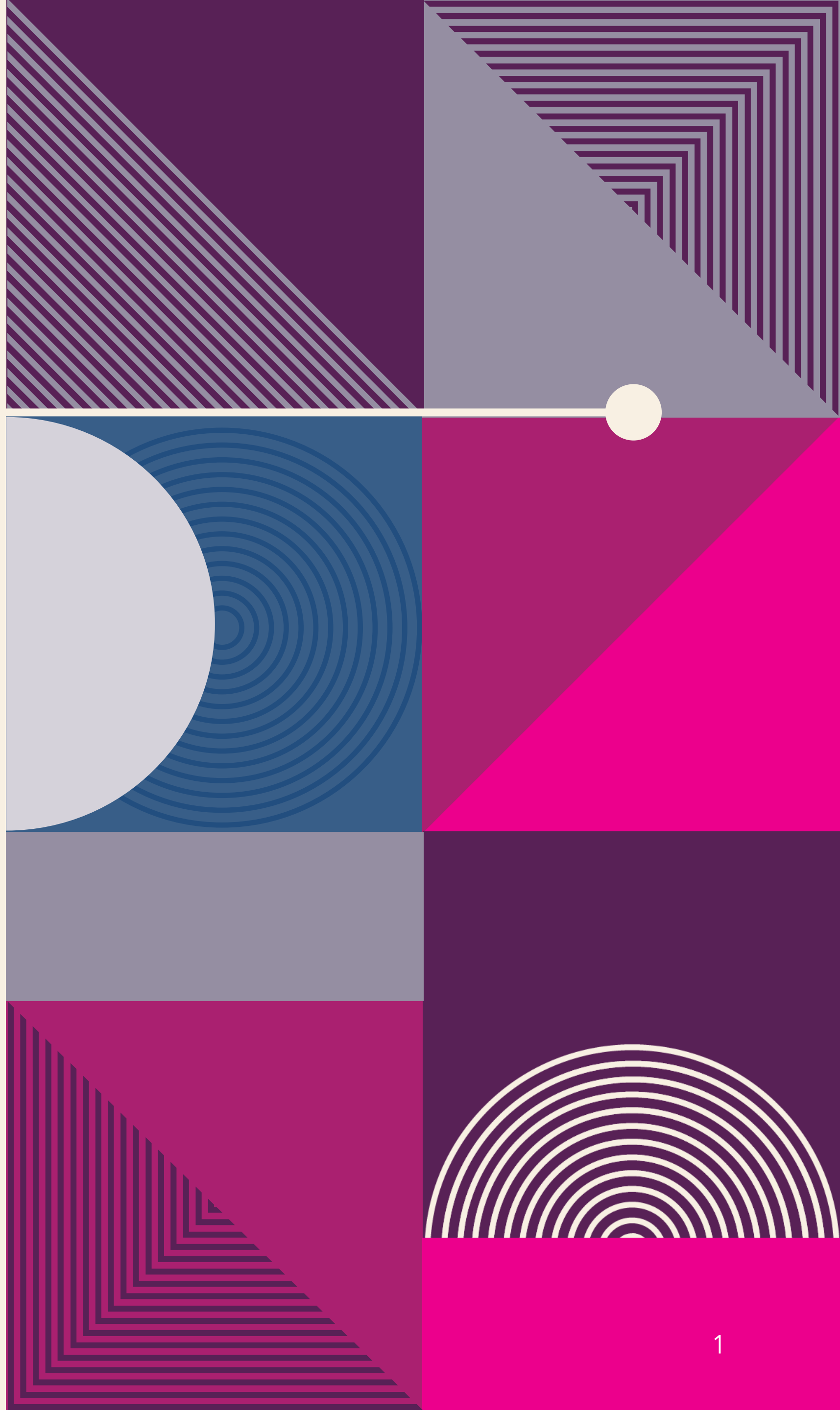
Using Common Widgets



USING BASIC WIDGETS

1. **Scaffold:** implements the basic Material Design **visual layout**, allowing you to add various widgets such as **AppBar**, **BottomAppBar**, **FloatingActionButton**, **Drawer**, **SnackBar**, **BottomSheet**.
2. **AppBar:** The AppBar widget usually contains the standard **title**, **toolbar**, **leading**, and **actions** properties (along with buttons).

– **title:** The title property is typically implemented with a **Text widget**.

– **leading** : displayed before the **title** property. **Usually** this is an **IconButton** or **BackButton**.

– **actions** : displayed to the **right** of the **title property**. It's a list of widgets aligned to the upper right of an **AppBar** widget usually with an **IconButton** or **PopupMenuButton**.

– **flexibleSpace** The flexibleSpace property is **stacked** behind the **Toolbar** or TabBar widget.

1. **SafeArea** : The SafeArea widget automatically adds sufficient padding to the child widget to avoid intrusions by the operating system.
2. **Container:** The Container widget is a commonly used widget that allows **customization of its child widget**. You can easily add properties such as **color, width, height, padding, margin, border, constraint, alignment, transform** .
3. **Text** : The Text widget is used to display a **string of characters**.

6. RichText: The RichText widget is a great way to display text **using multiple styles**.

7. Column: A Column widget displays its children **vertically**. It takes a children property containing an array of **List<Widget>,** meaning you can add multiple widgets. Each child widget can be embedded in an **Expanded** widget to fill the available space. CrossAxisAlignment, MainAxisAlignment, and MainAxisSize can be used to align and size how much space is occupied on the **main axis**.

8. Row: A Row widget displays its children **horizontally**. It takes a children property containing an array of **List<Widget>.** The same properties that the Column contains are applied to the Row widget.

9. Buttons : such as ElevatedButton, FloatingActionButton, TextButton, IconButton, PopupMenuButton, and ButtonBar.

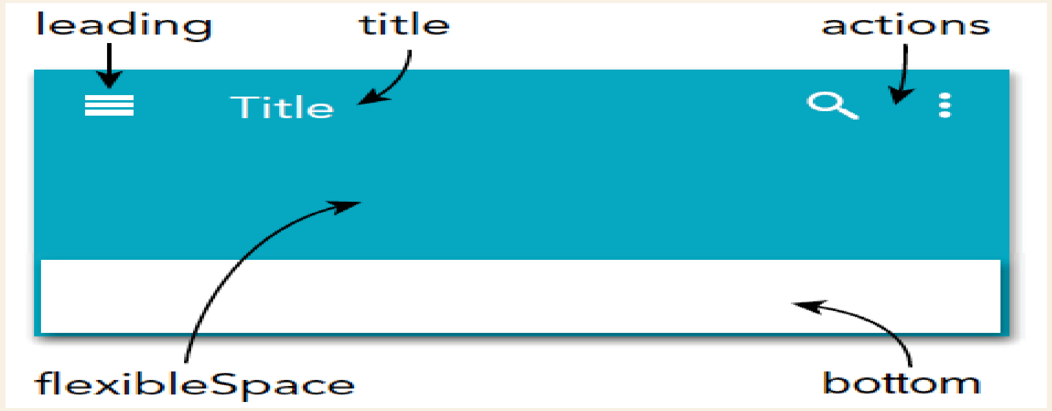
Adding AppBar Widgets

Create a new Flutter project. For this project, you need to **create** the **pages folder** only.

1. Open the **main.dart** file. Change the **primarySwatch** property from **blue** to lightGreen.

```
primarySwatch: Colors.lightGreen,
```

2. Open the **home.dart** file. **Start** by customizing the **AppBar** widget properties.



3. Add to the **AppBar** a **leading IconButton**. If you **override** the leading property, it is usually an IconButton or BackButton.

```
leading: IconButton(
  icon: Icon(Icons.menu),
  onPressed: () {},
),
```

4. The **title** property is usually a **Text** widget, you have already added the Text widget to the title property; if not, add the Text widget with a value of 'Home'.

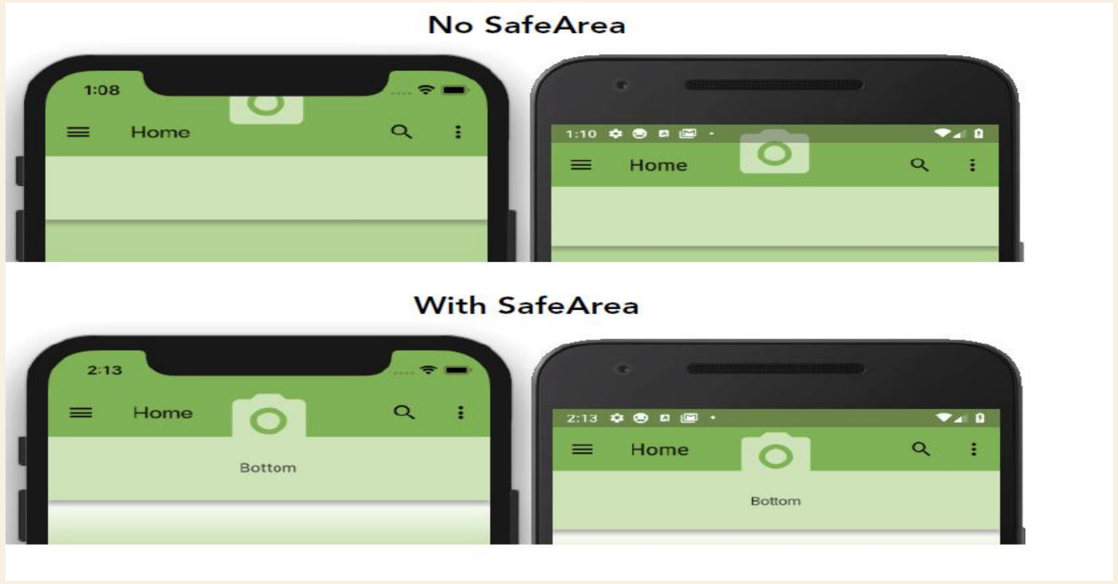
```
title: Text('Home'),
```

1. The **actions** property takes a **list of widgets**; add two **IconButton** widgets.

```
actions: <Widget>[
  IconButton(
    icon: Icon(Icons.search),
    onPressed: () {},
  ),
  IconButton(
    icon: Icon(Icons.more_vert),
    onPressed: () {},
  ),
],
```

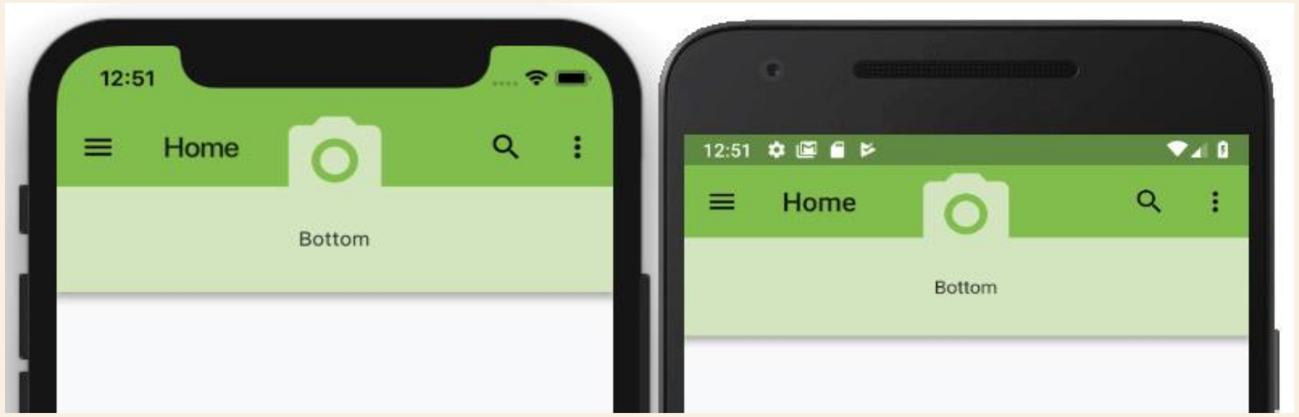
1. Because you are using an **Icon** for the **flexibleSpace** property, let's **add** a **SafeArea** and an **Icon** as a **child**.

```
flexibleSpace: SafeArea(
  child: Icon(
    Icons.photo_camera,
    size: 75.0,
    color: Colors.white70,
  ),
),
```



1. Add a **PreferredSize** for the **bottom** property with a Container for a child.

```
bottom: PreferredSize(
  child: Container(
    color: Colors.lightGreen.shade100,
    height: 75.0,
    width: double.infinity,
    child: Center(
      child: Text('Bottom'),
    ),
  ),
  preferredSize: Size.fromHeight(75.0),
),
```



Adding a **SafeArea** to the **Body**

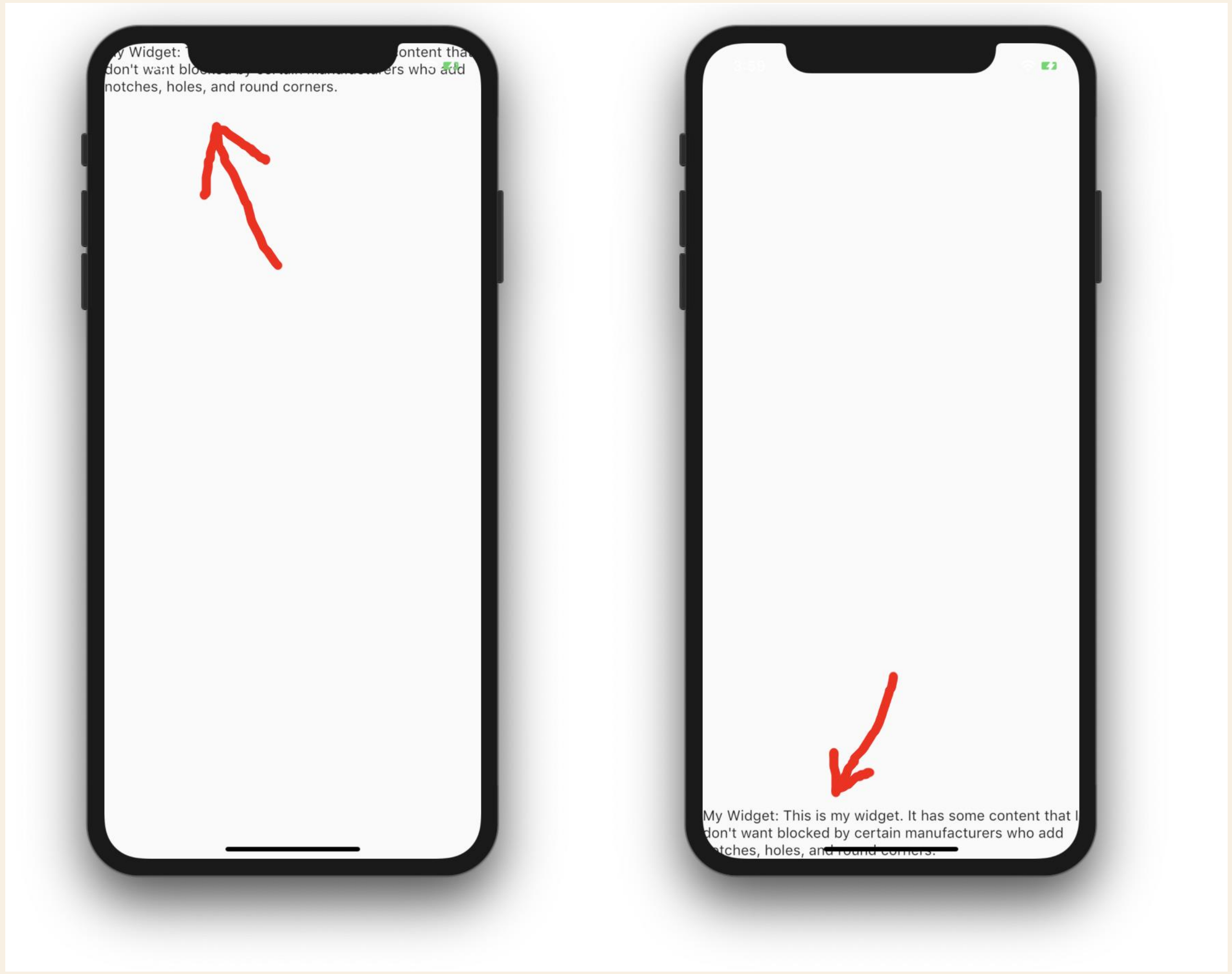
Continue modifying the **home.dart** file.

Add a **Padding** widget to the **body property** with a **SafeArea** as a **child**. add a **SingleChildScrollView** as a child of the **SafeArea**. The **SingleChildScrollView** allows the user to scroll and view hidden widgets;

```
body: Padding(
  padding: EdgeInsets.all(16.0),
  child: SafeArea(
    child: SingleChildScrollView(
      child: Column(
        children: <Widget>[
                    ],
                ),
            ),
        ),
),
```

Here is an example without SafeArea set:

```
Align(
  alignment: Alignment.topLeft,  // and bottomLeft
  child: Text('My Widget: ...'),
)
```

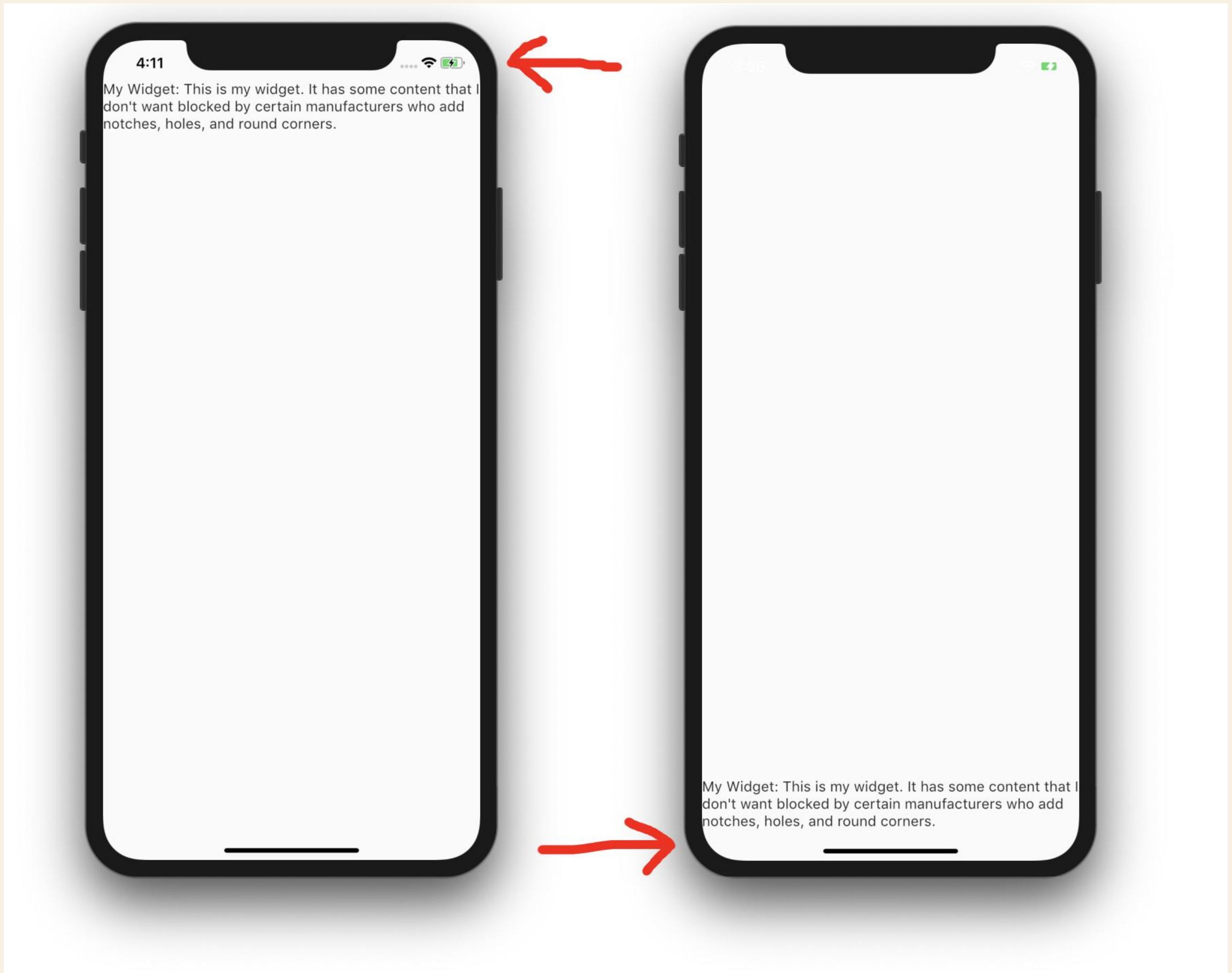


y Widget: ontent tha
don't want blo ers who add
notches, holes, and round corners.

My Widget: This is my widget. It has some content that I
don't want blocked by certain manufacturers who add
tches, holes, and round corners.

And again with the widget wrapped in a SafeArea widget:

```
Align(
  alignment: Alignment.topLeft,  // and bottomLeft
  child: SafeArea(
    child: Text('My Widget: ...'),  ), )
```

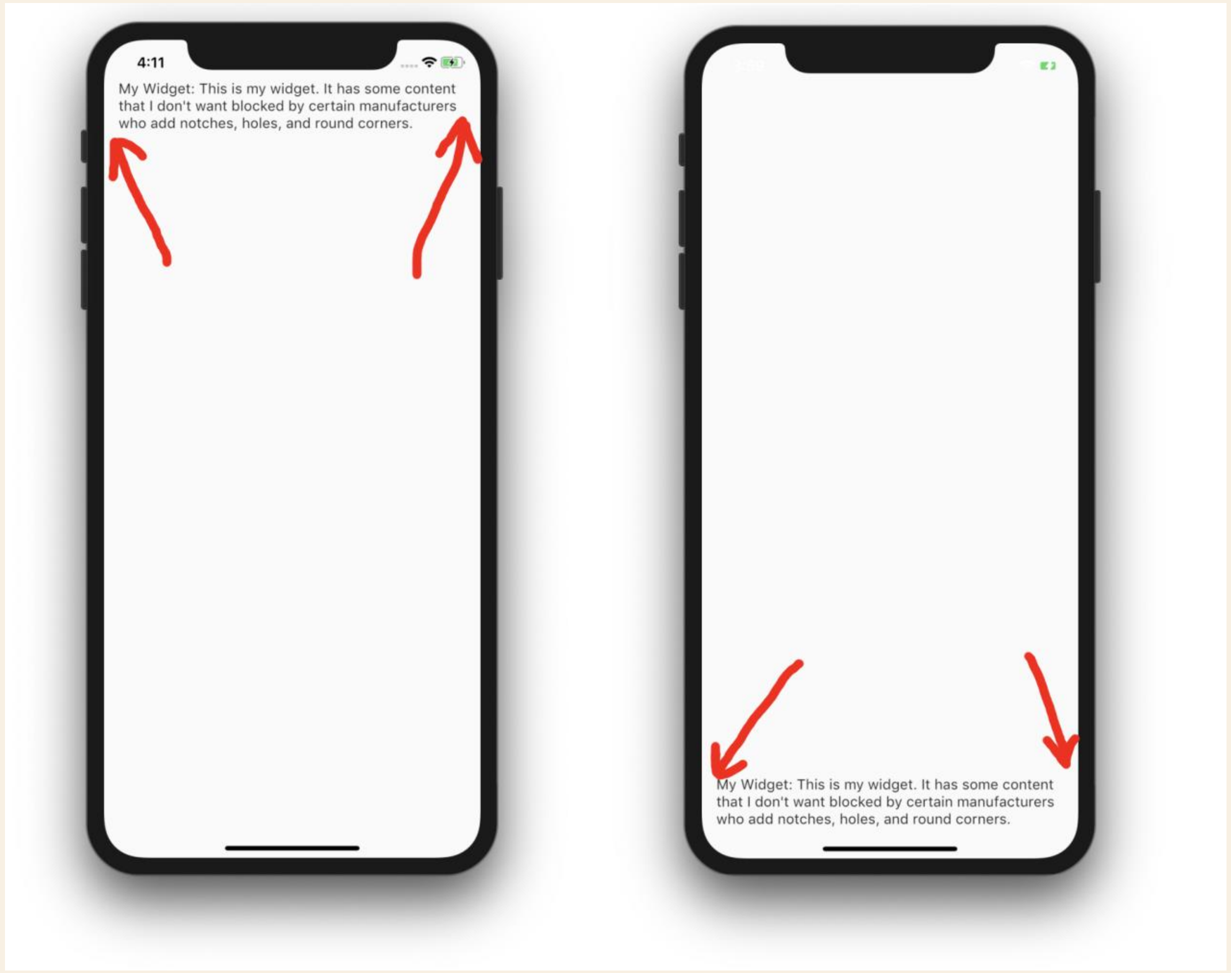


My Widget: This is my widget. It has some content that I don't want blocked by certain manufacturers who add notches, holes, and round corners.

My Widget: This is my widget. It has some content that I don't want blocked by certain manufacturers who add notches, holes, and round corners.

You can set a minimum padding for edges not affected by notches and such:

```
SafeArea(
  minimum: const EdgeInsets.all(16.0),
  child: Text('My Widget: ...'),
)
```


4:11
My Widget: This is my widget. It has some content that I don't want blocked by certain manufacturers who add notches, holes, and round corners.
My Widget: This is my widget. It has some content that I don't want blocked by certain manufacturers who add notches, holes, and round corners.

You can also turn off the safe area insets for any side:

```
SafeArea(
  left: false,
  top: false,
  right: false,
  bottom: false,
  child: Text('My Widget: ...'),
)
```

Setting them all to false would be the same as not using SafeArea. The default for all sides is true. Most of the time you will not need to use these settings, but I can imagine a situation where you have a widget that fills the whole screen. You want the top to not be blocked by anything, but you don't care about the bottom. In that case, you would just set bottom: false but leave the other sides to their default true values.

```
SafeArea(
  bottom: false,
  child: myWidgetThatFillsTheScreen,
)
```

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

void main() => runApp(MyApp());

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      home: Scaffold(
        body: BodyWidget(),   ),   );  } }
class BodyWidget extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Align(
      alignment: Alignment.topLeft,
      child: SafeArea(
        left: true,
        top: true,
        right: true,
        bottom: true,
        minimum: const EdgeInsets.all(16.0),
        child: Text( ‘My Widget: This is my widget. It has some content that I don\’t
                     want ‘ 'blocked by certain manufacturers who add notches, holes, and round
corners.’),   ),
    );
} }
```

Adding a Container

Continue modifying the **home.dart** file.

1. **In last step** for the **Column children**, add the call to the **ContainerWithBoxDecorationWidget()** widget class, which you will **create next**. Make sure the widget class uses the **const** keyword to take advantage of caching (**performance**).

```
body: Padding(
  padding: EdgeInsets.all(16.0),
  child: SafeArea(
    child: SingleChildScrollView(
      child: Column(
        children: <Widget>[
          const ContainerWithBoxDecorationWidget(),
],
               ),
          ),
     ),
),
```

1. Create the **ContainerWithBoxDecorationWidget() widget class after** class Home extends StatelessWidget {...}.

```
class ContainerWithBoxDecorationWidget extends StatelessWidget {
  const ContainerWithBoxDecorationWidget({
    Key key,
  }) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return Column(
      children: <Widget>[
        Container(),
            ],
         );
    }
}
```

2. Start **adding properties to the Container** by adding a **height** of **100.0 pixels**. Then go to the next line to add the **decoration** property, which accepts a **BoxDecoration** class. The BoxDecoration class provides different ways to **draw a box**.

```
Container(
  height: 100.0,
  decoration: BoxDecoration(),
),
```

3. Using the named constructor **BorderRadius.only()** allows you to control the sides to draw **round corners**.

```
decoration: BoxDecoration(
   borderRadius: BorderRadius.only(
     bottomLeft: Radius.circular(100.0),
     bottomRight: Radius.circular(10.0),
  ),
),
```

- The BoxDecoration also supports a gradient property.

```
gradient: LinearGradient(
  begin: Alignment.topCenter,
  end: Alignment.bottomCenter,
  colors: [
    Colors.white,
    Colors.lightGreen.shade500,
  ],
),
```

4. The boxShadow property is a great way to customize a shadow, and it takes a list of BoxShadows, called List<BoxShadow>.

- For the **BoxShadow**, set the **color**, **blurRadius**, and **offset** properties.

```
boxShadow: [
  BoxShadow(
    color: Colors.grey,
    blurRadius: 10.0,
    offset: Offset(0.0, 10.0),
  ),
],
```

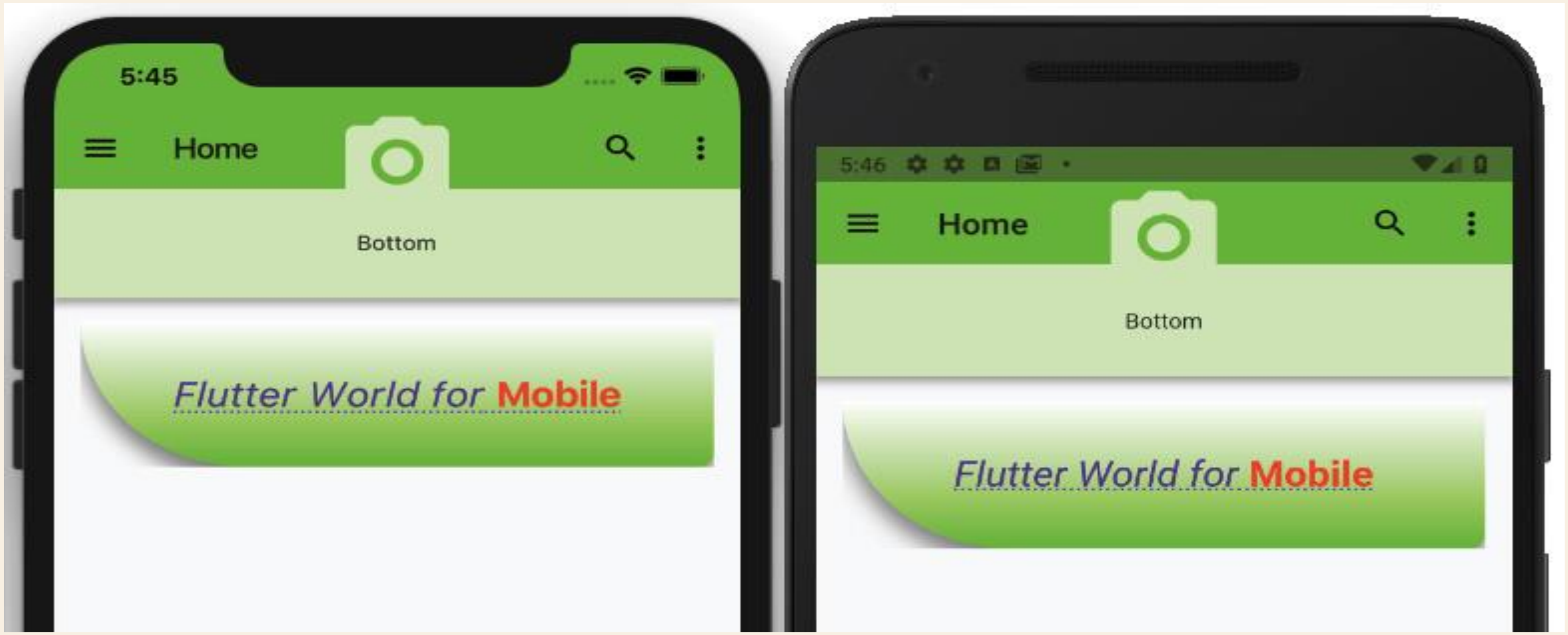
5. Add a **Center** widget as a child of the **Container**, and add to the Center widget child a **RichText** widget.

- By using the **RichText** widget and combining different **TextSpan** objects

```
child: Center(
  child: RichText(
    text: TextSpan(
      text: 'Flutter World',
      style: TextStyle(
        fontSize: 24.0,
        color: Colors.deepPurple,
        decoration: TextDecoration.underline,
        decorationColor: Colors.deepPurpleAccent,
        decorationStyle: TextDecorationStyle.dotted,
        fontStyle: FontStyle.italic,
        fontWeight: FontWeight.normal,
      ),
      children: <TextSpan>[
        TextSpan(
          text: ' for',
        ),
        TextSpan(
          text: ' Mobile',
          style: TextStyle(
              color: Colors.deepOrange,
              fontStyle: FontStyle.normal,
              fontWeight: FontWeight.bold),
        ),
      ],
    ),   ), ),
```

Full ContainerWithBoxDecorationWidget() widget **class source code**:

```
class ContainerWithBoxDecorationWidget extends StatelessWidget {
  const ContainerWithBoxDecorationWidget({
    Key key,
  }) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return Column(
      children: <Widget>[
        Container(
          height: 100.0,
          decoration: BoxDecoration(
            borderRadius: BorderRadius.only(
              bottomLeft: Radius.circular(100.0),
              bottomRight: Radius.circular(10.0),
            ),
   gradient: LinearGradient(
                 begin: Alignment.topCenter,
                 end: Alignment.bottomCenter,
                 colors: [
                   Colors.white,
                   Colors.lightGreen.shade500,
                 ],
               ),
               boxShadow: [
                 BoxShadow(
                   color: Colors.grey,
                   blurRadius: 10.0,
                   offset: Offset(0.0, 10.0),
                 ),
               ],
             ),
   child: Center(
               child: RichText(
                 text: TextSpan(
                   text: 'Flutter World',
                   style: TextStyle(
                     fontSize: 24.0,
                     color: Colors.deepPurple,
                     decoration: TextDecoration.underline,
                     decorationColor: Colors.deepPurpleAccent,
                     decorationStyle: TextDecorationStyle.dotted,
                     fontStyle: FontStyle.italic,
                     fontWeight: FontWeight.normal,
                   ),
       children: <TextSpan>[
                       TextSpan(
                         text: ' for',
                       ),
                       TextSpan(
                         text: ' Mobile',
                         style: TextStyle(
                             color: Colors.deepOrange,
                             fontStyle: FontStyle.normal,
                             fontWeight: FontWeight.bold),
                       ),
                     ],
                   ),
                 ),
               ),
             ),
           ],
         );
       }
     }
```



Flutter World for Mobile

Flutter World for Mobile

Adding **Column**, **Row**, and **Nesting the Row and Column** together as Widget Classes

1. **Add** the **widget class** names **ColumnWidget**(), **RowWidget**(), and **ColumnAndRowNestingWidget**() to the **Column** children widget list. The **Column widget** is located in the **body property**. **Add** a **Divider()** widget between each widget class name. Make sure each widget class uses the **const** keyword.

```
body: Padding(
  padding: EdgeInsets.all(16.0),
  child: SafeArea(
    child: SingleChildScrollView(
      child: Column(
        children: <Widget>[
          //ContainerWithBoxDecorationWidget
          const ContainerWithBoxDecorationWidget(),
          Divider(),
          //ColumnWidget,
          const ColumnWidget(),
          Divider(),
          //RowWidget,
          const RowWidget(),
          Divider(),
          //ColumnAndRowNestingWidget,
          const ColumnAndRowNestingWidget(),
        ],
      ),
    ),  ), ),
```

2. Create the ColumnWidget() widget class after the ContainerWithBoxDecorationWidget() widget class.

```
class ColumnWidget extends StatelessWidget {
  const ColumnWidget({
    Key key,
  }) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return Column(
      crossAxisAlignment:CrossAxisAlignment.center,
      mainAxisAlignment:MainAxisAlignment.spaceEvenly,
      mainAxisSize: MainAxisSize.max,
      children: <Widget>[
        Text('Column 1'),
        Divider(),
        Text('Column 2'),
        Divider(),
        Text('Column 3'),
      ],
    );
  }
}
```

3. Create the **RowWidget**() widget **class** after the **ColumnWidget**() widget **class**.

```
class RowWidget extends StatelessWidget {
  const RowWidget({
    Key key,
  }) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return Row(
      crossAxisAlignment: CrossAxisAlignment.start,
      mainAxisAlignment: MainAxisAlignment.spaceEvenly,
      mainAxisSize: MainAxisSize.max,
      children: <Widget>[
        Row(
          children: <Widget>[
            Text('Row 1'),
            Padding(padding: EdgeInsets.all(16.0),),
            Text('Row 2'),
            Padding(padding: EdgeInsets.all(16.0),),
            Text('Row 3'),
          ],
        ),
      ],
    );
  }
}
```

4. **Create** the ColumnAndRowNestingWidget() widget **class** after the RowWidget() widget class.

```
class ColumnAndRowNestingWidget extends StatelessWidget {
  const ColumnAndRowNestingWidget({
    Key key,
  }) : super(key: key);

  @override
  Widget build(BuildContext context) {
    return Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      mainAxisAlignment: MainAxisAlignment.spaceEvenly,
      mainAxisSize: MainAxisSize.max,
      children: <Widget>[
        Text('Columns and Row Nesting 1',),
        Text('Columns and Row Nesting 2',),
        Text('Columns and Row Nesting 3',),
        Padding(padding: EdgeInsets.all(16.0),),
        Row(
          mainAxisAlignment: MainAxisAlignment.spaceEvenly,
          children: <Widget>[
            Text('Row Nesting 1'),
            Text('Row Nesting 2'),
            Text('Row Nesting 3'),
          ],
        ),
      ],
    );
  }
}
```

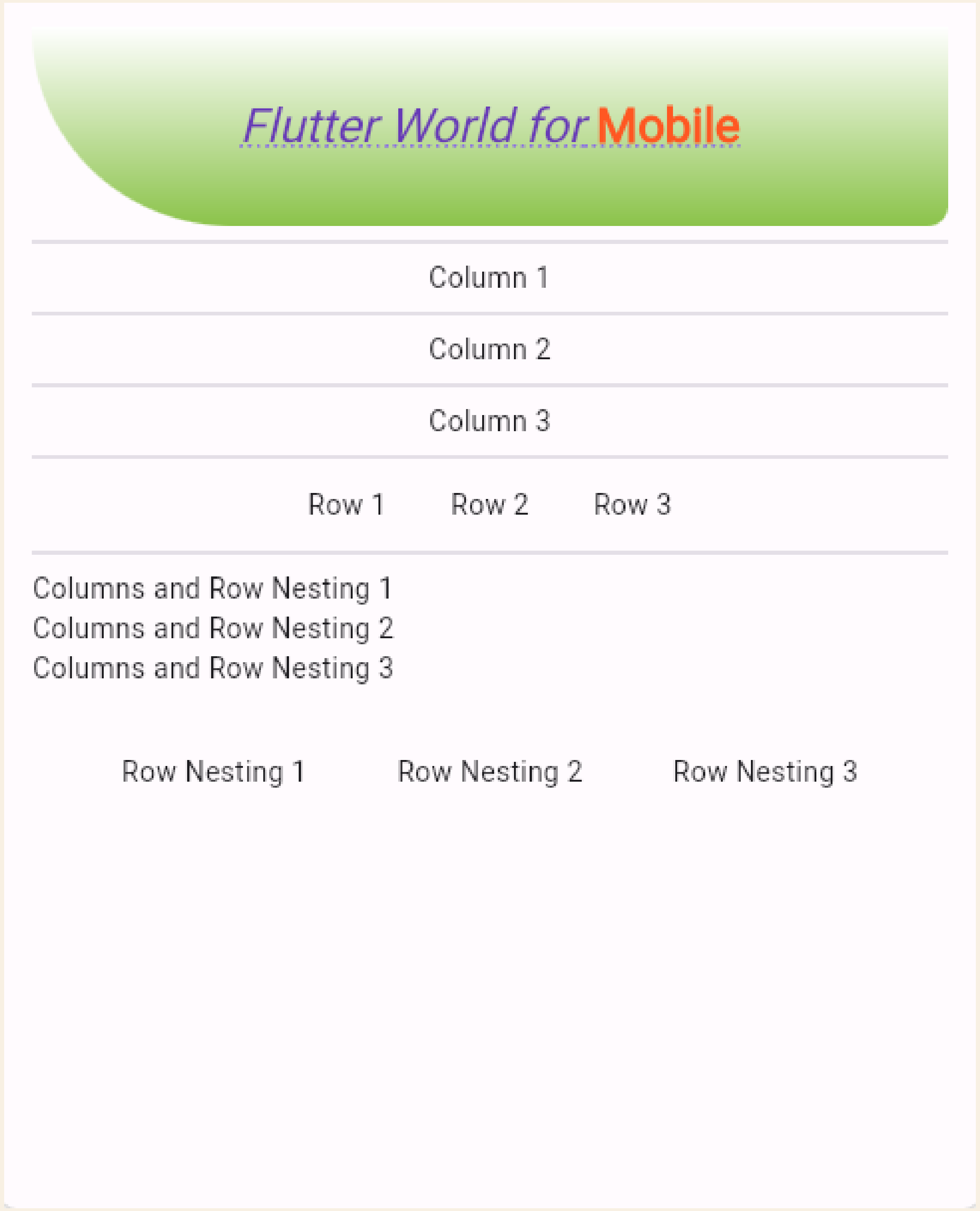
```dart
import 'package:flutter/material.dart';

void main() => runApp(MyApp());

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
        debugShowCheckedModeBanner: false,
        home: Scaffold(
          body: Padding(
            padding: EdgeInsets.all(16.0),
            child: SafeArea(
              child: SingleChildScrollView(
                child: Column(
                  children: <Widget>[
                    const ContainerWithBoxDecorationWidget(),
                    Divider(), //ColumnWidget,
                    const ColumnWidget(),
                    Divider(), //RowWidget,
                    const RowWidget(),
                    Divider(),
                    //ColumnAndRowNestingWidget,
                    const ColumnAndRowNestingWidget(),
                  ],  ),  ),  ),  ), ));
  }}
```

```
class ContainerWithBoxDecorationWidget extends StatelessWidget {
  const ContainerWithBoxDecorationWidget({
    Key? key,
  }) : super(key: key);
  @override
  Widget build(BuildContext context) {
    return Column(
      children: <Widget>[
        Container(
          height: 100.0,
          decoration: BoxDecoration(
            borderRadius: BorderRadius.only(
              bottomLeft: Radius.circular(100.0),
              bottomRight: Radius.circular(10.0),
            ),
            gradient: LinearGradient(
              begin: Alignment.topCenter,
              end: Alignment.bottomCenter,
              colors: [
                Colors.white,
                Colors.lightGreen.shade500,
              ],
            ),
          ),
        child: Center(
          child: RichText(
            text: TextSpan(
              text: 'Flutter World',
              style: TextStyle(
                fontSize: 24.0,
                color: Colors.deepPurple,
                decoration: TextDecoration.underline,
                decorationColor: Colors.deepPurpleAccent,
                decorationStyle: TextDecorationStyle.dotted,
                fontStyle: FontStyle.italic,
                fontWeight: FontWeight.normal,
              ),
              children: <TextSpan>[
                TextSpan(
                  text: ' for',
                ),
                TextSpan(
                  text: ' Mobile',
                  style: TextStyle(
                      color: Colors.deepOrange,
                      fontStyle: FontStyle.normal,
                      fontWeight: FontWeight.bold),
                ) ], ),),),),], );
}}
```

```dart
class ColumnWidget extends StatelessWidget {
  const ColumnWidget({
    Key? key,
  }) : super(key: key);
  @override
  Widget build(BuildContext context) {
    return Column(
      crossAxisAlignment: CrossAxisAlignment.center,
      mainAxisAlignment: MainAxisAlignment.spaceEvenly,
      mainAxisSize: MainAxisSize.max,
      children: <Widget>[
        Text('Column 1'),
        Divider(),
        Text('Column 2'),
        Divider(),
        Text('Column 3'),
      ],
    );
  }
}
```

```dart
class RowWidget extends StatelessWidget {
  const RowWidget({
    Key? key,
  }) : super(key: key);
  @override
  Widget build(BuildContext context) {
    return Row(
      crossAxisAlignment: CrossAxisAlignment.start,
      mainAxisAlignment: MainAxisAlignment.spaceEvenly,
      mainAxisSize: MainAxisSize.max,
      children: <Widget>[
        Row(
          children: <Widget>[
            Text('Row 1'),
            Padding(
              padding: EdgeInsets.all(16.0),
            ),
            Text('Row 2'),
            Padding(
              padding: EdgeInsets.all(16.0),
            ),
            Text('Row 3'),
          ],
        ),
      ],
    );  }}
```

```
class ColumnAndRowNestingWidget extends StatelessWidget {
  const ColumnAndRowNestingWidget({
    Key? key,
  }) : super(key: key);
  @override
  Widget build(BuildContext context) {
    return Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      mainAxisAlignment: MainAxisAlignment.spaceEvenly,
      mainAxisSize: MainAxisSize.max,
      children: <Widget>[
        Text( 'Columns and Row Nesting 1',        ),
        Text( 'Columns and Row Nesting 2',        ),
        Text( 'Columns and Row Nesting 3',        ),
        Padding(
          padding: EdgeInsets.all(16.0),        ),
        Row(
          mainAxisAlignment: MainAxisAlignment.spaceEvenly,
          children: <Widget>[
            Text('Row Nesting 1'),
            Text('Row Nesting 2'),
            Text('Row Nesting 3'),
          ],
        ),
      ],); }}
```



Flutter World for Mobile

Column 1

Column 2

Column 3

Row 1 Row 2 Row 3

Columns and Row Nesting 1
Columns and Row Nesting 2
Columns and Row Nesting 3

Row Nesting 1 Row Nesting 2 Row Nesting 3