

# Mobile Computing

## Flutter Stateful Widgets Common Widgets

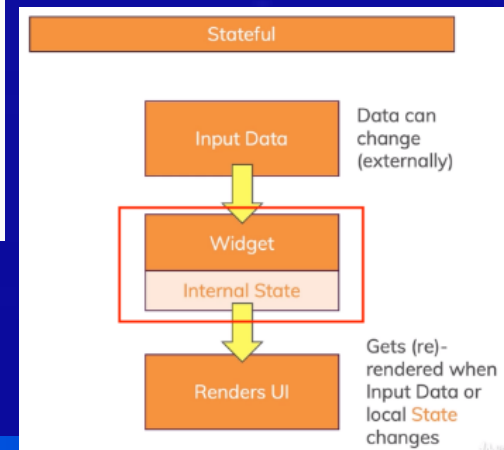
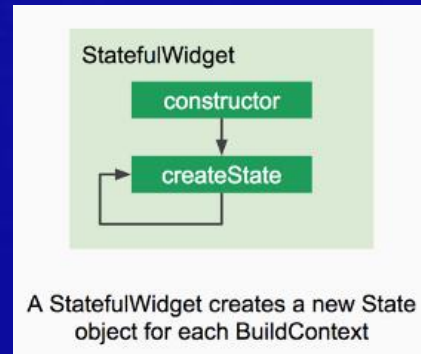
# Stateful Widgets

## ❖ Have an associated state object

- The state object is mutable and redraws the immutable widget through its `build()` method
  - The StatefulWidget derived class should override at least the `createState()` method, that returns the associated state object
  - The associated State class should override the `build()` method that returns the Widget (created the first time or redrawn)

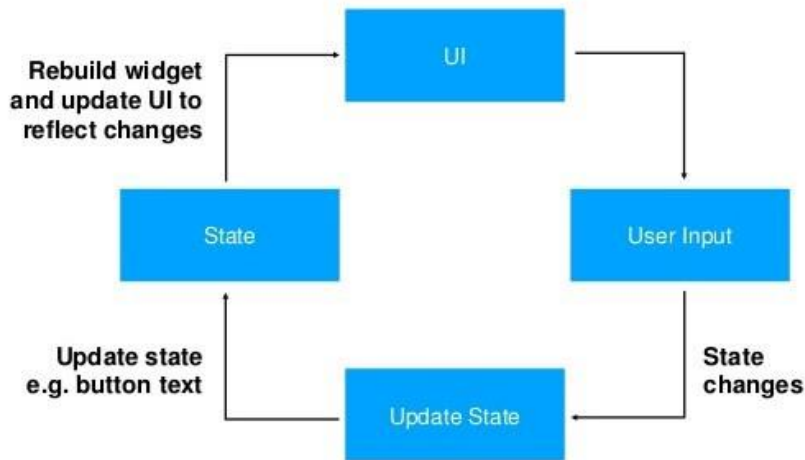
```
class MyWidget extends StatefulWidget {  
  @override  
  _MyWidgetState createState() => _MyWidgetState();  
}  
  
class _MyWidgetState extends State<MyWidget> {  
  sometype value = initvalue;  
  
  @override  
  Widget build(BuildContext context) {  
    return Container(  
      ...  
    );  
  }  
}
```

// the UI of this widget



# Stateful Lifecycle

## Stateful widget



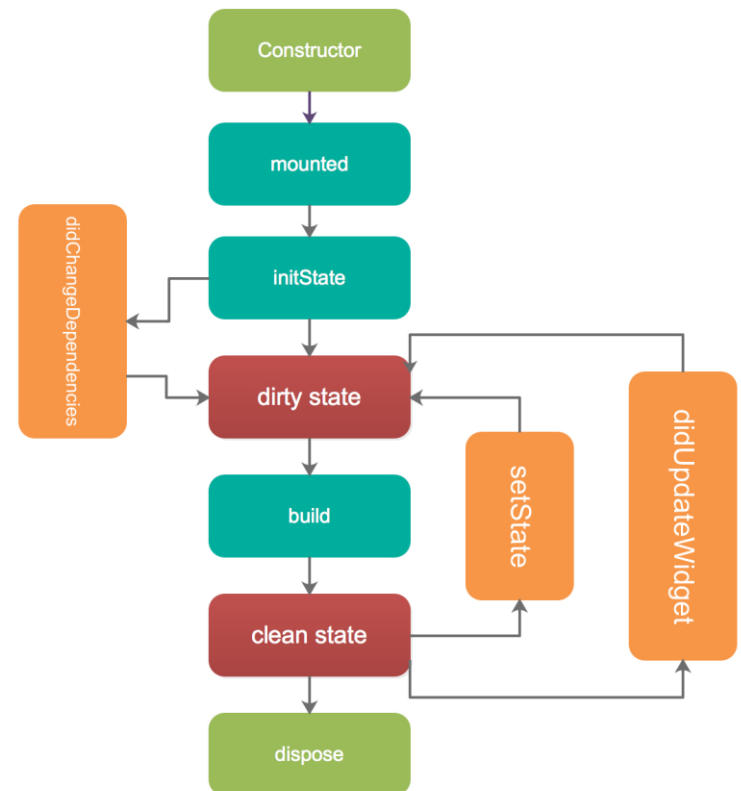
**createState() call** Immediately after construction

**initState() call** Called after creation if overridden

**build() call** To create or redraw a widget tree dependent on the state  
Automatically called if state changes (using setState() or didUpdateWidget())

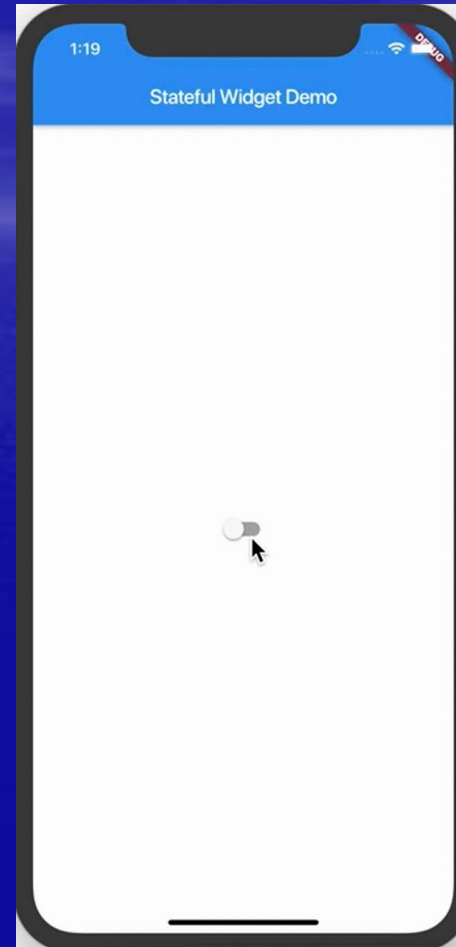
**setState() call** Should be called with a function parameter that changes the state and makes a rebuild

## State object



# Stateful Widget Example

```
1 import 'package:flutter/material.dart';
2
3 void main() => runApp(MyHomePage());
4
5 class MyHomePage extends StatefulWidget {
6   MyHomePage({Key key, this.title}) : super(key: key);
7   final String title;
8   @override
9   _MyHomePageState createState() => _MyHomePageState();
10 }
11
12 class _MyHomePageState extends State<MyHomePage> {
13   bool value = false;
14
15   @override
16   Widget build(BuildContext context) {
17     return MaterialApp(
18       home: new Scaffold(
19         backgroundColor: value ? Colors.black : Colors.white,
20         appBar: new AppBar(
21           title: new Text('Stateful Widget Demo'),
22         ),
23         body: Center(
24           child: Switch(
25             value: value,
26             onChanged: (v) {
27               setState(() {
28                 value = v;
29               });
30             },
31           ),
32         ),
33       );
34   }
35 }
```



When the user clicks the Switch the `onChanged` method runs.

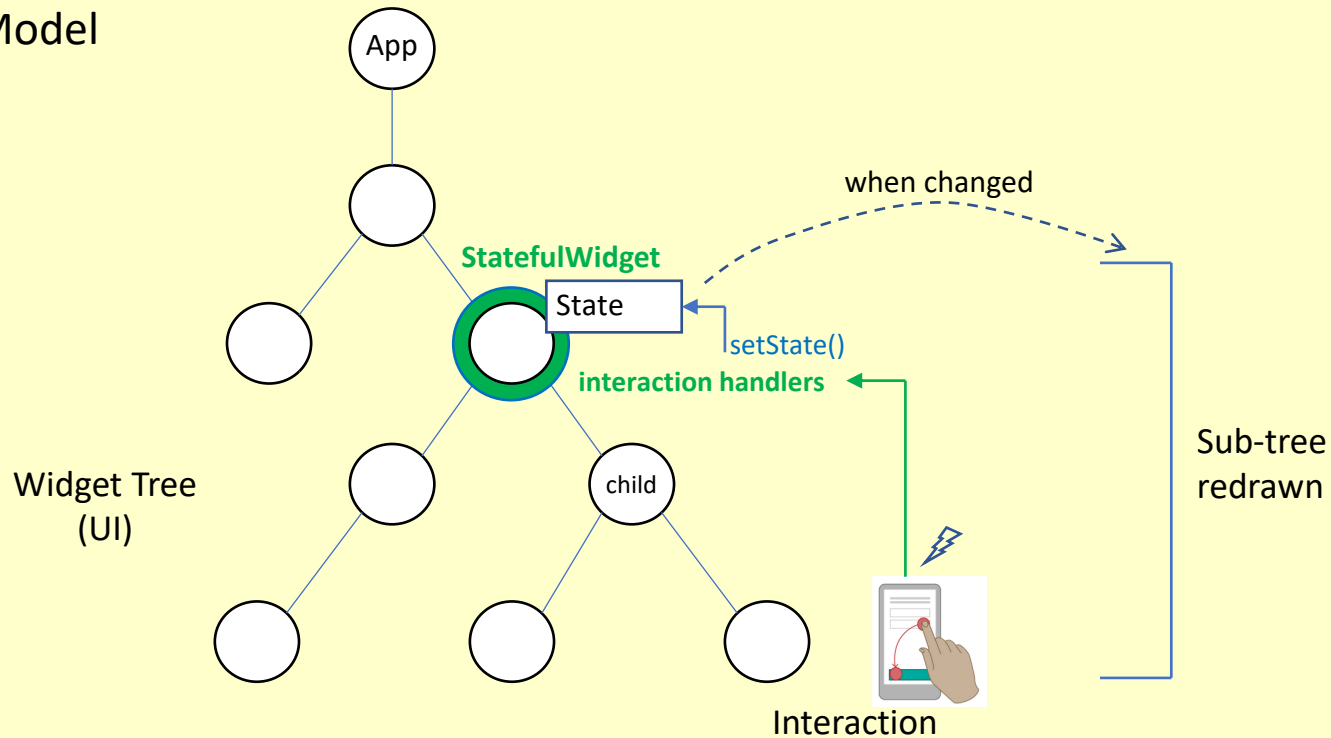
It calls `setState()` on `_MyHomePageState` changing the property value.

The widgets that depend on it (Scaffold, Switch) are rebuilt.



# State Management (Stateful Widgets)

Stateful Widget Based  
State  
Management  
Model



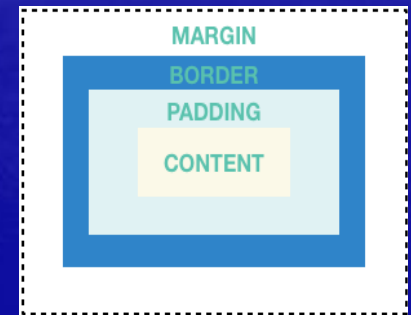
# Some Generic Layout Widgets

The **Widgets** Flutter Framework library contains **935 classes** and **3 exception** types

Some represent the top-level app like **MaterialApp** or **CupertinoApp** and some others the common structure of a page, like **Scaffold**

To organize the page (screen) widget tree there are many other widgets that can be used, with one child or multiple children.

Many visual widgets can have the depicted decorations around them, usually defined in other widgets, like **Padding**, **BoxDecoration**, or the **Container** widget.



Column



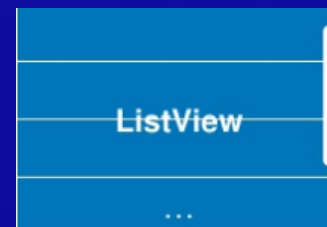
Row

Layout a list of children in vertical or horizontal direction



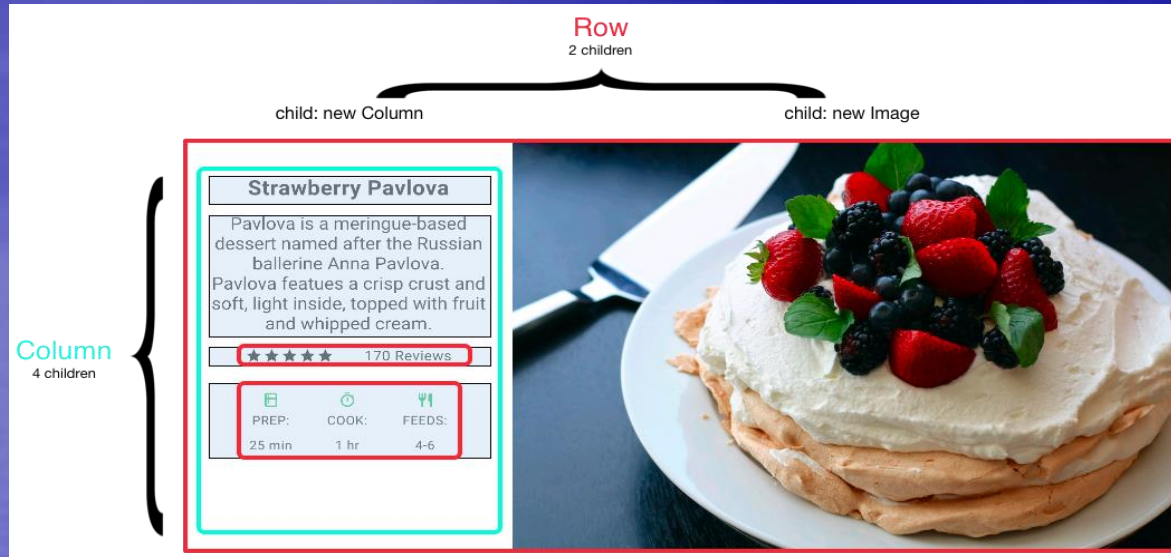
Stack

Layout the children overlapped



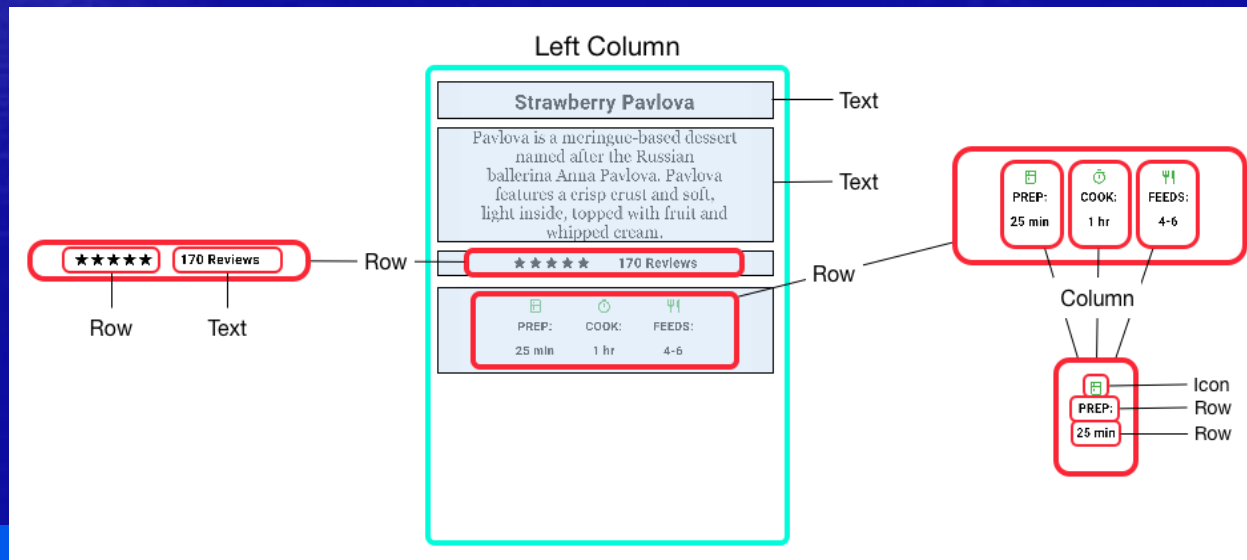
Scrollable displays of other widgets in a linear or tabular layout

# An Example

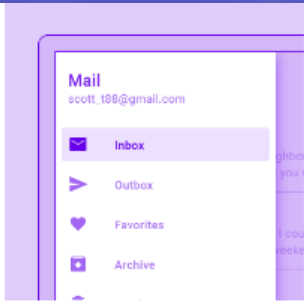


Top structure

The left Column

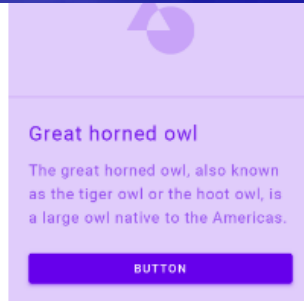


# Some Other Widgets



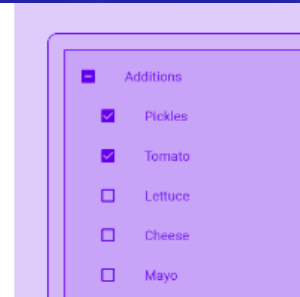
## Drawer

A Material Design panel that slides in horizontally from the edge of a Scaffold to show navigation links in an application.



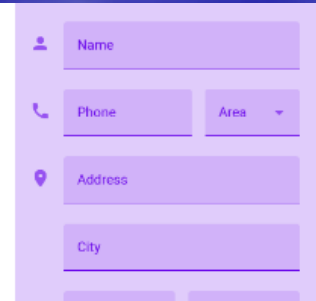
## RaisedButton

A Material Design raised button. A raised button consists of a rectangular piece of material that hovers over the interface.



## Checkbox

Checkboxes allow the user to select multiple options from a set. The Checkbox widget implements this component.



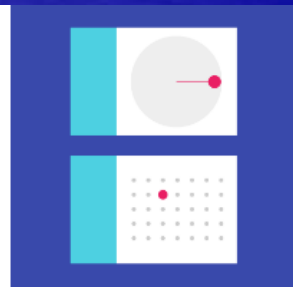
## TextField

Touching a text field places the cursor and displays the keyboard. The TextField widget implements this component.



## Image

A widget that displays an image.



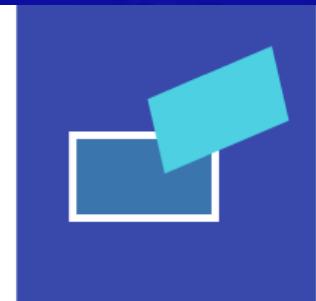
## Date & Time Pickers

Date pickers use a dialog window to select a single date on mobile. Time pickers use a dialog to select a single time (in the hours:minutes format) on mobile.



## Text

A run of text with a single style.



## Transform

A widget that applies a transformation before painting its child.