<https://docs.flutter.dev/ui>

* The central idea is that you build your UI out of widgets. Widgets describe what their view should look like given their current configuration and state. When a widget's state changes, the widget rebuilds its description, which the framework differs against the previous description in order to determine the minimal changes needed in the underlying render tree to transition from one state to the next.
* The minimal Flutter app simply calls the runApp() function with a widget
  + Example in article.

Common Basic Widgets:

* Text
  + The Text widgets lets you create a run of styled text within your application.
* Row, Column
  + These flex widgets let you create flexible layouts in both the horizontal (Row) and vertical (Column) directions. The design of these objects is based on the web’s flex box layout model
* Stack
  + Instead of being linearly oriented (either horizontally or vertically), a Stack widget lets you place widgets on top of each other in paint order. You can then use the Positioned widget on children of a Stack to position them relative to the top, right, bottom, or left edge of the stack, Stacks are based on the web’s absolute positioning layout model.
* Container
  + The Container widgets lets you create a rectangular visual element. A container can be decorated with a BoxDecoration, such as a background, a border, or a shadow. A Container can also have margins, padding, and constraints applied to its size. In addition, a Container can be transformed in three-dimensional space using a matrix.
* Be sure to have a uses-material-design: true entry in the flutter section of your pubspec.yaml file. It allows you to use the predefined set of Material icons. It's generally a good idea to include this line if you are using the Materials library.

name: my\_app

flutter:

uses-material-design: true

* Many Material Design widgets need to be inside of a MaterialApp to display properly, in order to inherit theme data. Therefore, run the application with a MaterialApp.
* Expanded makes a child use any extra space that isn’t being used by the other children
  + Multiple children can be expanded and you can determine the ratios as well
* The MyScaffold widget organizes its children in a vertical column

Using Material Components

* MaterialApp
  + The start of a Material App which builds a number of useful widgets at the root of your app including the Navigator Widget
* Navigator
  + The Navigator lets you transition smoothly between screens of your application.
* *Includes Example Program that shows these off*

Handling Gesture

* The GestureDetector widget doesn't have a visual representation but instead detects gestures made by the user. When the user taps the Container, the GestureDetector calls its onTap() callback, in this case printing a message to the console.
  + You can use GestureDetector to detect a variety of input gestures, including taps, drags, and scales.
* Check out: <https://docs.flutter.dev/ui/interactivity/gestures>

Changing widgets in response to input

* So far, this page has used only stateless widgets.
  + Stateless widgets receive arguments from their parent widget, which they store in final member variables.
  + When a widget is asked to build(), it uses these stored values to derive new arguments for the widgets it creates.
* In order to build more complex experiences—for example, to react in more interesting ways to user input—applications typically carry some state.
  + Flutter uses StatefulWidgets to capture this idea.
  + StatefulWidgets are special widgets that know how to generate State objects, which are then used to hold state.
* You might wonder why StatefulWidget and State are separate objects. In Flutter, these two types of objects have different life cycles.
  + **Widgets** are temporary objects, used to construct a presentation of the application in its current state.
  + **State objects**, on the other hand, are persistent between calls to build(), allowing them to remember information.
* Check Out: [https://api.flutter.dev/flutter/widgets/StatefulWidget-class.html?\_gl=1\*toz7yf\*\_ga\*MTUyNjM2NTM4Mi4xNzI2NTk5MDk5\*\_ga\_04YGWK0175\*MTcyOTEwNjIyMC43LjEuMTcyOTEwNzMxMy4wLjAuMA](https://api.flutter.dev/flutter/widgets/StatefulWidget-class.html?_gl=1*toz7yf*_ga*MTUyNjM2NTM4Mi4xNzI2NTk5MDk5*_ga_04YGWK0175*MTcyOTEwNjIyMC43LjEuMTcyOTEwNzMxMy4wLjAuMA).