Oct. 13, 2022

MNNIT Computer Coding Club

INTRO TO FLUTTER

Class 4

AGENDA

- Introduction to Flutter
- Widgets in Flutter
- Examples of Widgets
- Stateless/Stateful Widgets

REFERENCE:

- Flutter Documentation
- Flutter Cookbook
- Youtube tutorials

WHAT IS FLUTTER

Flutter is Google’s free, open-source software development kit (SDK) for cross-platform mobile application development. It is used to develop cross platform applications for Android, iOS and the web from a single codebase.

Dart programming language is used to code Flutter.

FLUTTER KEY FEATURES

CONTINUE..

Hot Reload - The changes made by the developers can be seen instantaneously with Hot Reload.

Cross-Platform Development - With Flutter, you need to write the code once, maintain and can use that for two apps

Widgets - In Flutter, the widgets are given the upper hand. It is capable of developing customizable and complex widgets

Minimal Code - Flutter is developed using Dart programming language.

WIDGETS

Everything in Flutter is a Widget

A **widget is a description of a part of UI**. The central idea is that you build your UI out of widgets**. A widget might display Something, it might help define design, it might help with layout, it may handle user interaction, etc.**

Widgets describe what their view should look like given their current configuration and state

CONTINUE..

When a widget’s state changes, the widget rebuilds its description, which the framework diffs 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.

There are mainly 14 categories into which the flutter widgets are divided.

BASIC WIDGETS

Text
The Text widget 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 flexbox layout model.

Container
The Container widget 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.

GESTURE DETECTOR

Gesture Detector in Flutter is used to detect the user’s gestures on the application. It is a non-visual widget.

When the user taps the Container, the GestureDetector calls its onTap() callback.

You can use GestureDetector to detect a variety of input gestures, including taps, long presses, and drags.

If this widget has a child, it defers to that child for its sizing behaviour. If it does not have a child, it grows to fit the parent instead.

STATELESS WIDGETS

A stateless widget **never changes**.

In simple words, if a widget doesn’t do anything it is a Stateless Widget. They are static in nature.

You can also say that stateless widgets are “DATALESS” widgets. As they don’t store any real-time data.

For example, if you have a simple Text widget on the screen, but it doesn’t do anything then its Stateless Widget

STATEFUL WIDGETS

A stateful widget is **dynamic**: for example, it can change its appearance in response to events triggered by user interactions or when it receives data.

In simple words, if a widget does anything then it's Stateful Widget.

The user can interact with a stateful widget. For example, If you press a button and it performs any task its a Stateful Widget.

If you are moving a slider and it does anything then its a Stateful Widget.

STATE

State is information that can be read synchronously when the widget is built and might change during the lifetime of the widget.

It is the responsibility of the widget implementer to ensure that the State is promptly notified when such state changes, using State.setState.

State objects are long lived, but StatefulWidgets (and all Widget subclasses) are thrown away and rebuilt whenever configuration changes.