SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER APPLICATIONS

23CAT607- CROSS-PLATFORM APP DEVELOPMENT

I YEAR II SEM

UNIT 2 – FLUTTER BASICS

TOPIC 6 – Introduction to Widgets

Widgets

Each element on the screen of the Flutter app is a widget. The view of the screen completely depends upon the choice and sequence of the widgets used to build the apps. And the structure of the code of apps is a tree of widgets.

Category of Widgets ⟷ **Mainly 14 Categories**

Accessibility	• These are the set of widgets that make a Flutter app more easily accessible.
Animation and Motion	• These widgets add animation to other widgets.
Assets, Images, and Icons	• These widgets take charge of assets such as display images and show icons.

Async	• These provide async functionality in the Flutter application.
Basics	• These are the bundle of widgets that are absolutely necessary for the development of any Flutter application.
Cupertino	• These are the iOS-designed widgets.
Input	• This set of widgets provides input functionality in a Flutter application.
Interaction Models	• These widgets are here to manage touch events and route users to different views in the application
Layout	• This bundle of widgets helps in placing the other widgets on the screen as needed.

Material Components	• This is a set of widgets that mainly follow material design by Google..
Painting and effects	• This is the set of widgets that apply visual changes to their child widgets without changing their layout or shape.
Scrolling	• This provides scrollability of to a set of other widgets that are not scrollable by default.
Styling	• This deals with the theme, responsiveness, and sizing of the app.
Text	• This displays text.

Types of Widgets

Stateless Widget

Stateless Widget is a type of widget which once built , then it's properties and state can't be changed. These widgets are immutable, once created can't be modified.

Examples: Display Text , Icons, Images, etc.

Stateful Widget

Stateful Widgets is a type of widget that can change state. It can maintain and update the appearance in the response to change in state.

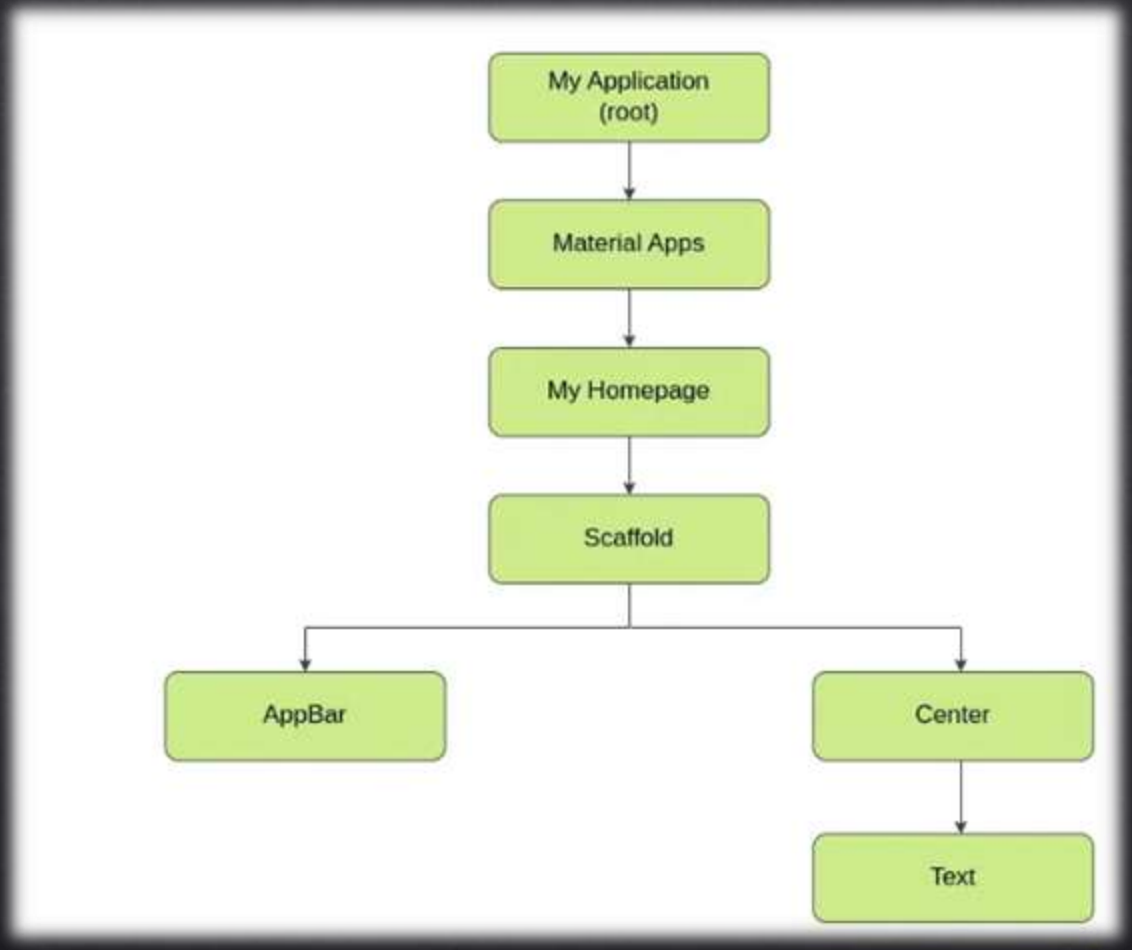
Examples: Buttons, Sliders, Text Fields, etc.

Implementation of Stateful and Stateless Widgets

•Scaffold – Implements the basic material design visual layout structure.

•App-Bar – To create a bar at the top of the screen.

•Text To write anything on the screen.



•Container – To contain any widget.

•Center – To provide center alignment to other widgets.

Stateless Widgets:

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

// function to trigger build process
void main() => runApp(const tree());

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

}
```

```
@override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        backgroundColor: Colors.lightGreen,
        appBar: AppBar(
          backgroundColor: Colors.green,
          title: const Text("GeeksforGeeks"),
        ), // AppBar
        body: Container(
          child: const Center(
            child: Text("Hello Flutter!!"),
          ), // Center
        ), // Container
      ), // Scaffold
    ); // MaterialApp
  }
```

Stateful Widgets.

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

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

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

@override
  // ignore: library_private_types_in_public_api
  _MyAppState createState() => _MyAppState();
}

class _MyAppState extends State<MyApp> {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        backgroundColor: Colors.lightGreen,
        appBar: AppBar(
          backgroundColor: Colors.green,
          title: const Text("GeeksforGeeks"),
        ), // AppBar
        body: const Center(
          child: Text("Hello Geeks!!"),
        ), // Container
      ), // Scaffold
    );// MaterialApp
  }
}
```

OUTPUT

THANK YOU