

EXPERIMENT NO: - 02

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AIM: - To design Flutter UI by including common widgets.

Theory: -

Understanding Widgets in Flutter

In Flutter, every UI element is a widget, and the entire app structure is a tree of nested widgets. The appearance and functionality of a screen are determined by the selection and arrangement of these widgets.

Whenever code changes occur, Flutter recalculates the differences between the previous and updated widgets to apply minimal UI updates efficiently. Since widgets are deeply nested, the root of the app itself is a widget, with every subsequent element also being a widget. These can be responsible for rendering visuals, defining layout structures, handling interactions, and more.

Types of Layout Widgets

Single-Child Layout Widgets

Single-child widgets allow only one child element within the parent widget. These widgets often provide specialized layout functionalities that enhance UI design, improve readability, and optimize development time.

Multi-Child Layout Widgets

Multi-child widgets contain multiple child elements and follow unique layout patterns.

- **Row** – Arranges child widgets horizontally.
- **Column** – Arranges child widgets vertically.
- **Combination of Row & Column** – Enables complex UI structures by nesting these widgets together.

Types of Widgets

StatefulWidget

- Maintains state information that can change during the widget's lifecycle.
- Comprises two key classes: the widget itself and a separate state object.
- Uses `createState()` instead of `build()`, which returns a class extending Flutter's `State` class.
- Examples: `Checkbox`, `Radio`, `Slider`, `InkWell`, `Form`, `TextField`.

StatelessWidget

- Does not hold any state; remains constant throughout its lifecycle.
- Uses the `build()` method directly to define UI elements.
- Examples: `Text`, `Row`, `Column`, `Container`.

Commonly Used Widgets

- **Container** – A box-like widget for layout styling (padding, margins, colors, borders).
- **Row & Column** – Used for horizontal and vertical alignment of widgets.
- **Stack** – Overlaps widgets to create layered designs.
- **Text** – Displays stylized text.
- **Image** – Loads images from assets, networks, or memory.
- **Scaffold** – Provides a basic screen layout with an app bar, body, and navigation elements.
- **ListView** – Creates a scrollable list, ideal for dynamic content.
- **GridView** – Arranges content in a grid, useful for galleries and dashboards.
- **SizedBox** – Defines space between elements or sets fixed dimensions.
- **ElevatedButton** – A button with elevation and customization options.
- **TextField** – Accepts user text input with keyboard configurations.
- **AppBar** – A top navigation bar with a title and actions.
- **BottomNavigationBar** – A bottom navigation panel for switching between app sections.
- **Drawer** – A side menu panel for navigation.
- **Card** – A material design component for displaying content in an elevated box.

Code: -

homescreen.dart

```
import
'package:cached_network_image/cached_network_i
mage.dart';
import 'package:flutter/material.dart';
import 'package:movflix/common/utils.dart';
import 'package:movflix/models/movie_model.dart';
import
'package:movflix/models/tv_series_model.dart';
import 'package:movflix/screens/search_screen.dart';
import 'package:movflix/services/api_services.dart';
import
'package:movflix/widgets/upcoming_movie_card_w
idget.dart';
```

```
class HomeScreen extends StatefulWidget {
  const HomeScreen({super.key});
```

```
  @override
  State<HomeScreen> createState() =>
  _HomeScreenState();
}
```

```
class _HomeScreenState extends
State<HomeScreen> {
  ApiService apiServices = ApiService();

  late Future<MovieModel> upcomingFuture;
  late Future<MovieModel> nowPlaying;
  late Future<TvSeriesModel> topRatedShows;
```

```
  @override
  void initState() {
    upcomingFuture =
apiServices.getUpcomingMovies();
    nowPlaying =
apiServices.getNowPlayingMovies();
    topRatedShows =
apiServices.getTopRatedSeries();
    super.initState();
  }
```

```
  @override
  Widget build(BuildContext context) {
    var size = MediaQuery.of(context).size;
    return Scaffold(
      appBar: AppBar(
        backgroundColor: Colors.black,
        title: Image.asset(
```

```
'assets/logo.png',
        height: 50,
        width: 120,
      ),
      actions: [
        Padding(
          padding: const EdgeInsets.only(right: 20.0),
          child: InkWell(
            onTap: () {
              Navigator.push(
                context,
                MaterialPageRoute(
                  builder: (context) => const
SearchScreen(),
                ),
              );
            },
            child: const Icon(
              Icons.search,
              size: 30,
              color: Colors.white,
            ),
          ),
        ),
      ],
      body: ClipRRect(
        borderRadius: BorderRadius.circular(6),
        child: InkWell(
          onTap: () {},
          child: Container(
            color: Colors.blue,
            height: 27,
            width: 27,
          ),
        ),
        const SizedBox(width: 20),
      ],
    ),
    body: SingleChildScrollView(
      child: Column(
        children: [
          FutureBuilder<TvSeriesModel>(
            future: topRatedShows,
            builder: (context, snapshot) {
              if (snapshot.connectionState ==
ConnectionState.waiting) {
                return const Center(child:
CircularProgressIndicator());
              }
              if (snapshot.hasData &&
snapshot.data!.results.isNotEmpty) {
                return SizedBox(
                  // width: size.width,
```

```

        height: (size.height * 0.5 < 300) ? 300 :
size.height * 0.5,
        child: PageView.builder(
          itemCount:
snapshot.data!.results.length,
          controller:
PageController(viewportFraction:
snapshot.data!.results.length == 1 ? 1.0 : 0.9),
          itemBuilder: (context, index) {
            var show =
snapshot.data!.results[index];
            return ClipRRect(
              borderRadius:
BorderRadius.circular(10),
              child: Stack(
                children: [
                  CachedNetworkImage(
                    imageUrl:
"$imageUrl${show.backdropPath}",
                    fit: BoxFit.cover,
                    width: double.infinity,
                    height: double.infinity,
                  ),
                  Container(
                    decoration: BoxDecoration(
                      gradient: LinearGradient(
                        colors:
[Colors.black.withOpacity(0.6), Colors.transparent],
                        begin:
Alignment.bottomCenter,
                        end: Alignment.topCenter,
                      ),
                    ),
                  Positioned(
                    bottom: 50,
                    left: 20,
                    child: Column(
                      crossAxisAlignment:
CrossAxisAlignment.start,
                      children: [
                        Text(
                          show.name.toString(),
                          style: const TextStyle(
                            fontSize: 24,
                            fontWeight:
FontWeight.bold,
                            color: Colors.white,
                          ),
                        ),
                        const SizedBox(height: 10),
                        Row(
                          children: [
                            ElevatedButton.icon(

```

```

onPressed: () {},
                          icon: const
Icon(Icons.play_arrow),
                          label: const Text('Play'),
                          style:
ElevatedButton.styleFrom(
                            backgroundColor:
Colors.white,
                            foregroundColor:
Colors.black,
                          ),
                        ),
                      const SizedBox(width: 10),
                      ElevatedButton.icon(
                        onPressed: () {},
                        icon: const
Icon(Icons.info_outline),
                        label: const Text('Info'),
                        style:
ElevatedButton.styleFrom(
                          backgroundColor:
Colors.grey[800],
                          foregroundColor:
Colors.white,
                        ),
                      ),
                    ],
                  ),
                ],
              ),
            );
          }
        }
        return const SizedBox();
      },
    ),
    const SizedBox(height: 20),
    SizedBox(
      height: 220,
      child: UpcomingMovieCard(
        future: nowPlaying,
        headlineText: 'Now Playing',
      ),
    ),
    const SizedBox(height: 20),
    SizedBox(
      height: 220,
      child: UpcomingMovieCard(
        future: upcomingFuture,

```

```

        headlineText: 'Upcoming Movies',
      ),
    ),
  ],
),
),
);
}
}

```

bottom_bar_nav.dart

```

import 'package:flutter/material.dart';
import
'package:movflix/screens/download_screen.dart';
import 'package:movflix/screens/homescreen.dart';
import
'package:movflix/screens/news_and_hot.dart';
import 'package:movflix/screens/search_screen.dart';

```

```

class BottomNavBar extends StatelessWidget {
  const BottomNavBar({super.key});

```

@override

```

Widget build(BuildContext context) {
  return DefaultTabController(
    length: 4,
    child: Scaffold(
      bottomNavigationBar: Container(
        color: Colors.black,
        height: 70,
        child: const TabBar(
          tabs: [
            Tab(
              icon: Icon(Icons.home),
              text: "Home",
            ),
            Tab(
              icon: Icon(Icons.search),
              text: "Search",
            ),
            Tab(
              icon: Icon(Icons.photo_library_outlined),
              text: "New & Hot",
            ),
            Tab(
              icon: Icon(Icons.download),
              text: "Downloads",
            ),
          ],
          unselectedLabelColor: Color(0xFF999999),
          labelColor: Colors.white,
          indicatorColor: Colors.transparent,

```

```

        ),
      ),
      body: const TabBarView(
        children: [
          HomeScreen(),
          SearchScreen(),
          MoreScreen(),
          DownloadScreen()
        ],
      ),
    ),
  );
}
}

```



