

EXPERIMENT NO: - 02

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

Theory:

The multiple child widgets are a type of widget that contains more than one child widget, and the layout of these widgets is unique. For example:

- **Row widget** lays out its child widgets in a horizontal direction.
- **Column widget** lays out its child widgets in a vertical direction.

By combining the **Row** and **Column** widgets, we can build complex widget structures.

Types of Widgets

- Each element on the screen of a Flutter app is a widget. The view of the screen completely depends on the choice and sequence of widgets used to build the app. The structure of an app's code forms a **tree of widgets**.
- When a change is made in the code, the widget rebuilds its description by calculating the difference between the previous and current widget to determine minimal changes required for rendering in the UI. Widgets are nested within each other to build the app, meaning the **root of the app is itself a widget, and everything inside is also a widget**.

Single Child Layout Widget

A single child layout widget can have **only one child widget inside the parent layout widget**. These widgets can also contain special layout functionalities. Flutter provides many **single child widgets** to make the app UI more attractive. Using these widgets properly saves time and makes the app code more readable.

StatefulWidget

A **StatefulWidget** has state information. It contains **two main classes**:

1. **The state object**
2. **The widget**

It is **dynamic** because it can change its internal data during the widget's lifetime. This widget does not have a **build()** method. Instead, it has a **createState()** method, which returns a class extending Flutter's **State** class.

Examples of StatefulWidget:

- Checkbox
- Radio
- Slider
- InkWell
- Form
- TextField

StatelessWidget

A **StatelessWidget** does not have any state information and remains **static** throughout its lifecycle.

Examples of StatelessWidget:

- Text
- Row
- Column
- Container

Commonly Used Widgets

- **Container** – A box widget used for styling with padding, margins, colors, borders, and constraints. It helps in layout structuring and positioning.
- **Row & Column** – Used to arrange widgets in horizontal (**Row**) or vertical (**Column**) orientation. They manage spacing, alignment, and distribution of child widgets.
- **Stack** – Overlaps widgets on top of each other, useful for creating layered UIs like banners, tooltips, or floating elements.
- **Text** – Displays text on the screen with customizable font size, color, alignment, and styling options.
- **Image** – Loads and displays images from assets, network, or memory with scaling and fit properties.
- **Scaffold** – Provides a basic layout structure with an app bar, body, floating action button, and bottom navigation.
- **ListView** – A scrollable list widget that efficiently renders large amounts of dynamic content. Supports both vertical and horizontal scrolling.
- **GridView** – Displays widgets in a grid format, useful for galleries, product listings, or dashboards. It supports dynamic column adjustments.
- **SizedBox** – Used to create space between widgets or define fixed width and height for layout adjustments.
- **ElevatedButton** – A button with elevation that provides a raised effect, customizable with color, shape, and click actions.
- **TextField** – A user input field that supports text entry, keyboard configurations, and validation.

Code:-

searchpage.dart

- *-the common widgets used are- scaffold, appbar, text, iconbutton, column, card*

import

'package:flutter/material.dart';

```

class SearchPage extends
StatelessWidget {

  @override
  Widget build(BuildContext context)
  {
    return Scaffold(
      appBar: AppBar(
        title: Text('Search Page'),
        centerTitle: true,
        actions: [
          IconButton(
            icon:
Icon(Icons.notifications),
            onPressed: () {
              // Handle notifications
            },
          ),
        ],
      ),
      body: SingleChildScrollView(
        padding: EdgeInsets.all(16),
        child: Column(
          crossAxisAlignment:
CrossAxisAlignment.start,
          children: [
            // My Feed Section
            _buildSectionHeader('My
Feed'),

```

```

      _buildHorizontalScroll([
        'Roundups',
        'Video Shorts',
        'Insights',
        'WORD',
        'WHEEL',
        'GAMES',
      ]),
      SizedBox(height: 20),

      // All News Section
      _buildSectionHeader('All
News'),
      _buildNewsItem(
        title: 'Who all are in the core
team preparing the Budget?',
      ),
      _buildNewsItem(
        title: 'Stampede breaks out
on biggest bathing day at Maha
Kumbh, several injured',
      ),
      _buildNewsItem(
        title: 'India lose a T20I at
home after 426 days',
      ),
      SizedBox(height: 20),

```

```

        // Top Stories Section
        _buildSectionHeader('Top
Stories'),
        _buildNewsItem(
            title: 'Top Story 1',
        ),
        _buildNewsItem(
            title: 'Top Story 2',
        ),
        SizedBox(height: 20),

        // Trending Section
        _buildSectionHeader('Trendin
g'),
        _buildNewsItem(
            title: 'Trending News 1',
        ),
        _buildNewsItem(
            title: 'Trending News 2',
        ),
    ],
),
),
);
}

```

// Helper method to build a section header

```

Widget _buildSectionHeader(String
title) {
    return Padding(
        padding: const
EdgeInsets.symmetric(vertical: 8.0),
        child: Text(
            title,
            style: TextStyle(
                fontSize: 18,
                fontWeight: FontWeight.bold,
            ),
        ),
    );
}

```

// Helper method to build a horizontal scrollable list

```

Widget
_buildHorizontalScroll(List<String>
items) {
    return Container(
        height: 50,
        child: ListView.builder(
            scrollDirection: Axis.horizontal,
            itemCount: items.length,
            itemBuilder: (context, index) {

```

```

    return Padding(
      padding: const
EdgeInsets.only(right: 8.0),
      child: Chip(
        label: Text(items[index]),
        backgroundColor:
Colors.blue[50],
      ),
    );
  },
),
);
}

```

// Helper method to build a news item

```

Widget _buildNewsItem({required
String title}) {
  return Card(
    margin:
EdgeInsets.symmetric(vertical: 4),
    child: ListTile(
      title: Text(title),
      trailing:
Icon(Icons.arrow_forward_ios, size:
16),
      onTap: () {
        // Handle news item tap
      },
    ),
  );
}
}

```

profile.dart

-the common widgets used in this flutter code is- scaffold, appBar, iconbutton, sizedbox, center

```

import
'package:flutter/material.dart';

```

```

class ProfileScreen extends
StatelessWidget {

```

@override

```

Widget build(BuildContext context)
{

```

```

  return Scaffold(
    appBar: AppBar(
      backgroundColor: Colors.white,
      elevation: 0,

```

```

        leading: IconButton(
          icon: Icon(Icons.arrow_back,
color: Colors.black),
          onPressed: () =>
Navigator.pop(context),
        ),
        actions: [
          TextButton(
            onPressed: () {},
            child: Text("Feedback", style:
TextStyle(color: Colors.black)),
          ),
          IconButton(
            icon: Icon(Icons.settings,
color: Colors.black),
            onPressed: () {},
          ),
        ],
      ),
      body: Column(
        crossAxisAlignment:
CrossAxisAlignment.center,
        children: [
          SizedBox(height: 10),

// Profile Picture
          Center(
            child: Column(

```

```

          children: [
            CircleAvatar(
              radius: 40,
              backgroundImage:
AssetImage('assets/profile.jpg'), //
Replace with your image
            ),
            SizedBox(height: 10),
            Text("Arnav", style:
TextStyle(fontSize: 18, fontWeight:
FontWeight.bold)),
            SizedBox(height: 5),

// Edit Profile Button
            ElevatedButton.icon(
              onPressed: () {},
              style:
ElevatedButton.styleFrom(
                backgroundColor:
Colors.grey[200],
                foregroundColor:
Colors.black,
                padding:
EdgeInsets.symmetric(horizontal:
12, vertical: 5),
                shape:
RoundedRectangleBorder(
                  borderRadius:
BorderRadius.circular(20),
                ),

```

```

    ),
    icon: Icon(Icons.edit, size:
16),
    label: Text("Edit Profile"),
  ),
],
),
),
),

```

```

    SizedBox(height: 20),

    // My Bookmarks Section
    Padding(
      padding:
EdgeInsets.symmetric(horizontal:
20),
      child: Column(
        crossAxisAlignment:
CrossAxisAlignment.start,
        children: [
          Text("My Bookmarks",
            style: TextStyle(fontSize:
16, fontWeight: FontWeight.bold)),
          Container(
            width: 40,
            height: 2,
            color: Colors.blue,

```

```

      margin:
EdgeInsets.only(top: 3, bottom: 10),
    ),
    SizedBox(height: 20),

    // Empty Bookmarks
    Message
    Center(
      child: Column(
        children: [
          Text("It's Empty Here",
            style:
TextStyle(fontSize: 16, fontWeight:
FontWeight.bold)),
          SizedBox(height: 5),
          Text(
            "Click on the
bookmark icon to bookmark a
short",
            textAlign:
TextAlign.center,
            style: TextStyle(color:
Colors.grey),
          ),
        ],
      ),
    ],

```



```

    ),
    ),
  ],
),
);
}
}

```

editprofile.dart

-the common widgets used in this code is – scaffold, appBar, text, padding, column, sizedbox

import

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

```
class EditProfileScreen extends
StatefulWidget {
```

@override

```
  _EditProfileScreenState
  createState() =>
  _EditProfileScreenState();
}
```

```
class _EditProfileScreenState
extends State<EditProfileScreen> {
  TextEditingController
  nameController =
  TextEditingController(text: "Arnav");
  TextEditingController bioController
  = TextEditingController();
```

```
  int nameMaxLength = 20;
```

```
  int bioMaxLength = 120;
```

@override

```
Widget build(BuildContext context)
{
  return Scaffold(
    appBar: AppBar(
      leading: IconButton(
        icon: Icon(Icons.arrow_back,
        color: Colors.black),
        onPressed: () =>
        Navigator.pop(context),
      ),
      title: Text("Edit Profile", style:
      TextStyle(color: Colors.black)),
      backgroundColor: Colors.white,
      elevation: 0,
    ),
    body: Padding(
      padding: const
      EdgeInsets.all(16.0),
```

```

    child: Column(
      crossAxisAlignment:
CrossAxisAlignment.start,
      children: [
        // Profile Picture
        Center(
          child: CircleAvatar(
            radius: 40,
            backgroundImage:
AssetImage('assets/profile.jpg'), //
Replace with your image
          ),
        ),
        SizedBox(height: 20),

        // Name Field
        _buildLabel("Name"),
        TextField(
          controller: nameController,
          maxLength:
nameMaxLength,
          decoration:
InputDecoration(
            border:
OutlineInputBorder(),
          ),
        ),
      ],
    ),
  ),

```

```

      _buildCharacterLimit(nameC
ontroller.text.length,
nameMaxLength),

      SizedBox(height: 16),

      // Bio Field
      _buildLabel("Your Bio"),
      TextField(
        controller: bioController,
        maxLength: bioMaxLength,
        maxLines: 3,
        decoration:
InputDecoration(
          border:
OutlineInputBorder(),
          hintText: "Enter your bio
here",
        ),
      ),
      _buildCharacterLimit(bioCont
roller.text.length, bioMaxLength),

      SizedBox(height: 20),

      // Submit Button
      SizedBox(
        width: double.infinity,

```

```

        child: ElevatedButton(
          onPressed: () {},
          style:
ElevatedButton.styleFrom(
          backgroundColor:
Colors.blue,
          padding:
EdgeInsets.symmetric(vertical: 14),
        ),
        child: Text("Submit", style:
TextStyle(fontSize: 16, color:
Colors.white)),
      ),
    ],
  ),
);
}

```

// Helper to create labels

```

Widget _buildLabel(String text) {
  return Padding(
    padding: const
EdgeInsets.only(bottom: 8),
    child: Text(text, style:
TextStyle(fontSize: 16, fontWeight:
FontWeight.bold)),
  );
}

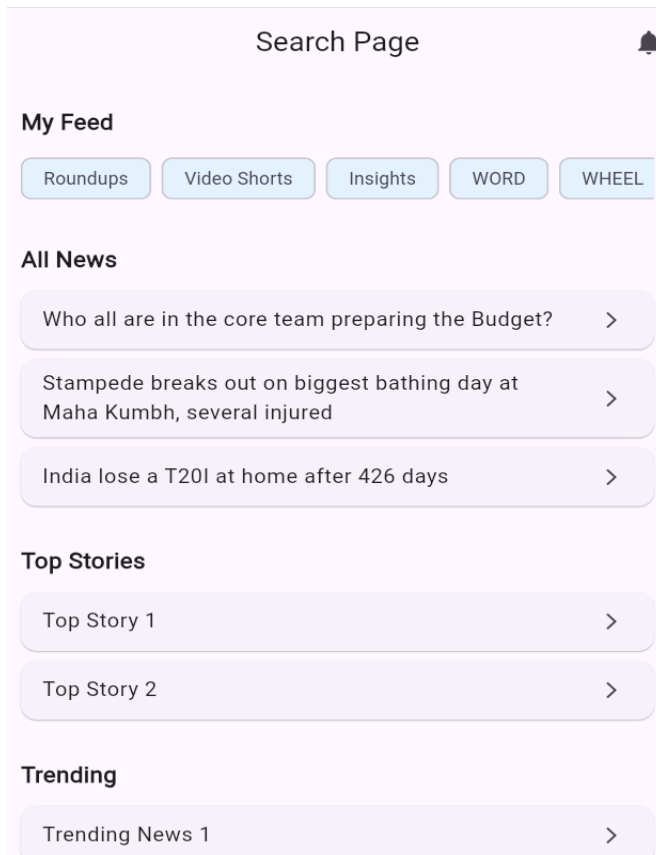
// Character counter

Widget _buildCharacterLimit(int
current, int max) {
  return Align(
    alignment:
Alignment.centerRight,
    child: Text("$current/$max",
style: TextStyle(color: Colors.grey,
fontSize: 12)),
  );
}
}

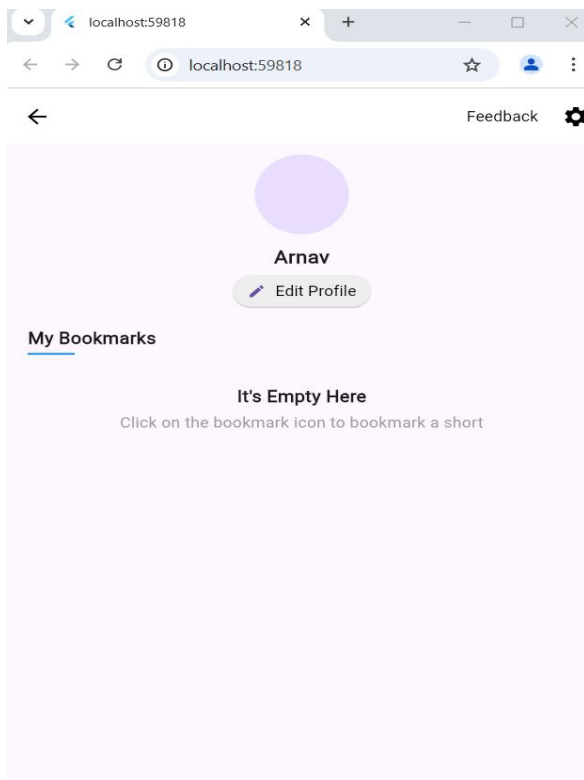
```

Screenshots:-

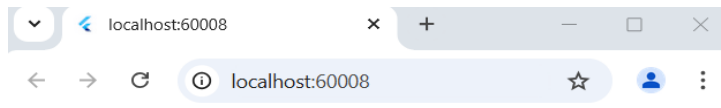
searchpage.dart




profile.dart



editprofile.dart



← Edit Profile



Name

5/20
5/20

Your Bio

Enter your bio here

0/120
0/120

Submit