EXPERIMENT NO: - 02

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

Theory: -

In **Flutter**, everything you see on the screen is a **widget**. A widget is like a building block that defines how a part of the app will look and behave. Every app in Flutter is built by combining different widgets, which are arranged in a **tree-like structure**.

How Widgets Work?

1. **Widget Tree Structure**
   - The entire screen layout is formed using a **widget tree**.
   - The root widget (usually MaterialApp or CupertinoApp) contains other widgets inside it.
   - Each widget can contain child widgets, which define their design, appearance, and behavior.
2. **Widgets React to Code Changes**
   - When you modify the code, Flutter does not rebuild the entire UI but **only updates the necessary parts**.
   - This process is called **widget rebuilding**, where Flutter calculates the difference between the old and new UI state to apply **minimal changes**.

Type of Widgetss

1. StatelessWidget – Static & Unchanging

A **StatelessWidget** is a widget that **does not store any dynamic data** and remains the same throughout its lifecycle. Once it is built, it **cannot change** unless its parent widget rebuilds it.

Characteristics:

✓ Does not update once rendered.
✓ Only depends on the input parameters provided when created.
✓ More optimized and efficient because no state management is needed.

StatefulWidget – Dynamic & Interactive

A **StatefulWidget** is a widget that can **change its state** during its lifetime. This means it can **respond to user interactions, API calls, animations, and more**.

How It Works?

A **StatefulWidget** consists of **two classes**:

1. The widget class → Creates the widget structure.
2. The state class → Manages and updates data dynamically.

Unlike **StatelessWidgets**, StatefulWidgets have a **createState()** method that returns an instance of a **State** class, which controls the widget's behavior and appearance.

Characteristics:

✓ Can update UI dynamically when data changes.
✓ Uses a `setState()` method to trigger UI updates.
✓ Used for interactive widgets like buttons, sliders, text fields, etc.

Some of the commonly used widgets

Flutter Widgets - Quick Overview

1 **Container** – A box widget for styling with padding, margins, colors, borders, and constraints.
2 **Row & Column** – Row arranges widgets **horizontally**, while Column arranges them **vertically**.
3 **Stack** – Overlaps widgets on top of each other, useful for layered UI designs.
4 **Text** – Displays customizable text with font, color, alignment, and styling options.
5 **Image** – Loads and displays images from assets, network, or memory with scaling and fit properties.
6 **Scaffold** – Provides the basic layout structure with an AppBar, body, and navigation elements.
7 **ListView** – A scrollable list widget for handling large amounts of dynamic content.
8 **GridView** – Displays widgets in a grid format, useful for galleries and product listings.
9 **SizedBox** – Creates spacing between widgets or defines a fixed size for layout adjustments.
10 **ElevatedButton** – A raised button with elevation, used for user interactions.

TextField – A user input field supporting text entry, validation, and keyboard configurations.
AppBar – A top navigation bar containing titles, actions, and menu icons.
BottomNavigationBar – A bottom bar for navigation between different app sections.
Drawer – A side navigation panel that slides out for app menus and quick navigation.
Card – A material design component for displaying content inside an elevated box.

Code: - login_page.dart

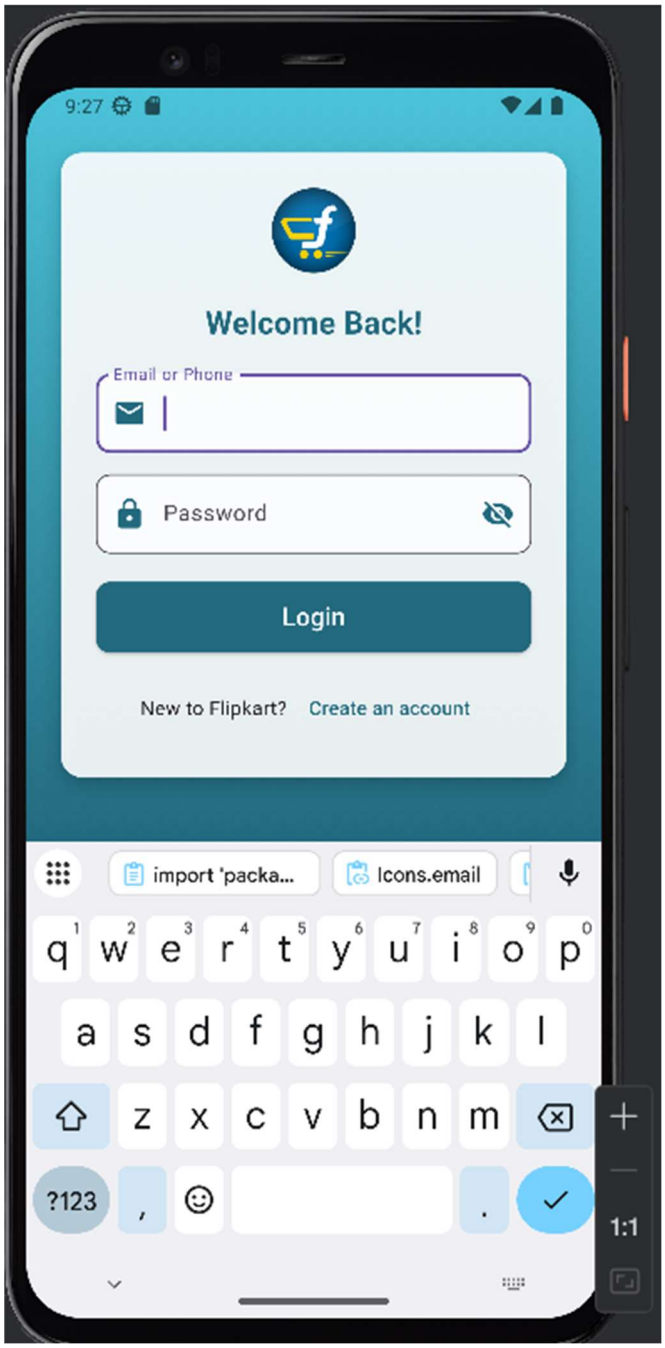
```
import 'package:flutter/material.dart';
import 'home_page.dart';
import 'signup_page.dart';

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

  @override
  State<LoginPage> createState() =>
_LoginPageState();
}

class _LoginPageState extends
State<LoginPage> {
  final TextEditingController _emailController =
TextEditingController();
  final TextEditingController
_passwordController = TextEditingController();
  bool _isObscure = true;

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      body: Container(
        decoration: const BoxDecoration(
          gradient: LinearGradient(
            colors: [Color(0xFF4CC3D9),
Color(0xFF236A7F)],
            begin: Alignment.topCenter,
            end: Alignment.bottomCenter,
          ),
        ),
        child: Center(
          child: Padding(
            padding: const
EdgeInsets.symmetric(horizontal: 25),
            child: Container(
              padding: const EdgeInsets.all(25),
              decoration: BoxDecoration(
                color: Colors.white.withOpacity(0.9),
                borderRadius:
BorderRadius.circular(15),
                boxShadow: [
                  BoxShadow(
                    color:
Colors.black.withOpacity(0.2),
                    blurRadius: 10,
                    offset: const Offset(0, 5),
                  ),
                ],
              ),
              child: Column(
                mainAxisSize: MainAxisSize.min,
                children: [

Image.asset('assets/flipkart_logo.png', height:
60),
                  const SizedBox(height: 20),
                  const Text(
                    "Welcome Back!",
                    style: TextStyle(fontSize: 22,
fontWeight: FontWeight.bold, color:
Color(0xFF236A7F)),
                  ),
                  const SizedBox(height: 20),

                  // Email
```

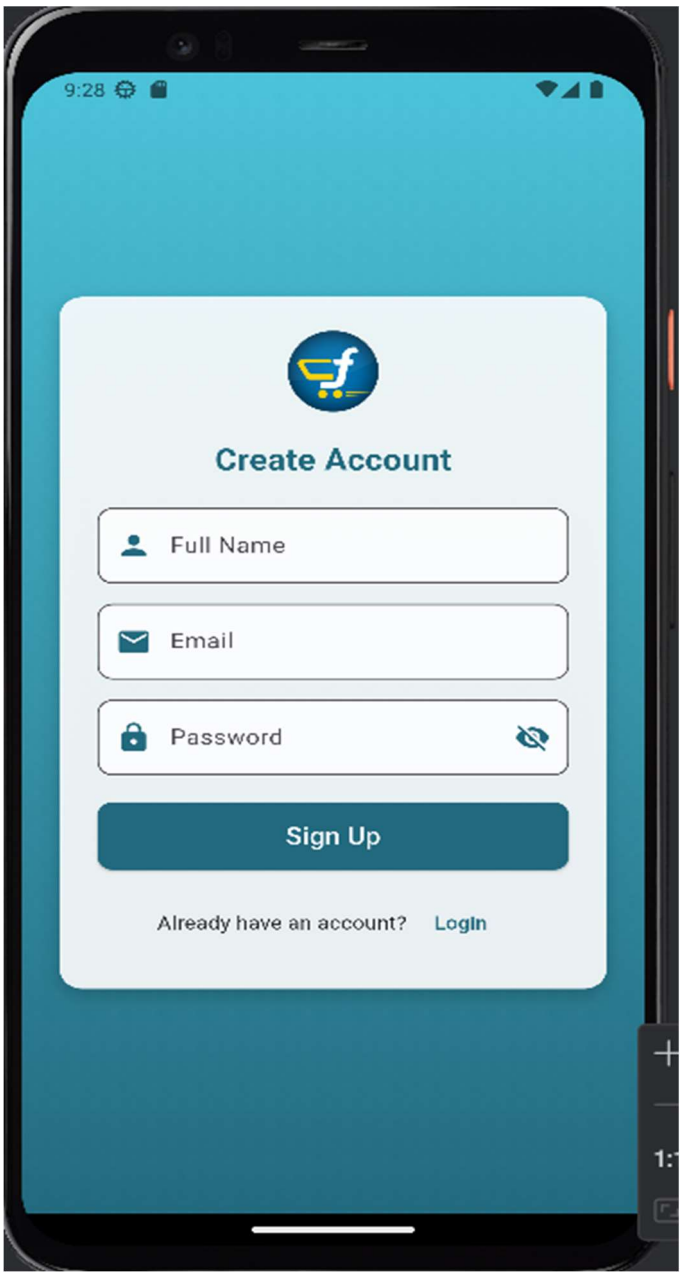
```
            buildTextField(_emailController, "Email or Phone", Icons.email),

            const SizedBox(height: 15),

            // Password
            buildTextField(_passwordController, "Password", Icons.lock, isPassword: true),

            const SizedBox(height: 20),

            // ✅ Login Button
            buildButton(context, "Login", () {
              Navigator.pushReplacement(context, MaterialPageRoute(builder: (context) => const HomePage()));
            }),

            const SizedBox(height: 15),

            // ✅ Signup Option
            Row(
              mainAxisAlignment: MainAxisAlignment.center,
              children: [
                const Text("New to Flipkart? "),
                TextButton(
                  onPressed: () {
                    Navigator.pushReplacement(context, MaterialPageRoute(builder: (context) => const SignupPage()));
                  },
                  child: const Text("Create an account", style: TextStyle(color: Color(0xFF236A7F))),
                ),
              ],
            ),
          ],
        ),
      ),
    ),
  );
}

// ✅ Reusable TextField Widget
Widget buildTextField(TextEditingController controller, String label, IconData icon, {bool isPassword = false}) {
  return TextField(
    controller: controller,
    obscureText: isPassword ? _isObscure : false,
    decoration: InputDecoration(
      labelText: label,
      prefixIcon: Icon(icon, color: Color(0xFF236A7F)),
      border: OutlineInputBorder(borderRadius: BorderRadius.circular(10)),
      filled: true,
      fillColor: Colors.white.withOpacity(0.8),
      suffixIcon: isPassword
          ? IconButton(
        icon: Icon(_isObscure ? Icons.visibility_off : Icons.visibility, color: Color(0xFF236A7F)),
        onPressed: () {
```

```
          setState(() {
            _isObscure = !_isObscure;
          });
        },
      )
          : null,
    ),
  );
 }


 // ✅ Reusable Button Widget
  Widget buildButton(BuildContext context, String text, VoidCallback onPressed) {
   return SizedBox(
    width: MediaQuery.of(context).size.width * 0.85,
    height: 50,
    child: ElevatedButton(
     onPressed: onPressed,
     style: ElevatedButton.styleFrom(
      backgroundColor: const Color(0xFF236A7F),
      shape: RoundedRectangleBorder(borderRadius: BorderRadius.circular(10)),
     ),
     child: Text(text, style: const TextStyle(color: Colors.white, fontSize: 18)),
    ),
   );
  }
}
```

```
  IconButton(
          icon: Icon(Icons.account_circle, color: Colors.white),
          onPressed: () {},
        ),
       ],
      ),
      body: SingleChildScrollView(
       child: Padding(
        padding: const EdgeInsets.all(12),
        child: Column(
         crossAxisAlignment: CrossAxisAlignment.start,
         children: [
          // **Category Title**
          Row(
           mainAxisAlignment: MainAxisAlignment.center,
           children: [
            Icon(Icons.hotel, color: Colors.blue[900], size: 24),
            SizedBox(width: 8),
            Text(
             "Find your stays",
             style: TextStyle(
              color: Colors.blue[900],
              fontSize: 14,
              fontWeight: FontWeight.bold,
             ),
            ),
           ],
          ),

          SizedBox(height: 15),

          // **Search Section**
          Container(
           padding: EdgeInsets.all(12),
           decoration: BoxDecoration(
            borderRadius: BorderRadius.circular(10),
            border: Border.all(color: Colors.orange, width: 2),
            color: Colors.white,
           ),
           child: Column(
            children: [
             _buildSearchField(Icons.search, "Enter your destination"),
             GestureDetector(
              onTap: () => _selectDate(context),
              child: _buildSearchField(
               Icons.calendar_today,
                _selectedDate,
```

OUTPUT :


9:27
Welcome Back!
Email or Phone
Password
Login
New to Flipkart?
Create an account
import 'packa...
Icons.email
?123
1:1


9:28
Create Account
Full Name
Email
Password
Sign Up
Already have an account?
LogIn