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**MPL Experiment 2** 

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

#### THEORY:

Flutter UI Structure

Everything in Flutter is a Widget: Widgets are the basic building blocks of a Flutter UI. They describe what the UI should look like and manage the structure and behavior of the app.

Composition over Inheritance: Flutter follows a composition-based approach where smaller widgets combine to form complex UIs.

Widget Tree: Every Flutter UI is built using a widget tree, where widgets are arranged hierarchically.

Types of Widgets

Flutter has two main types of widgets:

Stateless Widgets: Do not store any state and remain static unless rebuilt.

Example: Text, Icon, Container

Stateful Widgets: Can change dynamically based on user interactions or data changes.

Example: TextField, Checkbox, Slider

# **Common Flutter Widgets and Their Properties**

1. Basic Widgets

Container: Holds and styles child widgets (padding, margin, borders).

Container(width: 200, height: 100, color: Colors.blue, child: Text("Hello"))

Text: Displays static text with styles.

Text("Hello, Flutter!", style: TextStyle(fontSize: 20, color: Colors.red))

Image: Displays images from assets/network/memory.

Image.network('https://example.com/image.png', width: 100, height: 100)

2. Layout Widgets

Row: Arranges widgets horizontally.

Row(children: [Icon(Icons.star), Text("Flutter")])

Column: Arranges widgets vertically.

Column(children: [Text("Welcome"), ElevatedButton(onPressed: () {}, child: Text("Click

Me"))])

Stack: Overlays widgets on top of each other.

Stack(children: [Container(color: Colors.blue, width: 200, height: 200), Positioned(top:

50, child: Icon(Icons.star))])

### 3. Interactive Widgets

ElevatedButton: Raised button with elevation.

ElevatedButton(onPressed: () {}, child: Text("Click Me"))

TextField: User input field.

TextField(decoration: InputDecoration(labelText: 'Enter Name'))

Checkbox: Toggle checkbox.

Checkbox(value: true, onChanged: (bool? newValue) {})

### 4. Navigation Widgets

Navigator.push: Navigates to another screen.

Navigator.push(context, MaterialPageRoute(builder: (context) => SecondScreen()))

BottomNavigationBar: Bottom menu navigation.

BottomNavigationBar(items: [BottomNavigationBarItem(icon: Icon(Icons.home), label:

"Home")])

# 5. List and Grid Widgets

ListView: Scrollable list.

ListView(children: [ListTile(title: Text("Item 1"))])

GridView: Displays items in a grid.

GridView.count(crossAxisCount: 2, children: [Container(color: Colors.blue)])

#### **SYNTAX:**

import 'package:flutter/material.dart';

```
void main() {
 runApp(const MyApp());
}
class MyApp extends StatelessWidget {
 const MyApp({Key? key}) : super(key: key);
 @override
 Widget build(BuildContext context) {
  return MaterialApp(
   debugShowCheckedModeBanner: false, // Removes the debug banner
   title: 'Flutter UI',
   theme: ThemeData(
    primarySwatch: Colors.blue, // Sets theme color
   home: const HomeScreen(), // Calls the home screen widget
  );
class HomeScreen extends StatelessWidget {
 const HomeScreen({Key? key}) : super(key: key);
 @override
 Widget build(BuildContext context) {
  return Scaffold(
   appBar: AppBar(
    title: const Text('Flutter UI Example'),
    centerTitle: true,
   ),
   body: Center(
    child: Text(
      'Hello, Flutter!',
      style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold),
```

#### CODE:

#### 1.Homepage

```
borderRadius:
// lib/screens/home screen.dart
import 'package:flutter/material.dart';
                                            BorderRadius.circular(10),
                                                         borderSide: BorderSide.none,
class HomeScreen extends
StatelessWidget {
                                                        filled: true,
 const HomeScreen({Key? key}) :
                                                        fillColor: Colors.grey[200],
super(key: key);
                                                     ),
 @override
 Widget build(BuildContext context) {
                                                    const SizedBox(height: 16),
  return Scaffold(
                                                    SingleChildScrollView(
   body: SafeArea(
                                                     scrollDirection: Axis.horizontal,
     child: Column(
                                                     padding: const
                                            EdgeInsets.symmetric(horizontal: 16),
      children: [
       Padding(
                                                     child: Row(
        padding: const
                                                      children: [
EdgeInsets.all(16.0),
                                                        buildFilterChip('PRO'),
                                                        buildFilterChip('Cuisine'),
        child: Row(
                                                        buildFilterChip('Rating'),
          children: [
           const
                                                        buildFilterChip('Popular'),
Icon(Icons.person outline),
           const Spacer(),
           IconButton(
            icon: const Icon(Icons.menu),
                                                    const SizedBox(height: 16),
            onPressed: () {},
                                                    buildPromoBanner(),
                                                    const SizedBox(height: 20),
                                                    const Padding(
                                                     padding:
                                            EdgeInsets.symmetric(horizontal: 16.0),
       Padding(
                                                     child: Text(
                                                      'Eat what makes you happy',
        padding: const
EdgeInsets.symmetric(horizontal: 16.0),
                                                      style: TextStyle(
        child: TextField(
                                                        fontSize: 20,
          decoration: InputDecoration(
                                                        fontWeight: FontWeight.bold,
           hintText: 'Restaurant name,
cuisine, or a dish...',
           prefixIcon: const
Icon(Icons.search),
           border: OutlineInputBorder(
```

```
const SizedBox(height: 16),
       Expanded(
                                              );
        child: GridView.count(
         crossAxisCount: 4,
                                             Widget buildFilterChip(String label) {
         padding: const
EdgeInsets.symmetric(horizontal: 16),
                                               return Container(
                                                margin: const EdgeInsets.only(right:
         children: [
                                            8),
_buildCategoryItem('Healthy','assests/icon
                                                child: Chip(
s/healthy.jpeg'),
                                                 label: Text(label),
           buildCategoryItem('Biryani',
                                                 backgroundColor: Colors.grey[200],
'assests/icons/biryani.jpeg'),
           buildCategoryItem('Pizza',
                                              );
'assests/icons/pizza.jpeg'),
           buildCategoryItem('Noodles',
                                             Widget _buildPromoBanner() {
'assests/icons/noodles.jpeg'),
           buildCategoryItem('Chicken',
                                              return Container(
'assests/icons/chiken.jpeg'),
                                                margin: const
           buildCategoryItem('Burger',
                                            EdgeInsets.symmetric(horizontal: 16),
'assests/icons/burger.jpeg'),
                                                child: Row(
           buildCategoryItem('Cake',
                                                 children: [
'assests/icons/cake.jpeg'),
                                                  Expanded(
                                                    child: Container(
           buildCategoryItem('More',
'assests/icons/healthy.jpeg'),
                                                     height: 100,
                                                     decoration: BoxDecoration(
                                                      color: Colors.orange[300],
                                                      borderRadius:
                                            BorderRadius.circular(10),
                                                     child: const Center(
   bottomNavigationBar:
                                                      child: Text(
                                                       '60% OFF\nnew something',
BottomNavigationBar(
    selectedItemColor: Colors.red,
                                                       style: TextStyle(
    unselectedItemColor: Colors.grey,
                                                        color: Colors.white,
     items: const [
                                                        fontSize: 16,
      BottomNavigationBarItem(icon:
                                                        fontWeight: FontWeight.bold,
Icon(Icons.home), label: 'Home'),
      BottomNavigationBarItem(icon:
Icon(Icons.search), label: 'Search'),
      BottomNavigationBarItem(icon:
Icon(Icons.person), label: 'Profile'),
     ],
                                                  const SizedBox(width: 16),
```

```
Expanded(
       child: Container(
        height: 100,
        decoration: BoxDecoration(
          color: Colors.blue[200],
         borderRadius:
BorderRadius.circular(10),
        ),
        child: const Center(
          child: Text(
           'billig\ndiscounts',
           style: TextStyle(
            color: Colors.white,
            fontSize: 16,
            fontWeight: FontWeight.bold,
 Widget buildCategoryItem(String name,
String imagePath) {
 return Column(
  children: [
   Image.asset(imagePath, width: 50,
height: 50), // Load image instead of an
icon
   SizedBox(height: 5),
   Text(name, style: TextStyle(fontSize:
14)),
  ],
```

## 2.eat-healthy screen

```
//
                                               ],
lib/screens/eat healthy/eat healthy screen
.dart
import 'package:flutter/material.dart';
                                                     buildBottomNavigationBar(),
class EatHealthyScreen extends
StatelessWidget {
 const EatHealthyScreen({Key? key}) :
super(key: key);
 @override
 Widget build(BuildContext context) {
                                              Widget buildHeader() {
  return Scaffold(
                                               return Container(
   body: SafeArea(
                                                 padding: const EdgeInsets.all(16),
     child: Column(
                                                 child: Column(
      children: [
                                                  crossAxisAlignment:
        buildHeader(),
                                             CrossAxisAlignment.start,
        buildDeliveryOptions(),
                                                  children: [
       Expanded(
                                                   Row(
        child: SingleChildScrollView(
                                                    children: [
          child: Column(
                                                     IconButton(
           crossAxisAlignment:
                                                       icon: const
CrossAxisAlignment.start,
                                             Icon(Icons.arrow back),
           children: [
                                                       onPressed: () {},
            buildSegmentedControl(),
            const SizedBox(height: 16),
                                                      const Text(
                                                       'Eat Healthy',
             buildDishCard(
             'Plant Protein Bowl',
                                                       style: TextStyle(
             '★ 4.2',
                                                        fontSize: 20,
             'Veg preparation having raw
                                                        fontWeight: FontWeight.bold,
plant based...'.
                                                       ),
              'assests/bowl.jpeg',
                                                     ),
                                                   const Spacer(),
                                                      Container(
             buildDishCard(
             'Spring Veg Plater',
                                                       padding: const
             ' \bigstar 4.5'
                                             EdgeInsets.symmetric(
              'Veg preparation having raw
                                                        horizontal: 8,
                                                        vertical: 4,
plant based...'
              'assests/platter.jpeg',
                                                       ),
```

decoration: BoxDecoration( color: Colors.green,	), const SizedBox(width: 16),
borderRadius:	_buildDeliveryOption(
BorderRadius.circular(4),	Icons.restaurant,
),	'DINING',
child: const Row(	),
children: [	const SizedBox(width: 16),
Text(	_buildDeliveryOption(
'4.2 <b>★</b> ',	Icons.star,
style: TextStyle(color:	'REVIEWS',
Colors.white),	),
),	],
Icon(	),
Icons.arrow_forward_ios,	);
size: 12,	}
color: Colors.white,	
),	Widget _buildDeliveryOption(IconData
],	icon, String label, {bool isSelected =
),	false}) {
),	return Expanded(
],	child: Container(
),	padding: const
const Text(	EdgeInsets.symmetric(vertical: 8),
'Naturally, Hyderabad',	decoration: BoxDecoration(
style: TextStyle(color:	border: Border(
Colors.grey),	bottom: BorderSide(
),	color: isSelected? Colors.black:
],	Colors.grey,
),	width: 2,
);	),
}	),
	),
Widget buildDeliveryOptions() {	child: Row(
return Container(	mainAxisAlignment:
padding: const	MainAxisAlignment.center,
EdgeInsets.symmetric(horizontal: 16),	children: [
child: Row(	Icon(icon, color: isSelected?
children:	Colors.black: Colors.grey),
_buildDeliveryOption(	const SizedBox(width: 4),
Icons.delivery dining,	Text(
'DELIVERY',	label,
isSelected: true,	style: TextStyle(

```
color: isSelected? Colors.black:
                                               label,
                                                  textAlign: TextAlign.center,
Colors.grey,
                                                  style: TextStyle(
         fontWeight: isSelected?
FontWeight.bold: FontWeight.normal,
                                                   color: isSelected? Colors.black:
                                            Colors.grey,
                                                   fontWeight: isSelected?
                                            FontWeight.bold: FontWeight.normal,
 Widget _buildSegmentedControl() {
  return Container(
                                             Widget buildDishCard(String title,
   padding: const
                                            String rating, String description, String
EdgeInsets.symmetric(horizontal: 16),
                                            imagePath) {
                                              return Container(
   child: Row(
                                                padding: const EdgeInsets.all(16),
    children: [
      buildSegmentButton('Full Menu',
                                                child: Row(
isSelected: true),
                                                 crossAxisAlignment:
                                            CrossAxisAlignment.start,
       buildSegmentButton('Healthy'),
                                                 children: [
                                                  Expanded(
                                                   flex: 2,
                                                   child: Column(
                                                     crossAxisAlignment:
                                            CrossAxisAlignment.start,
 Widget buildSegmentButton(String
label, {bool isSelected = false}) {
                                                    children: [
  return Expanded(
                                                      Row(
   child: Container(
                                                       children: [
    padding: const
                                                        const Icon(Icons.circle, color:
EdgeInsets.symmetric(vertical: 8),
                                            Colors.green, size: 12),
    decoration: BoxDecoration(
                                                        const SizedBox(width: 4),
      border: Border(
                                                        Text(
       bottom: BorderSide(
                                                         title,
        color: isSelected? Colors.black:
                                                         style: const TextStyle(
                                                           fontWeight:
Colors.grey,
        width: 2,
                                            FontWeight.bold,
                                                           fontSize: 16,
    child: Text(
```

),	fit: BoxFit.cover,
const SizedBox(height: 4),	),
Container(	),
padding: const	Container(
EdgeInsets.symmetric(	padding: const
horizontal: 4,	EdgeInsets.symmetric(
vertical: 2,	horizontal: 12,
),	vertical: 4,
decoration: BoxDecoration(	),
color: Colors.green[100],	decoration: BoxDecoration(
borderRadius:	color: Colors.white,
BorderRadius.circular(4),	borderRadius:
),	BorderRadius.circular(4),
child: Text(	),
rating,	child: const Text(
style: const	'ADD',
TextStyle(fontSize: 12),	style: TextStyle(
),	color: Colors.green,
),	fontWeight: FontWeight.bold,
const SizedBox(height: 4),	),
Text(	),
description,	),
style: const TextStyle(	],
color: Colors.grey,	),
fontSize: 12,	],
),	),
),	);
],	}
),	
),	Widget _buildBottomNavigationBar() {
const SizedBox(width: 16),	return BottomNavigationBar(
Stack(	selectedItemColor: Colors.black,
alignment:	unselectedItemColor: Colors.grey,
Alignment.bottomRight,	items: const [
children: [	BottomNavigationBarItem(
ClipRRect(	icon: Icon(Icons.home),
borderRadius:	label: ",
BorderRadius.circular(8),	),
child: Image.asset(	BottomNavigationBarItem(
imagePath,	icon: Icon(Icons.search),
width: 100,	label: ",
height: 100	),

```
BottomNavigationBarItem(
       icon: Icon(Icons.person),
       label: ",
3.dish-detail screen
// lib/screens/dish detail screen.dart
                                               actions: [
 import 'package:flutter/material.dart';
                                                    Container(
                                                     margin: const EdgeInsets.all(8),
                                                     padding: const
 class DishDetailScreen extends
                                             EdgeInsets.symmetric(horizontal: 8,
 StatefulWidget {
  const DishDetailScreen({Key? key}) :
                                             vertical: 4),
                                                     decoration: BoxDecoration(
 super(key: key);
                                                      color: Colors.green,
                                                      borderRadius:
  @override
                                             BorderRadius.circular(12),
  State<DishDetailScreen> createState()
 => DishDetailScreenState();
                                                     ),
                                                     child: const Row(
                                                      children: [
 class DishDetailScreenState extends
                                                        Text(
 State < Dish Detail Screen > {
                                                         '4.2',
  int quantity = 1;
                                                         style: TextStyle(color:
                                              Colors.white),
  @override
                                                       Icon(Icons.star, color:
  Widget build(BuildContext context) {
                                             Colors.white, size: 16),
   return Scaffold(
    appBar: AppBar(
                                                      ],
     backgroundColor: Colors.transparent,
      elevation: 0,
     leading: IconButton(
       icon: const Icon(Icons.arrow_back,
 color: Colors.black),
       onPressed: () =>
Navigator.pop(context),
```

body: SingleChildScrollView(	const SizedBox(height: 8),
child: Column(	buildAddOnOption('Veg
crossAxisAlignment:	protein', '₹40'),
CrossAxisAlignment.start,	buildAddOnOption('Pepper',
children: [	'₹40'),
Image.asset(	buildAddOnOption('Extra
'assests/bowl.jpeg',	Veggies', '₹40'),
width: double.infinity,	<i>Se</i> , , , , , , , , , , , , , , , , , , ,
height: 200,	buildAddOnOption('Mushrooms', '₹40'),
fit: BoxFit.cover,	buildAddOnOption('Corn',
),	'₹40'),
Padding(	buildAddOnOption('Chilli
padding: const	Powder', '₹40'),
EdgeInsets.all(16.0),	const SizedBox(height: 16),
child: Column(	const Text(
crossAxisAlignment:	'Choose Your Protein',
CrossAxisAlignment.start,	style: TextStyle(
children: [	fontSize: 16,
const Row(	fontWeight:
children: [	FontWeight.w500,
Icon(Icons.circle, color:	),
Colors.green, size: 12),	).
SizedBox(width: 8),	const SizedBox(height: 8),
Text(	Row(
'Plant Protein Bowl',	children: [
style: TextStyle(	const Text('-'),
fontSize: 20,	Container(
fontWeight:	margin: const
FontWeight.bold,	EdgeInsets.symmetric(horizontal: 8),
).	padding: const
),	EdgeInsets.symmetric(
1.	horizontal: 16,
).	vertical: 4,
const SizedBox(height: 8),	),
const Text(	decoration: BoxDecoration(
'Add On',	border: Border.all(color:
style: TextStyle(	Colors.grey),
fontSize: 16,	borderRadius:
fontWeight:	BorderRadius.circular(4),
FontWeight.w500,	).
).	child: Text('\$quantity'),
),	),
	//

```
const Text('+'),
                                                Text(title),
             const Spacer(),
                                                  const Spacer(),
                                                  Text(price),
             ElevatedButton(
              onPressed: () {},
              style:
ElevatedButton.styleFrom(
                backgroundColor:
Colors.red,
                shape:
RoundedRectangleBorder(
                 borderRadius:
BorderRadius.circular(8),
                ),
              ),
              child: const Text(
                'Add ₹199',
                style: TextStyle(color:
Colors.white),
 Widget buildAddOnOption(String title,
String price) {
  return Container(
   margin: const EdgeInsets.only(bottom:
8),
   child: Row(
    children: [
      Checkbox(
       value: false,
       onChanged: (value) {},
      ),
```

# 4.checkout-screen

// lib/screens/checkout screen.dart	const SizedBox(height: 8),
import 'package:flutter/material.dart';	Row(
	mainAxisAlignment:
class CheckoutScreen extends	MainAxisAlignment.spaceEvenly,
StatelessWidget {	children:
<pre>const CheckoutScreen({Key? key}) :</pre>	_buildPaymentOption('GPay',
super(key: key);	Icons.g_mobiledata),
1 \ 3 3//	buildPaymentOption('FPay',
@override	Icons.payment),
Widget build(BuildContext context) {	_buildPaymentOption('Paytm',
return Scaffold(	Icons.payment),
appBar: AppBar(	_buildPaymentOption('Card',
backgroundColor: Colors.white,	Icons.credit card),
elevation: 0,	],
title: const Text(	),
'Checkout',	const SizedBox(height: 24),
style: TextStyle(color:	const Text(
Colors.black),	'Delivery Instructions',
),	style: TextStyle(
leading: IconButton(	fontSize: 16,
icon: const Icon(Icons.arrow_back,	fontWeight: FontWeight.bold,
color: Colors.black),	),
onPressed: () =>	),
Navigator.pop(context),	const SizedBox(height: 8),
),	Container(
),	padding: const
body: SingleChildScrollView(	EdgeInsets.all(12),
child: Padding(	decoration: BoxDecoration(
padding: const EdgeInsets.all(16.0),	border: Border.all(color:
child: Column(	Colors.grey.shade300),
crossAxisAlignment:	borderRadius:
CrossAxisAlignment.start,	BorderRadius.circular(8),
children: [	),
const Text(	child: const Row(
'Offers',	children: [
style: TextStyle(	Icon(Icons.location_on_outlined),
fontSize: 16,	SizedBox(width: 8),
fontWeight: FontWeight.bold,	Text('Deliver to default
),	location'),
)	

Spacer()	
Spacer(),	<i>)</i> ,
Text(	),
'Change',	
style: TextStyle(color:	),
Colors.red),	_),
),	],
],	),
),	),
),	const SizedBox(height: 24),
const SizedBox(height: 16),	const Divider(),
Container(	_buildBillItem('Item Total',
padding: const	'₹199.00'),
EdgeInsets.all(12),	_buildBillItem('Delivery Fee',
decoration: BoxDecoration(	'₹35.00'),
color: Colors.grey.shade100,	buildBillItem('Platform Fee',
borderRadius:	'₹3.00'),
BorderRadius.circular(8),	const Divider(),
),	buildBillItem('Grand Total',
child: Row(	'₹234.00', isBold: true),
children:	1.
const	).
Icon(Icons.eco_outlined, color:	).
Colors.green),	).
const SizedBox(width: 8),	bottomNavigationBar: Container(
Expanded(	padding: const EdgeInsets.all(16),
child: Column(	decoration: const BoxDecoration(
crossAxisAlignment:	color: Colors.white,
CrossAxisAlignment.start,	boxShadow: [
children:	BoxShadow(
const Text(	color: Colors.black12,
'Climate conscious	blurRadius: 4,
delivery',	)
style:	<i>)</i> ;
TextStyle(fontWeight: FontWeight.bold),	<u> </u>
)	child: Row(
Text(	mainAxisAlignment:
'Let us be more	MainAxisAlignment.spaceBetween,
sustainable by reducing plastic cutlery',	children: [
sustainable by reducing plastic editory, style: TextStyle(	const Column(
color:	mainAxisSize:
Colors.grey.shade600,	MainAxisSize. MainAxisSize.min,
<u> </u>	•
fontSize: 12,	crossAxisAlignment:

CrossAxisAlignment.start,	),
children: [	);
Text(	}
'₹234.00',	,
style: TextStyle(	Widget buildPaymentOption(String
fontSize: 18,	title, IconData icon) {
fontWeight: FontWeight.bold,	return Container(
),	padding: const EdgeInsets.all(12),
),	decoration: BoxDecoration(
Text(	border: Border.all(color:
'View Detailed Bill',	Colors.grey.shade300),
style: TextStyle(	borderRadius:
color: Colors.red,	BorderRadius.circular(8),
decoration:	).
TextDecoration.underline,	child: Column(
).	children:
),	Icon(icon),
], `	const SizedBox(height: 4),
),	Text(title),
ElevatedButton(	],
onPressed: () $\{\}$ ,	),
style: ElevatedButton.styleFrom(	);
backgroundColor: Colors.red,	}
padding: const	
EdgeInsets.symmetric(	Widget _buildBillItem(String title, String
horizontal: 32,	amount, {bool isBold = false}) {
vertical: 12,	return Padding(
),	padding: const
shape:	EdgeInsets.symmetric(vertical: 8),
RoundedRectangleBorder(	child: Row(
borderRadius:	mainAxisAlignment:
BorderRadius.circular(8),	MainAxisAlignment.spaceBetween,
),	children: [
),	Text(
child: const Text(	title,
'Place Order',	style: TextStyle(
style: TextStyle(color:	fontWeight: isBold?
Colors.white),	FontWeight.bold : FontWeight.normal,
),	),
),	), Tr. 46
],	Text(
),	Amount,

```
style: TextStyle(
                                                    fontWeight: isBold?
                                           FontWeight.bold: FontWeight.normal,
 Widget buildPaymentOption(String
title, IconData icon) {
  return Container(
   padding: const EdgeInsets.all(12),
   decoration: BoxDecoration(
    border: Border.all(color:
Colors.grey.shade300),
    borderRadius:
BorderRadius.circular(8),
   ),
   child: Column(
    children: [
      Icon(icon),
      const SizedBox(height: 4),
      Text(title),
    ],
 Widget buildBillItem(String title, String
amount, {bool isBold = false}) {
  return Padding(
   padding: const
EdgeInsets.symmetric(vertical: 8),
   child: Row(
    mainAxisAlignment:
MainAxisAlignment.spaceBetween,
    children: [
      Text(
       title,
       style: TextStyle(
        fontWeight: isBold?
FontWeight.bold: FontWeight.normal,
       ),
      ),
      Text(
       amount,
```

## OUTPUT:







