

# MAD & PWA Lab

## Journal

Experiment No.	02
Experiment Title.	To design Flutter UI by including common widgets.
Roll No.	14
Name	Komal Milind Deolekar
Class	D15A
Subject	MAD & PWA Lab
Lab Outcome	LO2: Design and Develop interactive Flutter App by using widgets, layouts, gestures and animation
Grade:	

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

## Theory :

Flutter is a UI toolkit developed by Google for building natively compiled applications for mobile, web, and desktop from a single codebase. It provides a rich set of widgets that help in designing responsive and visually appealing user interfaces.

## Flutter UI Structure

Flutter follows a widget-based architecture where everything is a widget, including the app itself. The UI is built using:

- **MaterialApp:** The root of a Flutter application that provides Material Design features.
- **Scaffold:** Provides a basic layout structure including an AppBar, body, floating action button, etc.
- **Widgets:** The building blocks of the UI.

## Types of Widgets in Flutter

### A. Basic Widgets

1. **Text:** Displays text with different styles.

```
Text('Hello, Flutter!', style: TextStyle(fontSize: 20, fontWeight: FontWeight.bold))
```

2. **Image:** Displays images from assets or the internet.

```
Image.asset('assets/logo.png') // For local image  
Image.network('https://example.com/image.png') // For online image
```

3. **Icon:** Displays an icon.

```
Icon(Icons.home, size: 30, color: Colors.blue)
```

### B. Layout Widgets

1. **Container:** A box widget that can hold other widgets.

```
Container(  
  padding: EdgeInsets.all(10),  
  decoration: BoxDecoration(color: Colors.blue, borderRadius: BorderRadius.circular(10)),  
  child: Text('Hello World', style: TextStyle(color: Colors.white)),  
)
```

2. **Column & Row:** Arrange widgets vertically or horizontally.

```
Column(  
  children: [
```

```
children: [
  Text('Item 1'),
  Text('Item 2'),
],
)

Row(
  children: [
    Icon(Icons.star),
    Text('Rating: 5'),
  ],
)
```

3. **Stack:** Overlays widgets on top of each other.

```
Stack(
  children: [
    Image.asset('assets/background.png'),
    Positioned(top: 20, left: 30, child: Text('Overlay Text')),
  ],
)
```

## C. Input Widgets

1. **TextField:** Allows text input.

```
TextField(
  decoration: InputDecoration(labelText: 'Enter Name', border: OutlineInputBorder()),
)
```

2. **Button Widgets:**

- a. **ElevatedButton:** Raised button with elevation.

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

- b. **TextButton:** Flat button with no elevation.

```
TextButton(
  onPressed: () {},
  child: Text('Click Me'),
)
```

- c. **IconButton:** A button with an icon.

```
IconButton(
  icon: Icon(Icons.add),
  onPressed: () {},
)
```

## D. Navigation & Routing Widgets

1. **Navigator**: Handles screen transitions.

```
Navigator.push(context, MaterialPageRoute(builder: (context) => NewScreen()));
```

2. **BottomNavigationBar**: Used for switching between different screens.

```
BottomNavigationBar(  
  items: [  
    BottomNavigationBarItem(icon: Icon(Icons.home), label: 'Home'),  
    BottomNavigationBarItem(icon: Icon(Icons.settings), label: 'Settings'),  
  ],  
)
```

## E. Interactive & Gestures

**GestureDetector**: Detects taps, swipes, and other gestures.

```
GestureDetector(  
  onTap: () => print("Tapped!"),  
  child: Container(color: Colors.blue, height: 100, width: 100),  
)
```

## Responsive Design Considerations

- Use **MediaQuery** for screen size adaptation.
- Use **Expanded & Flexible** widgets for dynamic layouts.
- Implement **ListView** instead of Column for scrollable content.

## State Management in UI

- **StatelessWidget**: Used for static UI components.
- **StatefulWidget**: Used for UI components that need updates (e.g., form inputs, animations).

## Theming & Styling

Flutter provides **ThemeData** to define a consistent look.

```
ThemeData(  
  primaryColor: Colors.blue,  
  textTheme: TextTheme(  
    bodyText1: TextStyle(fontSize: 18, color: Colors.black),  
  ),  
)
```

## Code :

Home\_page.dart

```
import 'package:flutter/material.dart';
import 'package:lucide_icons/lucide_icons.dart';
import 'fashion_store_screen.dart';
import 'food_store_screen.dart';

class HomePage extends StatelessWidget {

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        backgroundColor: Colors.blue.shade100,
        elevation: 0,
        title: Row(
          children: [
            Icon(Icons.location_on, color: Colors.pink),
            SizedBox(width: 5),
            Text("Charai", style: TextStyle(fontWeight:
FontWeight.bold)),
            Icon(Icons.keyboard_arrow_down),
          ],
        ),
        actions: [
          Container(
            padding: EdgeInsets.symmetric(horizontal:
10, vertical: 5),
            decoration: BoxDecoration(
              color: Colors.white,
              borderRadius: BorderRadius.circular(12),
            ),
            child: Row(
              children: [
                Text("300", style: TextStyle(fontWeight:
FontWeight.bold)),
                Icon(Icons.monetization_on, color:
Colors.yellow),
              ],
            ),
            SizedBox(width: 10),
            IconButton(icon: Icon(Icons.notifications),
onPressed: () {}),
          ],
        ),
        body: SingleChildScrollView(
          child: Column(
            crossAxisAlignment:
CrossAxisAlignment.start,
            children: [
              // Search Bar
```

```
Padding(
  padding: EdgeInsets.all(12),
  child: TextField(
    decoration: InputDecoration(
      prefixIcon: Icon(Icons.search),
      hintText: "Search for stores, products,
brands...",
      filled: true,
      fillColor: Colors.grey[200],
      border: OutlineInputBorder(
        borderRadius:
BorderRadius.circular(12),
        borderSide: BorderSide.none,
      ),
    ),
  ),
),
// Banner Section
Padding(
  padding: EdgeInsets.all(12),
  child: ClipRect(
    borderRadius: BorderRadius.circular(12),
    child:
Image.asset("assets/images/pizza_banner.jpg"), //
Change image
  ),
),

Padding(
  padding: EdgeInsets.symmetric(horizontal:
12),
  child: Column(
    crossAxisAlignment:
CrossAxisAlignment.start,
    children: [
      GridView.count(
        shrinkWrap: true,
        physics: NeverScrollableScrollPhysics(),
        crossAxisCount: 2,
        childAspectRatio: 1.5,
        crossAxisSpacing: 10,
        mainAxisSpacing: 10,
        children: [
          categoryCard("Fashion",
"assets/images/fashion.png", "Going out",
FashionStoreScreen(), context),
          categoryCard("Food Delivery",
"assets/images/food_delivery.png", "Deals at ₹9",
FoodStoreScreen(), context),
```

```

categoryCard2("Budget Dining",
"assets/images/budget_dining.png", "Going out" ),
categoryCard2("Online Vouchers",
"assets/images/vouchers.png", "" ),
categoryCard2("Fine Dining",
"assets/images/fine_dining.png", "UP TO 70% OFF"
),
categoryCard2("The ₹1 Shop",
"assets/images/shop.png", "magicShop" ),
],
),
Align(
alignment: Alignment.center,
child: TextButton(
onPressed: () =>
showMoreCategories(context),
child: Text("View All", style:
TextStyle(fontSize: 16, fontWeight:
FontWeight.bold)),
),
),
],
),
),
// Rewards Section
Container(
margin: EdgeInsets.all(12),
padding: EdgeInsets.all(10),
decoration: BoxDecoration(
color: Colors.grey.shade200,
borderRadius: BorderRadius.circular(12),
),
child: Row(
mainAxisAlignment:
MainAxisAlignment.spaceBetween,
children: [
Column(
crossAxisAlignment:
CrossAxisAlignment.start,
children: [
Text("1 Pending Rewards", style:
TextStyle(fontWeight: FontWeight.bold)),
Text("Your scratch cards are expiring
soon..."),
],
),
ElevatedButton(
onPressed: () {},
child: Text("Claim Now"),
style: ElevatedButton.styleFrom(
backgroundColor:
Colors.blue.shade500,
foregroundColor: Colors.white,

```

```

    ),
  ],
),
),
),

// Promotional Banner
Padding(
  padding: EdgeInsets.all(12),
  child: ClipRRect(
    borderRadius: BorderRadius.circular(12),
    child:
Image.asset("assets/images/promo_banner.png"), //
Add new promo banner
  ),
),
],
),
),
);
}

Widget categoryCard2(String title, String
imagePath, String subtitle) {
  return Container(
    decoration: BoxDecoration(
      color: Colors.white,
      borderRadius: BorderRadius.circular(12),
      border: Border.all(color: Colors.grey.shade300),
    ),
    padding: EdgeInsets.all(10),
    child: Column(
      crossAxisAlignment: CrossAxisAlignment.start,
      children: [
        if (subtitle.isNotEmpty)
          Container(
            padding: EdgeInsets.symmetric(horizontal:
8, vertical: 3),
            decoration: BoxDecoration(
              color: Colors.blue.shade100,
              borderRadius: BorderRadius.circular(8),
            ),
            child: Text(subtitle, style:
TextStyle(fontSize: 12, fontWeight:
FontWeight.bold)),
          ),
          SizedBox(height: 5),
          Text(title, style: TextStyle(fontSize: 16,
fontWeight: FontWeight.bold)),
          Spacer(),
          Align(
            alignment: Alignment.bottomRight,
            child: Image.asset(imagePath, height: 50),
          ),
        ],
      ),
    ),
  ),
);
}

```

```

    );
}

Widget categoryCard(String title, String imagePath,
String subtitle, Widget page, BuildContext context) {
  return GestureDetector(
    onTap: () => Navigator.push(
      context, MaterialPageRoute(builder: (context)
=> page),
    ),
    child: Container(
      decoration: BoxDecoration(
        color: Colors.white,
        borderRadius: BorderRadius.circular(12),
        border: Border.all(color:
Colors.grey.shade300),
      ),
      padding: EdgeInsets.all(10),
      child: Column(
        crossAxisAlignment:
CrossAxisAlignment.start,
        children: [
          if (subtitle.isNotEmpty)
            Container(
              padding: EdgeInsets.symmetric(horizontal:
8, vertical: 3),
              decoration: BoxDecoration(
                color: Colors.blue.shade100,
                borderRadius: BorderRadius.circular(8),
              ),
              child: Text(subtitle, style:
TextStyle(fontSize: 12, fontWeight:
FontWeight.bold)),
            ),
          SizedBox(height: 5),
          Text(title, style: TextStyle(fontSize: 16,
fontWeight: FontWeight.bold)),
          Spacer(),
          Align(
            alignment: Alignment.bottomRight,
            child: Image.asset(imagePath, height: 50),
          ),
        ],
      ),
    ),
  );
};

```

```

}

void showMoreCategories(BuildContext context) {
  showModalBottomSheet(
    context: context,
    shape: RoundedRectangleBorder(
      borderRadius: BorderRadius.vertical(top:
Radius.circular(16)),
    ),
    builder: (context) {
      return Padding(
        padding: const EdgeInsets.all(16.0),
        child: Column(
          mainAxisAlignment: MainAxisAlignment.min,
          children: [
            Text("More Categories", style:
TextStyle(fontSize: 18, fontWeight:
FontWeight.bold)),
            SizedBox(height: 10),
            GridView.count(
              shrinkWrap: true,
              crossAxisCount: 2,
              childAspectRatio: 1.5,
              crossAxisSpacing: 10,
              mainAxisSpacing: 10,
              children: [
                categoryCard2("Budget Dining",
"assets/images/budget_dining.png", "Going out"),
                categoryCard2("Online Vouchers",
"assets/images/vouchers.png", ""),
                categoryCard2("Fine Dining",
"assets/images/fine_dining.png", "UP TO 70%
OFF"),
                categoryCard2("The ₹1 Shop",
"assets/images/shop.png", "magicShop"),
              ],
            ),
          ],
        ),
      );
    },
  );
}

```

**Magic9deals.dart**

```

import 'package:flutter/material.dart';
import 'footer.dart';
import 'magic9_header.dart';
import 'user_provider.dart';
import 'package:provider/provider.dart';

class Magic9Deals extends StatefulWidget {
  @override
  _Magic9DealsState createState() =>
    _Magic9DealsState();
}

class _Magic9DealsState extends
  State<Magic9Deals> {

// class Magic9Deals extends StatelessWidget {
  @override
  void initState() {
    super.initState();
    Provider.of<UserProvider>(context, listen:
false).fetchUserData();
  }

// }
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        backgroundColor: Color.fromRGBO(212, 171,
250,1),
        title: Column(
          crossAxisAlignment:
CrossAxisAlignment.start,

          children: [
            Text("Dombivli Railway Station", style:
TextStyle(fontSize: 16, fontWeight:
FontWeight.bold)),
            Text("Mumbai", style: TextStyle(fontSize: 12,
color: Colors.grey)),
          ],
        ),
        actions: [
          Consumer<UserProvider>(
            builder: (context, userProvider, child) {
              return Row(
                children: [
                  Container(
                    padding:
EdgeInsets.symmetric(horizontal: 10, vertical: 5),
                    decoration: BoxDecoration(
                      color: Colors.white,
                      borderRadius:

```

```

BorderRadius.circular(12),
                ),
                child: Row(
                  children: [
                    Text("${userProvider.magicPoints}"),
                    style: TextStyle(fontWeight: FontWeight.bold)),
                    Icon(Icons.monetization_on, color:
Colors.yellow),
                  ],
                ),
                ),
                SizedBox(width: 10),
                IconButton(icon:
Icon(Icons.notifications), onPressed: () {}),
                ],
                ),
                ),
                IconButton(icon: Icon(Icons.search),
onPressed: () {}),
                IconButton(icon: Icon(Icons.notifications),
onPressed: () {}),
                ],
                ),
                body: ListView(
                  padding: EdgeInsets.all(16),
                  children: [
                    Magic9Header(),
                    SizedBox(height: 16),

                    // Updated Category Cards with images on the
right
                    CategoryCard(
                      title: "Food Delivery",
                      subtitle: "Menu starting at ₹9",
                      buttonText: "Order now",
                      imageUrl:
"assets/images/magic9_food_delivery.png", // Update
with actual image path
                      bgColor: Colors.redAccent,
                    ),
                    CategoryCard(
                      title: "Budget Dining",
                      subtitle: "Deals starting at ₹9",
                      buttonText: "Explore now",
                      imageUrl:
"assets/images/magic9_budget_dining.png",
                      bgColor: Colors.orangeAccent,
                    ),
                    CategoryCard(
                      title: "Fashion",
                      subtitle: "Bestsellers starting at ₹49",
                      buttonText: "Visit store",
                      imageUrl:

```



```

"assets/images/magic9_fashion.png",
  bgColor: Colors.purpleAccent,
),
CategoryCard(
  title: "Pubs & Bars",
  subtitle: "Beer deals starting at ₹79",
  buttonText: "Explore now",
  imageUrl:
"assets/images/magic9_pubs_and_bar.png",
  bgColor: Colors.blueAccent,
),

  SizedBox(height: 16),
  AppFooter(),
],
),
floatingActionButton: FloatingActionButton(
  onPressed: () {
    Navigator.pushNamed(context, '/cart');
  },
  child: Icon(Icons.shopping_cart),
),
);
}
}

// Updated CategoryCard with Image on the Right
class CategoryCard extends StatelessWidget {
  final String title;
  final String subtitle;
  final String buttonText;
  final String imageUrl;
  final Color bgColor;

  CategoryCard({
    required this.title,
    required this.subtitle,
    required this.buttonText,
    required this.imageUrl,
    required this.bgColor,
  });

  @override
  Widget build(BuildContext context) {
    return Card(
      shape: RoundedRectangleBorder(borderRadius:
BorderRadius.circular(16)),
      margin: EdgeInsets.symmetric(vertical: 8),
      elevation: 4,
      child: Container(

```

```

decoration: BoxDecoration(
  borderRadius: BorderRadius.circular(16),
  color: bgColor.withOpacity(0.15),
),
child: Padding(
  padding: EdgeInsets.all(12),
  child: Row(
    children: [
      // Expanded Text Section (Left Side)
      Expanded(
        child: Column(
          crossAxisAlignment:
CrossAxisAlignment.start,
          children: [
            Text(title, style: TextStyle(fontSize: 18,
fontWeight: FontWeight.bold)),
            SizedBox(height: 4),
            Text(subtitle, style: TextStyle(fontSize:
14, color: Colors.black54)),
            SizedBox(height: 8),
            ElevatedButton(
              onPressed: () {},
              style:
ElevatedButton.styleFrom(backgroundColor:
bgColor),
              child: Text(buttonText, style:
TextStyle(color: Colors.white)),
            ),
          ],
        ),
      ),
      // Image Section (Right Side)
      ClipRRect(
        borderRadius: BorderRadius.circular(12),
        child: Image.asset(
          imageUrl,
          width: 80,
          height: 80,
          fit: BoxFit.cover,
        ),
      ),
    ],
  ),
);
}
}

```

## ScreenShots :



