EXPERIMENT NO 2

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CLASS-D15A

ROLL NO-12

AIM-To design Flutter UI by including common widgets

THEORY-

Flutter is an open-source UI framework by Google that allows developers to build natively compiled applications for mobile, web, and desktop using a single codebase. It uses the Dart programming language and follows a widget- based architecture. In Flutter, everything is a widget, from layout components to UI elements.

Some of the common widgets

- **Container** – A flexible box that can hold other widgets and be styled with padding, margins, borders, and background colors. It is often used for layout structuring.
- **Text** – Used to display text with various styles, such as font size, color, weight, and alignment.
- **Image** – Loads and displays images from different sources like assets, networks, and memory.
- **Row & Column** – These layout widgets help arrange child widgets horizontally (Row) or vertically (Column). They are essential for structuring UI components.
- **Scaffold** – Provides a basic page structure, including an AppBar, body, floating action button, and drawer. It is the foundation of most Flutter screens.
- **AppBar** – A top navigation bar that usually contains a title, icons, and action buttons.
- **ListView** – A scrollable list widget that efficiently displays multiple items, often used for dynamic content like messages or product lists.

- **Text Field** – Allows users to input text, commonly used in forms and search fields.

SYNTAX-

AppBar creates a top navigator bar with title and icons.

```
AppBar (
  title: Text("Title"),
  leading: IconButton(
  icon: Icon(Icons.menu),
  onPressed: () {},
  ),
  bottom: TabBar(),
)
```

Scaffold creates the basic layout structure of the app.

```
Scaffold (
  appBar: AppBar(),
  body: Widget(),
  drawer: Drawer(),
  bottomNavigationBar: BottomNavigationBar(),
)
```

TabBar creates tabs for switching views

```
TabBar(
  tabs: [
    Tab(text: "Tab 1"),
    Tab(text: "Tab 2"),
  ],
)
```

Drawer a side menu that slides in from left

```
Drawer(
  child: ListView(
    children: [
    DrawerHeader(
       decoration: BoxDecoration(color: Colors.blue),
       child: Text("Header"),
      ),
      ListTile(
        leading: Icon(Icons.star),
```

```
        title: Text("Menu Item"),
        onTap: () {},
      ),
    ],
  ),
)
```

Listview creates a scrollable list dynamically

```
ListView.builder(
  itemCount: items.length,
  itemBuilder: (context, index) {
  return ListTile(
      title: Text(items[index]),
    );
  },
)
```

Widget Properties

Scaffold

key → Used to manage state
appBar → Adds a top navigation bar
body → The main content of the screen
drawer → A slide-out menu on the left
bottomNavigationBar → A navigation bar at the bottom

AppBar

title → Sets a title or an icon
leading → Adds an icon or button on the left
backgroundColor → Changes the background color
elevation → Controls the shadow effect
centerTitle → Aligns the title in the center
bottom → Adds a TabBar

Drawer

child → Contains a list of menu items
ListView → Displays menu options in a scrollable list

ListView

padding → Controls spacing around the list
children → Contains multiple widgets inside the lis

CODE

```
import 'package:flutter/material.dart';
import 'location_search_page.dart';
import 'services_page.dart'; // Import ServicesPage

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

  @override
  Widget build(BuildContext context) {
   return Scaffold(
     backgroundColor: Colors.white,
     appBar: AppBar(
       backgroundColor: Colors.white,
       elevation: 0,
       title: Padding(
         padding: const EdgeInsets.symmetric(horizontal: 8),
         child: Row(
           children: [
             const Icon(Icons.directions_car, color: Colors.black),
             const SizedBox(width: 8),
             const Text("Rides", style: TextStyle(color: Colors.black)),
             const Spacer(),
             const Icon(Icons.sports_football, color: Colors.black),
             const SizedBox(width: 8),
             const Text("Eats", style: TextStyle(color: Colors.black)),
           ],
         ),
       ),
     ),
     body: Padding(
       padding: const EdgeInsets.all(16),
       child: Column(
         children: [
           // Search Bar with Gesture Feedback
           InkWell(
             borderRadius: BorderRadius.circular(30),
             onTap: () {
               Navigator.push(
                 context,
                 MaterialPageRoute(
                     builder: (context) => const LocationSearchPage()),
               );
             },
             child: Container(
               padding:
```

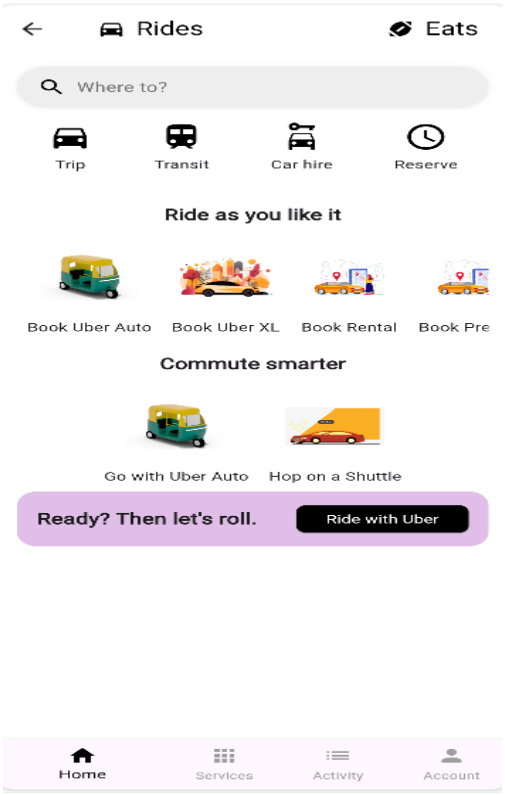
```
          const EdgeInsets.symmetric(horizontal: 16, vertical: 12),
        decoration: BoxDecoration(
          color: Colors.grey[200],
          borderRadius: BorderRadius.circular(30),
          boxShadow: [
            BoxShadow(
                color: Colors.grey.withOpacity(0.2), blurRadius: 4)
          ],
        ),
        child: Row(
          children: [
            const Icon(Icons.search, color: Colors.black),
            const SizedBox(width: 8),
            const Expanded(
              child: Text("Where to?",
                  style:
                      TextStyle(color: Colors.black54, fontSize: 16)),
            ),
          ],
        ),
      ),
    ),
    const SizedBox(height: 16),

    // Travel Options
    Row(
      mainAxisAlignment: MainAxisAlignment.spaceAround,
      children: [
        _buildOption(Icons.directions_car, "Trip"),
        _buildOption(Icons.train, "Transit"),
        _buildOption(Icons.car_rental, "Car hire"),
        _buildOption(Icons.access_time, "Reserve"),
      ],
    ),
    const SizedBox(height: 24),

    // Ride as you like it section
    _buildSectionTitle("Ride as you like it"),
    _buildCardRow([
      _buildRideOption(
          "Book Uber Auto", "/Uber_Auto_558x372_pixels_Desktop.jpg"),
      _buildRideOption("Book Uber XL",
          "/360_F_1177342225_4nqBSE2JARmL00zOaj6LsDKlnoRzeSAf.jpg"),
      _buildRideOption("Book Rental",
          "/360_F_481296102_MFYiHxLkrLSRXF5vTth0ZGbdPkn8yCSU.jpg"),
      _buildRideOption("Book Premier",
"/360_F_481296102_MFYiHxLkrLSRXF5vTth0ZGbdPkn8yCSU.jpg"),
```

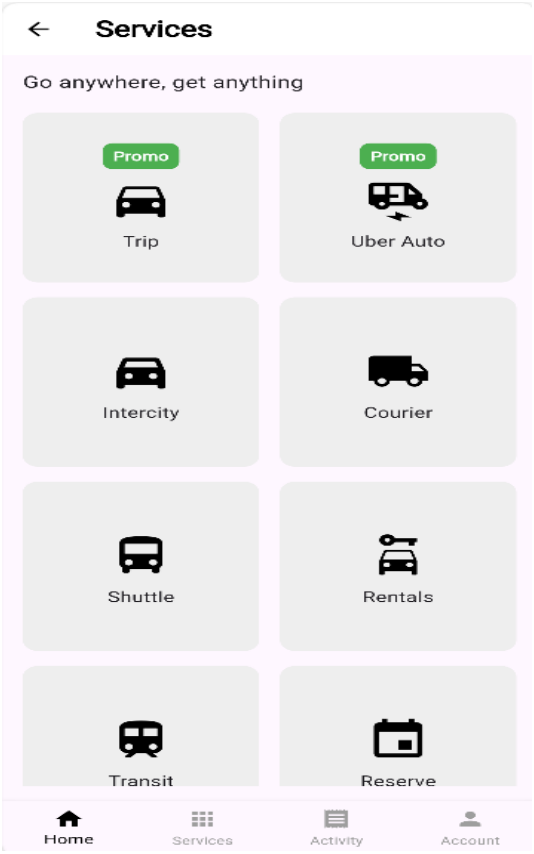
```
      ]),

      // Commute smarter section
      _buildSectionTitle("Commute smarter"),
      _buildCardRow([
        _buildRideOption(
            "Go with Uber Auto", "/Uber_Auto_558x372_pixels_Desktop.jpg"),
        _buildRideOption("Hop on a Shuttle",
            "/223-2238120_uber-select-png-transparent-png.png"),
      ]),

      // Promo Section
      Container(
        decoration: BoxDecoration(
          color: Colors.purple[100],
          borderRadius: BorderRadius.circular(16),
        ),
        padding: const EdgeInsets.all(16),
        child: Row(
          children: [
            const Expanded(
              child: Text(
                "Ready? Then let's roll.",
                style:
                    TextStyle(fontSize: 18, fontWeight: FontWeight.bold),
              ),
            ),
            ElevatedButton(
              onPressed: () {},
              style: _buttonStyle(),
              child: const Text("Ride with Uber"),
            ),
          ],
        ),
      ),
    ],
  ),
),

// Bottom Navigation
bottomNavigationBar: BottomNavigationBar(
  currentIndex: 0,
  selectedItemColor: Colors.black,
  unselectedItemColor: Colors.grey,
  showUnselectedLabels: true,
  onTap: (index) {
```

```
        if (index == 1) {
          // Navigate to ServicesPage when "Services" tab is clicked
          Navigator.push(
            context,
            MaterialPageRoute(builder: (context) => ServicesPage()),
          );
        }
      },
      items: const [
        BottomNavigationBarItem(icon: Icon(Icons.home), label: "Home"),
        BottomNavigationBarItem(icon: Icon(Icons.apps), label: "Services"),
        BottomNavigationBarItem(icon: Icon(Icons.list), label: "Activity"),
        BottomNavigationBarItem(icon: Icon(Icons.person), label: "Account"),
      ],
    ),
  );
}

Widget _buildOption(IconData icon, String text) {
  return Column(
    children: [
      Icon(icon, size: 36, color: Colors.black),
      const SizedBox(height: 4),
      Text(text,
          style: const TextStyle(fontSize: 14, fontWeight: FontWeight.w500)),
    ],
  );
}

Widget _buildSectionTitle(String title) {
  return Padding(
    padding: const EdgeInsets.symmetric(vertical: 12.0),
    child: Text(
      title,
      style: const TextStyle(fontSize: 18, fontWeight: FontWeight.bold),
    ),
  );
}

Widget _buildCardRow(List<Widget> cards) {
  return SingleChildScrollView(
    scrollDirection: Axis.horizontal,
    child: Row(children: cards),
  );
}
```

```
Widget _buildRideOption(String title, String imagePath) {
  return Padding(
    padding: const EdgeInsets.all(8.0),
    child: Column(
      children: [
        Image.asset(imagePath, width: 80, height: 80),
        const SizedBox(height: 8),
        Text(title, style: const TextStyle(fontSize: 14)),
      ],
    ),
  );
 }

 ButtonStyle _buttonStyle() {
  return ElevatedButton.styleFrom(
    backgroundColor: Colors.black,
    foregroundColor: Colors.white,
    shape: RoundedRectangleBorder(borderRadius: BorderRadius.circular(8)),
  );
 }
}
```

OUTPUT





Services Page

CODE

```
import 'package:flutter/material.dart';
import 'location_search_page.dart'; // Import the target page

class ServicesPage extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
  return Scaffold(
   appBar: AppBar(
    title: Text(
     'Services',
     style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold),
    ),
    elevation: 0,
    backgroundColor: Colors.white,
    foregroundColor: Colors.black,
   ),
   body: Padding(
    padding: const EdgeInsets.all(16.0),
    child: Column(
     crossAxisAlignment: CrossAxisAlignment.start,
     children: [
      Text(
       'Go anywhere, get anything',
       style: TextStyle(fontSize: 18, fontWeight: FontWeight.w500),
      ),
      SizedBox(height: 20),
      Expanded(
       child: GridView.count(
        crossAxisCount: 2,
        crossAxisSpacing: 16,
        mainAxisSpacing: 16,
        children: [
         serviceTile(context, 'Trip', Icons.directions_car, true),
         serviceTile(context, 'Uber Auto', Icons.electric_rickshaw, true),
         serviceTile(context, 'Intercity', Icons.directions_car_filled, false),
         serviceTile(context, 'Courier', Icons.local_shipping, false),
         serviceTile(context, 'Shuttle', Icons.directions_bus, false),
         serviceTile(context, 'Rentals', Icons.car_rental, false),
         serviceTile(context, 'Transit', Icons.train, false),
         serviceTile(context, 'Reserve', Icons.event, false),
        ],
       ),
      ),
     ],
    ),
   ),
   bottomNavigationBar: BottomNavigationBar(
    type: BottomNavigationBarType.fixed,
    selectedItemColor: Colors.black,
    unselectedItemColor: Colors.grey,
    items: [
```

```
        BottomNavigationBarItem(icon: Icon(Icons.home), label: 'Home'),
        BottomNavigationBarItem(icon: Icon(Icons.apps), label: 'Services'),
        BottomNavigationBarItem(icon: Icon(Icons.receipt), label: 'Activity'),
        BottomNavigationBarItem(icon: Icon(Icons.person), label: 'Account'),
      ],
    ),
  );
 }

 Widget serviceTile(BuildContext context, String title, IconData icon, bool isPromo) {
  return GestureDetector(
    onTap: () {
     // Navigate to LocationSearchPage when the tile is clicked
     Navigator.push(
       context,
       MaterialPageRoute(builder: (context) => LocationSearchPage()),
     );
    },
    child: Container(
     decoration: BoxDecoration(
       color: Colors.grey[200],
       borderRadius: BorderRadius.circular(12),
     ),
     child: Column(
       mainAxisAlignment: MainAxisAlignment.center,
       children: [
         if (isPromo)
           Container(
             padding: EdgeInsets.symmetric(vertical: 4, horizontal: 8),
             decoration: BoxDecoration(
               color: Colors.green,
               borderRadius: BorderRadius.circular(8),
             ),
             child: Text(
               'Promo',
               style: TextStyle(color: Colors.white, fontWeight: FontWeight.bold),
             ),
           ),
         SizedBox(height: 8),
         Icon(icon, size: 50, color: Colors.black),
         SizedBox(height: 8),
         Text(title, style: TextStyle(fontSize: 16, fontWeight: FontWeight.w500)),
       ],
     ),
    ),
  );
 }
}
```

Maps:
Code:

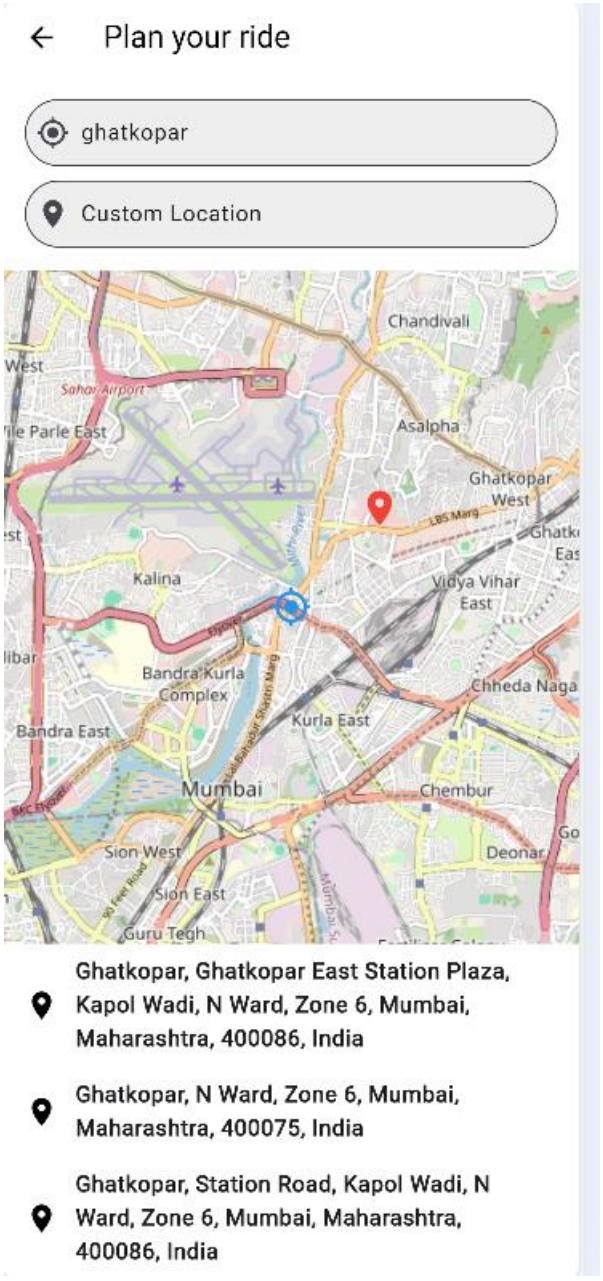
```
import 'package:flutter/material.dart';
import 'package:flutter_map/flutter_map.dart';
import 'package:latlong2/latlong.dart';
import 'package:http/http.dart' as http;
import 'dart:convert';

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

  @override
  _LocationSearchPageState createState() => _LocationSearchPageState();
}

class _LocationSearchPageState extends State<LocationSearchPage> {
  TextEditingController pickupController = TextEditingController();
  TextEditingController destinationController = TextEditingController();

  LatLng _userLocation = LatLng(19.0760, 72.8777); // Default: Mumbai
  LatLng? _selectedLocation;

  List<Map<String, dynamic>> locationSuggestions = [];
  bool isSearching = false;

  @override
  void initState() {
    super.initState();

    pickupController.addListener(() {
      _fetchLocationSuggestions(pickupController.text);
    });

    destinationController.addListener(() {
      _fetchLocationSuggestions(destinationController.text);
    });
  }

  Future<void> _fetchLocationSuggestions(String query) async {
    if (query.isEmpty) {
      setState(() {
        locationSuggestions.clear();
        isSearching = false;
      });
      return;
    }

    setState(() {
      isSearching = true;
    });

    final url = Uri.parse(
        "https://nominatim.openstreetmap.org/search?format=json&q=$query&limit=5");

    try {
```

```
    final response = await http.get(url);
    if (response.statusCode == 200) {
      List<dynamic> results = json.decode(response.body);

      setState(() {
        locationSuggestions = results
            .map((result) => {
                  "name": result["display_name"],
                  "latLng": LatLng(double.parse(result["lat"]),
                      double.parse(result["lon"])),
                })
            .toList();
        isSearching = false;
      });
    }
  } catch (e) {
    print("Error fetching locations: $e");
    setState(() {
      isSearching = false;
    });
  }
}

void _selectLocation(LatLng location, String placeName) {
  setState(() {
    _selectedLocation = location;
    destinationController.text = placeName;
    locationSuggestions.clear(); // Hide suggestions after selection
  });
}

@override
Widget build(BuildContext context) {
  return Scaffold(
    backgroundColor: Colors.white,
    appBar: AppBar(
      title: const Text("Plan your ride"),
      leading: IconButton(
        icon: const Icon(Icons.arrow_back),
        onPressed: () => Navigator.pop(context),
      ),
      backgroundColor: Colors.white,
      elevation: 0,
      foregroundColor: Colors.black,
    ),
    body: Column(
      children: [
        Padding(
          padding: const EdgeInsets.all(16.0),
          child: Column(
            children: [
              _buildTextField(
                  "Pickup location", Icons.my_location, pickupController),
              const SizedBox(height: 10),
              _buildTextField("Drop-off location", Icons.location_on,
                  destinationController),
```

```
            ],
          ),
        ),
        Expanded(
          flex: 2,
          child: FlutterMap(
            options: MapOptions(
              initialCenter: _userLocation,
              initialZoom: 13.0,
              onTap: (tapPosition, latLng) {
                _selectLocation(latLng, "Custom Location");
              },
            ),
            children: [
              TileLayer(
                urlTemplate:
                    "https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png",
                subdomains: ['a', 'b', 'c'],
              ),
              MarkerLayer(
                markers: [
                  Marker(
                    point: _userLocation,
                    width: 40,
                    height: 40,
                    child: const Icon(Icons.my_location,
                        color: Colors.blue, size: 30),
                  ),
                  if (_selectedLocation != null)
                    Marker(
                      point: _selectedLocation!,
                      width: 40,
                      height: 40,
                      child: const Icon(Icons.location_on,
                          color: Colors.red, size: 30),
                    ),
                ],
              ),
            ],
          ),
        ),
        Expanded(
          flex: 1,
          child: ListView(
            children: [
              if (isSearching)
                const Center(child: CircularProgressIndicator()),
              for (var location in locationSuggestions)
                _buildLocationTile(location["name"]!, location["latLng"]),
            ],
          ),
        ),
      ],
    ),
  );
}
```

```
  Widget _buildTextField(
      String hint, IconData icon, TextEditingController controller) {
    return TextField(
      controller: controller,
      decoration: InputDecoration(
        hintText: hint,
        prefixIcon: Icon(icon),
        border: OutlineInputBorder(borderRadius: BorderRadius.circular(30)),
        filled: true,
        fillColor: Colors.grey[200],
      ),
    );
  }

  Widget _buildLocationTile(String title, LatLng location) {
    return ListTile(
      leading: const Icon(Icons.location_on, color: Colors.black),
      title: Text(title, style: const TextStyle(fontWeight: FontWeight.bold)),
      onTap: () {
        _selectLocation(location, title);
      },
    );
  }
}
```

OUTPUT


Plan your ride
ghatkopar
Custom Location
Chandivali
Asalpha
Ghatkopar West
Kalina
Vidya Vihar East
Bandra Kurla Complex
Chheda Naga
Kurla East
Bandra East
Mumbai
Chembur
Sion West
Deonar
Sion East
Guru Tegh
Ghatkopar, Ghatkopar East Station Plaza, Kapol Wadi, N Ward, Zone 6, Mumbai, Maharashtra, 400086, India
Ghatkopar, N Ward, Zone 6, Mumbai, Maharashtra, 400075, India
Ghatkopar, Station Road, Kapol Wadi, N Ward, Zone 6, Mumbai, Maharashtra, 400086, India