MAD and PWA Lab

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Experiment No.-5

AIM: To apply navigation, routing and gestures in Flutter App

THEORY:
In a Flutter app, implementing navigation, routing, and gestures effectively is crucial for creating a seamless user experience. Let's delve into a theory on how to apply these concepts in your Flutter app:

A) Navigation and Routing:

a. Navigation:

Navigation in Flutter refers to moving between different screens or "routes" within your app. It's essential to organize your app's navigation in a clear and intuitive manner.

b. Routing:

Routing involves defining routes and managing transitions between them. Flutter provides a built-in routing system that allows you to define routes using a Route object. Common types of routes include MaterialPageRoute, CupertinoPageRoute, and Custom routes.

Application:
1. Route Management:
Define routes for each screen in your app using MaterialApp or CupertinoApp's "routes" parameter. This maps route names to builder functions.

```
routes: {
  '/home': (context) => HomeScreen(),
  '/profile': (context) => ProfileScreen(),
  // Add more routes as needed
}
```

2. Navigation:
Use Navigator.push() to navigate to a new route when a user interacts with UI elements such as buttons or gestures.

```
onPressed: () {
    Navigator.pushNamed(context, '/profile');
}
```

3.Navigation with Data: Pass data between routes using arguments.
```
Navigator.pushNamed(context, '/profile', arguments: userData);
```

4. Back Navigation:
Allow users to navigate back using Navigator.pop().

```
onPressed: () {
    Navigator.pop(context);
}
```

5. Named Routes vs. Route Builders:
Decide whether to use named routes or route builders based on your app's complexity and navigation requirements. Named routes are simpler, while route builders offer more customization.

C) **Gestures:**

a. Gestures:
Gestures enable users to interact with your app through touch-based actions like tapping, swiping, dragging, etc. Flutter provides GestureDetector and various gesture recognizers to handle these interactions.

b. **Theory/Application:**
1. GestureDetector:
Wrap your UI elements with GestureDetector to detect gestures.

```
GestureDetector(
  onTap: () {
    // Handle tap gesture
  },
  onDoubleTap: () {
    // Handle double tap gesture
  },
  // Add more gesture callbacks as needed
  child: YourWidget(),
)
```

CODE:

location_screen.dart:

```dart
import 'package:firebase_auth/firebase_auth.dart';
import 'package:flutter/cupertino.dart';
import 'package:flutter/material.dart';
import 'package:location/location.dart';
import 'package:olx_clone/screens/home_screen.dart';
import 'package:olx_clone/screens/login_screen.dart';

class LocationScreen extends StatefulWidget {
  static const String id = "location-screen";

  @override
  State<LocationScreen> createState() => _LocationScreenState();
}

class _LocationScreenState extends State<LocationScreen> {
  bool _loading=false;
  Location location = new Location();

  late bool _serviceEnabled;
  late PermissionStatus _permissionGranted;
  late LocationData _locationData;

  Future<LocationData?> getLocation() async {
    _serviceEnabled = await location.serviceEnabled();
```

```dart
    if (!_serviceEnabled) {
      _serviceEnabled = await location.requestService();
      if (!_serviceEnabled) {
        return null;
      }
    }

    _permissionGranted = await location.hasPermission();
    if (_permissionGranted == PermissionStatus.denied) {
      _permissionGranted = await location.requestPermission();
      if (_permissionGranted != PermissionStatus.granted) {
        return null;
      }
    }


      _locationData = await location.getLocation();
    print(_locationData);

    return _locationData;
  }

  @override

  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      body: Column(
        children: [
          Image.asset('assets/images/map.png', height: 350),
          SizedBox(height: 20),
          Text(
            'Where do you want \nto buy/sell products?',
            textAlign: TextAlign.center,
            style: TextStyle(fontWeight: FontWeight.bold, fontSize: 25),
          ),
          SizedBox(
            height: 10,
          ),
          Text(
            'To fully enjoy all that we have to offer,\nwe need to know where to look for it',
            textAlign: TextAlign.center,
            style: TextStyle(fontSize: 12),
          ),
```

```
SizedBox(
  height: 30,
),
Padding(
  padding: const EdgeInsets.only(left: 20, right: 20, bottom: 10),
  child: Row(
    children: [
      Expanded(
        child: _loading ? Center(child: CircularProgressIndicator(
          valueColor: AlwaysStoppedAnimation<Color>(Theme.of(context).primaryColor),
        )):ElevatedButton.icon(
          style: ButtonStyle(
            backgroundColor: MaterialStateProperty.all<Color>(
              Theme.of(context).primaryColor,
            ),
          ),
          icon: Icon(
            CupertinoIcons.location_fill,
            color: Colors.white,
          ),
          label: Padding(
            padding: const EdgeInsets.only(top: 15, bottom: 15),
            child: Text('Around me', style: TextStyle(color: Colors.white,fontWeight:
FontWeight.bold),),

          ),
          onPressed: () {
            setState(() {
              _loading=true;
            });
            getLocation().then((value) {
              print(_locationData.latitude);

              if (value != null) {
                Navigator.pushReplacement(
                  context,
                  MaterialPageRoute(
                    builder: (BuildContext context) =>
                        HomeScreen(locationData: _locationData),
                  ),
                );
              }
            });
          },
```

```
            ),
          ),
        ],
      ),
    ),
  ),
  TextButton(
    onPressed: () {},
    child: Text(
      'Set location Manually',
      style: TextStyle(
        fontWeight: FontWeight.bold,
        color: Colors.black,
        fontSize: 18,
        decoration: TextDecoration.underline,
      ),
    ),
  ), // Removed the semicolon and added a comma
      ],
    ),
  );
 }
}
```

HomeScreen.dart:

```dart
import 'package:firebase_auth/firebase_auth.dart';
import 'package:flutter/cupertino.dart';
import 'package:flutter/material.dart';
import 'package:location/location.dart';
import 'package:flutter_geocoder/geocoder.dart';
import 'package:olx_clone/screens/login_screen.dart';
import 'package:olx_clone/widgets/banner_widget.dart';

class HomeScreen extends StatefulWidget {
 static const String id = 'home-screen';
 final LocationData? locationData;

 HomeScreen({required this.locationData});

 @override
 State<HomeScreen> createState() => _HomeScreenState();
}
```

```dart
class _HomeScreenState extends State<HomeScreen> {
 String address = 'India';

 Future<String?> getAddress() async {
   // From coordinates
   final coordinates = Coordinates(widget.locationData?.latitude,
widget.locationData?.longitude);
   var addresses = await Geocoder.local.findAddressesFromCoordinates(coordinates);
   var first = addresses.first;
   setState(() {
     address = first.addressLine ?? 'Address not found';
   });
   return first.addressLine;
 }

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

   getAddress();
 }

 Future<void> _signOut() async {
   try {
     await FirebaseAuth.instance.signOut();
     Navigator.pushReplacementNamed(context, LoginScreen.id);
   } catch (e) {
     print('Error signing out: $e');
   }
 }

 @override
 Widget build(BuildContext context) {
   return Scaffold(
     appBar: AppBar(
       backgroundColor: Colors.white,
       elevation: 0.0,
       automaticallyImplyLeading: false,
       title: InkWell(
         onTap: () {},
         child: Container(
```

```
              width: MediaQuery.of(context).size.width,
          child: Padding(
            padding: const EdgeInsets.only(top: 8, bottom: 8),
            child: Row(
              children: [
                Icon(CupertinoIcons.location_solid, color: Colors.black, size: 18,),
                Flexible(
                  child: Text(
                    address,
                    style: TextStyle(color: Colors.black, fontSize: 12, fontWeight:
FontWeight.bold),
                  ),
                ),
                Icon(Icons.arrow_downward_outlined, color: Colors.black, size: 18,),
              ],
            ),
          ),
        ),
      ),
    ),
    body: Column(
      children: [
        Container(
          color: Colors.white,
          child: Padding(
            padding: const EdgeInsets.fromLTRB(12,0,12,8),
            child: Row(
              children: [
                Expanded(
                  child: SizedBox(
                    height: 40,
                    child: TextField(
                      decoration: InputDecoration(
                        prefixIcon: Icon(Icons.search, color: Colors.grey,),
                        labelText: 'Find Cars, Mobiles and many more',
                        labelStyle: TextStyle(fontSize: 12),
                        contentPadding: EdgeInsets.only(left: 10, right: 10),
                        border: OutlineInputBorder(
                          borderRadius: BorderRadius.circular(6),
                        ),
                      ),
```

```dart
              ),
            ),
          ),
          SizedBox(width: 10,),
          Icon(Icons.notifications_none),
          SizedBox(width: 10,),
        ],
      ),
    ),
  ),
  Padding(
    padding: const EdgeInsets.fromLTRB(12, 0, 12, 8),
    child: Column(
      children: [
        // Banner
        BannerWidget(),
        // categories
      ],
    ),
  ),
      ],
    ),
  ),
  bottomNavigationBar: Padding(
    padding: const EdgeInsets.all(8.0),
    child: TextButton(
      onPressed: _signOut,
      child: Text(
        'Sign Out',
        style: TextStyle(color: Colors.red),
      ),
    ),
  ),
    );
  }
}
```

main.dart:

```dart
import 'package:firebase_core/firebase_core.dart';
import 'package:flutter/material.dart';
import 'package:olx_clone/screens/authentication/email_auth_screen.dart';
import 'package:olx_clone/screens/authentication/phoneauth_screen.dart';
```

```dart
import 'package:olx_clone/screens/home_screen.dart';
import 'package:olx_clone/screens/login_screen.dart';
import 'package:olx_clone/screens/splash_screen.dart';
import 'package:olx_clone/screens/location_screen.dart';
import 'dart:io';


void main() async {
 WidgetsFlutterBinding.ensureInitialized();
 Platform.isAndroid ?await Firebase.initializeApp(
   options: const FirebaseOptions(
      apiKey: "AIzaSyDuFtAm59795zlrpp16kTJTbd1Lac95KkI",
      appId: "1:232516563209:android:d2dea587c60de17bac63d8",
      messagingSenderId:"232516563209" ,
      projectId: "olxclone-12618"
   )
):await Firebase.initializeApp();
 runApp(MyApp());
}

class MyApp extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
  return MaterialApp(
    debugShowCheckedModeBanner: false,
     theme: ThemeData(
       primaryColor: Colors.cyan.shade900,
       fontFamily: 'Horizon',
     ),
    initialRoute: SplashScreen.id,
    routes: {
     SplashScreen.id: (context) => SplashScreen(),
     LoginScreen.id: (context) => LoginScreen(),
     PhoneAuthScreen.id: (context) => PhoneAuthScreen(),
     LocationScreen.id: (context) => LocationScreen(),
     HomeScreen.id: (context) => HomeScreen(locationData: null),
     EmailAuthScreen.id: (context) => EmailAuthScreen(),
    },

  );
```

pubsec.yaml:
name: olx_clone
description: "A new Flutter project."

publish_to: 'none' # Remove this line if you wish to publish to pub.dev

version: 1.0.0+1

environment:
 sdk: '>=3.2.5 <4.0.0'

dependencies:
 flutter:
   sdk: flutter

cupertino_icons: ^1.0.2
cloud_firestore: ^4.15.3
animated_text_kit: ^4.2.2
flutter_signin_button: ^2.0.0
firebase_core: ^2.24.2
firebase_auth: ^4.16.0
legacy_progress_dialog: ^0.1.2
location: ^5.0.3
flutter_geocoder: ^0.2.2-nullsafety
google_sign_in: ^6.2.1
email_validator: ^2.1.17
flutter_neumorphic_plus: ^3.3.0

dev_dependencies:
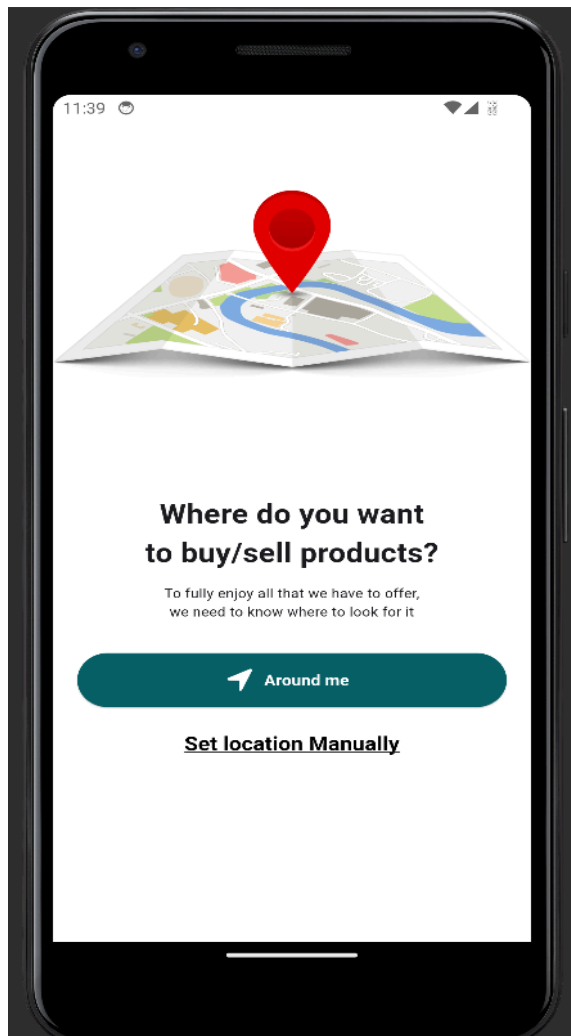 flutter_test:
   sdk: flutter

 flutter_lints: ^2.0.0
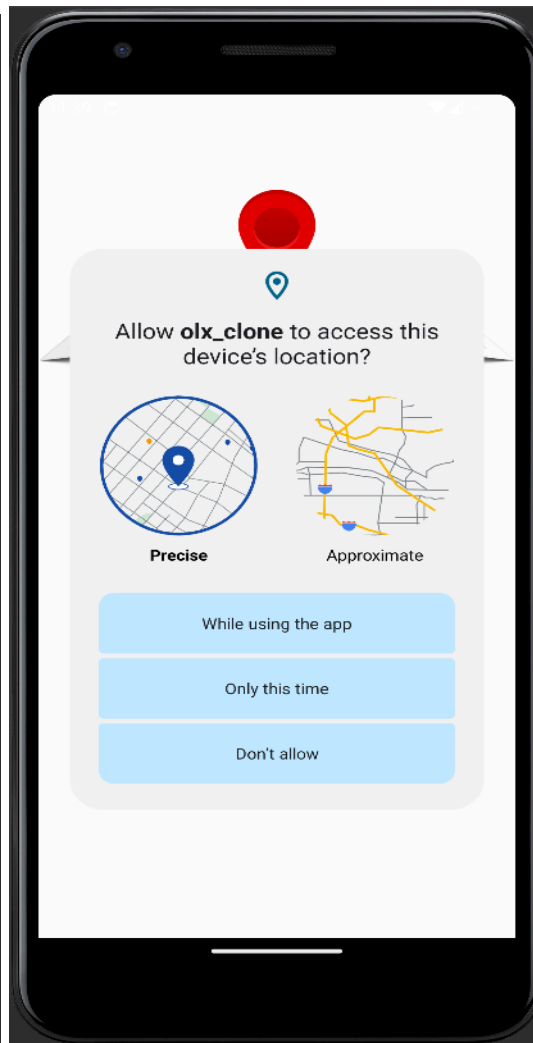
flutter:

 uses-material-design: true

assets:
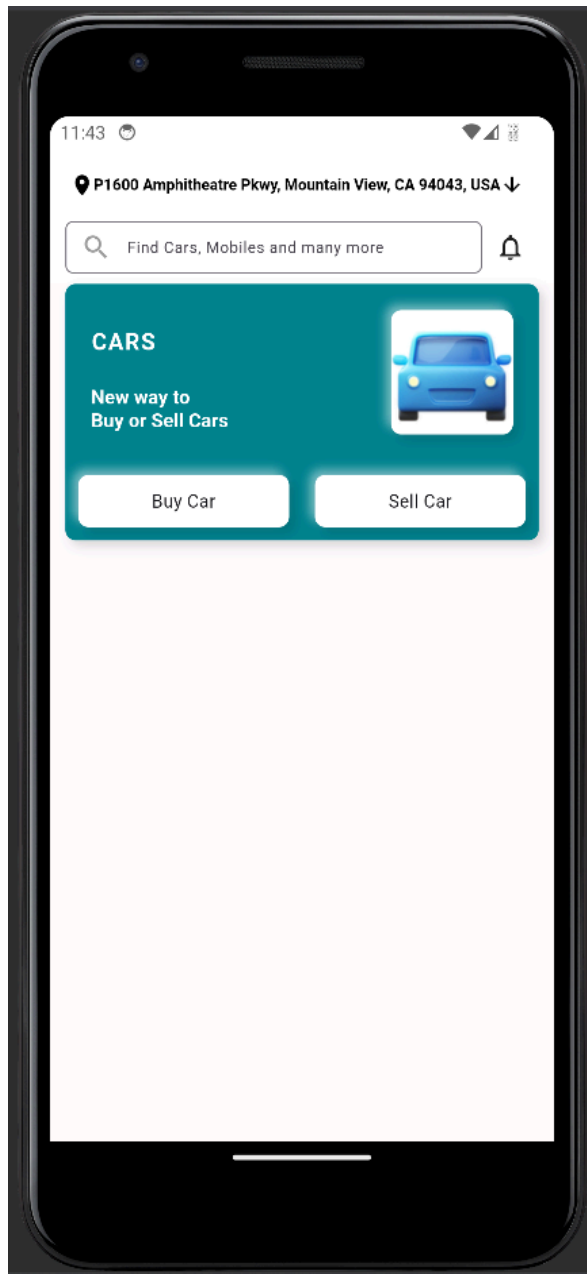 - assets/images/cart.png
  - assets/images/map.png

OUTPUT:

Location Screen: **After clicking on 'Around me' button It will navigate to this page**

Navigation to Home Screen:

CONCLUSION:
We have implemented navigation ,routing and gestures in the pages.