EXPERIMENT - 05

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

THEORY :

Gestures are an interesting feature in Flutter that allows us to interact with the mobile app (or any touch-based device). Generally, gestures define any physical action or movement of a user in the intention of specific control of the mobile device. Flutter divides the gesture system into two different layers, which are given below:

1. Pointers
2. Gestures

Pointers

Pointers are the first layer that represents the raw data about user interaction. It has events, which describe the location and movement of pointers such as touches, mice, and style across the screens.

1. **PointerDownEvents**: It allows the pointer to contact the screen at a particular location.
2. **PointerMoveEvents**: It allows the pointer to move from one location to another location on the screen.
3. **PointerUpEvents**: It allows the pointer to stop contacting the screen.
4. **PointerCancelEvents**: This event is sent when the pointer interaction is canceled

Gestures

It is the second layer that represents semantic actions such as tap, drag, and scale, which are recognized from multiple individual pointer events.

1. **Tap**: It means touching the surface of the screen from the fingertip for a short time and then releasing them.
2. **Double Tap**: It is similar to a Tap gesture, but you need to tapping twice in a short time.
3. **Drag**: It allows us to touch the surface of the screen with a fingertip and move it from one location to another location and then releasing them.
4. **Long Press**: It means touching the surface of the screen at a particular location for a long time.

Gesture Detector

Flutter provides a widget that gives excellent support for all types of gestures by using the GestureDetector widget. The basic idea of the gesture detector is a stateless widget that contains parameters in its constructor for different touch events.

CODE :

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

void main() {
 runApp(MyApp());
}

class MyApp extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
  return MaterialApp(
   title: 'Quiz App',
   theme: ThemeData(
    primarySwatch: Colors.blue,
   ),
   home: UserLandingPage(),
  );
 }
}

class UserLandingPage extends StatelessWidget
{
 @override
 Widget build(BuildContext context) {
  return Scaffold(
   appBar: AppBar(
    title: Text('User Landing Page'),
    actions: [
     IconButton(
      icon: Icon(Icons.search),
      onPressed: () {
       // Expand search bar
      },
     ),
    ],
   ),
   body: SingleChildScrollView(
    child: Padding(
     padding: EdgeInsets.all(20),
     child: Column(
      crossAxisAlignment:
CrossAxisAlignment.stretch,
       children: [
        // First Card
        Card(
         child: Padding(
          padding: EdgeInsets.all(20),
          child: Column(
           children: [
            Text(
             'Welcome to Quiz App!',
             style: TextStyle(
              fontSize: 24,
              fontWeight: FontWeight.bold,
             ),
            ),
            SizedBox(height: 10),
            Text(
             'This app is designed to help you
test your knowledge in various subjects.',
             style: TextStyle(fontSize: 16),
            ),
           ],
          ),
         ),
        ),
        SizedBox(height: 20),
        // Quiz Categories
        Row(
         mainAxisAlignment:
MainAxisAlignment.spaceBetween,
         children: [
          // Science Quiz
          _buildCategoryBox(context, 'Science',
'assets/science.jpg'),
          // Maths Quiz
          _buildCategoryBox(context, 'Maths',
'assets/math.jpg'),
         ],
        ),
        SizedBox(height: 20),
        Row(
         mainAxisAlignment:
MainAxisAlignment.spaceBetween,
         children: [
          // History Quiz
          _buildCategoryBox(context, 'History',
'assets/history.png'),
          // Literature Quiz
          _buildCategoryBox(context,
'Literature', 'assets/literature.jpg'),
```

```dart
            ],
          ),
          SizedBox(height: 20),
        ],
      ),
    ),
  ),
  bottomNavigationBar: BottomAppBar(
    child: Row(
      mainAxisAlignment:
MainAxisAlignment.spaceAround,
      children: [
        IconButton(
          icon: Icon(Icons.calendar_today),
          onPressed: () {
            // Calendar icon pressed
          },
        ),
        IconButton(
          icon: Icon(Icons.notifications),
          onPressed: () {
            // Notifications icon pressed
          },
        ),
        IconButton(
          icon: Icon(Icons.settings),
          onPressed: () {
            // Settings icon pressed
          },
        ),
      ],
    ),
  ),
  drawer: Drawer(
    child: ListView(
      padding: EdgeInsets.zero,
      children: <Widget>[
        DrawerHeader(
          decoration: BoxDecoration(
            color: Colors.blue,
          ),
          child: Column(
            crossAxisAlignment:
CrossAxisAlignment.start,
            children: [
              Padding(
                padding: EdgeInsets.only(bottom:
10),
                child: CircleAvatar(
                  radius: 50,
                  backgroundImage:
AssetImage('assets/profile_image.jpg'),
                ),
              ),
              Text(
                'Username',
                style: TextStyle(
                  color: Colors.white,
                  fontSize: 18,
                  fontWeight: FontWeight.bold,
                ),
              ),
            ],
          ),
        ),
        ListTile(
          leading: Icon(Icons.account_circle),
          title: Text('Profile'),
          onTap: () {
            // Profile tapped
          },
        ),
        ListTile(
          leading: Icon(Icons.emoji_events),
          title: Text('Ranking'),
          onTap: () {
            // Ranking tapped
          },
        ),
        ListTile(
          leading: Icon(Icons.emoji_events),
          title: Text('Achievements'),
          onTap: () {
            // Achievements tapped
          },
        ),
        ListTile(
          leading: Icon(Icons.edit),
          title: Text('Edit Profile'),
          onTap: () {
            // Edit Profile tapped
          },
        ),
```

```dart
        ],
      ),
    ),
  );
}

Widget _buildCategoryBox(BuildContext
context, String categoryName, String
imagePath) {
  return Expanded(
    child: GestureDetector(
      onTap: () {
        // Navigate to quiz page for the selected
category (question.dart)
        Navigator.push(
          context,
          MaterialPageRoute(builder: (context) =>
QuizPage(categoryName)),
        );
      },
      child: Card(
        elevation: 4,
        child: Column(
          mainAxisAlignment:
MainAxisAlignment.center,
          children: [
            Text(
              categoryName,
              style: TextStyle(
                fontSize: 20,
                fontWeight: FontWeight.bold,
              ),
            ),
            SizedBox(height: 10),
            Image.asset(
              imagePath,
              height: 120,
              width: 120,
              fit: BoxFit.cover,
            ),
            SizedBox(height: 10),
            ElevatedButton(
              onPressed: () {
                // Navigate to quiz page for the
selected category (question.dart)
                Navigator.push(
                  context,
                  MaterialPageRoute(builder:
(context) => QuizPage(categoryName)),
                );
              },
              child: Text('Play'),
            ),
          ],
        ),
      ),
    ),
  );
}
}

class QuizPage extends StatelessWidget {
  final String category;

  QuizPage(this.category);

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Quiz - $category'),
      ),
      body: Center(
        child: Text('Quiz Page for $category'),
      ),
    );
  }
}
```

OUTPUT :