EXPERIMENT NO: - 05

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

Theory: -

In Flutter, the screens and pages are known as routes, and these routes are just a widget. In Android, a route is similar to an Activity.

In any mobile app, navigating to different pages defines the workflow of the application, and the way to handle the navigation is known as routing. Flutter provides a basic routing class MaterialPageRoute and two methods Navigator.push() and Navigator.pop() that shows how to navigate between two routes. The following steps are required to start navigation in your application.

Gestures enable the app to respond to user interactions, making the application more dynamic and responsive.

Navigation and Routing in Flutter

Navigation is the process of moving between different screens or pages in an app. Flutter provides a simple and effective way to handle this through the use of the Navigator widget and routes.

1. Using Navigator Widget

The Navigator widget manages a stack of routes, allowing for pushing and popping routes on the stack.

- **Pushing a Route**: To navigate to a new screen, use Navigator.push().
- **Popping a Route**: To go back to the previous screen, use Navigator.pop().

```
ElevatedButton(
  onPressed: () {
    Navigator.push(
```

```
      context,
      MaterialPageRoute(builder: (context) => SecondScreen()),
    );},
);
```

2. **Named Routes**

   Flutter also allows the use of named routes to navigate, which can make the routing process cleaner, especially in larger applications.

```
MaterialApp(
  initialRoute: '/',
  routes: {
    '/': (context) => HomeScreen(),
    '/second': (context) => SecondScreen(),
  },
);
```

Navigate to the route using Navigator.pushNamed()

```
Navigator.pushNamed(context, '/second');
```

Handling Gestures in Flutter

Gestures refer to user interactions with the app, such as taps, swipes, pinches, and drags. Flutter provides several widgets and gesture detectors to handle these interactions.

Tap Gestures

The most common gesture is the tap, which can be handled using the GestureDetector widget or specific buttons like InkWell or ElevatedButton.

Long Press Gesture

For long press gestures, Flutter provides the onLongPress callback in GestureDetector or InkWell.

Swipe and Drag Gestures

Flutter also provides swipe and drag gesture handling. The onHorizontalDragUpdate and onVerticalDragUpdate callbacks are used for dragging gestures.

Code: -

Welcome_page.dart

main.dart

```
import 'package:flutter/material.dart';
import 'pages/login_page.dart';
import 'pages/register_page.dart';
import 'pages/otp_verification_page.dart';
import 'pages/myaccountpage.dart';
import 'pages/home_page.dart';


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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      title: 'AgriApp',
      theme: ThemeData(
        primarySwatch: Colors.green,
        colorScheme: ColorScheme.fromSeed(seedColor:
Color(0xFF6A9A5B)),
      ),
      initialRoute: '/login', // Set initial page
      routes: {
        '/login': (context) => LoginPage(),
        '/register': (context) => RegistrationPage(),
        '/otp': (context) => OtpVerificationPage(),
        '/myaccount': (context) => MyAccountPage(),
        '/home': (context) => HomePage(),
      },
    );
  }
}
```

Login_page.dart

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

class LoginPage extends StatefulWidget {
  @override
  _LoginPageState createState() =>
_LoginPageState();
}

class _LoginPageState extends
State<LoginPage> {
  final _formKey = GlobalKey<FormState>();

  @override
  Widget build(BuildContext context) {
   return Scaffold(
    backgroundColor: Colors.white,
    body: SafeArea(
     child: SingleChildScrollView(
      child: Padding(
       padding: const EdgeInsets.all(16.0),
       child: Column(
        crossAxisAlignment:
CrossAxisAlignment.stretch,
        children: [
         SizedBox(height: 50),
         // Logo
         Center(
          child: Image.asset(
           'assets/images/logo.png',
           height: 150,
          ),
         ),
         SizedBox(height: 16),
         // Title
         Text(
          'AgriApp: The mix of Agriculture &
Smart, Scientific, Sustainable, Modern
Technology Methods for Precision Farming.',
          textAlign: TextAlign.center,
          style: TextStyle(
           fontSize: 15,
           color: Colors.black,
          ),
         ),
         SizedBox(height: 32),
         // Form
         Form(
          key: _formKey,
          child: Column(
           children: [
            _buildTextField(
             label: 'Email',
             hint: 'Enter your email',
             icon: Icons.email,
             validator: (value) {
              if (value == null ||
value.isEmpty) {
               return 'Email is required';
              } else if
(!RegExp(r'^[^@]+@[^@]+\.[^@]+').hasMatch(
value)) {
               return 'Enter a valid email
address';
              }
              return null;
             },
            ),
            SizedBox(height: 16),
            _buildTextField(
             label: 'Password',
             hint: 'Enter your password',
             icon: Icons.lock,
             isPassword: true,
             validator: (value) {
              if (value == null ||
value.isEmpty) {
               return 'Password is required';
              } else if (value.length < 6) {
               return 'Password must be at
least 6 characters';
              }
              return null;
```

```
                },
              ),
            ],
          ),
        ),
        SizedBox(height: 32),
        // Login Button
        ElevatedButton(
          onPressed: () {
            if
(_formKey.currentState!.validate()) {

Navigator.pushReplacementNamed(context,
'/home');
            }
          },
          style: ElevatedButton.styleFrom(
            backgroundColor: Colors.green,
            minimumSize: Size(double.infinity,
50),
            shape: RoundedRectangleBorder(
              borderRadius:
BorderRadius.circular(8),
            ),
          ),
          child: Text(
            'Login',
            style: TextStyle(fontSize: 18, color:
Colors.white),
          ),
        ),
        SizedBox(height: 16),
        // Registration link
        Center(
          child: TextButton(
            onPressed: () {
              Navigator.pushNamed(context,
'/register'); // Add registration route later
            },
            child: Text(
              'Don’t have an account? Register',
              style: TextStyle(color:
Colors.green), // Green color applied
            ),
          ),
        ),
      ],
```

```
          ),
        ),
      ),
    ),
  );
}

Widget _buildTextField({
  required String label,
  required String hint,
  required IconData icon,
  bool isPassword = false,
  required String? Function(String?) validator,
}) {
  return TextFormField(
    obscureText: isPassword,
    decoration: InputDecoration(
      labelText: label,
      hintText: hint,
      prefixIcon: Icon(icon, color: Colors.green),
      border: OutlineInputBorder(
        borderRadius: BorderRadius.circular(8),
      ),
      focusedBorder: OutlineInputBorder(
        borderSide: BorderSide(color:
Colors.green), // Green color applied
        borderRadius: BorderRadius.circular(8),
      ),
    ),
    validator: validator,
  );
}
}
```

add_medicine.dart

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

class PillMate extends StatefulWidget {
  @override
  _PillMateState createState() =>
_PillMateState();
}

class _PillMateState extends State<PillMate> {
  final _formKey = GlobalKey<FormState>();
  final TextEditingController _cityController =
TextEditingController();

  String? _city;
  String? _address;
  String? _updatedAt;
  String? _status;
  String? _temp;
  String? _tempMin;
  String? _tempMax;
  String? _windSpeed;
  String? _pressure;
  String? _humidity;
  String? _sunrise;
  String? _sunset;
  bool _isLoading = false;
  bool _isError = false;
  bool _isDataFetched = false; // Add this flag to
control the visibility of weather details

  Future<void> _fetchWeather() async {
    setState(() {
      _isLoading = true;
      _isError = false;
      _isDataFetched = false; // Reset this flag
when fetching new data
    });

    final response = await http.get(Uri.parse(

'https://api.openweathermap.org/data/2.5/weathe
r?q=$_city&units=metric&appid=73cbebdd0322
acd49bda6ede059b2b18'));

    if (response.statusCode == 200) {
      final data = jsonDecode(response.body);

      setState(() {
        _address = '${data['name']},
${data['sys']['country']}';
        _updatedAt = 'Updated At:
${DateTime.fromMillisecondsSinceEpoch(data['
dt'] * 1000).toString()}';
        _status =
data['weather'][0]['description'].toUpperCase();
        _temp = '${data['main']['temp']}°C';
        _tempMin = 'Min Temp:
${data['main']['temp_min']}°C';
        _tempMax = 'Max Temp:
${data['main']['temp_max']}°C';
        _pressure = 'Pressure:
${data['main']['pressure']} hPa';
        _humidity = 'Humidity:
${data['main']['humidity']}%';
        _windSpeed = 'Wind Speed:
${data['wind']['speed']} m/s';
        _sunrise =
DateTime.fromMillisecondsSinceEpoch(data['sy
s']['sunrise'] * 1000).toString();
        _sunset =
DateTime.fromMillisecondsSinceEpoch(data['sy
s']['sunset'] * 1000).toString();
        _isLoading = false;
        _isDataFetched = true; // Set the flag to true
after data is fetched
      });
    } else {
      setState(() {
        _isLoading = false;
        _isError = true;
        _isDataFetched = false; // Reset the flag if
```

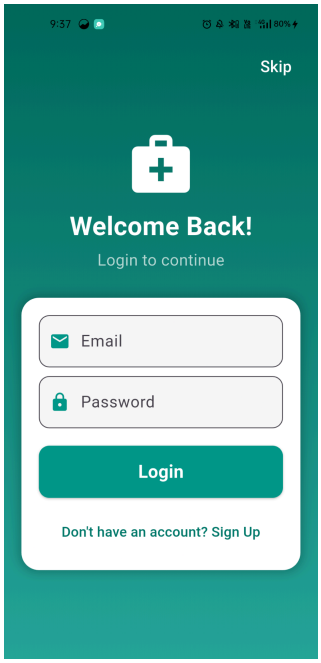
there is an error

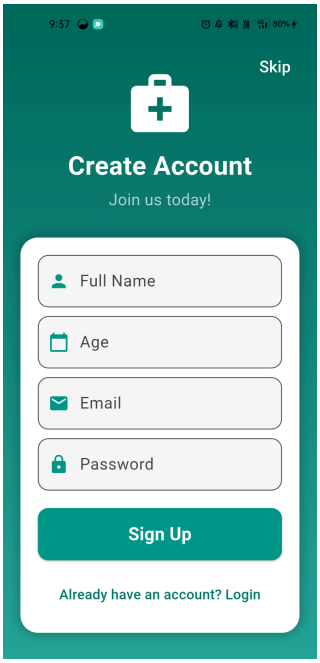
```
    });
  }
 }

 @override
 Widget build(BuildContext context) {
  return Scaffold(
   appBar: AppBar(
    title: Text('Weather Forecasting'),
    //backgroundColor: Colors.white,
   ),
   //backgroundColor: Colors.white,
   body: SafeArea(
    child: SingleChildScrollView(
     child: Padding(
      padding: const EdgeInsets.all(16.0),
      child: Column(
       crossAxisAlignment:
CrossAxisAlignment.stretch,
       children: [
        SizedBox(height: 50),
        // Logo
        Center(
         child: Image.asset(
          'assets/images/logo.png', // Replace
with your logo
          height: 150,
         ),
        ),
        SizedBox(height: 16),
        // Title
        Text(
         'Weather Forecasting',
         textAlign: TextAlign.center,
         style: TextStyle(
          fontSize: 18,
          color: Colors.black,
         ),
        ),
        SizedBox(height: 32),
        // Form
        Form(
         key: _formKey,
         child: Column(
          children: [
           TextFormField(
            controller: _cityController,
            decoration: InputDecoration(
             labelText: 'City',
             hintText: 'Enter the city name',
             prefixIcon:
Icon(Icons.location_city, color: Colors.green),
             border: OutlineInputBorder(
              borderRadius:
BorderRadius.circular(8),
             ),
             focusedBorder:
OutlineInputBorder(
              borderSide: BorderSide(color:
Colors.green),
              borderRadius:
BorderRadius.circular(8),
             ),
            ),
            validator: (value) {
             if (value == null ||
value.isEmpty) {
              return 'City is required';
             }
             return null;
            },
           ),
           SizedBox(height: 16),
           ElevatedButton(
            onPressed: () {
             if
(_formKey.currentState!.validate()) {
              setState(() {
               _city = _cityController.text;
              });
              _fetchWeather();
             }
            },
            style: ElevatedButton.styleFrom(
             backgroundColor: Colors.green,
             minimumSize:
Size(double.infinity, 50),
             shape:
RoundedRectangleBorder(
              borderRadius:
BorderRadius.circular(8),
             ),
            ),
```

```
                child: Text(
                  'Get Weather',
                  style: TextStyle(fontSize: 18,
color: Colors.white),
                ),
              ),
            ],
          ),
        ),
        SizedBox(height: 32),
        _isLoading
            ? CircularProgressIndicator()
            : _isError
            ? Text(
          'Error fetching weather data.',
          style: TextStyle(color: Colors.red),
          textAlign: TextAlign.center,
        )
            : _isDataFetched
            ? Column(
          crossAxisAlignment:
CrossAxisAlignment.start,
          children: [
            Text(
              'Location: $_address',
              style: TextStyle(fontSize: 16,
fontWeight: FontWeight.bold),
            ),
            SizedBox(height: 8),
            Text('$_updatedAt'),
            SizedBox(height: 16),
            Text('Status: $_status'),
            SizedBox(height: 8),
            Text('Temperature: $_temp'),
            SizedBox(height: 8),
            Text('$_tempMin'),
            SizedBox(height: 8),
            Text('$_tempMax'),
            SizedBox(height: 8),
            Text('$_windSpeed'),
            SizedBox(height: 8),
            Text('$_pressure'),
            SizedBox(height: 8),
            Text('$_humidity'),
            SizedBox(height: 8),
            Text('Sunrise: $_sunrise'),
            SizedBox(height: 8),
            Text('Sunset: $_sunset'),
          ],
        )
            : Container(),
      ],
    ),
  ),
  ),
  );
 }
}
```

OUTPUT: -

After clicking on Don’t have an account? it navigates to the registration page.





In home page, after clicking on “+” icon it navigates to the add medicine page.