

Experiment 5

Navigation , Routing and Gestures

Name: Sharvari Kishor More

Class: D15B

Roll no.: 35

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

Theory:

Flutter provides powerful tools to implement user interactions, navigation, and routing in mobile applications. This experiment focuses on three key concepts:

1. **Gestures:** Gestures allow users to interact with the UI using touch-based actions like tapping, swiping, and long pressing. Flutter provides the `GestureDetector` widget to handle such interactions.
2. **Navigation:** Navigation is the process of switching between different screens (pages) within an application. Flutter's `Navigator` class manages the navigation stack and allows users to move between screens using `push` and `pop` methods.
3. **Routing:** Routing is a way to define and manage the different screens in an application. Named routes can be used to simplify navigation and organize the app's structure better.

Implementation in the Given Code

In this experiment, we have implemented gestures, navigation, and routing as follows:

- **Gestures:** The `DoctorCategoryButton` widget uses `GestureDetector` to handle user interactions. When a user taps on a category, a `SnackBar` displays the selected category.
- **Navigation:** The login and signup pages utilize navigation to move between screens using the `Navigator.push()` method.
- **Routing:** The `main.dart` file contains the routing logic, which helps in switching between different pages smoothly.

Code:**Home_screen.dart**

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

class HomeScreen extends StatefulWidget {

  const HomeScreen({super.key});

  @override

  _HomeScreenState createState() => _HomeScreenState();

}

class _HomeScreenState extends State<HomeScreen> {

  String selectedCity = "Bangalore";

  final List<String> cities = ["Bangalore", "Pune", "Nashik", "Mumbai"];

  @override

  Widget build(BuildContext context) {

    return Scaffold(

      backgroundColor: Colors.white,

      appBar: AppBar(

        backgroundColor: Colors.indigo,

        title: Row(

          children: [

            Icon(Icons.location_on, color: Colors.white),

            SizedBox(width: 5),

            DropdownButton<String>(

              value: selectedCity,

              dropdownColor: Colors.indigo,
```

```
        icon: Icon(Icons.keyboard_arrow_down, color: Colors.white),
        underline: SizedBox(),
        style: TextStyle(color: Colors.white, fontSize: 16),
        onChanged: (String? newValue) {
            setState(() {
                selectedCity = newValue!;
            });
        },
        items: cities.map<DropdownMenuItem<String>>((String city) {
            return DropdownMenuItem<String>(
                value: city,
                child: Text(city, style: TextStyle(color:
Colors.white)),
            );
        }).toList(),
    ),
],
),
actions: [
    IconButton(
        icon: Icon(Icons.account_circle, color: Colors.white),
        onPressed: () {},
    ),
],
```

```
),  
  
body: SingleChildScrollView(  
  
  child: Padding(  
  
    padding: EdgeInsets.all(16.0),  
  
    child: Column(  
  
      crossAxisAlignment: CrossAxisAlignment.start,  
  
      children: [  
  
        Container(  
  
          padding: EdgeInsets.symmetric(horizontal: 10),  
  
          decoration: BoxDecoration(  
  
            color: Colors.grey[200],  
  
            borderRadius: BorderRadius.circular(10),  
  
          ),  
  
          child: TextField(  
  
            decoration: InputDecoration(  
  
              hintText: "Search for clinics",  
  
              border: InputBorder.none,  
  
              prefixIcon: Icon(Icons.search, color: Colors.grey),  
  
            ),  
  
          ),  
  
        ),  
  
        SizedBox(height: 20),  
  
        // Appointment & Consultation Section
```

```
Row(  
  mainAxisAlignment: MainAxisAlignment.spaceBetween,  
  children: [  
    Expanded(  
      child: AppointmentCard(  
        title: "Book In-Clinic Appointment",  
        imagePath: "assets/images/images.jpg",  
      ),  
    ),  
    SizedBox(width: 10),  
    Expanded(  
      child: AppointmentCard(  
        title: "Instant Video Consultation",  
        imagePath: "assets/images/hospital.jpg",  
      ),  
    ),  
  ],  
SizedBox(height: 20),  
Text(  
  "Find a Doctor for your Health Problem",  
  style: TextStyle(fontSize: 18, fontWeight:  
FontWeight.bold),  
)
```

```
    SizedBox(height: 10),

    GridView.builder(

      shrinkWrap: true,

      physics: NeverScrollableScrollPhysics(),

      gridDelegate: SliverGridDelegateWithFixedCrossAxisCount(

        crossAxisCount: 4,

        crossAxisSpacing: 10,

        mainAxisSpacing: 10,

        childAspectRatio: 0.9,

      ),

      itemCount: doctorCategories.length,

      itemBuilder: (context, index) {

        return DoctorCategoryButton(doctorCategories[index]);

      },

    ),

    SizedBox(height: 20),

    Text(

      "Featured services",

      style: TextStyle(fontSize: 18, fontWeight:
FontWeight.bold),

    ),

    SizedBox(height: 10),

    Container(

      width: double.infinity,
```

```
        height: 120,

        decoration: BoxDecoration(

            color: Colors.indigo,

            borderRadius: BorderRadius.circular(10),

        ),

        child: Center(

            child: Text(

                "Affordable Procedures by Expert Doctors",

                style: TextStyle(color: Colors.white, fontSize: 16),

                textAlign: TextAlign.center,

            ),

        ),

    ],

),

),

),

);

}
```

```
class AppointmentCard extends StatelessWidget {

    final String title;
```

```
final String imagePath;

const AppointmentCard({

  required this.title,

  required this.imagePath,

  super.key,

});

@override

Widget build(BuildContext context) {

  return Container(

    height: 120,

    decoration: BoxDecoration(

      color: Colors.white,

      borderRadius: BorderRadius.circular(10),

      boxShadow: [

        BoxShadow(color: Colors.grey.shade300, blurRadius: 5,

spreadRadius: 2),

      ],

    ),

    child: Column(

      children: [

        Expanded(

          child: ClipRRect(

            borderRadius: BorderRadius.vertical(top:

Radius.circular(10)),
```



```
        child: Image.asset(imagePath, width: double.infinity, fit:
BoxFit.cover),

      ),

    ),

    Padding(

      padding: EdgeInsets.all(8.0),

      child: Text(title, textAlign: TextAlign.center, style:
TextStyle(fontSize: 14, fontWeight: FontWeight.bold)),

    ),

  ],

),

);

}
```

```
class DoctorCategoryButton extends StatelessWidget {

  final DoctorCategory category;

  const DoctorCategoryButton(this.category, {super.key});

  @override

  Widget build(BuildContext context) {

    return GestureDetector(

      onTap: () {

        ScaffoldMessenger.of(context).showSnackBar(

          SnackBar(content: Text("Selected: ${category.title}")),

        );

      },

    );

  }

}
```

```
    },  
    child: Column(  
      children: [  
        Container(  
          padding: EdgeInsets.all(10),  
          decoration: BoxDecoration(  
            color: Colors.blue[50],  
            borderRadius: BorderRadius.circular(10),  
          ),  
          child: Icon(category.icon, color: Colors.indigo, size: 30),  
        ),  
        SizedBox(height: 5),  
        Text(category.title, textAlign: TextAlign.center, style:  
TextStyle(fontSize: 12)),  
      ],  
    ),  
  );  
}  
}  
  
class DoctorCategory {  
  final String title;  
  final IconData icon;  
  DoctorCategory({required this.title, required this.icon});  
}
```

```
List<DoctorCategory> doctorCategories = [

  DoctorCategory(title: "General Physician", icon: Icons.local_hospital),

  DoctorCategory(title: "Skin & Hair", icon: Icons.face),

  DoctorCategory(title: "Women's Health", icon: Icons.pregnant_woman),

  DoctorCategory(title: "Dental Care", icon: Icons.medical_services),

  DoctorCategory(title: "Child Specialist", icon: Icons.child_care),

  DoctorCategory(title: "Ear, Nose, Throat", icon: Icons.hearing),

  DoctorCategory(title: "Mental Wellness", icon: Icons.psychology),

  DoctorCategory(title: "More", icon: Icons.more_horiz),

];
```

Login_screen.dart

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

import 'package:lifeline/home_screen.dart';

class LoginScreen extends StatefulWidget {

  const LoginScreen({super.key});

  @override

  LoginScreenState createState() => LoginScreenState();

}

class LoginScreenState extends State<LoginScreen> {

  final _formKey = GlobalKey<FormState>();

  final _emailController = TextEditingController();

  final _passwordController = TextEditingController();

  bool _obscurePassword = true;
```

```
@override

void dispose() {

    _emailController.dispose();

    _passwordController.dispose();

    super.dispose();

}

@override

Widget build(BuildContext context) {

    return Scaffold(

        body: Stack(

            fit: StackFit.expand,

            children: [

                Image.asset("assets/images/dr1.jpg", fit: BoxFit.cover),

                Container(color: Colors.black.withOpacity(0.4)),

                Center(

                    child: Padding(

                        padding: EdgeInsets.all(20),

                        child: Form(

                            key: _formKey,

                            child: Column(

                                mainAxisAlignment: MainAxisAlignment.min,

                                children: [

                                    Text("Welcome to Lifeline",
```

```
        style: TextStyle(fontSize: 24, fontWeight:
FontWeight.bold, color: Colors.white)),

        SizedBox(height: 20),

        _buildTextField(_emailController, "Email",
Icons.email, false),

        SizedBox(height: 10),

        _buildTextField(_passwordController, "Password",
Icons.lock, true),

        SizedBox(height: 20),

        ElevatedButton(

            style: ElevatedButton.styleFrom(backgroundColor:
Colors.blue),

            onPressed: () {

                if (_formKey.currentState!.validate()) {

                    Navigator.pushReplacement(context,
MaterialPageRoute(builder: (context) => HomeScreen()));

                }

            },

            child: Text("Login", style: TextStyle(color:
Colors.white)),

        ),

        TextButton(

            onPressed: () => Navigator.pushNamed(context,
'/signup'),

            child: Text("Don't have an account? Sign Up", style:
TextStyle(color: Colors.white)),

        ),
```

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

```
Widget _buildTextField(TextEditingController controller, String label,  
IconData icon, bool isPassword) {
```

```
  return TextFormField(  
    controller: controller,  
    obscureText: isPassword ? _obscurePassword : false,  
    style: TextStyle(color: Colors.white),  
    decoration: InputDecoration(  
      labelText: label,  
      labelStyle: TextStyle(color: Colors.white70),  
      prefixIcon: Icon(icon, color: Colors.white),  
      filled: true,  
      fillColor: Colors.white.withOpacity(0.2),  
      border: OutlineInputBorder(borderRadius:  
BorderRadius.circular(10)),  
      suffixIcon: isPassword
```

```

        ? IconButton(

            icon: Icon(_obscurePassword ? Icons.visibility_off :
Icons.visibility, color: Colors.white),

            onPressed: () => setState(() => _obscurePassword =
!_obscurePassword),

        )

        : null,

    ),

    validator: (value) => value == null || value.isEmpty ? "$label
cannot be empty" : null,

    );

}

}

```

Signup_screen.dart

```

import 'package:flutter/material.dart';

class SignupScreen extends StatelessWidget {

    const SignupScreen({super.key});

    @override

    Widget build(BuildContext context) {

        final _formKey = GlobalKey<FormState>();

        final _nameController = TextEditingController();

        final _emailController = TextEditingController();

        final _passwordController = TextEditingController();

        return Scaffold(

```

```
body: Stack(  
  fit: StackFit.expand,  
  children: [  
    Image.asset("assets/images/dr1.jpg", fit: BoxFit.cover),  
    Container(color: Colors.black.withOpacity(0.4)),  
    Center(  
      child: Padding(  
        padding: EdgeInsets.all(20),  
        child: Form(  
          key: _formKey,  
          child: Column(  
            mainAxisAlignment: MainAxisAlignment.min,  
            children: [  
              Text("Create an Account", style: TextStyle(fontSize:  
24, fontWeight: FontWeight.bold, color: Colors.white)),  
              SizedBox(height: 20),  
              _buildTextField(_nameController, "Full Name",  
Icons.person, false),  
              SizedBox(height: 10),  
              _buildTextField(_emailController, "Email",  
Icons.email, false),  
              SizedBox(height: 10),  
              _buildTextField(_passwordController, "Password",  
Icons.lock, true),  
              SizedBox(height: 20),
```



```

ElevatedButton(
    style: ElevatedButton.styleFrom(backgroundColor:
Colors.lightBlue),
    onPressed: () {
        if (_formKey.currentState!.validate()) {
            Navigator.pushReplacementNamed(context,
'/home');
        }
    },
    child: Text("Sign Up", style: TextStyle(color:
Colors.white)),
),
TextButton(
    onPressed: () => Navigator.pushNamed(context,
'/login'),
    child: Text("Already have an account? Login", style:
TextStyle(color: Colors.white)),
),
],
),
),
),
),
),
],
),
),

```

```
);

}

Widget _buildTextField(TextEditingController controller, String label,
IconData icon, bool isPassword) {

  return TextFormField(

    controller: controller,

    obscureText: isPassword,

    style: TextStyle(color: Colors.white),

    decoration: InputDecoration(

      labelText: label,

      labelStyle: TextStyle(color: Colors.white70),

      prefixIcon: Icon(icon, color: Colors.white),

      filled: true,

      fillColor: Colors.white.withOpacity(0.2),

      border: OutlineInputBorder(borderRadius:
BorderRadius.circular(10)),

    ),

    validator: (value) => value == null || value.isEmpty ? "$label
cannot be empty" : null,

  );

}

}
```

Main.dart

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

```
import 'home_screen.dart';

import 'login_screen.dart';

import 'signup_screen.dart';


void main() {

  runApp(const LifelineApp()); // Ensure const is used if applicable
}

class LifelineApp extends StatelessWidget {

  const LifelineApp({super.key}); // Add key parameter for best practice

  @override

  Widget build(BuildContext context) {

    return MaterialApp(

      debugShowCheckedModeBanner: false,

      title: 'Lifeline',

      theme: ThemeData(

        primaryColor: Colors.green,

        colorScheme: ColorScheme.fromSwatch().copyWith(secondary:
Colors.blue),

      ),

      initialRoute: '/login',

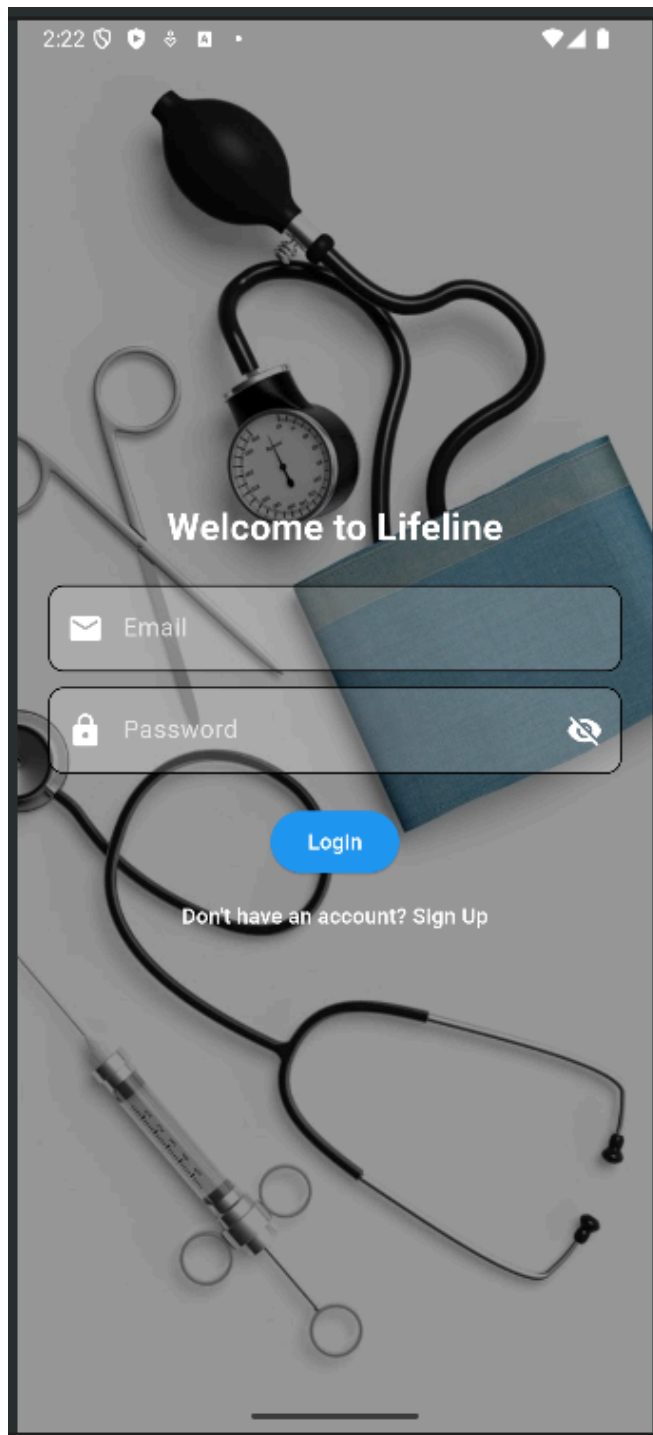
      routes: {

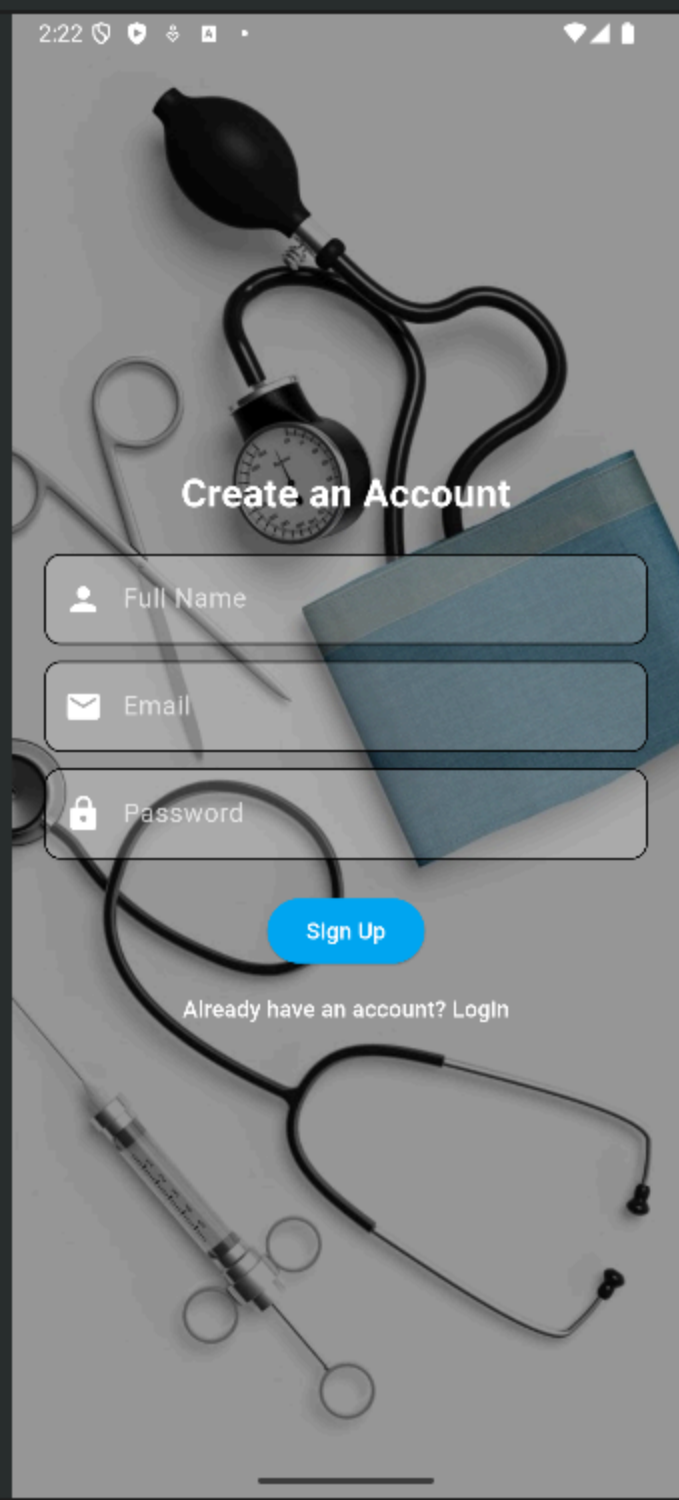
        '/login': (context) => LoginScreen(),

        '/signup': (context) => SignupScreen(),

        '/home': (context) => HomeScreen(),
```


```
    },  
    );  
}
```


Output:




2:22

Create an Account

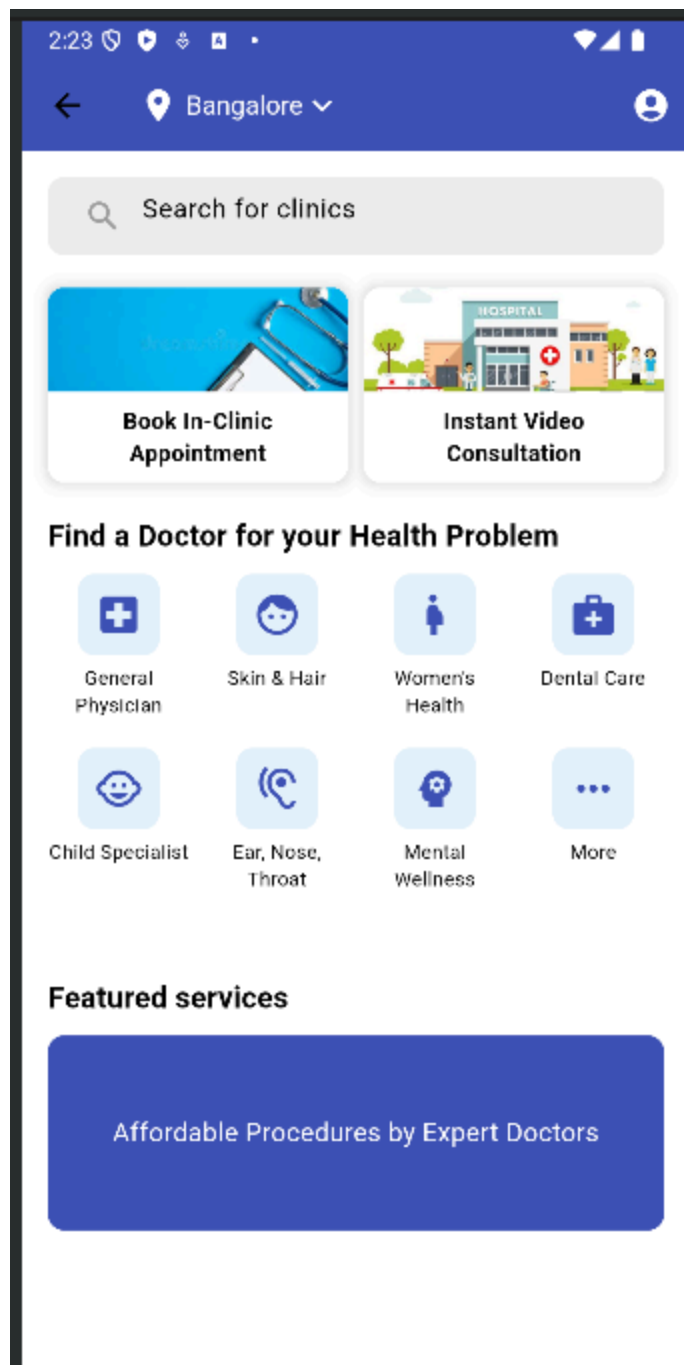
 Full Name

 Email

 Password

[Sign Up](#)

[Already have an account? Login](#)

**Conclusion:**

In this experiment, we successfully implemented gestures for user interaction, navigation for screen transitions, and routing for better app structure. Initially, we faced issues with state management in the dropdown menu and improper routing setup, which we resolved by properly using `setState()` and defining named routes correctly.