**St. Francis Institute of Technology, Mumbai-400 103**

**Department of Information Technology**

**A.Y. 2024-2025**

**Class: TE-IT A/B, Semester: VI**

**Subject: MAD & PWA LAB**

**Experiment – 5: Applying navigation, routing and gestures in Flutter App**

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

**Objectives:** After study of this experiment, the student will be

able to • Develop the App UI by applying navigation and

gestures.

**Outcomes:** After study of this experiment, the student will be able to • Design and Develop an interactive Flutter App by using navigation and gestures. (L604.3)

**Prerequisite:** Dart Programming Language.

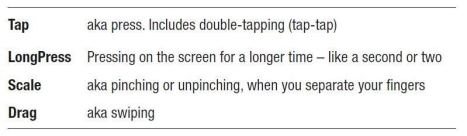
**Requirements:** Android Studio, Flutter framework, Internet Connection.

**Pre-Experiment**

**Exercise: Brief Theory:**

**Gestures:**

Gestures are divided into two categories: gestures on built-in widgets and gestures on your custom widgets. Built-in widgets: Buttons Custom widgets:

Responding to custom gestures will require these steps:

1. Decide on your gestures and behaviours.

2. Create your custom widget as normal.

3. Add a Gesture Detector widget.

4. Associate your gesture with its behaviour.

**Navigation and Routing:**

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.

There are four navigation techniques in Flutter. They are:

1. Stacks

2. Drawers

3. Tabs

4. Dialogs

**Laboratory Exercise**

**Program**

Design the app using one gesture and one navigation method.

**Result/Observation**

Print out of program code and output.

**Post-Experiments**

**Exercise A. Questions:**

Explain what happens if there are two or more gestures happening at the same time?

**B. Conclusion:**

Write what you have learnt in the experiment.

| **main.Dart :**  import 'package:flutter/material.dart';  void main() {  runApp(CollegeERPApp());  }  class CollegeERPApp extends StatelessWidget {  @override  Widget build(BuildContext context) {  return MaterialApp(  title: 'College ERP System',  home: HomeScreen(),  theme: ThemeData(  primarySwatch: Colors.blue,  appBarTheme: AppBarTheme(  color: Colors.blue.shade800,  ),  ),  );  }  }  class HomeScreen extends StatelessWidget {  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('College ERP System 📚')),  body: ListView(  padding: EdgeInsets.all(10),  children: [  Text(  "Departments",  style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold),  ),  SizedBox(height: 10),  leading: Icon(Icons.event, color: Colors.blue),  title: Text("Workshop on Robotics - 15th March 2025"),  subtitle: Text("Department of Mechanical Engineering"),  ),  ListTile(  leading: Icon(Icons.event, color: Colors.blue),  title: Text("Civil Engineering Conference - 18th March 2025"),  subtitle: Text("Department of Civil Engineering"),  ),  ],  ),  );  }  }  class DepartmentCard extends StatelessWidget {  final String name;  final int totalStudents;  final int totalFaculty;  DepartmentCard({required this.name, required this.totalStudents, required this.totalFaculty});  @override  Widget build(BuildContext context) {  return Container(  margin: EdgeInsets.only(bottom: 10),  padding: EdgeInsets.all(15),  decoration: BoxDecoration(  color: Colors.white,  borderRadius: BorderRadius.circular(10),    StatsCard({required this.statTitle, required this.value});  @override  Widget build(BuildContext context) {  return Container(  margin: EdgeInsets.symmetric(vertical: 10),  padding: EdgeInsets.all(15),  decoration: BoxDecoration(  color: Colors.blue.shade100,  borderRadius: BorderRadius.circular(10),  ),  child: Row(  mainAxisAlignment: MainAxisAlignment.spaceBetween,  children: [  Text(statTitle, style: TextStyle(fontSize: 16, fontWeight: FontWeight.bold)),  Text(value, style: TextStyle(fontSize: 16)),  ],  ),  );  }  }  class DepartmentDetailScreen extends StatelessWidget {  final String name;  DepartmentDetailScreen({required this.name});  @override  Widget build(BuildContext context) {  return Scaffold(  appBar: AppBar(title: Text('$name Department Details')),  subtitle: Text("Computer Science Department"),  ),  ListTile(  leading: Icon(Icons.event, color: Colors.green),  title: Text("Robotics Workshop - 12th March 2025"),  subtitle: Text("Mechanical Engineering Department"),  ),  ],  ),  ),  );  }  TableRow \_buildTableRow(String stat, String value, {bool isHeader = false}) {  return TableRow(  decoration: BoxDecoration(  color: isHeader ? Colors.blue.shade100 : Colors.white,  ),  children: [  Padding(  padding: EdgeInsets.all(8),  child: Text(  stat,  style: TextStyle(  fontWeight: isHeader ? FontWeight.bold : FontWeight.normal,  ),  ),  ),  Padding(  padding: EdgeInsets.all(8),  child: Text(value),  ), | DepartmentCard(name: "Computer Science", totalStudents: 300, totalFaculty: 20),  DepartmentCard(name: "Mechanical Engineering", totalStudents: 250, totalFaculty: 18),  DepartmentCard(name: "Electrical Engineering", totalStudents: 200, totalFaculty: 15),  DepartmentCard(name: "Civil Engineering", totalStudents: 220, totalFaculty: 16),  SizedBox(height: 20),  Text(  "College Stats",  style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold),  ),  StatsCard(statTitle: "Total Students", value: "970"),  StatsCard(statTitle: "Total Faculty", value: "69"),  StatsCard(statTitle: "Pass Percentage", value: "88%"),  SizedBox(height: 20),  Text(  "Recent Activities",  style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold),  ),  ListTile(  leading: Icon(Icons.event, color: Colors.blue),  title: Text("Guest Lecture on AI - 12th March 2025"),  subtitle: Text("Department of Computer Science"),  ),  ListTile(  boxShadow: [BoxShadow(color: Colors.grey.shade300, blurRadius: 5)],  ),  child: Row(  mainAxisAlignment: MainAxisAlignment.spaceBetween,  children: [  Column(  crossAxisAlignment: CrossAxisAlignment.start,  children: [  Text(name, style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold)),  Text("Students: $totalStudents, Faculty: $totalFaculty"),  ],  ),  IconButton(  icon: Icon(Icons.arrow\_forward, color: Colors.blue),  onPressed: () {  Navigator.push(  context,  MaterialPageRoute(builder: (context) => DepartmentDetailScreen(name: name)),  );  },  ),  ],  ),  );  }  }  class StatsCard extends StatelessWidget {  final String statTitle;  fina body: Padding(  padding: EdgeInsets.all(10),  child: Column(  crossAxisAlignment: CrossAxisAlignment.start,  children: [  Text(  "$name Department Stats",  style: TextStyle(fontSize: 20, fontWeight: FontWeight.bold),  ),  SizedBox(height: 10),  Table(  border: TableBorder.all(color: Colors.blue),  children: [  \_buildTableRow("Stat", "Value", isHeader: true),  \_buildTableRow("Total Students", "300"),  \_buildTableRow("Total Faculty", "20"),  \_buildTableRow("Average Marks", "78%"),  \_buildTableRow("Pass Percentage", "92%"),  \_buildTableRow("Research Papers", "15"),  ],  ),  SizedBox(height: 20),  Text("Recent Department Activities", style: TextStyle(fontSize: 20, fontWeight: FontWeight.bold)),  SizedBox(height: 10),  ListTile(  leading: Icon(Icons.event, color: Colors.green),  title: Text("AI Conference - 10th March 2025"),l String value;  ],  );  }  } |
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