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:

Tap	aka press. Includes double-tapping (tap-tap)
LongPress	Pressing on the screen for a longer time – like a second or two
Scale	aka pinching or unpinching, when you separate your fingers
Drag	aka swiping

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.

C. References:

1. Beginning App Development with Flutter: Create Cross-Platform Mobile Apps, By Rap Payne, 2019.
2. Google Flutter Mobile Development Quick Start Guide, Packt Publishing, 2019.

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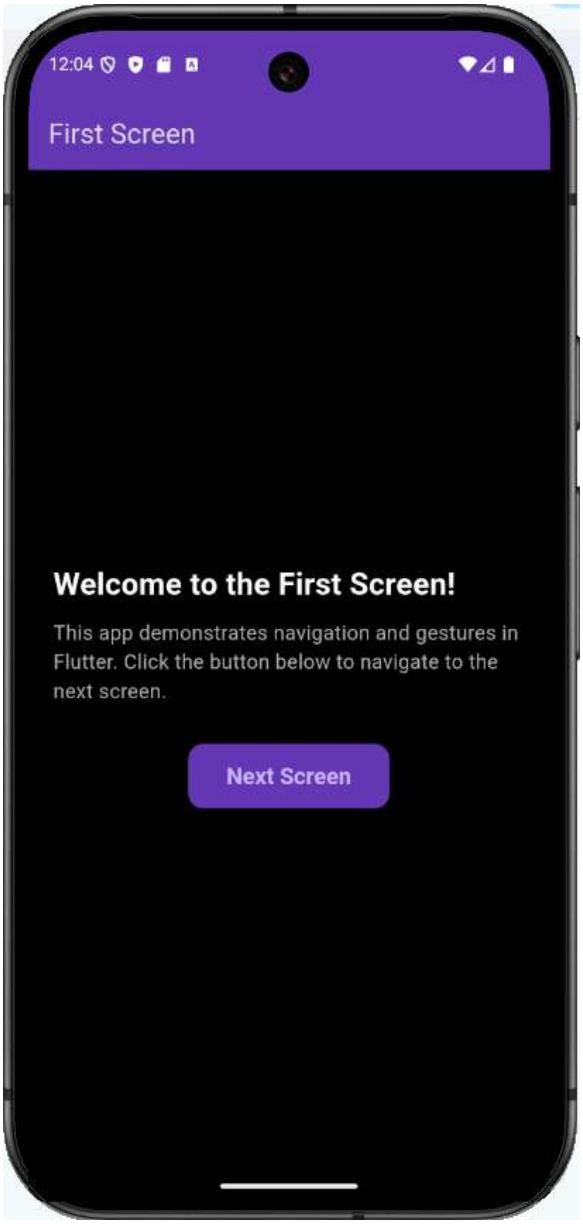
Laboratory Exercise

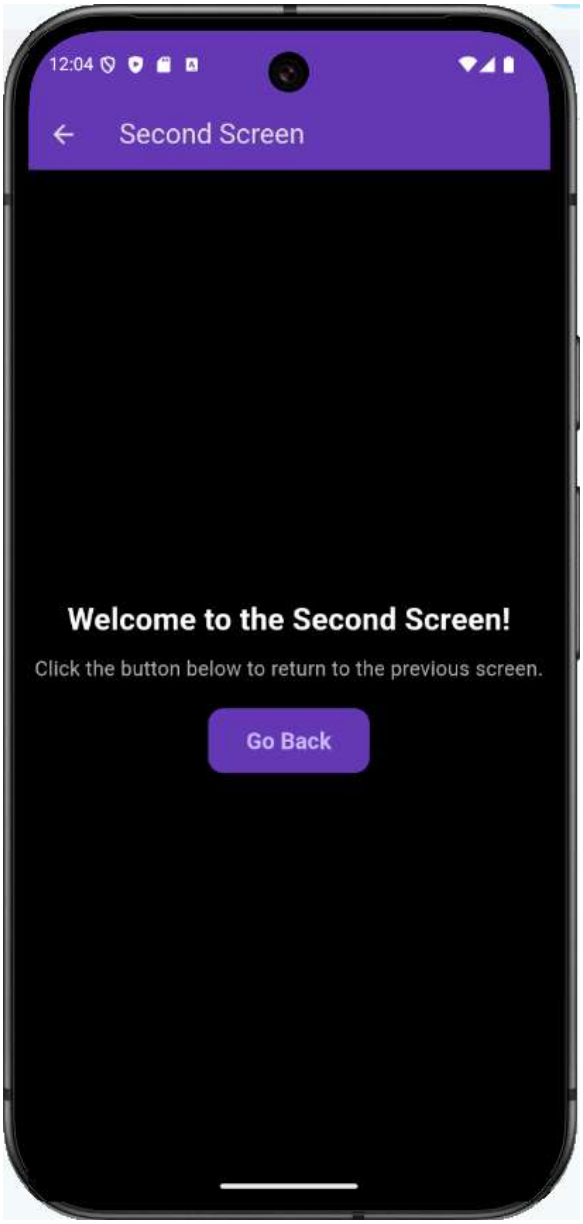
Q. Design the app using one gesture and one navigation method.

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      theme: ThemeData.dark().copyWith(
        primaryColor: Colors.deepPurple,
        scaffoldBackgroundColor: Colors.black,
        appBarTheme: AppBarTheme(color: Colors.deepPurple),
        elevatedButtonTheme: ElevatedButtonThemeData(
          style: ElevatedButton.styleFrom(
            backgroundColor: Colors.deepPurple,
            padding: EdgeInsets.symmetric(horizontal: 30, vertical: 15),
            textStyle: TextStyle(
                fontSize: 18, fontWeight: FontWeight.bold, color: Colors.white),
            shape: RoundedRectangleBorder(
              borderRadius: BorderRadius.circular(12),
            ),
          ),
        ),
      ),
      home: FirstScreen(),
    );
  }
}

class FirstScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
```

```
      appBar: AppBar(
        title: Text('First Screen'),
      ),
      body: Padding(
        padding: EdgeInsets.all(20),
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          crossAxisAlignment: CrossAxisAlignment.start,
          children: [
            Text(
              'Welcome to the First Screen!',
              style: TextStyle(
                  fontSize: 24,
                  fontWeight: FontWeight.bold,
                  color: Colors.white),
            ),
            SizedBox(height: 10),
            Text(
              'This app demonstrates navigation and gestures in Flutter. Click the
button below to navigate to the next screen.',
              style: TextStyle(fontSize: 16, color: Colors.white70),
            ),
            SizedBox(height: 30),
            Center(
              child: ElevatedButton(
                child: Text('Next Screen'),
                onPressed: () {
                  Navigator.push(
                    context,
                    MaterialPageRoute(builder: (context) => SecondScreen()),
                  );
                },
              ),
            ),
          ],
        ),
      ),
    );
  }
}
```

```dart
class SecondScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Second Screen'),
      ),
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: [
            Text(
              'Welcome to the Second Screen!',
              style: TextStyle(
                  fontSize: 24,
                  fontWeight: FontWeight.bold,
                  color: Colors.white),
            ),
            SizedBox(height: 10),
            Text(
              'Click the button below to return to the previous screen.',
              style: TextStyle(fontSize: 16, color: Colors.white70),
            ),
            SizedBox(height: 20),
            ElevatedButton(
              child: Text('Go Back'),
              onPressed: () {
                Navigator.pop(context);
              },
            ),
          ],
        ),
      ),
    );
  }
}
```


12:04
First Screen
Welcome to the First Screen!
This app demonstrates navigation and gestures in Flutter. Click the button below to navigate to the next screen.
Next Screen


12:04
Second Screen
Welcome to the Second Screen!
Click the button below to return to the previous screen.
Go Back