MAD Ex 5

Aim: To apply navigation, routing, and gestures in a Flutter app.

Theory:

Navigation, routing, and gestures are essential for building interactive and user-friendly Flutter applications. Navigation allows users to move between screens using the Navigator widget, which manages a stack of routes. Routing can be implemented using named routes or direct push and pop methods. Named routes help in organizing navigation, making the app structure more manageable.

Gestures enhance user interaction by detecting taps, swipes, and drags using the GestureDetector widget. Common gestures include tapping for button clicks, swiping for navigation, and pressing for additional actions. Flutter's built-in gesture recognition makes UI interactions smooth and intuitive.

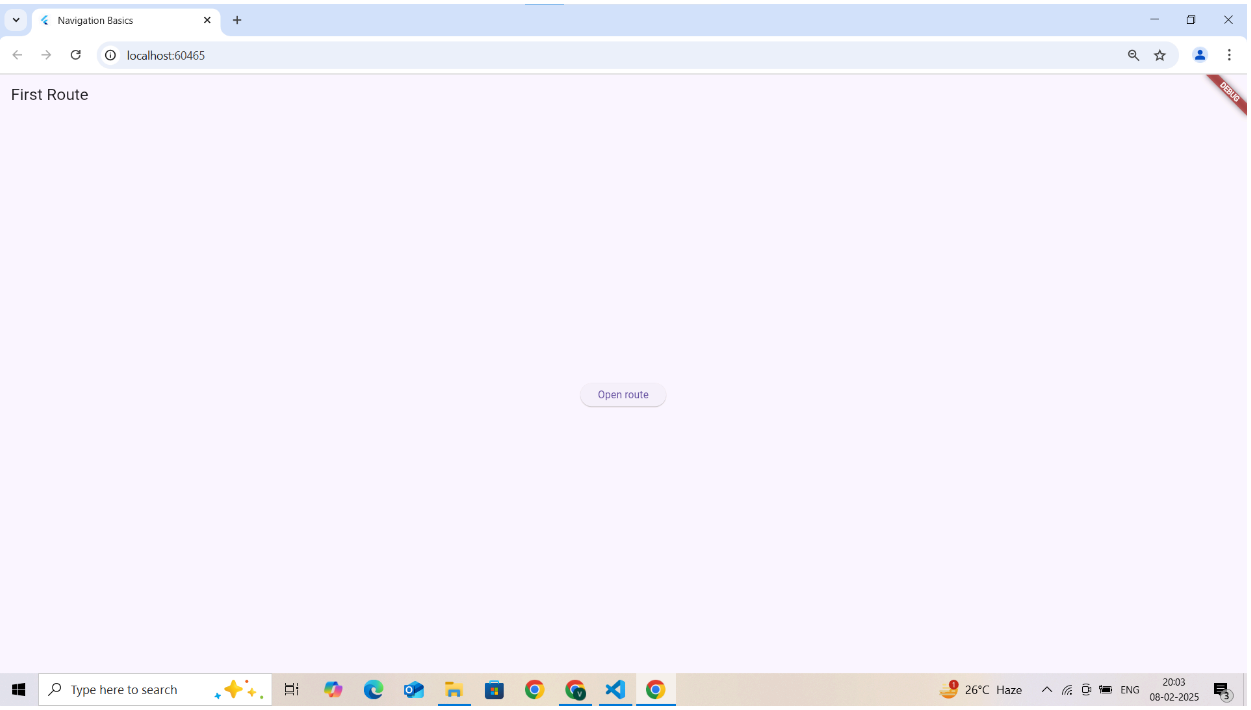
By effectively implementing navigation, routing, and gestures, Flutter apps become more dynamic, resulting in seamless transitions and an enhanced user experience.

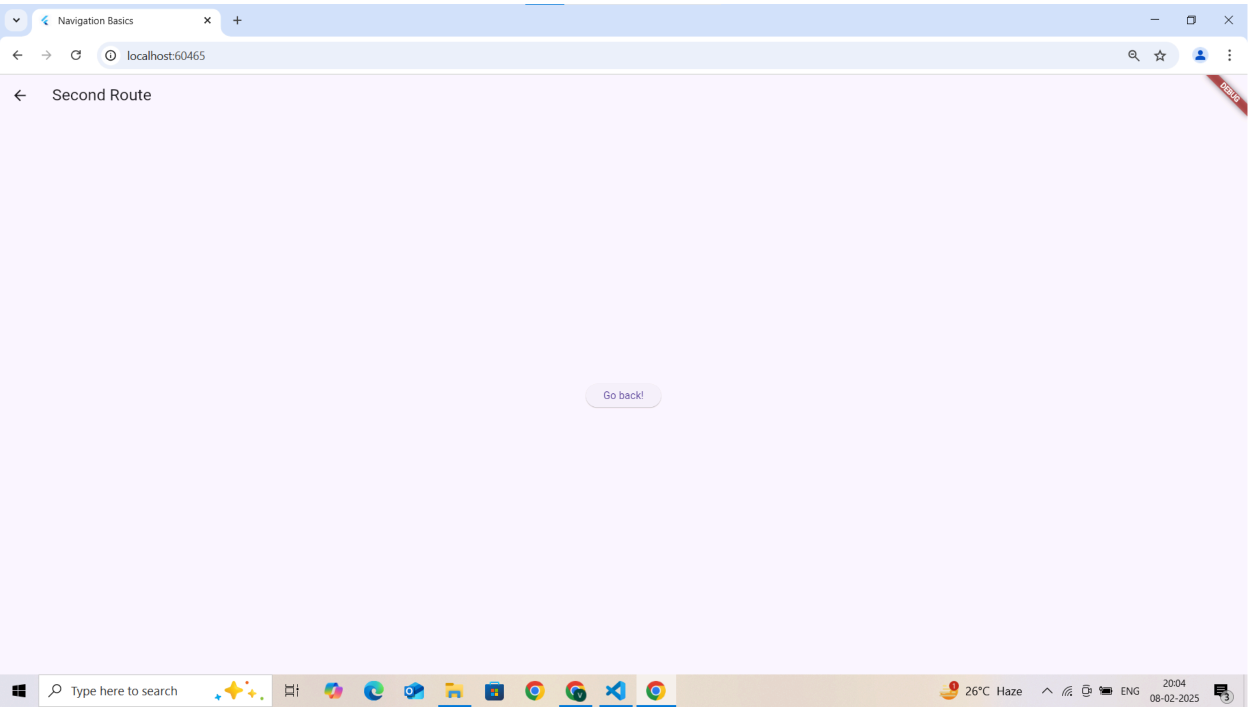
Conclusion:

Implementing navigation, routing, and gestures in a Flutter app enhances user experience by enabling smooth screen transitions and interactive controls. The Navigator and named routes simplify navigation, while the GestureDetector widget allows intuitive touch interactions. Properly integrating these features ensures a seamless, responsive, and user-friendly app.

Exp 5 To apply navigation, routing and gestures in Flutter App

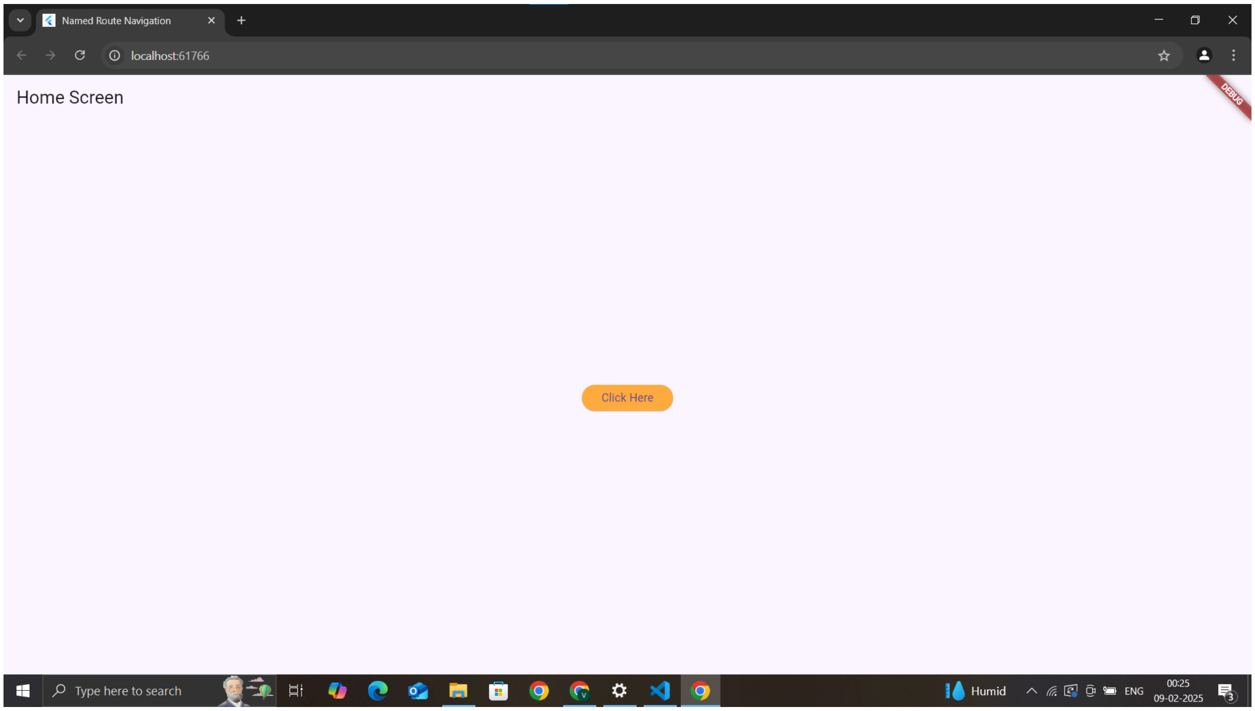
```
import 'package:flutter/material.dart';
void main() {
  runApp(const MaterialApp(
    title: 'Navigation Basics',
    home: FirstRoute(),
  ));
}
class FirstRoute extends StatelessWidget {
  const FirstRoute({Key? key}) : super(key: key);
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: const Text('First Route'),
      ),
      body: Center(
        child: ElevatedButton(
          child: const Text('Open route'),
          onPressed: () {
            Navigator.push(
              context,
              MaterialPageRoute(builder: (context) => const SecondRoute()),
            );
          },
        ),
      ),
    );
  }
}
class SecondRoute extends StatelessWidget {
  const SecondRoute({Key? key}) : super(key: key);
 @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: const Text('Second Route'),
      ),
      body: Center(
        child: ElevatedButton(
          onPressed: () {
            Navigator.pop(context);
          },
          child: const Text('Go back!'),
        ),
      ),
    );
  }
}
```

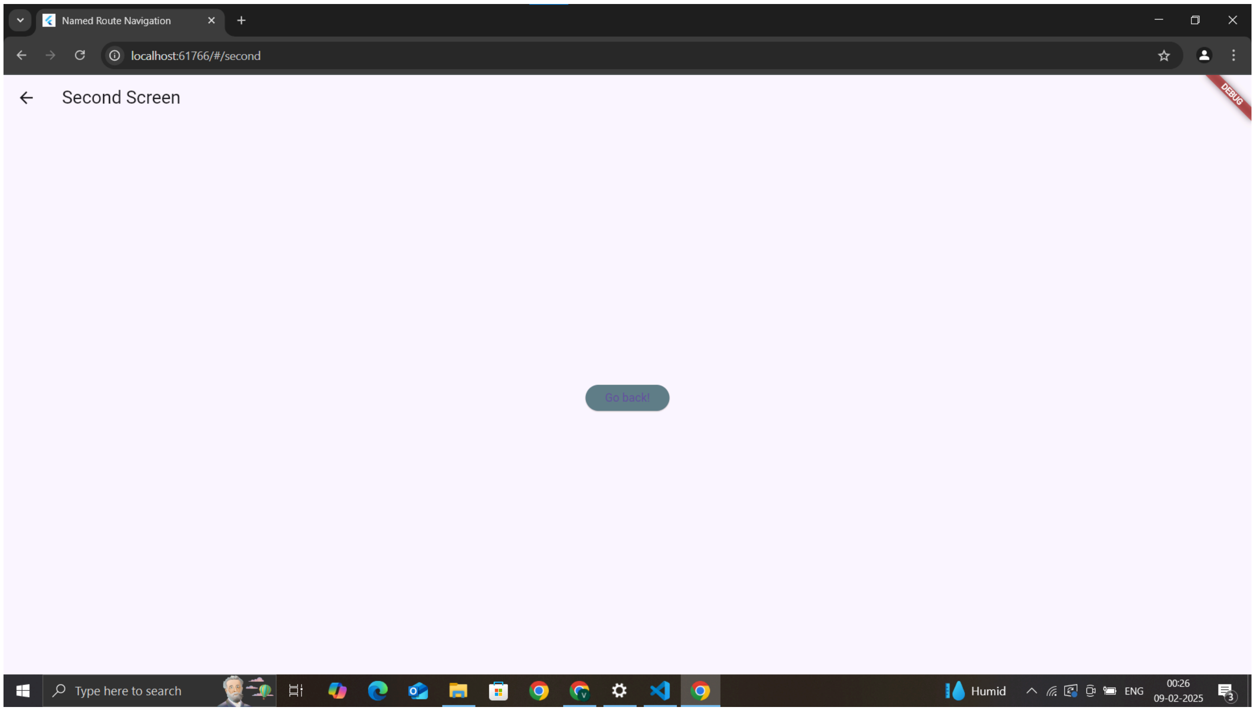

Navigation Basics
localhost:60465
First Route
DEBUG
Open route
Type here to search
26°C Haze
ENG
20:03
08-02-2025


Navigation Basics
localhost:60465
Second Route
DEBUG
Go back!
Type here to search
26°C Haze
ENG
20:04
08-02-2025

//Routing Navigation with Named Routes

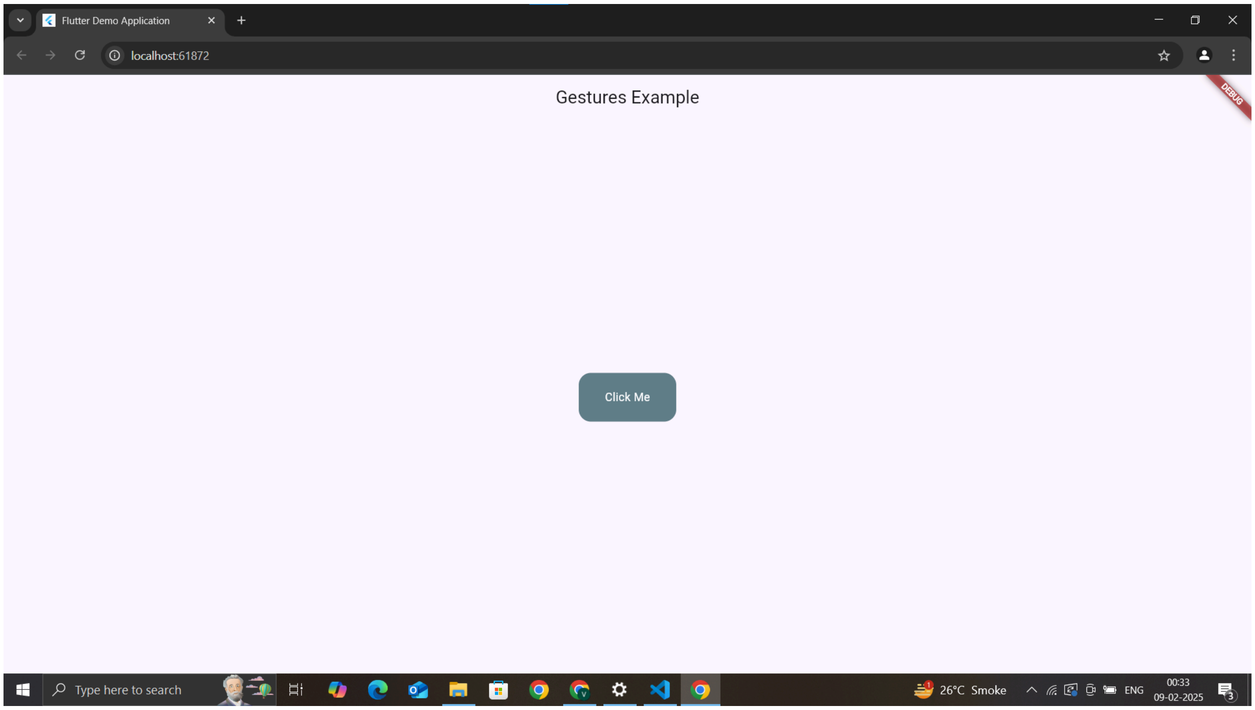
```
import 'package:flutter/material.dart';
void main() {
  runApp(MaterialApp(
    title: 'Named Route Navigation',
    theme: ThemeData(
      primarySwatch: Colors.green,
    ),
    // Start the app with the "/" named route.
    initialRoute: '/',
    routes: {
      // When navigating to the "/" route, build the HomeScreen widget.
      '/': (context) => HomeScreen(),
      // When navigating to the "/second" route, build the SecondScreen widget.
      '/second': (context) => SecondScreen(),
    },
  ));
}
class HomeScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: const Text('Home Screen'),
      ),
      body: Center(
        child: ElevatedButton(
          onPressed: () {
            Navigator.pushNamed(context, '/second');
          },
          style: ElevatedButton.styleFrom(
            backgroundColor: Colors.orangeAccent,
          ),
          child: const Text('Click Here'),
        ),
      ),
    );
  }
}
class SecondScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: const Text("Second Screen"),
      ),
      body: Center(
        child: ElevatedButton(
          onPressed: () {
            Navigator.pop(context);
          },
          style: ElevatedButton.styleFrom(
            backgroundColor: Colors.blueGrey,
          ),
          child: const Text('Go back!'),
        ),
      ),
    );
  }
}
```



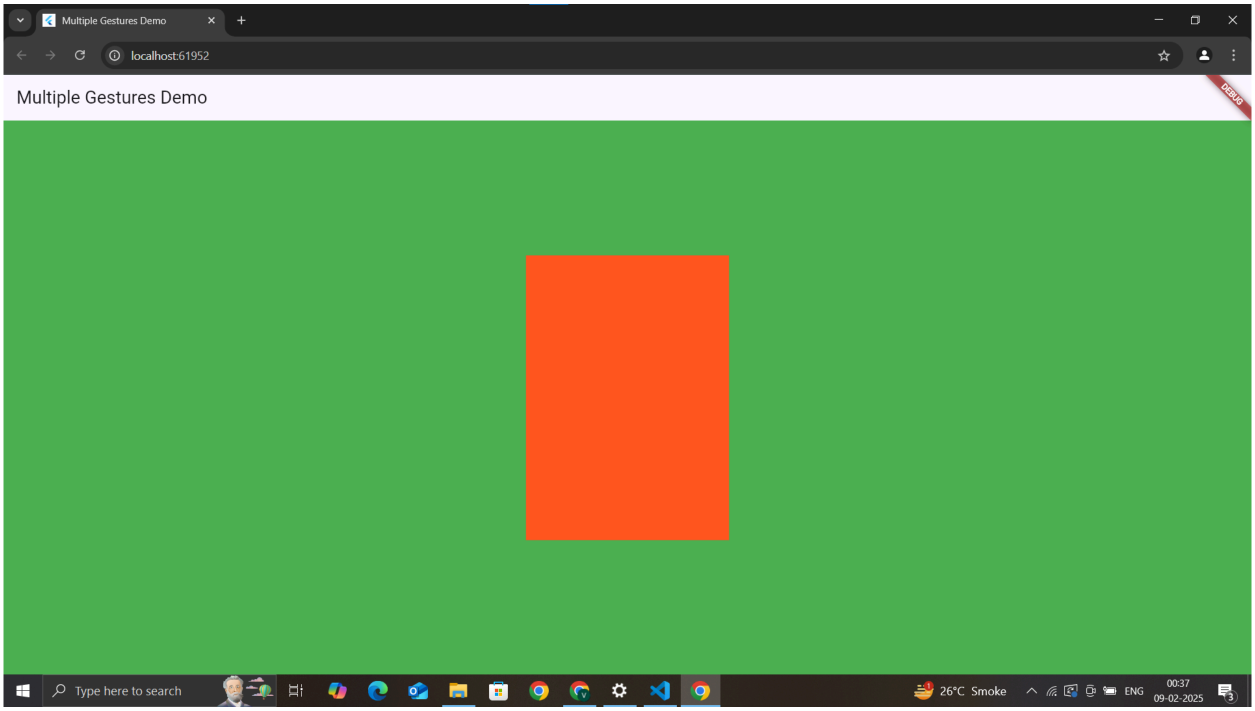


//Gesture Example

```dart
import 'package:flutter/material.dart';
void main() => runApp(MyApp());
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter Demo Application',
      theme: ThemeData(
        primarySwatch: Colors.green,
      ),
      home: MyHomePage(),
    );
  }
}
class MyHomePage extends StatefulWidget {
  @override
  MyHomePageState createState() => MyHomePageState();
}
class MyHomePageState extends State<MyHomePage> {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Gestures Example'),
        centerTitle: true,
      ),
      body: Center(
        child: GestureDetector(
          onTap: () {
            print('Box Clicked');
          },
          child: Container(
            height: 60.0,
            width: 120.0,
            padding: EdgeInsets.all(10.0),
            decoration: BoxDecoration(
              color: Colors.blueGrey,
              borderRadius: BorderRadius.circular(15.0),
            ),
            child: Center(
              child: Text(
                'Click Me',
                style: TextStyle(color: Colors.white),
              ),
            ),
          ),
        ),
      ),
    );
  }}
```


Flutter Demo Application
localhost:61872
DEBUG
Gestures Example
Click Me
Type here to search
26°C Smoke
ENG
00:33
09-02-2025

```
// Multiple Gesture Example
import 'package:flutter/gestures.dart';
import 'package:flutter/material.dart';
// Entry point for the Flutter app.
void main() {
  runApp(
    MaterialApp(
      title: 'Multiple Gestures Demo',
      home: Scaffold(
        appBar: AppBar(
          title: Text('Multiple Gestures Demo'),
        ),
        body: DemoApp(),
      ),
    ),
  );
}
class DemoApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return RawGestureDetector(
      gestures: {
        AllowMultipleGestureRecognizer:
            GestureRecognizerFactoryWithHandlers<
                AllowMultipleGestureRecognizer>(
          () => AllowMultipleGestureRecognizer(),
          (AllowMultipleGestureRecognizer instance) {
            instance.onTap =
                () => print('It is the parent container gesture');
          },
        ),
      },
      behavior: HitTestBehavior.opaque,
            // Parent Container
      child: Container(
        color: Colors.green,
        child: Center(
          // Now, wraps the second container in RawGestureDetector
          child: RawGestureDetector(
            gestures: {
              AllowMultipleGestureRecognizer:
                  GestureRecognizerFactoryWithHandlers<
                      AllowMultipleGestureRecognizer>(
                () => AllowMultipleGestureRecognizer(), // Constructor
                (AllowMultipleGestureRecognizer instance) { // Initializer
                  instance.onTap =
                      () => print('It is the nested container');
                },
              ),
            },
      // Creates the nested container within the first
      child: Container(
       color: Colors.deepOrange,
       width: 250.0,
       height: 350.0,
      ),
     ),
    ),
   ),
  );
 }
}
// Custom Gesture Recognizer to allow multiple gestures
class AllowMultipleGestureRecognizer extends TapGestureRecognizer {
 @override
 void rejectGesture(int pointer) {
  acceptGesture(pointer);
 }
}
```


Multiple Gestures Demo
localhost:61952
Multiple Gestures Demo
DEBUG
Type here to search
26°C Smoke
ENG
00:37
09-02-2025