

MAD & PWA Lab Journal

Experiment No.	05
Experiment Title.	: To apply navigation, routing and gestures in Flutter App
Roll No.	27
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Class	D15A
Subject	MAD & PWA Lab
Lab Outcome	LO1: Understand cross platform mobile application development using Flutter framework
Grade:	

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

THEORY:

Navigation, Routing, and Gestures in Flutter

Flutter provides powerful tools for managing **navigation, routing, and gestures** to create seamless user experiences.

1. Navigation in Flutter

Navigation in Flutter refers to moving between different screens (or pages). Flutter uses a **stack-based navigation system**, where each new screen is placed on top of a stack and removed when navigating back.

- **Pushing a new screen** adds it to the stack.
- **Popping a screen** removes it from the stack and returns to the previous one.

Navigation can be managed **imperatively** (by manually pushing and popping screens) or **declaratively** (by defining routes in advance).

2. Routing in Flutter

Routing is a structured way to manage navigation by defining screen paths in advance. There are two main types of routing:

- **Imperative Routing:** Directly navigating to a screen using function calls.
- **Named Routing:** Predefining route names and managing navigation using these names.

Routing helps in organizing the app structure, especially in large applications where multiple screens exist.

3. Gestures in Flutter

Gestures refer to touch-based interactions like **taps, swipes, long presses, and pinches**. Flutter provides a **gesture recognition system** to detect user interactions with widgets.

Common Gestures in Flutter:

- **Tap:** Detects single or double taps on the screen.
- **Swipe:** Identifies left, right, up, or down swipes.
- **Long Press:** Triggers an action when a user holds down on an element.
- **Drag:** Recognizes dragging movements, useful for draggable UI elements.

Gestures enhance user experience by making apps more interactive and intuitive.

PROGRAM:

Login and Register

```
import 'package:flutter/material.dart';
import 'package:bigbasket_website/home.dart'; //
void main() {
  runApp(const MyApp());
}
```

```
class MyApp extends StatelessWidget {
  const MyApp({super.key});
```

```
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Login Screen',
      theme: ThemeData(
        primarySwatch: Colors.red,
      ),
      home: const LoginScreen(),
    );
  }
}
```

```
class LoginScreen extends StatelessWidget {
  const LoginScreen({super.key});
```

```
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      body: SingleChildScrollView(
        child: Column(
          children: [
            // Top image section
            Container(
              height: 250,
              decoration: const BoxDecoration(
                image: DecorationImage(
                  image: NetworkImage(
                    'assets/loginnn.png'),
                  fit: BoxFit.cover,
                ),
              ),
            ),
            child: const Padding(
```

```

padding: EdgeInsets.all(24.0),
child: Align(
  alignment: Alignment.bottomLeft,

),
),
),
// Login form section
Padding(
  padding: const EdgeInsets.all(24.0),
  child: Column(
    crossAxisAlignment: CrossAxisAlignment.stretch,
    children: [
      const Text(
        'Login',
        style: TextStyle(
          fontSize: 24,
          fontWeight: FontWeight.bold,
        ),
      ),
      const SizedBox(height: 24),
      // Social login buttons
      Row(
        children: [
          Expanded(
            child: ElevatedButton.icon(
              onPressed: () {},
              icon: const Icon(Icons.facebook, color: Colors.white),
              label: const Text('FACEBOOK',
                style: TextStyle(color: Colors.white)),
              style: ElevatedButton.styleFrom(
                backgroundColor: const Color(0xFF3B5998),
                padding: const EdgeInsets.symmetric(vertical: 12),
              ),
            ),
          const SizedBox(width: 16),
          Expanded(
            child: OutlinedButton.icon(
              onPressed: () {},
              icon: const Icon(Icons.g_mobiledata,
                color: Colors.black87),
              label: const Text('GOOGLE',
                style: TextStyle(color: Colors.black87)),
            ),
          ),
        ],
      ),
    ],
  ),
),

```

```

        style: OutlinedButton.styleFrom(
          padding: const EdgeInsets.symmetric(vertical: 12),
        ),
      ),
    ],
  ),
  const SizedBox(height: 24),
  const Text(
    'or',
    textAlign: TextAlign.center,
    style: TextStyle(color: Colors.grey),
  ),
  const SizedBox(height: 24),
  // Email field
  TextField(
    decoration: InputDecoration(
      hintText: 'Email',
      border: OutlineInputBorder(
        borderRadius: BorderRadius.circular(4),
      ),
    ),
  ),
  const SizedBox(height: 16),
  // Password field
  TextField(
    obscureText: true,
    decoration: InputDecoration(
      hintText: 'Password',
      border: OutlineInputBorder(
        borderRadius: BorderRadius.circular(4),
      ),
    ),
  ),
  const SizedBox(height: 16),
  // Remember me checkbox
  Row(
    children: [
      Checkbox(
        value: false,
        onChanged: (bool? value) {},
      ),
      const Text('Remember me'),
      const Spacer(),
    ],
  ),

```

```

        TextButton(
          onPressed: () {},
          child: const Text('TERMS & CONDITIONS',
            style: TextStyle(color: Colors.green)),
        ),
      ],
    ),
    const SizedBox(height: 24),
    // Login button
    ElevatedButton(
      onPressed: () {
        Navigator.pushReplacement(
          context,
          MaterialPageRoute(builder: (context) => const HomePage()), // Navigate to
HomePage
        );
      },
      style: ElevatedButton.styleFrom(
        backgroundColor: Colors.green,
        padding: const EdgeInsets.symmetric(vertical: 16),
      ),
      child: const Text('LOGIN', style: TextStyle(color: Colors.white)),
    ),

    const SizedBox(height: 24),
    // Bottom text
    const Text(
      'New to the platform?',
      textAlign: TextAlign.center,
    ),
    TextButton(
      onPressed: () {
        Navigator.push(
          context,
          MaterialPageRoute(builder: (context) => const RegisterScreen()),
        );
      },
      child: const Text('REGISTER HERE', style: TextStyle(color: Colors.green)),
    ),

    ],
  ),
),
],

```

```

    ),
  ),
);
}
}

```

```

class RegisterScreen extends StatefulWidget {
  const RegisterScreen({super.key});

  @override
  _RegisterScreenState createState() => _RegisterScreenState();
}

```

```

class _RegisterScreenState extends State<RegisterScreen> {
  final _formKey = GlobalKey<FormState>();

  // Controllers to store user input
  final TextEditingController _nameController = TextEditingController();
  final TextEditingController _emailController = TextEditingController();
  final TextEditingController _phoneController = TextEditingController();
  final TextEditingController _passwordController = TextEditingController();
  final TextEditingController _addressController = TextEditingController();

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: const Text('Register')),
      body: SingleChildScrollView(
        child: Center(
          child: Padding(
            padding: const EdgeInsets.only(top: 50.0, left: 16.0, right: 16.0), // Top padding added
            child: Container(
              constraints: const BoxConstraints(maxWidth: 400), // Limits form width for centering
              child: Form(
                key: _formKey,
                child: Column(
                  mainAxisAlignment: MainAxisAlignment.min, // Keeps form compact
                  children: [
                    const Text(
                      'Create Your Account',
                      style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold),
                      textAlign: TextAlign.center,

```

```

),
const SizedBox(height: 20),

// Name Field
TextFormField(
  controller: _nameController,
  decoration: const InputDecoration(
    labelText: 'Full Name',
    border: OutlineInputBorder(),
    prefixIcon: Icon(Icons.person),
  ),
  validator: (value) {
    if (value == null || value.isEmpty) {
      return 'Please enter your name';
    }
    return null;
  },
),
const SizedBox(height: 15),

// Email Field
TextFormField(
  controller: _emailController,
  keyboardType: TextInputType.emailAddress,
  decoration: const InputDecoration(
    labelText: 'Email',
    border: OutlineInputBorder(),
    prefixIcon: Icon(Icons.email),
  ),
  validator: (value) {
    if (value == null || value.isEmpty) {
      return 'Please enter your email';
    }
    if (!RegExp(r'^^[^@]+@^[^@]+\.[^@]+').hasMatch(value)) {
      return 'Enter a valid email';
    }
    return null;
  },
),
const SizedBox(height: 15),

// Phone Number Field
TextFormField(
  controller: _phoneController,

```



```

keyboardType: TextInputType.phone,
decoration: const InputDecoration(
  labelText: 'Phone Number',
  border: OutlineInputBorder(),
  prefixIcon: Icon(Icons.phone),
),
validator: (value) {
  if (value == null || value.isEmpty) {
    return 'Please enter your phone number';
  }
  if (value.length != 10) {
    return 'Phone number must be 10 digits';
  }
  return null;
},
),
const SizedBox(height: 15),

// Password Field
TextFormField(
  controller: _passwordController,
  obscureText: true,
  decoration: const InputDecoration(
    labelText: 'Password',
    border: OutlineInputBorder(),
    prefixIcon: Icon(Icons.lock),
  ),
  validator: (value) {
    if (value == null || value.isEmpty) {
      return 'Please enter a password';
    }
    if (value.length < 6) {
      return 'Password must be at least 6 characters long';
    }
    return null;
  },
),
const SizedBox(height: 15),

// Address Field
TextFormField(
  controller: _addressController,
  decoration: const InputDecoration(
    labelText: 'Address',

```

```

        border: OutlineInputBorder(),
        prefixIcon: Icon(Icons.location_on),
      ),
      validator: (value) {
        if (value == null || value.isEmpty) {
          return 'Please enter your address';
        }
        return null;
      },
    ),
    const SizedBox(height: 25),

    // Register Button
    SizedBox(
      width: double.infinity, // Makes the button take the full width of the parent
      child: ElevatedButton(
        onPressed: () {
          if (_formKey.currentState!.validate()) {
            ScaffoldMessenger.of(context).showSnackBar(
              const SnackBar(content: Text('Registration Successful!')),
            );
            Navigator.pop(context);
          }
        },
        style: ElevatedButton.styleFrom(
          backgroundColor: Colors.green,
          padding: const EdgeInsets.symmetric(vertical: 16),
        ),
        child: const Text('REGISTER', style: TextStyle(color: Colors.white)),
      ),
    ),

    const SizedBox(height: 15),
    // Already Registered? Login Text
    TextButton(
      onPressed: () {
        // Navigate to login screen
        Navigator.pop(context); // Replace with correct navigation if needed
      },
      child: const Text(
        'Already registered? Login',
        style: TextStyle(fontSize: 16, color: Colors.green),
      ),
    ),
  ),

```

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

```
}
```



Login



FACEBOOK



GOOGLE

or

Email

Password

☐


Remember me

[TERMS & CONDITIONS](#)

LOGIN


New to the platform?


[REGISTER HERE](#)


 Register


DEBUG


Create Your Account

 Full Name

 Email

 Phone Number

 Password

 Address

REGISTER

Already registered? Login

Home.dart

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

```
import 'dishes.dart';
```

```
import 'icecreamprod.dart';
```

```
class HomeScreen extends StatelessWidget {
```

```
  const HomeScreen({Key? key}) : super(key: key);
```

```
  @override
```

```
  Widget build(BuildContext context) {
```

```
    return Scaffold(
```

```
backgroundColor: Colors.white,
appBar: AppBar(
  backgroundColor: Color(0xFF1E8040),
  elevation: 0,
  title: Column(
    mainAxisAlignment: MainAxisAlignment.min, // Prevents Column from expanding beyond AppBar
    crossAxisAlignment: CrossAxisAlignment.start,
    children: [
      Flexible( // Prevents overflow
        child: Image.network(
```

```
'https://hebbkx1anhila5yf.public.blob.vercel-storage.com/WhatsApp%20Image%202025-02-03%20at%207.18.38%20PM%20(1)-5NeEZVgiFEJKRwglBk7oHBqBwMGcdv.jpeg',
```

```
      height: 40,
      fit: BoxFit.contain, // Ensures image does not expand unexpectedly
    ),
  ),
  Row(
    children: [
      Icon(Icons.location_on, color: Colors.white, size: 20),
      Expanded( // Ensures text doesn't overflow
        child: Text(
          'Deliver to Selected Location',
          style: TextStyle(fontSize: 14, color: Colors.white),
          overflow: TextOverflow.ellipsis,
        ),
      ),
      Icon(Icons.keyboard_arrow_down, color: Colors.white),
    ],
  ),
  Text(
    'Mahadeo Wadi, Mumbai - 400071',
    style: TextStyle(fontSize: 12, color: Colors.white70),
    overflow: TextOverflow.ellipsis,
  ),
],
),
```

```
actions: [
  Container(
    padding: EdgeInsets.all(8),
    child: Column(
      mainAxisAlignment: MainAxisAlignment.center,
      children: [
        Text(
          'Delivers in',
```

```

        style: TextStyle(fontSize: 12, color: Colors.white70),
    ),
    Container(
      padding: EdgeInsets.symmetric(horizontal: 8, vertical: 4),
      decoration: BoxDecoration(
        color: Colors.white,
        borderRadius: BorderRadius.circular(4),
      ),
      child: Row(
        children: [
          Icon(Icons.flash_on, size: 16, color: Colors.black),
          Text(
            '6 mins',
            style: TextStyle(color: Colors.black, fontSize: 12),
          ),
        ],
      ),
    ),
  ],
),
IconButton(
  icon: Icon(Icons.person_outline),
  onPressed: () {},
),
],
),
body: SingleChildScrollView(
  child: Column(
    children: [
      // Search Bar
      Padding(
        padding: EdgeInsets.all(16),
        child: TextField(
          decoration: InputDecoration(
            hintText: 'Search 20000+ products',
            prefixIcon: Icon(Icons.search),
            suffixIcon: Icon(Icons.mic),
            border: OutlineInputBorder(
              borderRadius: BorderRadius.circular(8),
            ),
          ),
          filled: true,
          fillColor: Colors.white,
        ),
      ),
    ],
  ),
),
),

```

```

// Sale Banner
Container(
  padding: EdgeInsets.all(16),
  color: Color(0xFFFFF6B4A),
  child: Column(
    children: [
      Text(
        'BIG INDIAN',
        style: TextStyle(
          color: Colors.white,
          fontSize: 24,
          fontWeight: FontWeight.bold,
        ),
      ),
      Text(
        'GROCERY SALE',
        style: TextStyle(
          color: Colors.white,
          fontSize: 32,
          fontWeight: FontWeight.bold,
        ),
      ),
      Text(
        '1st to 9th Feb',
        style: TextStyle(color: Colors.white),
      ),
    ],
  ),
),

```

```

// Categories Grid
GridView.count(
  shrinkWrap: true,
  physics: NeverScrollableScrollPhysics(),
  crossAxisCount: 2,
  padding: EdgeInsets.all(16),
  mainAxisSpacing: 16,
  crossAxisSpacing: 16,
  children: [
    _buildCategoryCard(
      'Icecream',
      'assets/sunday.jpg',
      context, // Pass context
    ),
    _buildCategoryCard(

```



```

        'Cleaning &\nhousehold',
        'assets/household.png',
        context,
    ),
    _buildCategoryCard(
        'Lays',
        'assets/lays.jpg',
        context,
    ),
    _buildCategoryCard(
        'Beauty &\nhygiene',
        'assets/cosmetics.png',
        context,
    ),
    _buildCategoryCard(
        'Kitchen, garden\n& pets',
        'assets/pet.png',
        context,
    ),
    _buildCategoryCard(
        'Electronic &\napparel',
        'assets/electronics.png',
        context,
    ),
],
),

```

// Bottom Navigation Bar

```

Container(
  padding: EdgeInsets.symmetric(vertical: 8),
  decoration: BoxDecoration(
    border: Border(top: BorderSide(color: Colors.grey.shade300)),
  ),
  child: Row(
    mainAxisAlignment: MainAxisAlignment.spaceAround,
    children: [
      _buildNavItem(Icons.home, 'Home', true, context),
      _buildNavItem(Icons.grid_view, 'Dishes', false, context),
      _buildNavItem(Icons.refresh, 'Re-Order', false, context),
    ],
  ),

),
],
),

```

```

    ),
  );
}

```

```

Widget _buildCategoryCard(String title, String imageAsset, BuildContext context) {
  return GestureDetector(
    onTap: () {
      if (title == 'Icecream') {
        Navigator.push(
          context,
          MaterialPageRoute(builder: (context) => IceCreamShop()),
        );
      }
    },
    child: Container(
      decoration: BoxDecoration(
        color: Color(0xFFFFF3E0),
        borderRadius: BorderRadius.circular(8),
      ),
      child: Column(
        mainAxisAlignment: MainAxisAlignment.center,
        children: [
          Image.asset(imageAsset, height: 80),
          SizedBox(height: 8),
          Text(
            title,
            textAlign: TextAlign.center,
            style: TextStyle(
              fontSize: 16,
              fontWeight: FontWeight.bold,
            ),
          ),
        ],
      ),
    ),
  );
}

```

```

Widget _buildNavItem(IconData icon, String label, bool isSelected, BuildContext context) {
  return GestureDetector(
    onTap: () {
      if (label == 'Dishes') {
        Navigator.push(
          context,
          MaterialPageRoute(builder: (context) => HomePage()),
        );
      }
    },
  );
}

```

```
    );  
  }  
},  
child: Column(  
  mainAxisAlignment: MainAxisAlignment.min,  
  children: [  
    Icon(icon, color: isSelected ? Colors.green[800] : Colors.grey),  
    Text(label, style: TextStyle(color: isSelected ? Colors.green[800] : Colors.grey)),  
  ],  
),  
);  
}  
  
}
```



Delivers in

DEBUG



Deliver to Selected Loc...



6 mins

BOTTOM OVERFLOWED BY 2.0 PIXELS

GROCERY SALE

1st to 9th Feb



Icecream



Cleaning &
household



Lays



Beauty &
hygiene



Kitchen, garden
& pets



Electronic &
apparel



Home



Dishes



Re-Order