EXPERIMENT NO 5

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CLASS-D15A

ROLL NO-12

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

THEORY-

Navigation in Flutter allows users to move between different screens (or pages) in the app. Flutter uses the Navigator widget to handle navigation between routes (screens).

Types of Navigation

- Push Navigation (Forward Navigation) → Moves to a new screen.
- Pop Navigation (Backward Navigation) → Moves back to the previous screen.
- PushReplacement → Replaces the current screen with a new one.
- PushAndRemoveUntil → Moves to a new screen and removes previous screens from the stack.

Routing in Flutter manages different screens in the app. It helps organize and structure navigation efficiently.

Types of Routing

1. Direct Route Navigation (MaterialPageRoute)-Used for simple page-to-page navigation.
2. Named Routes (Predefined Routes in main.dart)-Defined in the MaterialApp widget and used throughout the app.

Flutter uses the GestureDetector widget to detect user interactions like taps, swipes, pinches, and long presses. This is essential for making an app interactive.

Common Gestures & Their Uses:

- Tap → Detects simple taps on a widget.
- Double Tap → Recognizes double-clicking.
- Long Press → Triggers an action when the user presses and holds.
- Swipe (Drag) → Detects horizontal or vertical dragging.
- Pinch (Zoom In/Out) → Detects two-finger pinch for zooming.

SYNTAX

Navigator

```
Navigator.push(
context,
  MaterialPageRoute(builder: (context) => SecondPage()),
);
Navigator.pushReplacement(
  context,
  MaterialPageRoute(builder: (context) => NewPage()),
);
```

Routing

```
void main() {
  runApp(MaterialApp(
  initialRoute: '/',
  routes: {
      '/': (context) => HomePage(),
      '/profile': (context) => ProfilePage(),
    },
  ));
}
```

Gestures

```
GestureDetector(
onTap: () {
    print("Widget Tapped!");
  },
  child: Container(
    width: 100,
    height: 100,
    color: Colors.blue,
  ),
);
```

Widget Properties

Navigator

context → The current build context for navigation.

MaterialPageRoute → Creates a transition animation between pages.

builder → Defines the widget to navigate to.

Navigator.push() → Pushes a new screen on top of the stack.

Navigator.pop() → Removes the top screen and goes back.

Navigator.pushReplacement() → Replaces the current screen with a new one.

Routing

initialRoute → Sets the first screen when the app starts.

routes → Defines a map of route names and corresponding widgets.

Navigator.pushNamed() → Navigates using a predefined route.

Navigator.pop() → Closes the current screen and returns to the previous one.

Gestures

onDoubleTap → Detects a double tap.

onLongPress → Detects when the user presses and holds.

onHorizontalDragStart → Detects when a horizontal drag begins.

onHorizontalDragUpdate → Detects movement during a horizontal drag.

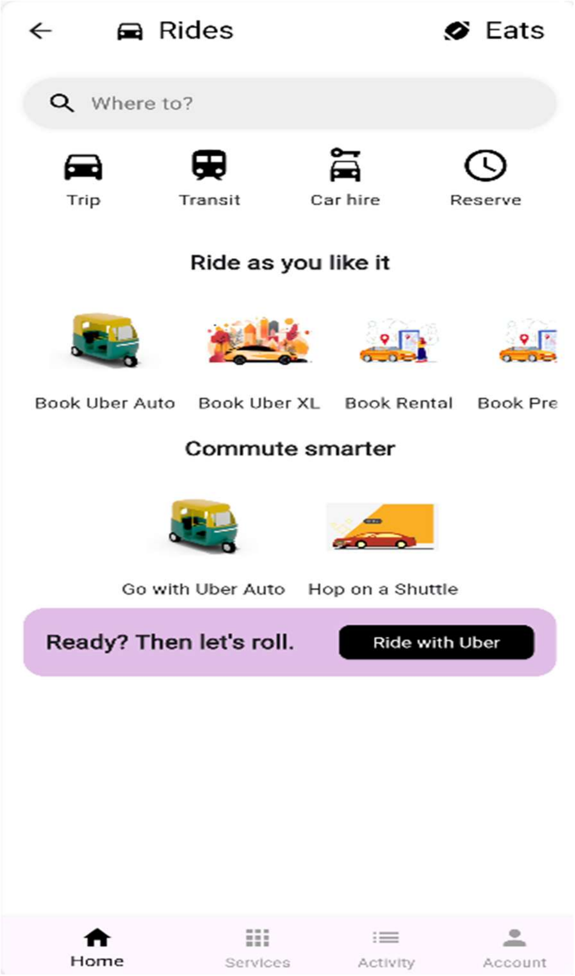
onHorizontalDragEnd → Detects when a horizontal drag stops.

CODE

So when we click on the services button on the bottom navigation, it will take us to the services page.

```
// Bottom Navigation
    bottomNavigationBar: BottomNavigationBar(
      currentIndex: 0,
      selectedItemColor: Colors.black,
      unselectedItemColor: Colors.grey,
      showUnselectedLabels: true,
      onTap: (index) {
        if (index == 1) {
          // Navigate to ServicesPage when "Services" tab is clicked
          Navigator.push(
            context,
            MaterialPageRoute(builder: (context) => ServicesPage()),
          );
        }
      },
      items: const [
        BottomNavigationBarItem(icon: Icon(Icons.home), label: "Home"),
        BottomNavigationBarItem(icon: Icon(Icons.apps), label: "Services"),
        BottomNavigationBarItem(icon: Icon(Icons.list), label: "Activity"),
        BottomNavigationBarItem(icon: Icon(Icons.person), label: "Account"),
      ],
    ),
```

OUTPUT


Rides
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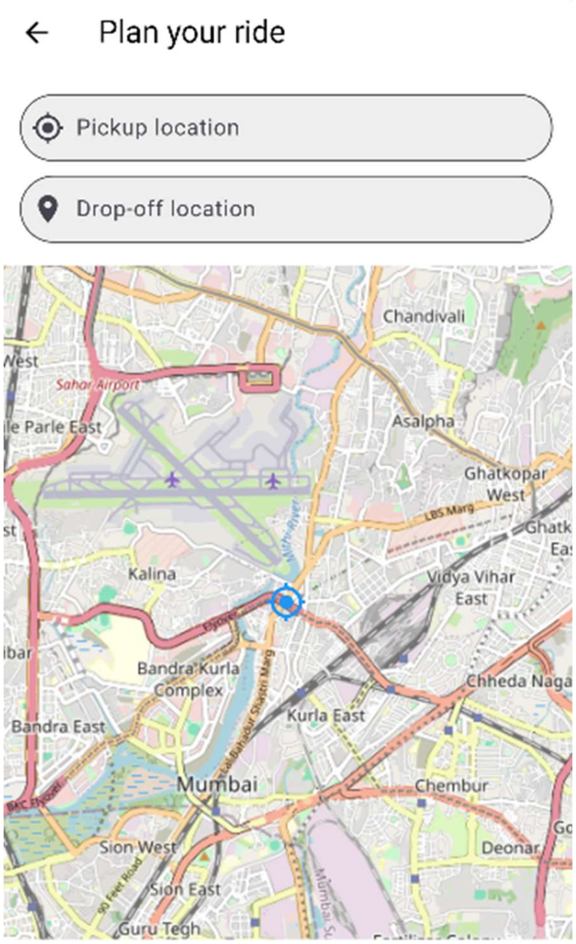
Trip
Transit
Car hire
Reserve
Ride as you like it
Book Uber Auto
Book Uber XL
Book Rental
Book Pre
Commute smarter
Go with Uber Auto
Hop on a Shuttle
Ready? Then let's roll.
Ride with Uber
Home
Services
Activity
Account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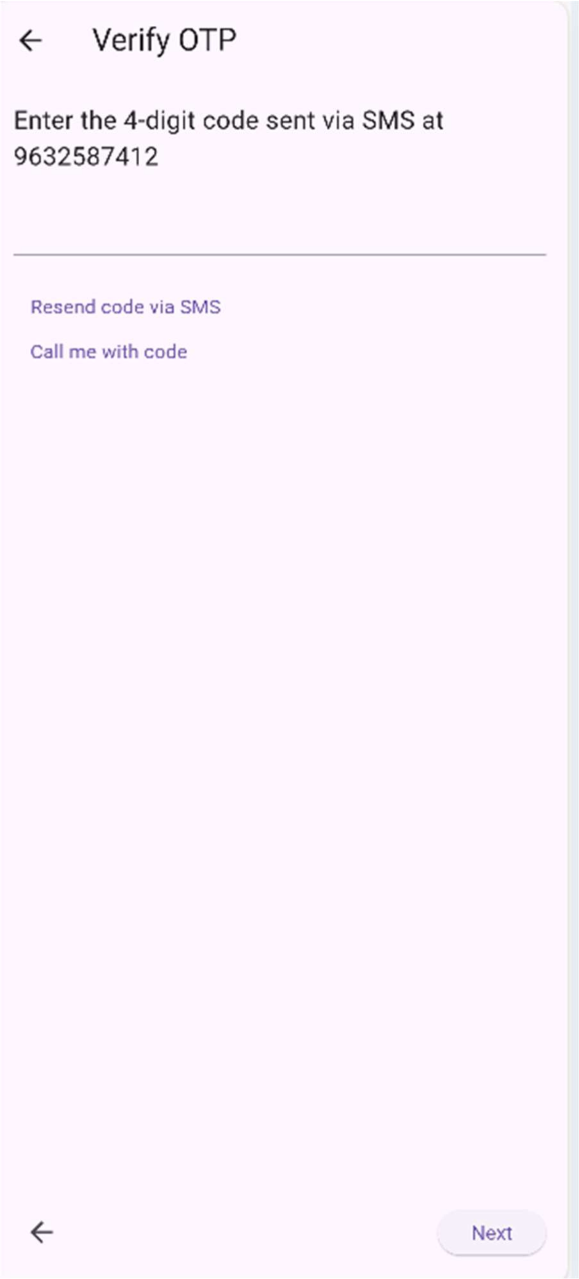
Eas
Kalina
Vidya Vihar East
Bandra Kurla Complex
Chheda Naga
Bandra East
Kurla East
Mumbai
Chembur
Sion West
Sion East
Deonar
Guru Tegh

CODE

```
oid _navigateToOtpPage() {
   if (_phoneController.text.length == 10) {
     Navigator.push(
       context,
       MaterialPageRoute(
         builder: (context) => OtpPage(phoneNumber: _phoneController.text),
       ),
     );
   } else {
     ScaffoldMessenger.of(context).showSnackBar(
       SnackBar(content: Text("Please enter a valid 10-digit number")),
     );
   }
 }

 void _navigateToSignupPage() {
   Navigator.push(
     context,
     MaterialPageRoute(builder: (context) => SignupPage()),
   );
 }
```

OUTPUT



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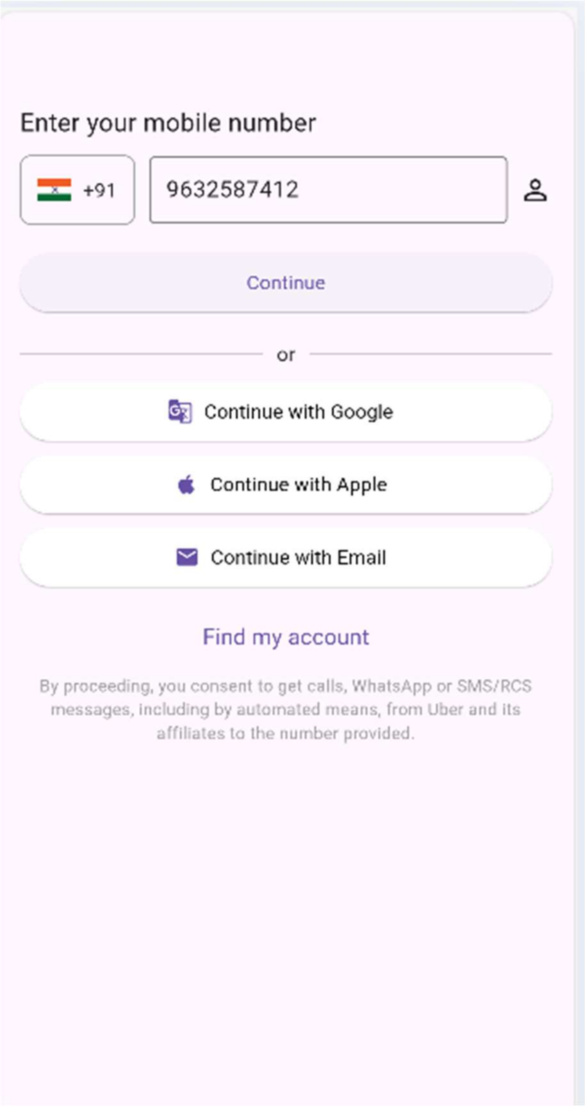

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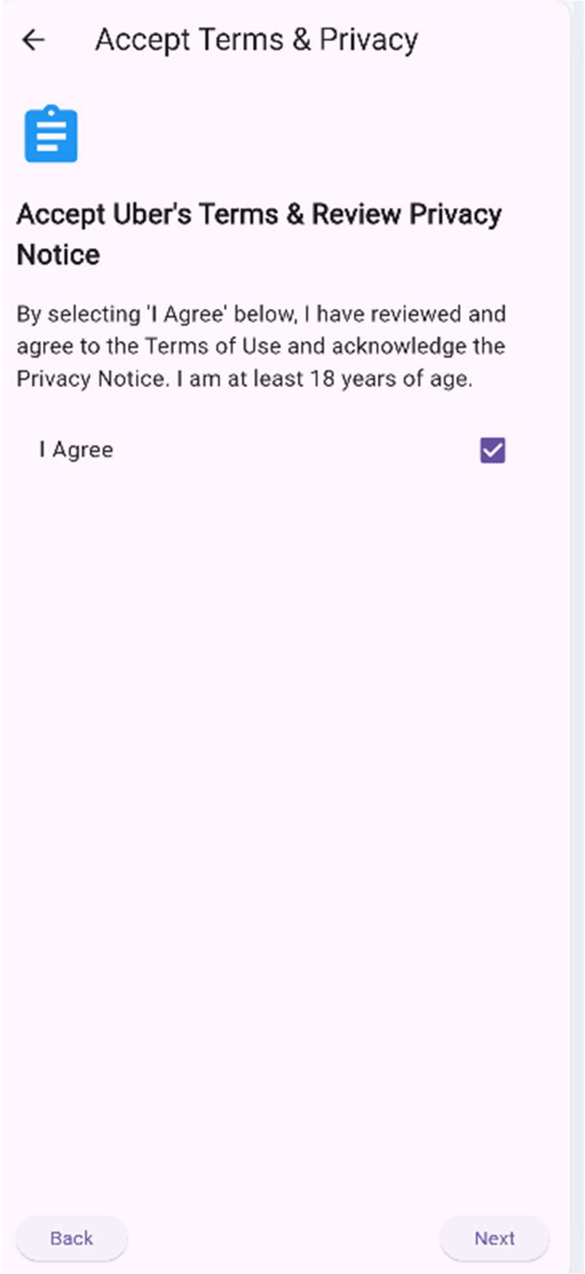
CODE

```
ElevatedButton(
         onPressed: _isChecked
           ? () {
             Navigator.pushReplacement(
              context,
              MaterialPageRoute(
                builder: (context) => LandingPage()),
             );
            }
           : null,
         child: Text("Next"),
        )
```

OUTPUT



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