MAD & PWA Lab
Journal

Experiment No.	04
Experiment Title.	To create an interactive Form using form widget
Roll No.	14
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Class	D15A
Subject	MAD & PWA Lab
Lab Outcome	LO2: Design and Develop interactive Flutter App by using widgets, layouts, gestures and animation
Grade:	

AIM : To create an interactive Form using form widget.

Theory :

Forms are an essential component of any application that requires user input. They allow users to enter and submit data, making them useful for login pages, registration forms, feedback sections, and more. In Flutter, the Form widget provides a structured way to handle user input efficiently, ensuring validation and state management.

In Flutter, the Form widget provides a structured way to handle user input efficiently while ensuring validation and state management.

Understanding the Form Widget

The Form widget in Flutter acts as a container for multiple input fields (such as text fields, checkboxes, radio buttons, or dropdowns), unlike using individual TextField widgets. It helps manage the form state and validation collectively, ensuring a smooth user experience.

Key Components of an Interactive Form in Flutter

1. TextFormField Widget: Used for user input fields such as name, email, and password.
2. FormKey: A unique global key that manages the form state and validation.
3. Validators: Functions that check if user input meets the required conditions (e.g., ensuring a field is not empty or an email format is valid).
4. Submit Button: Triggers validation and processes user input.
5. State Management: Helps retain user input and dynamically update the UI.

Importance of Interactive Forms in App Development

● User Engagement: Provides a structured way for users to interact with the app.
● Data Validation: Ensures correct and meaningful input before submission.
● State Management: Maintains form data efficiently for a better user experience. Retains user input even when UI changes.
● Seamless Navigation: Allows users to enter data smoothly with features like auto-focus and keyboard actions.
● Data Collection: Makes it easy to retrieve user data for further processing.

Working Mechanism of a Form in Flutter

1. Defining a Form with a Global Key:
    ○ The Form widget requires a GlobalKey<FormState> to manage its state and validation.
    ○ This key helps in performing actions like form validation and resetting inputs.
2. Using TextFormField for Input Fields:
    ○ Instead of TextField, the TextFormField widget is used within a Form because it supports built-in validation.

   ○ Each TextFormField can have a validator function to check whether the entered data meets specific conditions.
3. <u>Adding Validation Logic:</u>
   ○ Each TextFormField includes a validator function to check input validity.
   ○ When the user submits the form, the validate() function of the FormState is called, which runs all validator functions and ensures that the input is valid before proceeding.
4. <u>Handling User Input and Submission:</u>
   ○ The onSaved function stores user input for processing.
   ○ A button (e.g., ElevatedButton) is used to trigger the validation and submission process.
   ○ If the form is valid, it can proceed with actions like saving data or navigating to another screen.

Example Workflow of an Interactive Form

1. The user enters data into TextFormField fields (e.g., name, email, password).
2. When the submit button is clicked, the FormKey calls validate(), which runs all validator functions.
3. If validation passes, the onSaved function stores the data and the app processes it.
4. If validation fails, appropriate error messages are displayed.

Some Properties of Form Widget

● key: A GlobalKey that uniquely identifies the Form. You can use this key to interact with the form, such as validating, resetting, or saving its state.
● child: The child widget that contains the form fields. Typically, this is a Column, ListView, or another widget that allows you to arrange the form fields vertically.
● autovalidateMode: An enum that specifies when the form should automatically validate its fields.

Some Methods of Form Widget

● validate(): This method is used to trigger the validation of all the form fields within the Form. It returns true if all fields are valid, otherwise false. You can use it to check the overall validity of the form before submitting it.
● save(): This method is used to save the current values of all form fields. It invokes the onSaved callback for each field. Typically, this method is called after validation succeeds.
● reset(): Resets the form to its initial state, clearing any user-entered data.
● currentState: A getter that returns the current FormState associated with the Form.

The Flutter form uses TextField for input, ElevatedButton for submission, and Text for messages. Column and Row structure the layout, while Padding and Container manage spacing and styling. Icons enhance the UI, and Form ensures input validation. GestureDetector handles taps for navigation, while ThemeData and MaterialApp define the app's overall design.

Code :

login_page.dart

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

class PhoneNumberPage extends StatefulWidget {
  @override
  _PhoneNumberPageState createState() =>
_PhoneNumberPageState();
}

class _PhoneNumberPageState extends
State<PhoneNumberPage> {
  TextEditingController phoneController =
TextEditingController();

  // Function to handle navigation to OTP page
  void goToOTPPage() {
    String phoneNumber = phoneController.text.trim();

    // Simple validation for phone number
    if (phoneNumber.isNotEmpty &&
phoneNumber.length == 10) {
      Navigator.pushNamed(
        context,
        '/otp',
        arguments: phoneNumber, // Passing phone
number
      );
    } else {
      // Show error message if phone number is invalid
      ScaffoldMessenger.of(context).showSnackBar(
        SnackBar(content: Text("Please enter a valid
10-digit phone number")),
      );
    }
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Color(0xFF7D73E8), // Light
purple background
      body: Center(
        child: Padding(
          padding: const
EdgeInsets.symmetric(horizontal: 20.0),
          child: Column(
            mainAxisAlignment:
MainAxisAlignment.center,
            children: [
              SizedBox(height: 100),
              Text(
                'magicpin',
                style: TextStyle(
                  fontSize: 32,
                  fontWeight: FontWeight.bold,
                  color: Colors.white,
                ),
              ),
              SizedBox(height: 5),
              Text(
                'Local Savings SuperApp',
                style: TextStyle(
                  fontSize: 16,
                  color: Colors.white,
                ),
              ),
              SizedBox(height: 120),
              Text(
                "Hey, what's your number?",
                style: TextStyle(
                  fontSize: 20,
                  fontWeight: FontWeight.bold,
                  color: Colors.white,
                ),
              ),
              SizedBox(height: 10),
              Text(
                "Your wallet balance will be linked to this
number. Don't worry, we will never make it public.",
                textAlign: TextAlign.center,
                style: TextStyle(
                  fontSize: 14,
                  color: Colors.white,
                ),
              ),
              SizedBox(height: 30),
              Container(
                decoration: BoxDecoration(
                  color: Colors.white,
                  borderRadius: BorderRadius.circular(10),
                ),
                child: Row(
                  children: [
                    Padding(
                      padding: const EdgeInsets.all(8.0),
                      child:
Image.asset('assets/images/india_flag.jpg', width: 24),
                    ),
                    Text(
                      '+91',
                      style: TextStyle(fontSize: 16,
fontWeight: FontWeight.bold),
                    ),
```

```
            Icon(Icons.arrow_drop_down),
            Expanded(
              child: TextField(
                controller: phoneController, // ✅
Added controller
                keyboardType: TextInputType.phone,
                style: TextStyle(color: Colors.black),
// ✅ Set text color to bla
                decoration: InputDecoration(
                  hintText: 'Enter mobile no.',
                  border: InputBorder.none,
                  contentPadding:
EdgeInsets.symmetric(horizontal: 10),
                ),
              ),
            ),
          ],
        ),
      ),
      SizedBox(height: 20),
      ElevatedButton(
        onPressed: goToOTPPage, // ✅ Fixed
onPressed
        style: ElevatedButton.styleFrom(
          backgroundColor: Colors.grey[300],
          padding:
EdgeInsets.symmetric(horizontal: 100, vertical: 15),
        ),
        child: Text(
          'Login',
          style: TextStyle(color: Colors.black,
fontSize: 16),
        ),
      ),
      SizedBox(height: 30),
      Text(
        "By clicking 'Login', you accept our",
        style: TextStyle(color: Colors.white,
fontSize: 12),
```

```
            ),
            Text(
              "Privacy Policy",
              style: TextStyle(
                color: Colors.white,
                fontSize: 12,
                fontWeight: FontWeight.bold,
              ),
            ),
            Spacer(),
            SizedBox(
              width: MediaQuery.of(context).size.width,
// Takes full screen width
              child: Container(
                padding: EdgeInsets.all(10),
                color: Colors.white,
                child: Column(
                  children: [
                    Text(
                      "₹500 worth 🟡 magicPoints",
                      style: TextStyle(fontSize: 14,
fontWeight: FontWeight.bold),
                    ),
                    Text(
                      "New users - Sign up now to claim
your bonus!",
                      style: TextStyle(fontSize: 12),
                    ),
                  ],
                ),
              ),
            ),
          ],
        ),
      ),
    );
  }
}
```

otp_verification_page.dart

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

class OTPVerificationPage extends StatefulWidget {
  @override
  _OTPVerificationPageState createState() =>
_OTPVerificationPageState();
}

class _OTPVerificationPageState extends
State<OTPVerificationPage> {
  late String phoneNumber;
```

```
  TextEditingController otpController =
TextEditingController();
  int _resendTimer = 30;
  late Timer _timer;

  @override
  void initState() {
    super.initState();
    startResendTimer();
  }

  void startResendTimer() {
    _resendTimer = 30;
    _timer = Timer.periodic(Duration(seconds: 1),
```

```
(timer) {
    if (_resendTimer > 0) {
      setState(() {
        _resendTimer--;
      });
    } else {
      timer.cancel();
    }
  });
}

@override
void dispose() {
  _timer.cancel();
  super.dispose();
}

@override
Widget build(BuildContext context) {
  phoneNumber =
ModalRoute.of(context)!.settings.arguments as
String;

  return Scaffold(
    backgroundColor: Color(0xFF7B61FF), //
Magicpin purple background
    body: Column(
      children: [
        SizedBox(height: 100),
        Text(
          "magicpin",
          style: TextStyle(
            fontSize: 28,
            fontWeight: FontWeight.bold,
            color: Colors.white,
            letterSpacing: 1.5,
          ),
        ),
        Text(
          "Local Savings SuperApp",
          style: TextStyle(
            fontSize: 16,
            color: Colors.white70,
          ),
        ),
        SizedBox(height: 70),
        Text(
          "Verification Code",
          style: TextStyle(
            fontSize: 22,
            fontWeight: FontWeight.bold,
            color: Colors.white,
          ),
        ),
        SizedBox(height: 10),
        Text(
          "Waiting for OTP sent to $phoneNumber",
          textAlign: TextAlign.center,
          style: TextStyle(fontSize: 16, color:
Colors.white70),
        ),
        SizedBox(height: 20),
        Padding(
          padding: EdgeInsets.symmetric(horizontal:
40),
          child: PinCodeTextField(
            appContext: context,
            length: 6,
            controller: otpController,
            keyboardType: TextInputType.number,
            animationType: AnimationType.fade,
            enableActiveFill: true,
            pinTheme: PinTheme(
              shape: PinCodeFieldShape.box,
              borderRadius: BorderRadius.circular(12), //
Rounded squares
              fieldHeight: 55,
              fieldWidth: 50,
              inactiveColor: Colors.white,
              activeColor: Colors.white,
              selectedColor: Colors.white,
              inactiveFillColor: Colors.white,
              activeFillColor: Colors.white,
              selectedFillColor: Colors.white,
              borderWidth: 1,
            ),
            onChanged: (value) {},
          ),
        ),
        SizedBox(height: 20),
        ElevatedButton(
          onPressed: () {
            String otp = otpController.text;
            if (otp.length == 6) {
              Navigator.pushNamed(context, '/home'); //
Navigate after OTP verification
            } else {

ScaffoldMessenger.of(context).showSnackBar(
                SnackBar(content: Text("Please enter a
valid 6-digit OTP")),
              );
            }
          },
          style: ElevatedButton.styleFrom(
            backgroundColor: Colors.black,
            shape:
RoundedRectangleBorder(borderRadius:
BorderRadius.circular(10)),
            padding: EdgeInsets.symmetric(vertical: 15,
horizontal: 80),
          ),
```

```
        child: Text("Verify", style:                            Radius.circular(20)),
TextStyle(fontSize: 18, color: Colors.white)),              ),
      ),                                                    child: Column(
      SizedBox(height: 15),                                  children: [
      TextButton(                                              Text(
        onPressed: _resendTimer == 0 ?                          "₹500 worth 🪙 magicPoints",
startResendTimer : null,                                        style: TextStyle(
        child: Text(                                              fontSize: 16,
          _resendTimer == 0                                       fontWeight: FontWeight.bold,
            ? "Resend OTP"                                         color: Colors.black,
            : "Resend in                                         ),
${_resendTimer.toString().padLeft(2, '0')}",                   ),
          style: TextStyle(                                    SizedBox(height: 5),
            fontSize: 16,                                       Text(
            color: Colors.white70,                              "New users - Sign up now to claim your
            fontWeight: FontWeight.bold,              bonus!",
          ),                                                     style: TextStyle(fontSize: 14, color:
        ),                                               Colors.black54),
      ),                                                     ),
      Spacer(),                                            ],
      Container(                                          ),
        padding: EdgeInsets.symmetric(vertical: 15),    )
        width: double.infinity,                        ],
        decoration: BoxDecoration(                   ),
          color: Colors.white,                      );
          borderRadius: BorderRadius.vertical(top:  }
                                                   }
```

lib/theme/theme.dart

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

class AppTheme {
  static const Color primaryColor = Color(0xFF796EFF); // Adjust as needed

  static ThemeData lightTheme = ThemeData(
    primaryColor: primaryColor,
    scaffoldBackgroundColor: primaryColor,
    textTheme: TextTheme(
      headlineLarge: TextStyle(fontSize: 24, fontWeight: FontWeight.bold, color: Colors.white),
      bodyLarge: TextStyle(fontSize: 16, color: Colors.white),
    ),
  );
}
```

Main.dart :

```dart
import 'package:flutter/material.dart';
import 'screens/login_page.dart';
import 'theme/theme.dart';

void main() {
  runApp(MyApp());
}
```
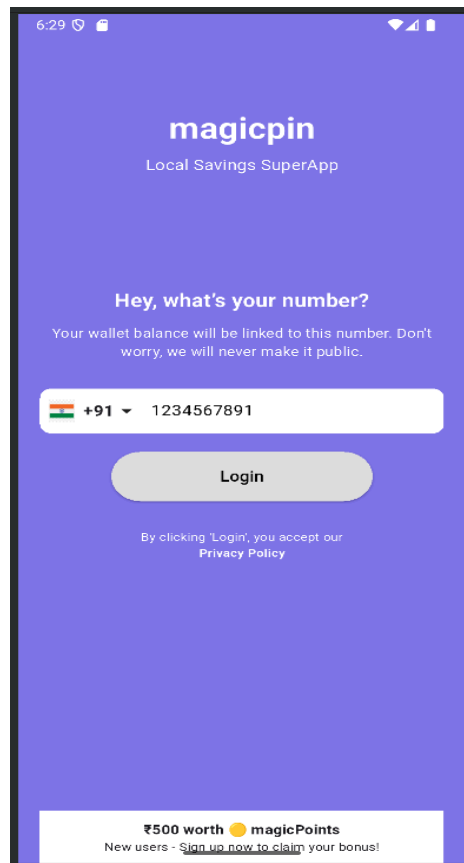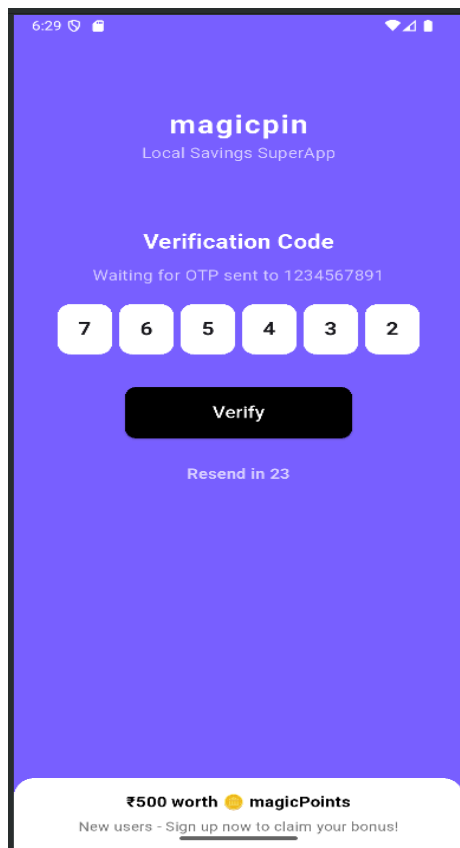
```
class MyApp extends StatelessWidget {
 @override
 Widget build(BuildContext context) {
  return MaterialApp(
    debugShowCheckedModeBanner: false,
    title: 'Magicpin Clone',
    theme: AppTheme.lightTheme,    //ThemeData(primarySwatch: Colors.blue),
    home: LoginPage(),
  );
 }
}
```

Pubspec.yaml

```
assets:
   - assets/images/india_flag.jpg
```

ScreenShots :