Experiment: 04

Aim:To create an interactive Form using form widget

Theory:
In Flutter, a "form widget" typically refers to a widget that helps manage and validate user input within a form. Forms are crucial in mobile and web applications to collect data from users. Flutter provides several built-in widgets and classes to handle forms efficiently. Let's discuss the key components and theory behind form widgets in Flutter:

Form Widget:
The Form widget is the root container for form elements in Flutter. It encapsulates multiple form fields and manages their state.
It automatically validates and saves the state of its fields, making it easier to handle user input.

FormField Widget:
A FormField is a single form element within a Form. Examples include TextFormField for text input, CheckboxFormField for checkboxes, etc.
Each FormField has a unique key, which allows Flutter to track and manage its state.

Validation:
Form validation ensures that user input meets certain criteria before being processed further. Validators can be applied to form fields using the validator property. For example, the TextFormField has a validator parameter that takes a function to validate the entered text.

Saving Form State:
The onSaved property of form fields is used to define a callback function that saves the current value of the form field when the form is submitted.
The Form widget itself has an onSaved callback that gets triggered when the form is saved.

Form Submission:
Form submission is usually triggered by a button, like ElevatedButton or TextButton.
The onPressed callback of the button can call the Form widget's save method to trigger the form submission.

GlobalKey<FormState>:
To uniquely identify and manage the state of the form, a GlobalKey<FormState> is often used.
This key is assigned to the Form widget.
The key helps in accessing the form's state for actions like validation and submission.

Code:

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: ContactForm(),
    );
  }
}
class ContactForm extends StatefulWidget {
  @override
  _ContactFormState createState() => _ContactFormState();
}
class _ContactFormState extends State<ContactForm> {
  final _formKey = GlobalKey<FormState>();

  // Controllers for each text field
  TextEditingController _nameController = TextEditingController();
  TextEditingController _phoneController = TextEditingController();
  TextEditingController _aadharController = TextEditingController();
  TextEditingController _addressController = TextEditingController();

  // Variables to store submitted details
  String _submittedName = '';
  String _submittedPhone = '';
  String _submittedAadhar = '';
  String _submittedAddress = '';
```

```dart
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text('Contact Form'),
    ),
    body: Padding(
      padding: const EdgeInsets.all(16.0),
      child: Form(
        key: _formKey,
        child: Column(
          children: [
            // Name Field
            TextFormField(
              controller: _nameController,
              decoration: InputDecoration(labelText: 'Name'),
              validator: (value) {
                if (value!.isEmpty) {
                  return 'Please enter your name';
                }
                return null;
              },
            ),
            SizedBox(height: 16),

            // Phone Number Field
            TextFormField(
              controller: _phoneController,
              decoration: InputDecoration(labelText: 'Phone Number'),
              validator: (value) {
                if (value!.isEmpty) {
                  return 'Please enter your phone number';
                } else if (!RegExp(r"^\d{10}$").hasMatch(value)) {
                  return 'Please enter a valid 10-digit phone number';
                }
                return null;
              },
            ),
            SizedBox(height: 16),
```

```dart
          // Aadhar Number Field
          TextFormField(
            controller: _aadharController,
            decoration: InputDecoration(labelText: 'Aadhar Number'),
            validator: (value) {
              if (value!.isEmpty) {
                return 'Please enter your Aadhar number';
              } else if (!RegExp(r"^\d{12}$").hasMatch(value)) {
                return 'Please enter a valid 12-digit Aadhar number';
              }
              return null;
            },
          ),
          SizedBox(height: 16),

          // Address Field
          TextFormField(
            controller: _addressController,
            decoration: InputDecoration(labelText: 'Address'),
            validator: (value) {
              if (value!.isEmpty) {
                return 'Please enter your address';
              }
              return null;
            },
            maxLines: 4,
          ),
          SizedBox(height: 32),

          // Submit Button
          ElevatedButton(
            onPressed: () {
              _submitForm();
            },
            child: Text('Submit'),
          ),

          SizedBox(height: 16),
```
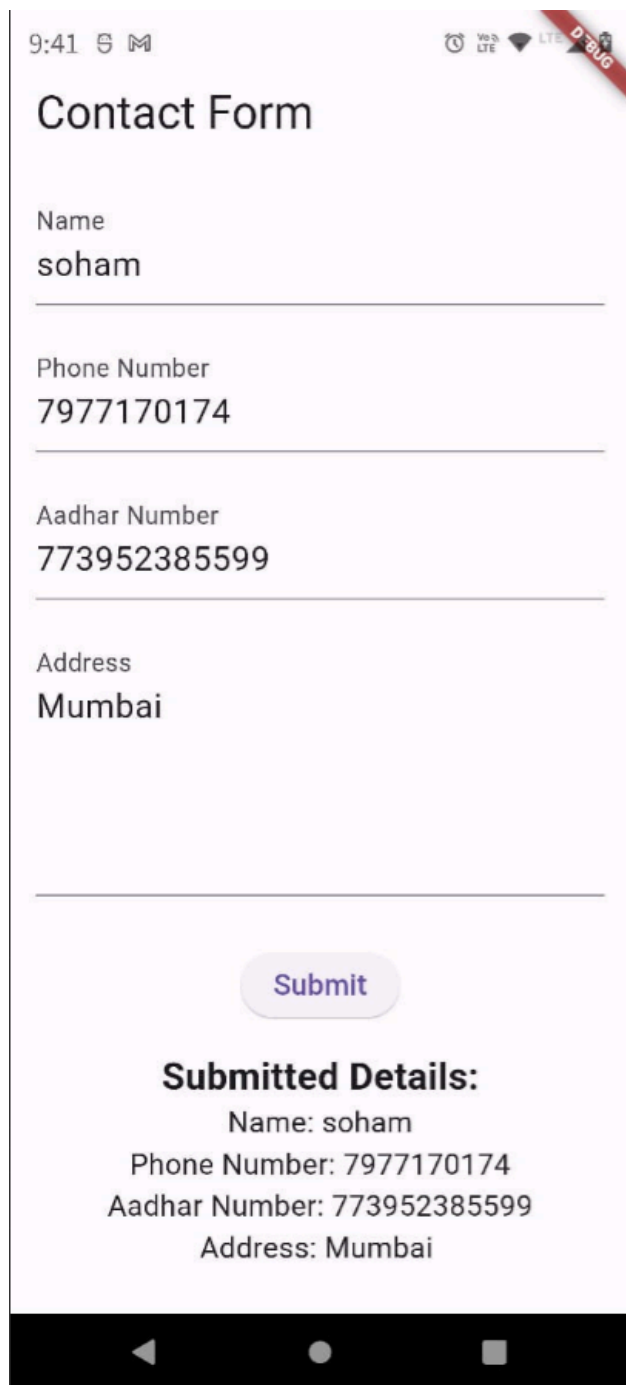
```dart
            // Display Submitted Details
            Container(
              alignment: Alignment.center,
              child: Column(
                children: [
                  Text('Submitted Details:',
                      style: TextStyle(
                          fontSize: 18, fontWeight: FontWeight.bold)),
                  Text('Name: $_submittedName'),
                  Text('Phone Number: $_submittedPhone'),
                  Text('Aadhar Number: $_submittedAadhar'),
                  Text('Address: $_submittedAddress'),
                ],
              ),
            ),
          ],
        ),
      ),
    ),
  );
}

// Function to handle form submission
void _submitForm() {
  if (_formKey.currentState!.validate()) {
    // Validation successful, process the form data
    setState(() {
      _submittedName = _nameController.text;
      _submittedPhone = _phoneController.text;
      _submittedAadhar = _aadharController.text;
      _submittedAddress = _addressController.text;
    });

    // TODO: Add your logic to handle the form data (e.g., send it to a server)
    print(
        'Name: $_submittedName, Phone Number: $_submittedPhone, Aadhar Number:
$_submittedAadhar, Address: $_submittedAddress');
  }
}
}
```