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DIV:D15B

EXPERIMENT-4

Aim: To create an interactive Form using form widget
Theory:
In Flutter, the Form widget is a crucial component for building interactive user input forms. It facilitates input validation, data submission, and error handling. Here's a brief overview of creating an interactive form using the Form widget in Flutter:

1. What is a Form?
a. A Form widget is a container that holds multiple form fields, allowing users to input data.
b. It manages the state of the form and provides methods for validation and Submission.

2. Creating a Form:
a. To create a form, wrap your form fields within a Form widget.
b. Use the GlobalKey<FormState> to uniquely identify the form and access its state.

3. Form Fields:
a. Form fields such as TextFormField, DropdownButtonFormField, etc., are used to collect user input.
b. Each form field should be provided with a controller (for controlled input) and a validator function to validate user input.

4. Validation:
a. Validation ensures that user input meets specific criteria before submission.
b. Use the validator property of form fields to specify validation logic.
c. Validators are functions that return an error message if validation fails, or null if the input is valid.

5. Submission:
a. Submission occurs when the user interacts with a submit button or similar action.
b. Use the onPressed callback of a button to trigger form submission.
c. Inside the submission handler, validate the form using the validate method of the FormState.
d. If the form is valid, proceed with the submission logic (e.g., saving data to a database).

6. Error Handling:

a. If form validation fails, display error messages to the user to guide them in correcting their input.
b. Error messages can be displayed below each form field or as a general error message at the top of the form.

7. Cleaning Up:
a. Dispose of form controllers and other resources in the dispose method of the State object to prevent memory leaks.

8. Additional Features:
a. Flutter provides various widgets and utilities for enhancing forms, such as InputDecoration for customizing form field appearance, FocusNode for managing focus between fields, and SnackBar for displaying feedback messages.

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

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

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: MySignUpForm(),
      theme: ThemeData(
        primaryColor: Color.fromARGB(255, 53, 18, 150),
        colorScheme: ColorScheme.fromSwatch(primarySwatch: Colors.teal),
        fontFamily: 'Arial',
      ),
    );
  }
}

class MySignUpForm extends StatefulWidget {
  @override
  _MySignUpFormState createState() => _MySignUpFormState();
}

class _MySignUpFormState extends State<MySignUpForm> {
  final GlobalKey<FormState> _formKey = GlobalKey<FormState>();
  final TextEditingController _nameController = TextEditingController();
  String _email = '';
  String _password = '';

  String? _validateName(String? value) {
    if (value == null || value.isEmpty) {
      return 'Please enter your name';
    }
    return null;
  }

  String? _validateEmail(String? value) {
    if (value == null || value.isEmpty) {
      return 'Please enter your email';
    } else if (!RegExp(r'^[\w-]+(\.[\w-]+)*@([\w-]+\.)+[a-zA-Z]{2,7}$')
        .hasMatch(value)) {
      return 'Please enter a valid email address';
    }
    return null;
  }

  String? _validatePassword(String? value) {
    if (value == null || value.isEmpty) {
      return 'Please enter your password';
    } else if (value.length < 8) {
      return 'Password must be at least 8 characters';
    } else if (!RegExp(r'^(?=.*?[a-z])(?=.*?[A-Z])(?=.*?[0-9])(?=.*?[!@#\$&*~]).{8,}$')
        .hasMatch(value)) {
      return 'Password must contain at least one uppercase letter, lowercase letter, number,
and special character';
    }
    return null;
```

```
 }

 void _submitForm() {
   if (_formKey.currentState?.validate() ?? false) {
     _formKey.currentState?.save();
     _showSignUpCompleteDialog(_nameController.text);
   }
 }

 void _showSignUpCompleteDialog(String name) {
   showDialog(
     context: context,
     builder: (BuildContext context) {
       return AlertDialog(
         title: Text('Account creation Complete'),
         content: Text(
             'Congratulations, $name! You have successfully created an account.'),
         actions: <Widget>[
           TextButton(
             onPressed: () {
               Navigator.of(context).pop();
             },
             child: Text('OK'),
           ),
         ],
       );
     },
   );
 }

 @override
 Widget build(BuildContext context) {
   return Scaffold(
     appBar: AppBar(
       title: Text('Account creation Form'),
       backgroundColor: Color.fromARGB(255, 177, 70, 226),
     ),
     body: Container(
       decoration: BoxDecoration(
         gradient: LinearGradient(
           colors: [
             Color.fromRGBO(190, 52, 184, 1),
             Colors.blue,
           ],
           begin: Alignment.topCenter,
           end: Alignment.bottomCenter,
         ),
       ),
       child: Padding(
         padding: const EdgeInsets.all(16.0),
         child: Form(
           key: _formKey,
           child: Column(
             crossAxisAlignment: CrossAxisAlignment.stretch,
             children: [
               Image.asset(
                 'assets/images/sneaker_image.jpg',
                 height: 150,
                 fit: BoxFit.cover,
               ),
               SizedBox(height: 16),
               TextFormField(
                 controller: _nameController,
                 decoration: InputDecoration(
                   labelText: 'Name',
                   hintText: 'Enter your name',
                   border: OutlineInputBorder(),
                   prefixIcon: Icon(Icons.person),
                 ),
                 style: TextStyle(
                   fontSize: 16,
                   color: Colors.black87,
                 ),
                 validator: _validateName,
                 onSaved: (value) {
                   _nameController.text = value ?? '';
                 },
               ),
               SizedBox(height: 16),
               TextFormField(
                 decoration: InputDecoration(
                   labelText: 'Email',
                   hintText: 'Enter your email',
                   border: OutlineInputBorder(),
                   prefixIcon: Icon(Icons.email),
                 ),
                 style: TextStyle(
                   fontSize: 16,
                   color: Colors.black87,
                 ),
                 validator: _validateEmail,
                 onSaved: (value) {
                   _email = value ?? '';
                 },
               ),
               SizedBox(height: 16),
               TextFormField(
                 obscureText: true,
                 decoration: InputDecoration(
                   labelText: 'Password',
                   hintText: 'Enter your password',
                   border: OutlineInputBorder(),
                   prefixIcon: Icon(Icons.lock),
                 ),
                 style: TextStyle(
                   fontSize: 16,
                   color: Colors.black87,
                 ),
                 validator: _validatePassword,
                 onChanged: (value) {
                   setState(() {
                     _password = value;
                   });
                 },
               ),
               SizedBox(height: 8),
               Text(
                 _passwordStrength(_password),
                 style: TextStyle(
                   color: _passwordStrengthColor(_password),
                 ),
               ),
               SizedBox(height: 16),
               ElevatedButton(
                 onPressed: _submitForm,
                 child: Text(
                   'Sign Up',
                   style: TextStyle(
                     fontSize: 18,
                     color: Colors.white,
                   ),
                 ),
                 style: ButtonStyle(
                   backgroundColor:
                       MaterialStateProperty.all(const Color.fromARGB(255, 107, 0, 150)),
                   padding: MaterialStateProperty.all(
                     EdgeInsets.symmetric(vertical: 12),
                   ),
                 ),
               ),
             ],
           ),
         ),
         ),
         ),
         );
         }
         String _passwordStrength(String password) {
             if (password.isEmpty) {
               return '';
             } else if (password.length < 8) {
               return 'Weak password';
             } else if (RegExp(r'^[\w-]+(\.[\w-]+)*@([\w-]+\.)+[a-zA-Z]{2,7}$')
                 .hasMatch(password)) {
               return 'Weak password';
             } else if (!RegExp(r'^(?=.*?[a-z])(?=.*?[A-Z])(?=.*?[0-9])(?=.*?[!@#\$&*~]).{8,}$')
                 .hasMatch(password)) {
               return 'Medium password';
             } else {
               return 'Strong password';
             }
           }

           Color _passwordStrengthColor(String password) {
             if (password.isEmpty || password.length < 8) {
               return Colors.red;
             } else if (!RegExp(r'^(?=.*?[a-z])(?=.*?[A-Z])(?=.*?[0-9])(?=.*?[!@#\$&*~]).{8,}$')
                 .hasMatch(password)) {
               return Colors.orange;
             } else {
               return Color.fromARGB(255, 166, 68, 196);
             }
           }
         }
```

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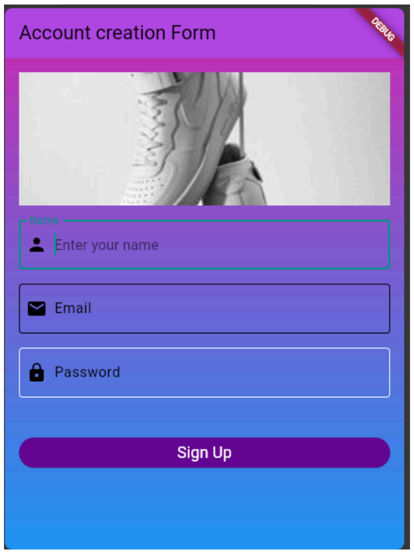
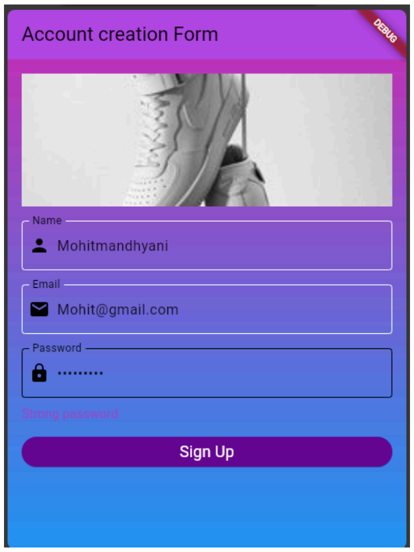
OUTPUT:





Mohitmandhyani

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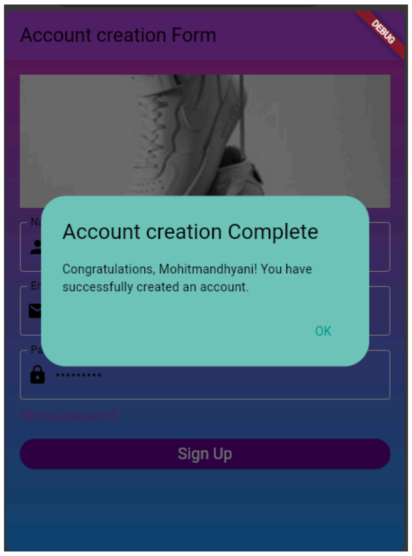

Account creation Complete

Congratulations, Mohitmandhyani! You have successfully created an account.

CONCLUSION: Hence, we have successfully implemented the Flutter interactive Form using form widget.