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Experiment No 2

Aim: To design Flutter UI by including common widgets.

Theory:

Widgets:

Each element on a screen of the Flutter app is a widget. The view of the screen completely depends upon the choice and sequence of the widgets used to build the apps and the structure of the code of an app is a tree of widgets.

Category of Widgets:

There are mainly 14 categories in which the flutter widgets are divided. They are mainly segregated on the basis of the functionality they provide in a flutter application.

1. **Accessibility:** These are the set of widgets that make a flutter app more easily accessible.
2. **Animation and Motion:** These widgets add animation to other widgets.
3. **Assets, Images, and Icons:** These widgets take charge of assets such as display images and show icons.
4. **Async:** These provide async functionality in the flutter application.
5. **Basics:** These are the bundle of widgets that are absolutely necessary for the development of any flutter application.
6. **Cupertino:** These are the iOS designed widgets.
7. **Input:** This set of widgets provides input functionality in a flutter application.
8. **Interaction Models:** These widgets are here to manage touch events and route users to different views in the application.
9. **Layout:** This bundle of widgets helps in placing the other widgets on the screen as needed.
10. **Material Components:** This is a set of widgets that mainly follow material design by Google.
11. **Painting and effects:** This is the set of widgets that apply visual changes to their child widgets without changing their layout or shape.
12. **Scrolling:** This provides scrollability of to a set of other widgets that are not scrollable by default.
13. **Styling:** This deals with the theme, responsiveness, and sizing of the app.
14. **Text:** This displays text.

Description of few of the widgets are as follows:

● **Scaffold**– Implements the basic material design visual layout structure.

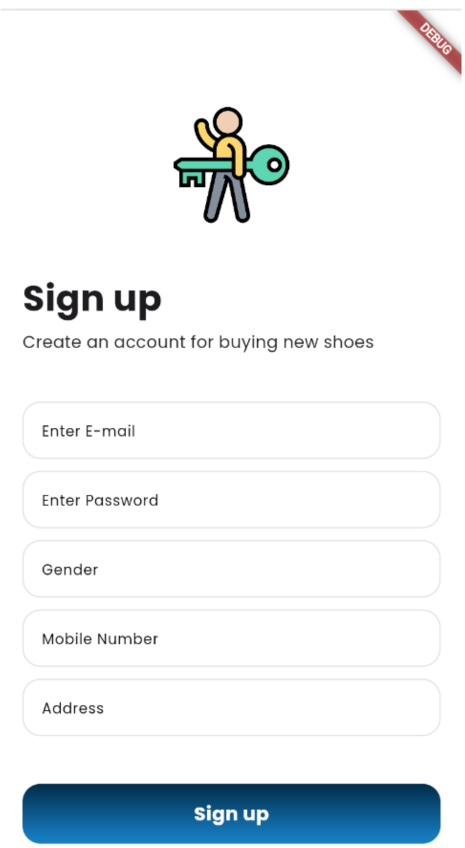
- **App-Bar**- To create a bar at the top of the screen.
- **Text**- To write anything on the screen.
- **Container**– To contain any widget.
- **Center**– To provide center alignment to other widgets.

The code in login.dart:

```
import 'package:flutter/material.dart';
import 'package:google_fonts/google_fonts.dart';
import 'package:firebase_auth/firebase_auth.dart';
import 'package:skillxchange/auth/signup.dart';
import 'package:skillxchange/common/button.dart';
import 'package:skillxchange/common/textfield.dart';
import 'package:skillxchange/screens/main_app_screen.dart';

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

  @override
  State<Login> createState() => _LoginState();
}

class _LoginState extends State<Login> {
  final TextEditingController emailController = TextEditingController();
  final TextEditingController passwordController = TextEditingController();
  bool isLoading = false;

  void loginUser() async {
    setState(() {
      isLoading = true;
    });

    try {
      await FirebaseAuth.instance.signInWithEmailAndPassword(
        email: emailController.text.trim(),
        password: passwordController.text.trim(),
      );

      ScaffoldMessenger.of(context).showSnackBar(
        const SnackBar(content: Text("Login Successful!")),
      );

      Navigator.pushReplacement(
        context,
        MaterialPageRoute(builder: (context) => const MainAppScreen()),
      );
    } on FirebaseAuthException catch (e) {
      ScaffoldMessenger.of(context).showSnackBar(
        SnackBar(content: Text(e.message ?? "Login failed")),
      );
    }

    setState(() {
      isLoading = false;
    });
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      body: SingleChildScrollView(
        child: Padding(
          padding: const EdgeInsets.all(20.0),
          child: Column(
            crossAxisAlignment: CrossAxisAlignment.start,
            children: [
              const SizedBox(height: 100),
              Row(
                mainAxisAlignment: MainAxisAlignment.center,
                children: [
                  SizedBox(
                    height: 100,
                    width: 100,
                    child: Image.asset("assets/key.png"),
                  ),
                ],
              ),
              const SizedBox(height: 40),
              Text(
                "Login",
                style: GoogleFonts.poppins(
                  fontSize: 30,
                  fontWeight: FontWeight.bold,
                ),
              ),
              const SizedBox(height: 5),
              Text(
                "Login into your account for buying new shoes",
                style: GoogleFonts.poppins(),
              ),
              const SizedBox(height: 40),
              CustomTextField(
                text: "Enter E-mail",
                controller: emailController,
              ),
              const SizedBox(height: 10),
              CustomTextField(
                text: "Enter Password",
                controller: passwordController,
                obscureText: true,
              ),
              const SizedBox(height: 20),
              Row(
                mainAxisAlignment: MainAxisAlignment.end,
                children: [
                  Text(
                    "Forgot Password?",
                    style: GoogleFonts.poppins(),
                  ),
                ],
              ),
              const SizedBox(height: 20),
              isLoading
                  ? const Center(child: CircularProgressIndicator())
```

```
                  : CustomButton(
                      onTap: loginUser,
                      text: "Login",
                    ),
              const SizedBox(height: 40),
              InkWell(
                onTap: () {
                  Navigator.pushReplacement(
                    context,
                    MaterialPageRoute(builder: (context) => const Signup()),
                  );
                },
                child: Row(
                  mainAxisAlignment: MainAxisAlignment.center,
                  children: [
                    Text(
                      "Don't have an account? ",
                      style: GoogleFonts.poppins(),
                    ),
                    Text(
                      "Create one",
                      style: GoogleFonts.poppins(fontWeight: FontWeight.bold),
                    ),
                  ],
                ),
              ),
            ],
          ),
        ),
      ),
    );
  }
}
```

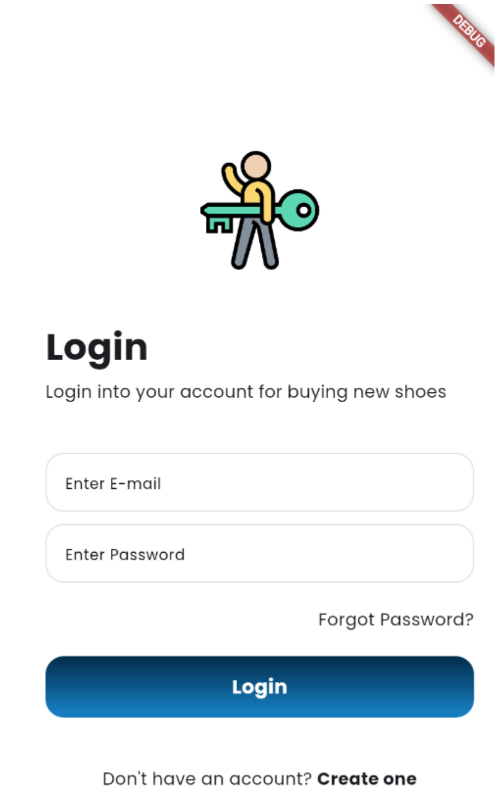
Output:



Sign up

Create an account for buying new shoes

Signup page



Login

Login into your account for buying new shoes

Login Page

Conclusion:

This experiment helped in understanding the implementation of Flutter widgets to design user-friendly UI screens. Widgets are the core elements of Flutter, and using them effectively enhances UI/UX.

GitHub Link: https://github.com/brijeshforcollege/flutter