Bharatiya Vidya Bhavan's
SARDAR PATEL INSTITUTE OF TECHNOLOGY
(Autonomous Institute Affiliated to University of Mumbai)
Munshi Nagar, Andheri (W), Mumbai – 400 058.
Department of Computer Science and Engineering

Experiment	1
Aim	To install Flutter and its dependency. Create an app of your profile including educational qualification, hobby, Technical language known, social media handles etc.
Objective	1. To install flutter. 2. To create basic app for your own profile using UI components of flutter.
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Technology used	**VS CODE, FLUTTER, DART**
Task	Part1: Installation of Flutter and its Dependencies Part 2: Create an app of your profile using your creative design.

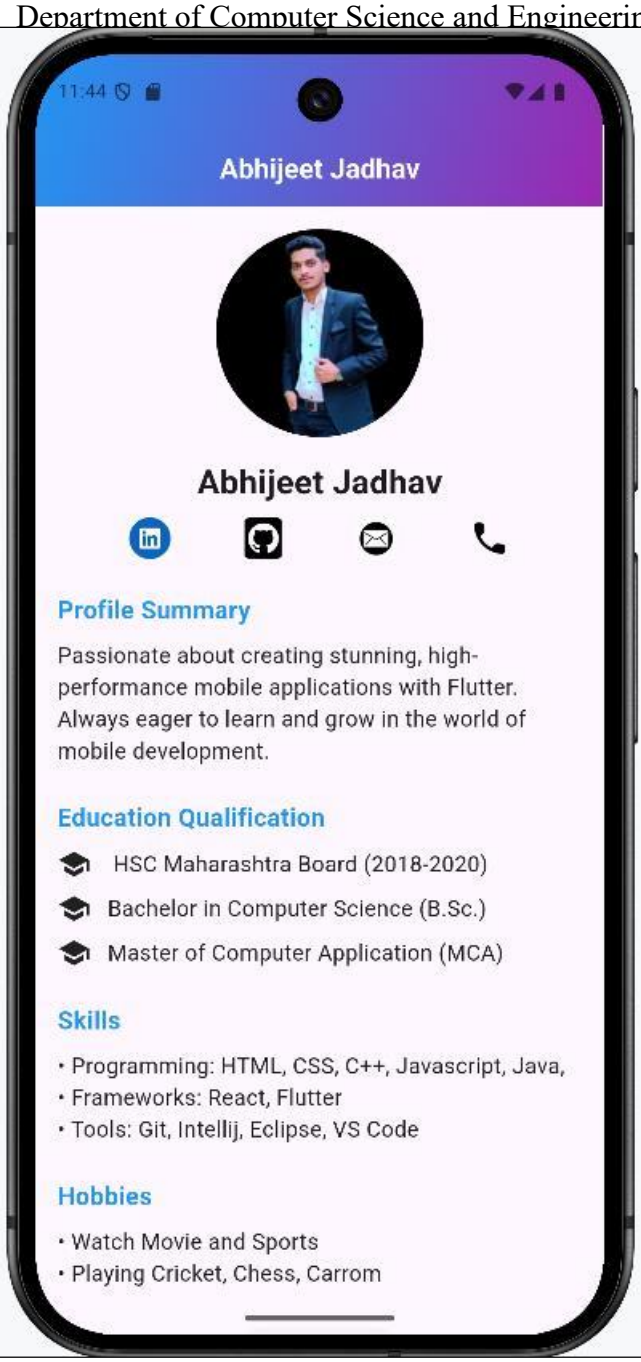
Code with proper label	**main.dart :**
	import 'package:flutter/material.dart';
	import 'package:profile/profile.dart';
	void main() {
	runApp(ProfileApp());
	}
	class ProfileApp extends StatelessWidget {
	@override
	Widget build(BuildContext context) {
	return MaterialApp(
	debugShowCheckedModeBanner: false,
	T itle: 'Profile App',
	theme: ThemeData(primarySwatch: Colors.*blue*),
	home: ProfileScreen(),
	);
	}
	}
	
	Profile.dart :
	import 'package:flutter/material.dart';
	import 'package:url_launcher/url_launcher.dart';
	class ProfileScreen extends StatelessWidget {
	@override
	Widget build(BuildContext context) {
	return Scaffold(
	appBar: AppBar(
	centerTitle: true,
	flexibleSpace: Container(
	decoration: BoxDecoration(
	gradient: LinearGradient(
	colors: [Colors.*blue*, Colors.*red*], *// Start and end colors*
	begin: Alignment.*topLeft*,
	end: Alignment.*bottomRight*,
	),
	),
	),
	title: Text(
	'Profile Page',
	style: TextStyle(
	color: Colors.*white*, *// Makes the title visible over the background*
	fontWeight: FontWeight.*bold*,
	fontSize: 20,

```
),
),
),
body: SingleChildScrollView( // Wrap the whole body with this
padding: const EdgeInsets.all(16.0),
child: Column(
crossAxisAlignment: CrossAxisAlignment.start,
children: [
Center(
child: CircleAvatar(
radius: 75,
backgroundImage: AssetImage(
'assets/images/abhijeet.jpeg', // Replace with your actual asset path.
),
),
),
SizedBox(height: 16),
Center(
child: Column(
children: [
Text(
'Abhijeet Jadhav',
style: TextStyle(fontSize: 24, fontWeight: FontWeight.bold),
),
SizedBox(height: 8),
Row(
mainAxisAlignment: MainAxisAlignment.spaceEvenly,
children: [
GestureDetector(
onTap: () => _launchURL('https://www.linkedin.com/in/abhijeet-jadhav-
026487284/'),
child: Image.asset(
'assets/images/linkeldln_icon.jpg',
height: 30,
width: 30,
),
),
GestureDetector(
onTap: () => _launchURL('https://github.com/abhijeet-jadhav'),
child: Image.asset(
'assets/images/github.jpg',
height: 30,
width: 30,
),
),
GestureDetector(
onTap: () => _launchURL('mailto:abhijeet.jadhav24@spit.ac.in'),
```

```
child: Image.asset(
'assets/images/mail.jpg',
height: 30,
width: 30,
),
),
GestureDetector(
onTap: () => _launchURL('tel:+1234567890'),
child: Icon(
Icons.local_phone_rounded,
size: 30,
color: Colors.black,
),
),
],
),
],
),
),
SizedBox(height: 24),
Text(
'Profile Summary',
  style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold, color:
  Colors.blue),
)  ,
SizedBox(height: 8),
Text(
  'A passionate software developer with expertise in Flutter, React, and
  full-stack development. Enthusiastic about creating innovative solutions
  and constantly improving skills.',
style: TextStyle(fontSize: 16),
),
SizedBox(height: 24),
Text(
'Education Qualification',
  style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold, color:
  Colors.blue),
),
SizedBox(height: 8),
Row(
children: [
Icon(Icons.school),
SizedBox(width: 12),
Text(
' HSC Maharashtra Board (2018-2020)',
style: TextStyle(fontSize: 16),
),
```

```
],
),
SizedBox(height: 8),
Row(
children: [
Icon(Icons.school),
SizedBox(width: 8),
Text(
' Bachelor in Computer Science (B.Sc.) ' ,
style: TextStyle(fontSize: 16),
),
],
),
SizedBox(height: 8),
Row(
children: [
Icon(Icons.school),
SizedBox(width: 8),
Text(
' Master of Computer Application (MCA) ',
style: TextStyle(fontSize: 16),
),
],
),
SizedBox(height: 24),
Text(
'Skills',
style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold, color:
Colors.blue),
),
SizedBox(height: 8),
Text(
'• Programming: HTML, CSS, C++, Javascript, Java,',
style: TextStyle(fontSize: 16),
),
Text(
'• Frameworks: React, Flutter',
style: TextStyle(fontSize: 16),
),
Text(
'• Tools: Git, Intellij, Eclipse, VS Code',
style: TextStyle(fontSize: 16),
),
SizedBox(height: 24),
Text(
'Hobbies',
style: TextStyle(fontSize: 18, fontWeight: FontWeight.bold, color:
```

```
Colors.blue),
),
SizedBox(height: 8),
Text(
'• Watch Movie and Sports',
style: TextStyle(fontSize: 16),
),
Text(
'• Playing Cricket, Chess, Carrom',
style: TextStyle(fontSize: 16),
),
SizedBox(height: 24),
Center(
child: ElevatedButton(
onPressed: () {},
child: Text('Edit Profile'),
),
),
],
),
),
);
}
void _launchURL(String url) async {
final uri = Uri.parse(url);
try {
if (await canLaunchUrl(uri)) {
await launchUrl(uri, mode: LaunchMode.externalApplication);
} else {
throw 'Could not launch $url';
}
} catch (e) {
print('Error: $e');
}
}
}
```

Screenshot	
Question and Answers	Answer the following Questions: **1.** What is flutter? features and benefits of flutter? Ans: Flutter is an open-source framework developed by Google for building natively compiled applications for mobile, web, and desktop from a single code base. It uses the Dart programming language and provides tools for creating beautiful, fast, and responsive applications. Flutter enables developers to create applications with high performance, flexibility, and easy of use. **Benefits of Flutter:** 1) Flutter is a free and open-source framework for developing mobile applications. 2) It makes the app development process extremely fast because of the hot-reload feature. This feature allows us to change or update the code are reflected as soon as the

alterations are made.
3) It provides the smoother and seamless scrolling experiences of using the app without much hangs or cuts, which makes running applications faster in comparison to other mobile app development frameworks.
4) Flutter reduces the time and efforts of testing.
5) It has an excellent user interface because it uses a design-centric widget, high development tools, advanced APIs, and many more features.
6) The Flutter framework offers widgets, which are capable of developing customizable specific designs

2. What is dart? why should we use dart as the programming language?

Ans: Dart is an open-source programming language which is widely used to develop the mobile application, modern web-applications, desktop application, and the Internet of Things (IoT) using by Flutter framework. It is initially designed by the Lars bark and Kespar and developed by Google.

Why to use Dart
1) Dart is a platform-independent language and supports all operating systems such as Windows, Mac, Linux, etc.
2) It is an open-source language, which means it available free for everyone. It comes with a BSD license and recognized by the ECMA standard.
3) It is an object-oriented programming language and supports all features of oops such as inheritance, interfaces, and optional type features.
4) Dart is very useful in building real-time applications because of its stability.
5) Dart comes with the dar2js compiler which transmits the Dart code into JavaScript code that runs on all modern web browser.

3. How is the basic program of dart written?

Ans:

```
void main()
{ int num = 1;
for(num; num<=10; num++) //for loop to print 1-10 numbers
{ print(num); //to print the number } }
```

main() - The main() function indicates that it is the beginning of our program. It is an essential function where the program starts its execution.
print() - This function is used to display the output on the console. It is similar to C, JavaScript, or any other language. The curly brackets and semicolons are necessary to use appropriately.

4. What do you mean by widgets?

Ans: In Flutter, widgets are the core components used to create the user interface (UI). Essentially, everything you see on the screen, from buttons to layout elements, is a widget. Widgets are used to define both the structure and style of the app.

5. What do you mean by stateless widgets?

Ans: A Stateless Widget is one that does not have any mutable state that it needs

to track. The only area of focus of a stateless widget is the information displayed and the user interface. They deal with situations that are independent of the user's input.

6. What is stateful widgets?

Ans: The widgets whose state can be altered once they are built are called stateful Widgets. These states are mutable and can be changed multiple times in their lifetime. This simply means the state of an app can change multiple times with different sets of variables, inputs, data.
Some examples can be Checkbox, Radio Button, Form, Text-field.

7. what is the structure of files in flutter?

Ans: **Root Folder:**
android/: This directory hosts Android-specific files, forming a functional Android application where developers can integrate native Android code.
ios/: Similar to the android/ directory, this contains iOS-specific files, tailored for Apple's iOS platform.
assets/: A place for images, fonts, and other media files.
lib/: The core of the Flutter application, where the Dart code lives and breathes.
1. **main.dart:** The starting point of the application
2. **screens/:** This folder typically contains the various screens of your app, helping in organizing the user interface components.
3. **widgets/:** A place for reusable widgets, which can be used across different screens or components of the app.
4. **models/:** Contains data models that the application uses, providing a structured format for your data.
5. **services/:** Used for functionalities like network calls, database interactions, and other services that the app requires.
6. **utils/:** Stores utility or helper functions, which can be used throughout the application to perform common tasks.
7. **constants/:** Keeps constant values like colors, text styles, and other constants that provide consistency across the app.
8. **test/:** Dedicated to Dart tests, ensuring your application's reliability and stability.
9. **web/:** Contains necessary files to run the Flutter application in web browsers.
10. **Linux/, Windows/, Macos/:** These directories are present for desktop-targeted applications, housing platform-specific code for each desktop OS.
11 **.flutter-plugins:** This file lists the project's dependencies.
12. **flutter-plugins-dependencies:** Provides detailed information on plugin dependencies.
13. **packages:** A legacy file largely replaced by pubspec.lock, used for package management.
14. **pubspec.yaml:** A vital file where project dependencies, Flutter version, assets, and more are declared.

8. Steps for installation of flutter. Give step by step installation. What dependent files are required.

Ans: Before installing Flutter, ensure your system meets the following requirements:

	Windows - Git, Android Studio **Download Flutter SDK ==> Extract Flutter SDK ==> Set Up Environment Variables ==>** Open **System Properties → Advanced → Environment Variables** Under **System Variables**, find `Path`, then **Edit** → Add: **Install Required Dependencies ===> Verify Installation ==> flutter doctor ==> Install Flutter & Dart Plugins in Android Studio ==> flutter run** **9.** Command to start flutter application Ans: Command to start flutter application is flutter run. **10.** Command to run flutter application Ans: To run flutter application write command flutter run. **11.** Command to sync files with emulator. Ans: To sync files with emulator command is flutter hot-reload, **12.** Command to check the issues in flutter application. Ans:To check the issues in flutter application write command flutter doctor.
Conclusion	In Part 1, we successfully set up Flutter and installed all necessary dependencies to begin app development. The process involved installing Flutter SDK, setting up the appropriate IDE (like Android Studio or VS Code), and ensuring that all required components, such as the Dart SDK and platform-specific tools (Android/iOS), were properly configured. Once everything was installed and verified, we ran a sample app to ensure the environment was working correctly. This foundational setup is essential for developing robust Flutter applications, providing the necessary tools and libraries to create high-quality apps across multiple platforms. In Part 2, we moved on to designing and building an app that represents your personal profile in a creative way. Using Flutter's extensive widget library, we implemented a design that reflects your style and preferences. Through this process, we explored key Flutter concepts such as layout, navigation, and state management. By customizing the UI with widgets like Container, Column, Row, and integrating your personal content (text, images, etc.), we created a visually appealing and interactive profile app. This part allowed us to apply the skills learned in Part 1 and further solidify our understanding of Flutter's capabilities, showing how easy it is to build a user-friendly and aesthetically pleasing app.