

PROFESSIONAL TRAINING REPORT
at
Sathyabama Institute of Science and Technology
(Deemed to be University)

Submitted in partial fulfillment of the requirements for the award of Bachelor of
Engineering Degree in Information technology

By

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DEPARTMENT OF INFORMATION TECHNOLOGY SCHOOL OF
COMPUTING
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
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APRIL 2021



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade “A” by NAAC

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JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI– 600119

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DEPARTEMENT OF INFORMATION TECHNOLOGY

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **sham venkat S (39120107)** who carried out the project entitled “**QR code generator and scanner**” under my supervision from March 2022 to April 2022.

INTERNAL GUIDE:

Dr.R.subhashini,

HEAD OF THE DEPARTMENT

Submitted for Viva Voice Examination held on _____

Internal Examiner

External Examiner

DECLARATION

I am, sham venkat S hereby declare that the Project Report entitled '**QR code generator and scanner**' done by me under the guidance of **Dr.R.subhashini** ,at Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Information Technology

DATE:

PLACE:

SIGNATURE OF THECANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to **Board of Management of SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. T.Sasikala M.E., Ph.D., Dean**, School of Computing, **DR.R.subhashini M.E.,Phd.** Heads of the Department of **Information technology** for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Project Guide **Dr.R.subhashini** for her valuable guidance, suggestions, and constant encouragement paved way for the successful completion of my project work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Information technology** who were helpful in many ways for the completion of the project.



CERTIFICATE

OF APPRECIATION



*AlgoxFusion recognizes the hard work and
dedication of*

Sham Venkat S

*for the successful completion of an online course and a mini-project on
"Flutter App Development" in association with "PRIDE - SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY" from Feb 23, 2022 to April 6, 2022.*

Prasanth P

CEO, ALGOXFUSION PVT. LTD

Certificate ID: 22SIST207

07/04/2022
ISSUED DATE

ABSTRACT

Creating a QR code scanner and generator was the main objective. We used Android Studio and VS Code to develop our application. we build flutter application with the features of scanning QR code using camera, generating QR code with text data and sharing the image file of QR code to other app using platform specific image sharing mechanism for both ios and android. we made sure this app is user friendly and easy to use by anyone at anywhere. We created various pages to split our code to make sure it looks neat. Working with this app was a huge breakthrough in our career and we learned a lot of things. This report takes us through all the details of the app we developed.

Abbreviations

- SDK – Software Development kit
- Vs Code – Visual Studio Code
- IDE – Integrated Development Environment

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CHAPTER 1

1.INTRODUCTION

1.1. Introduction to Flutter:

Flutter is an open-source UI Software Development Kit created by Google. It is used to develop cross platform applications for Android, IOS, Linux, MAC, Windows, Google Fuchsia and the web from a single codebase. First Pitched in 2015, Flutter was released in May 2017.

Flutter apps are written in the Dart language and make use of many of the language's more advanced features. On Windows, macOS, and Linux. Flutter runs in the Dart virtual machine, which features a just-in-time execution engine. While writing and debugging an app, Flutter uses Just in Time compilation, allowing for "hot reload", with which modifications to source files can be injected into a running application. Flutter extends this with support for stateful hot reload, where in most cases changes to source code are reflected immediately in the running app without requiring a restart or any loss of state.

For better performance, release versions of Flutter apps targeting Android and iOS are compiled with ahead-of-time (AOT) Compilation

Flutter's engine, written primarily in C++. provides low-level rendering support using Google's Skia graphics library. Additionally, it interfaces with platform-specific SDK's such as those provided by Android and IOS.

The Flutter Engine is a portable runtime for hosting Flutter applications. It implements Flutter's core libraries, including animation and graphics, file and network I/O, accessibility support, plugin architecture, and a Dart runtime and compile toolchain. Most developers interact with Flutter via the Flutter Framework, which provides a reactive framework and a set of platform, layout, and foundation widgets.

The Flutter framework contains two sets of widgets that conform to specific design languages: Material Design widgets implement Google's design language of the same name, and *Cupertino* widgets implement Apple's iOS Human Interface guidelines.

1.2. History of Flutter:

The first version of Flutter was called 'Sky' and ran on Android Operating System. It was unveiled at the 2015 Dart developer summit with the stated intent of being able to render consistently at 120 frames per second. During the keynote of Google Developer Days in Shanghai in September 2018.

On May 6, 2020, the Dart software development kit (SDK) in version 2.8 and the Flutter in version 1.17.0 were released, where support was added to the Metal API, improving performance on iOS devices (approximately 50%), new Material widgets, and new network tracking.

1.3 INTRODUCTION TO DART

Dart was unveiled at the GOTO conference in Aarhus, Denmark, October 10–12, 2012. The project was founded by Lars Bak and Kasper Lund. Dart 1.0 was released on November 14, 2013

Dart is a programming language designed for client development, such as for the web and mobile apps. It is developed by Google and can also be used to build server and desktop applications.

Dart is an object-oriented, class-based, garbage-collected language with C-style syntax. Dart can compile to either native code or JavaScript. It supports interfaces, mixins, abstract classes, reified generics, and type inference.

Dart 2.6 introduced a new extension, `dart2native`. The feature extends native compilation to

the Linux, macOS, and Windows desktop platforms. Earlier developers were able to create new tools only using Android or iOS devices. Moreover, with this extension it becomes possible to compose a Dart program into self-contained executables. Thus, according to the company representatives, it's not obligatory now to have Dart SDK installed, the self-contained executables can now start running in a few seconds. The new extension is also integrated with Flutter toolkit, thus making it possible to use the compiler on small services (backend supporting for example)

Use of Dart :

There are four ways to run Dart code:

Web

To run in mainstream web browsers, Dart relies on a source-to-source compiler to JavaScript. According to the project site, Dart was "designed to be easy to write development tools for, well-suited to modern app development, and capable of high-performance implementations. When running Dart code in a web browser the code is precompiled into JavaScript using the dart2js compiler. Compiled as JavaScript, Dart code is compatible with all major browsers with no need for browsers to adopt Dart. Through optimizing the compiled JavaScript output to avoid expensive checks and operations, code written in Dart can, in some cases, run faster than equivalent code hand-written using JavaScript idioms.

Stand-alone

The Dart software development kit (SDK) ships with a stand-alone Dart VM, allowing Dart code to run in a command-line interface environment. As the language tools included in the Dart SDK are written mostly in Dart, the stand-alone Dart VM is a critical part of the SDK. These tools include the dart2js compiler and a package manager called pub. Dart ships with a complete standard library allowing users to write fully working system apps, such as custom web servers

Ahead-of-time compiled

Dart code can be AOT-compiled into machine code (native instruction sets). Apps built with Flutter, a mobile app SDK built with Dart, are deployed to app stores as AOT-compiled Dart code.

Native

Dart 2.6 with dart2native compiler to compile to self-contained, native executables code. Before Dart 2.6, this feature only exposed this capability on iOS and Android mobile devices via Flutter.

CHAPTER 2

AIM AND SCOPE

The main scope of this project is to build an application of QR code generator and scanner. People can make use of this application .

The project objectives are:

- Each person can explore the every feature of the app.
- Safe and secure, it can be only read by machines.
- Quick the give response.
- They can store any type of data easily.

Reduce App Development Cost: By leveraging a single codebase, developers can develop an application for both native platforms without having to engage two dedicated development teams.

Codes are Cheaper to Maintain: Since cross-platform applications are developed with a single code base, therefore, businesses from across the world having knowledge of working

with cross-platform frameworks. By making changes and updates in one codebase you can easily maintain the app. The final changes will be automatically reflected in all the applications without having to devote extra efforts and time on maintaining the codes.

App Testing is Easier: Instead of running different applications on different platforms, developers can discover errors by merely running a single app on multiple platforms. They won't need to devote long hours on testing each mobile app.

Availability of Better Plugins: Integration of third-party plugins increase the functionality of the application and speed up the process of mobile app development. And all the leading cross-platform app development frameworks like Flutter, Cordova, React Native, Ionic are open-source technologies that provide a great source of plugins. Developers can choose from the various widgets and can meet the demand of enterprises by customizing the app leveraging useful plugin libraries.

- **HOW THE APP WORKS**

- A QR code works similarly to barcodes . Each QR code consists black squares and dots which represent different pieces of information. When scanned, the unique pattern on the barcode translates into human-readable data. This transaction happens in seconds.

- Users must scan the code with a QR reader or scanner, although nowadays most people scan QR codes with smartphones. On the off chance your phone doesn't have the capability, there are plenty of free apps for QR scanning
- Basically, a QR code works in the same way as a barcode at the supermarket. It is a machine-scannable image that can instantly be read using a Smartphone camera. Every QR code consists of a number of black squares and dots which represent certain pieces of information. When your Smartphone scans this code, it translate that information into something that can be easily understand by humans.
- Quite simply, a QR code is an encoded piece of data. The data in a QR code can be alphanumeric, numeric, binary.

CHAPTER 3

SYSTEM SPECIFICATION AND METHODS

Software and Hardware Requirements:

- 8 Gb Ram or more
- 1280 x 800 minimum screen resolution
- 8 GB of available disk space minimum (IDE + Android SDK + Android Emulator)
- x86_64 CPU architecture; 2nd generation Intel Core or newer, or AMD CPU with support for a Windows Hypervisor
- Flutter, Java and Dart required
- A virtual device must be installed to run the application (Optional)

CHAPTER 4

SYSTEM STUDY AND ANALYSIS

Analysis

Problems and Solution

There are more problems in developing an app. We faced a lot of challenges while designing the app was design color mismatch, not using a square shape but those problems could be rectified easily

Problems

During the initial phase of development, I faced a lot of hurdles such as the alignment could not be rendered properly, couldn't fix the image properly, the design could end up messy, padding was not set properly. Developing an App is not an easy task. It takes a lot of creativity, uniqueness and brainstorming sessions to come up with a nice App design. Only an App developer can talk about the challenges they go through on regular basis. App developing which

are liked and appreciated by target market and clients are mostly the result of constant development and regressive critical thinking

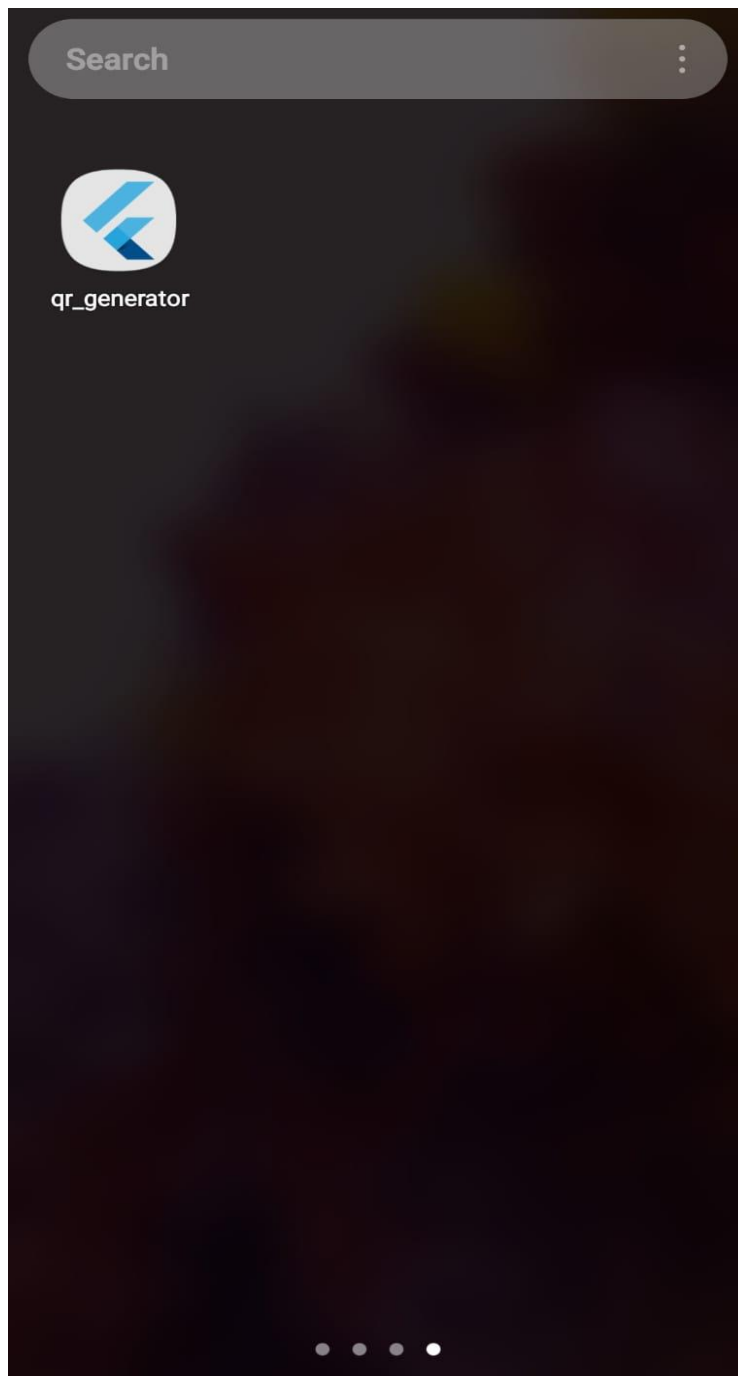
On the contrary, there are many challenges faced by mobile-app developers. One such thing is making the app load faster. During the initial phase, the app could face a lot of bugs or could load slowly or could crash. These kinds of things would irritate the client and the app could fail. One of the toughest challenges faced by app designers is making sure the app works perfectly fine and doesn't crash. Sometimes, the app may work on a one mobile and wouldn't work in another one. App developers should make sure these kinds of things doesn't happen, sometimes these issues will develop because of the structure of the mobile or due to a software. Time spent detecting the source of a problem means a delay in tackling the problem itself.

Solution:

One of the main advantages while developing an app is you can easily find solution. I learned a lot of new things while developing this application. Developing an app was challenging as well as exciting. There are lot of websites and authors who guided me throughout this course.

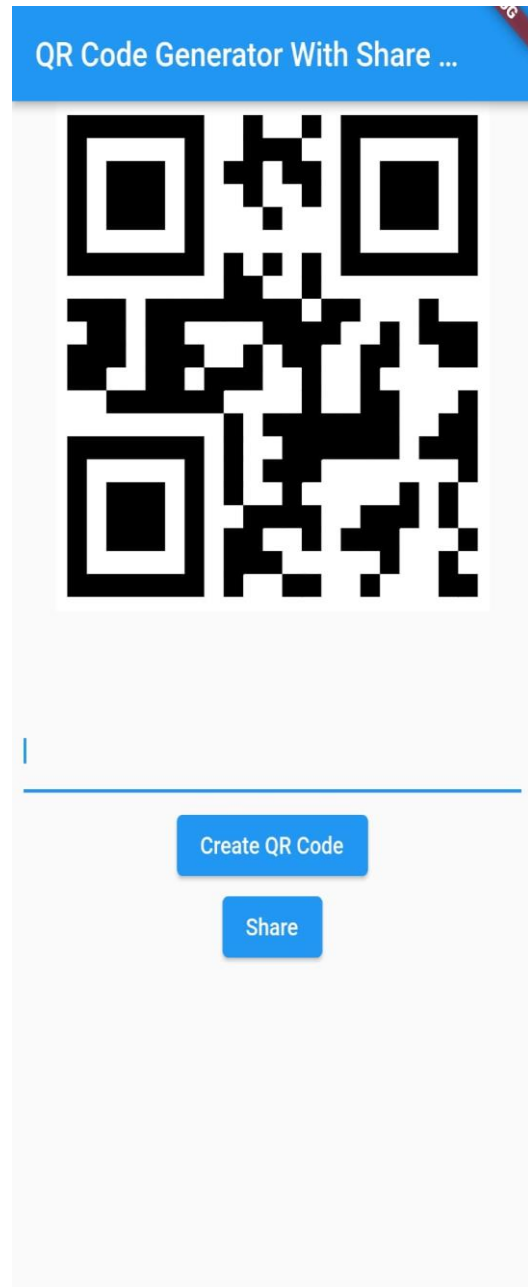
Automated website monitoring solutions often allow the developers to view their clients' websites in real time and to set alerts to notify them when potential issues begin to arise. Not only does this allow the developers to identify a problem before the customer does, in many cases it also gives them the chance to fix it before the issue has any impact on the client's business.

Application Screenshots



QR code app

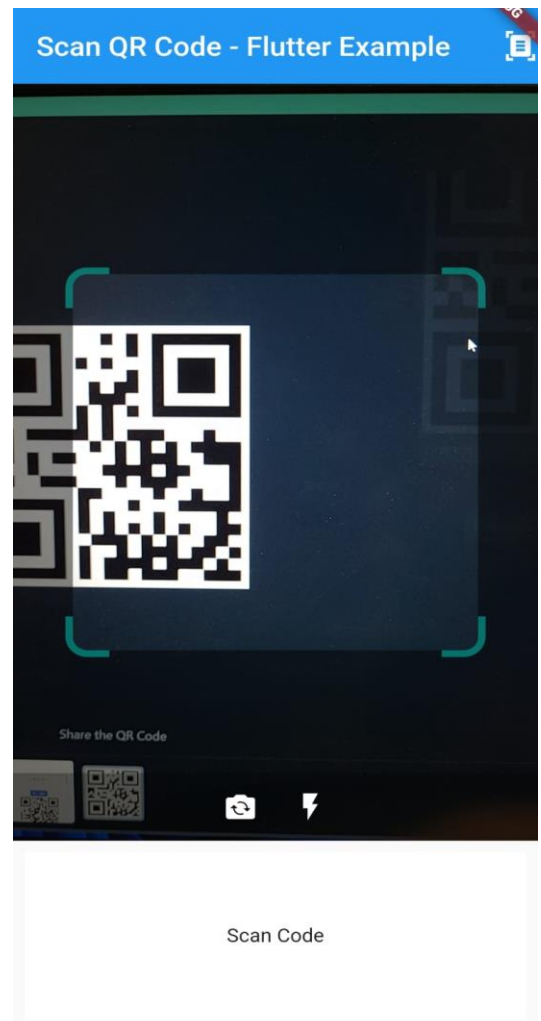
XVII



QRcode generator page



QR code generated



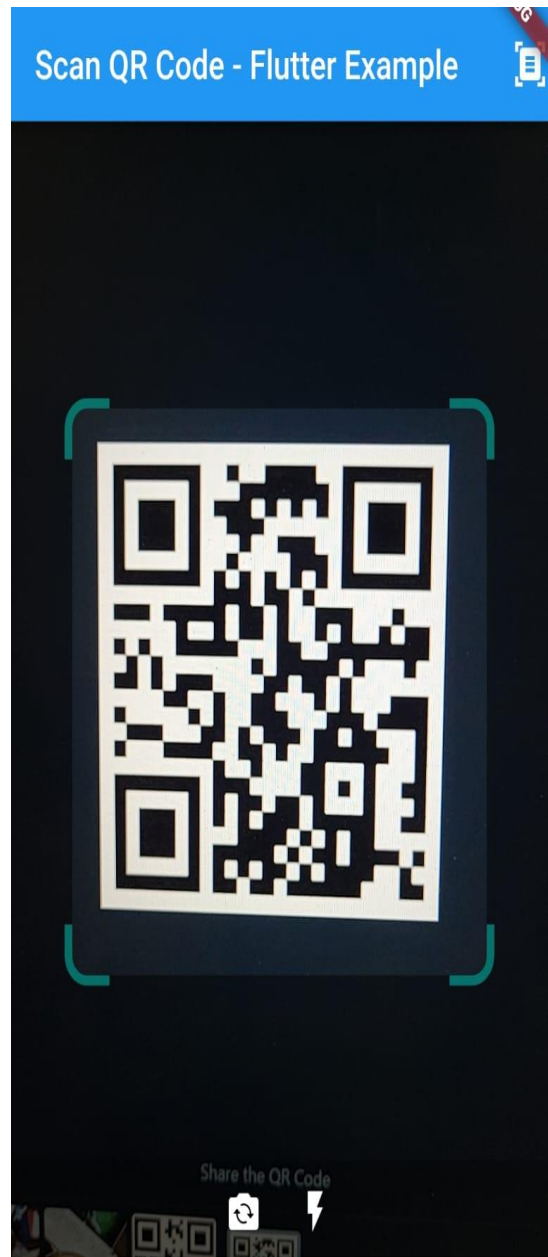
QR scanner with
Front camera
& flash

QR scanner with flash

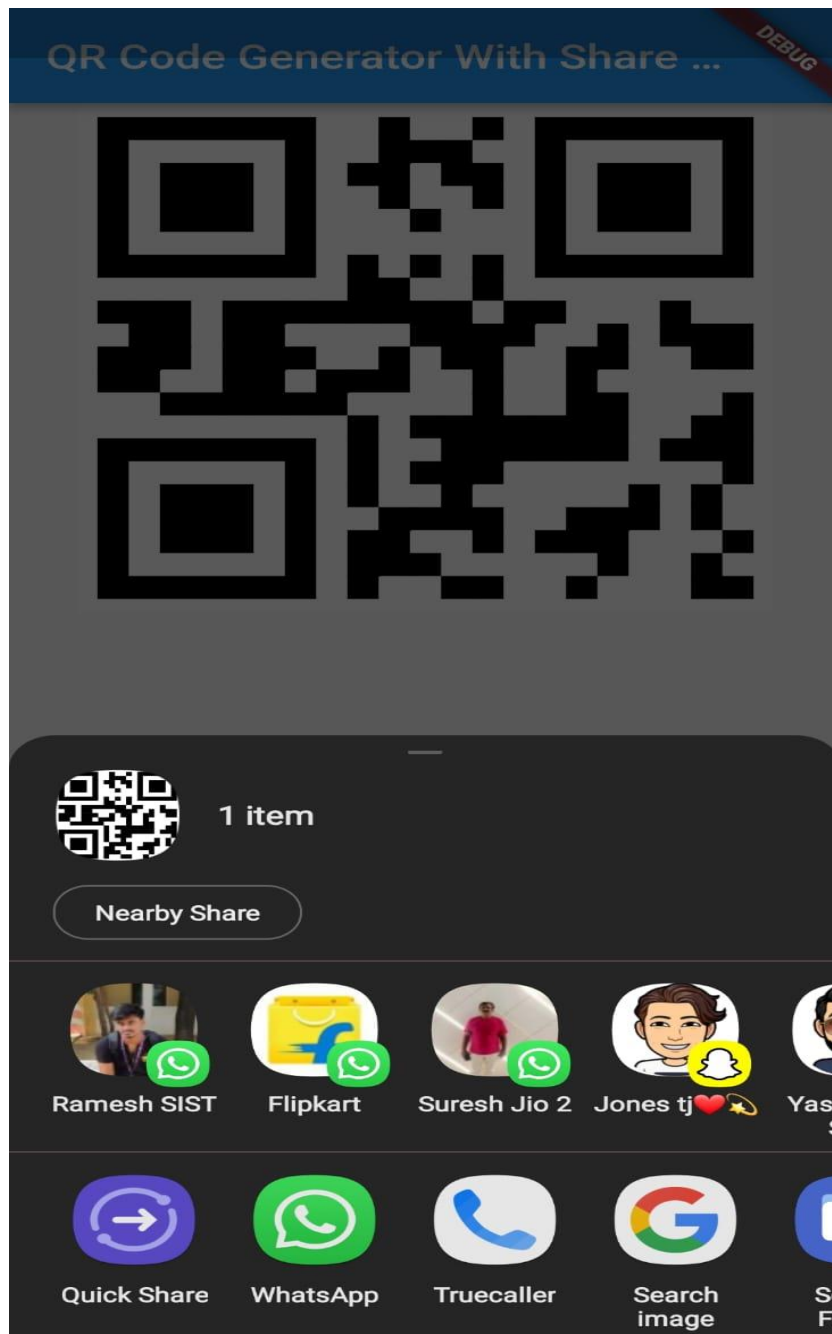


Code: shamvenkat49@gmail.com
Format: BarcodeFormat.qrcode

Scanner Result



Code: shamvenkat49@gmail.com
Format: BarcodeFormat.qrcode



QR share

Results

Learning Outcome:

- **Flutter Concepts**
- **Object Oriented Programming**
- **Creating application using flutter**
- **Dart language**
- **Usage of android studio**

CHAPTER 5

CONCLUSION AND FUTURE SCOPE

Conclusion:

As a Conclusion, I can say the internship was a great experience. Thanks to this project, I acquired deeper knowledge concerning my technical skills, but I also personally benefited. Currently, Flutter is used as a major application while developing mobile apps and it has become a popular language worldwide. If we surf the internet, we can find number of apps developed using Flutter. I learn to live in a different environment from the one I am used to. Indeed, I grew more independent in work and in everyday life. I realized that I could do more things than I thought like

learning new things by myself.

There are huge opportunities available for the students who want to work in this field. Many private and public organizations hire Flutter developers for designing mobile apps. With the rapid advent of online industry, the demand of Flutter developers is increasing, and this has created a huge job opportunity for the aspirants in the upcoming days. Also, an experienced person in this field can also work as a freelancer; there are many online companies which provide online projects to the individuals.

Future Scopes:

- Can work as a Flutter developer
- Can work as a Software Engineer
- Can work as a freelance mobile app's developer

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