Main Project Presentation

VISITOR DATA COLLECTION USING Q.R CODE

S8 CSB - GROUP 3
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Intro

Introduction

- This year the world fear epidemic COVID-19 has caused tremendous damage to our day-to-day life which thus affected our life practices and styles.
- Even though the restrictions are loosening, still the details are being collected manually when we are visiting the public places including malls, hospitals, banks and so on.
- We would like to automate this process and also bring in many needed changes in this system.

Disadvantages

- Manual work efforts required by officials and users.
- Might cause health issues
- Inefficient methods for storing,retrieval and managing datas
- Backtracking is difficult for large numbers.
- Cannot guarantee complete notification to others.

Literature Survey

A. QR Technology

- Author : **Sumit Tiwari**

- A QR code is a type of matrix bar code or two-dimensional code that can store data information and designed to be read by smartphone.
- The QR code system consists of a QR code encoder and decoder.
- Each QR Code symbol shall be built of square modules arranged in a regular square array and shall consist of function patterns and encoding region.
- High data density, robustness, readable from 360 degrees at high speed and the ability to encode codes.
- in this project,use of QR code allows for efficient intake of data rather than manual entering.

B. AROGYA SETU

- Authors : RAJAN GUPTA, MANAN BEDI, PRASHI GOYAL

- Aarogya Setu, developed as a part of the E-Governance initiative, to track and sensitize the citizens of India in a joint battle against COVID-19 spread.
- informs the user whenever they come in contact with an infected person through Bluetooth and GPS location services and is not disclosed.
- There is also a “Self-Assessment Test”that shows the risk level for the user in different color codes
- In this project, proposed system is used for tracking the individuals by taking the scanned data.

C. Firebase

- Authors : **Chunnu Khawas, Pritam Shah**

- Firebase is a Backend-as-a-Service — BaaS — that grew up into a next-generation app-development platform on Google Cloud Platform.
- The Firebase Realtime Database is a cloud-hosted NoSQL database that lets you store and sync data between your users in realtime.
- Apart from database, it also provides functionalites like Real-Time Analytics, Cloud Messaging etc.
- In this project, Firebase is used as the main database. Also to alert specific users, the cloud-messaging functionality is used.

D. Virtual Queuing System using Cloud Computing

- Authors : **Chetan Sharma, Indira Joshi**

- This Application automates the process of manual queue and eliminate the need for standing in such long queues by using virtual tokens.
- Works by using a live token system using cloud hosted real time databases.
- This paper discusses on the idea of eliminating manual-queues and using the idea of Virtual-Queues.
- In this project, a small inspiration of Virtual-Queuing is taken, as this project also tries to eliminate the manual queuing.

Journals

Reference	Advantages	Disadvantages
[1] An Introduction to QR Technology	- Omnidirectional - Fast Scanning - Small Size - Huge Capacity	- Need of QR code scanner - Security issues - Lack of public awareness
[2] Arogya Setu App: Case Study	- Wide range of uses - Tracking of data - Awareness	- Privacy concerns -changing guidelines

Journals (Contd.)

[3] Application of Firebase in Android App Development - A Study	- built-in email/ password authentication system - easy-to-use hosting services	- app runs on one centralized database - Storage format entirely different to that of SQL.
[4] Virtual Queueing System using Cloud Computing	- Reduces wait time - Client Satisfaction - Increase Sales - Decrease Spread of Disease	- Limited Ability - System Errors - Internet Connection - Cost

Problem Statement

Problem Statement

- In the existing system, Data-Collection of visitors at public places is done manually.
- Moreover, the storage of these manually collected data can be a issue in the future.
- Other disadvantages can be waiting in queues, avoiding Social-Distancing norms etc.

Proposed System

Proposed System

- Proposed System consists of an Android application made using Google Flutter.
- An Android application where a user can enter his data into the application, generate QR Code based on data given and also share the data using QR Code.
- Application has an **Admin Login** and a **User login**.
- Admin has an QR-Code scanner and user has a QR-Code generator.

Methodology

- A user can login into the application and enter his/her personal data like Name, Address, Phone Number etc.
- The user can use the feature of local data storage so, only one time entry of details is needed.
- Whenever the user visits a public place, this application is used to generate a QR Code based on the given data.
- At the time of visit, the user uses the application to generate QR Code and shows the QR Code to the Officer at the public place.

Methodology

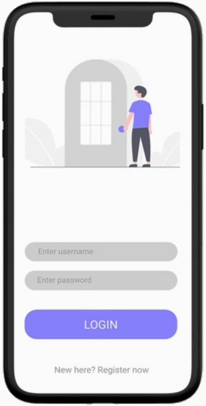
- The Officer at the public place has an Admin version of the same application that has QR Code reader in it.
- Admin user can scan the QR Code from the user, thereby get the data from the visitor and can upload them to the online-database.
- Thus the details are saved to the location where the Admin wants and can be easily accessed at the time of need.
- One of the use-cases of data thus collected can be that if any of the visitors has been reported positive, notification could be sent to all visitors who were there at the same time.

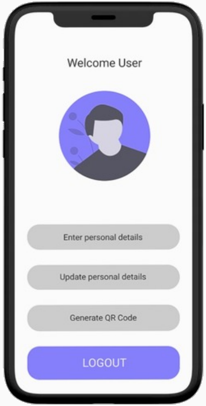
Software Requirements

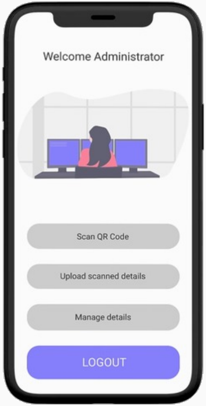
Software Requirements

- Front-End -> Flutter Framework
- Back-End -> Firebase
- Languages Used -> Dart
- Database -> FireStore, Hive
    - For local data-storage -> Hive database.
    - For local notifications -> Google-FireStore.

Application Prototype

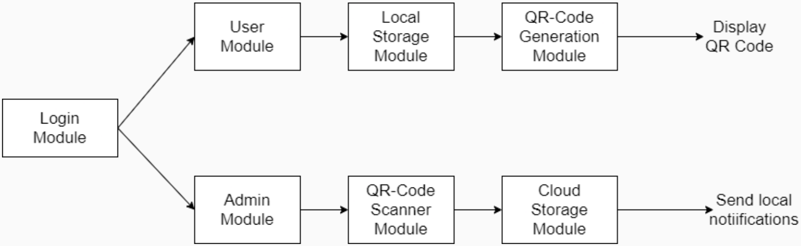






Modules

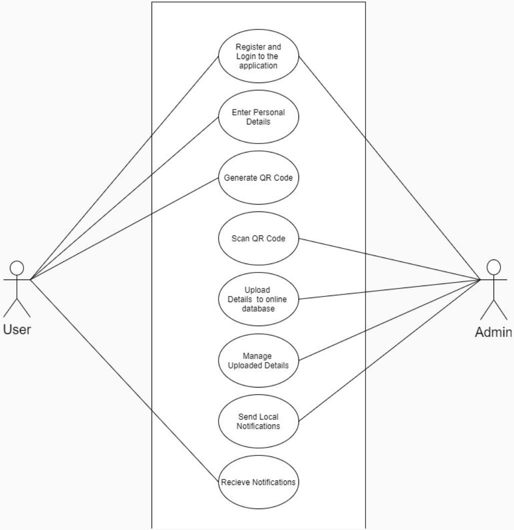
Modules



Different modules in the application

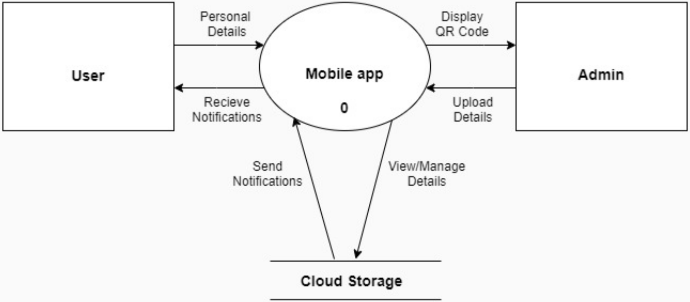
Diagrams

Use-case Diagram



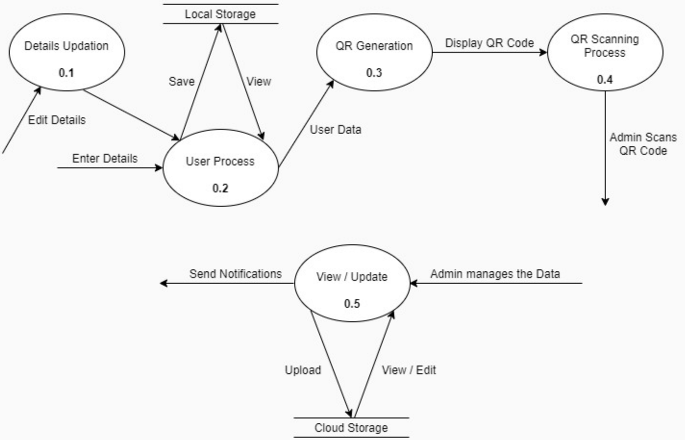
Use-Case Diagram

Level-0 Dataflow Diagram



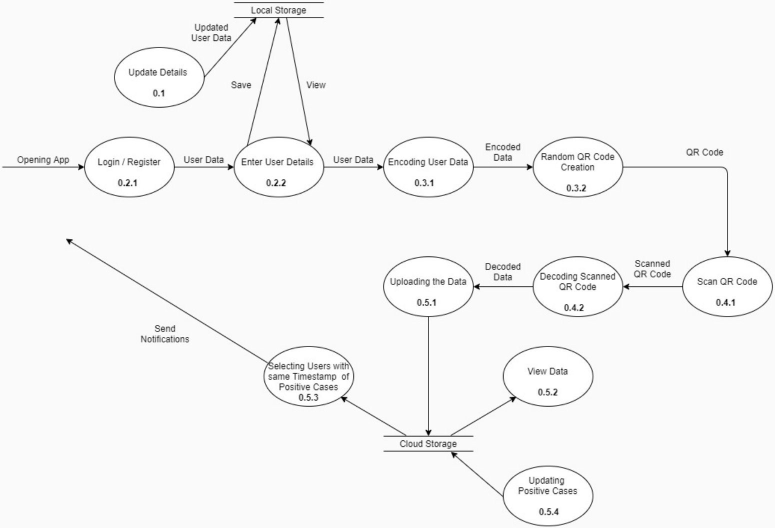
Level-0 Data Flow Diagram

Level-1 Dataflow Diagram



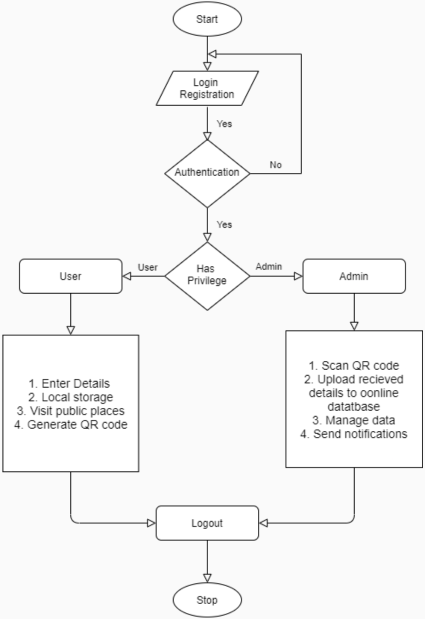
Level-1 Data Flow Diagram

Level-2 Dataflow Diagram

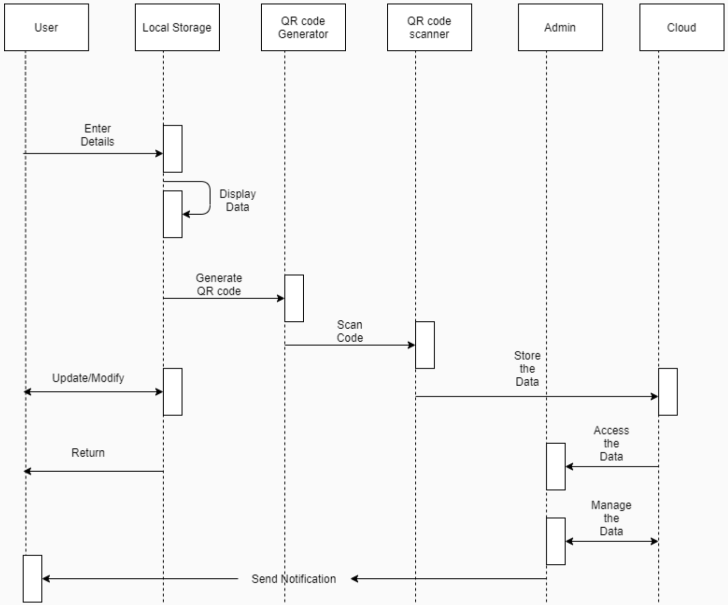


Level-2 Data Flow Diagram

Flowchart


Start
Login
Registration
Yes
Authentication
No
Yes
Has
Privilege
User
Admin
User
Admin
1. Enter Details
2. Local storage
3. Visit public places
4. Generate QR code
1. Scan QR code
2. Upload recieved
details to oonline
datatbase
3. Manage data
4. Send notifications
Logout
Stop

Sequence Diagram



Advantages

Advantages of Proposed System

- Efficient means of Data-Collection with one time entry.
- Visitor-Data is saved to an online database like Google Firebase. No problem of security.
- No violations of Health-measures occur. This process is time-efficient.
- Local notifications can be provided to the visitors easily.

Algorithm

Steps to add Packages in Flutter

1. Go to the website https://pub.dev/ Here we can find and use packages to build Dart and Flutter apps.
2. Search for the package you want.
3. Copy the name of the package.
4. Paste the package name in the packages section of the pubspec.yaml dependency file.
5. Now run the command flutter pub get to get and add the packages to your project.
6. Import the package in the file needed and use as per its documentation.

QR Generation Algorithm

1. Add the package qr_flutter to the project.
2. Import the package in the required file using statement import 'package:qr_flutter/qr_flutter.dart';
3. Now retrieve the data from the local database, Hive using statement visitorBox.getAt(0). This would return the data saved at the 0th index in our database.
4. Save the retrieved data to a string variable.
5. Now call the QR Scanner builder using its instance widget QRImage();
6. Pass the string that has the data to generate the QR Code to this instance widget.
7. Optionally we can also give different parameters to this widget such as QR version to use, Background color, Foreground color, Size of the QR Code, Error builder in the case of a run-time error, etc.
8. This would generate a QR Code as per the data and parameters given.

QR Scanner Algorithm

1. Add the package barcode_scan_fix to the project.
2. Import the package in the required file using statement import 'package:barcode_scan_fix/barcode_scan.dart';
3. Create a String variable qrCodeResult. This String is used to store the QR Scan result or run-time errors caused during the QR Scanning process.
4. First, the qrCodeResult is assigned a value of "Visitor details not yet Scanned" as no scanning has previously taken place.
5. Create an asynchronous function _scanQR and within the function:

5.1 Try the code BarcodeScanner.scan() This would return the decrypted QR result as a string in the case of a successful scanning. Set the resultant string to qrCodeResult and display this string output. This is a successful case.

5.2 In case if the user has not given the Camera permission, PlatformException occurs. Catch the exception and set qrCodeResult as ”Camera permission was denied”. Display this error caused to the User

5.3 In case if the user pressed the Back button without scanning anything or in the case of Unsuccessful scanning, FormatException occurs. Catch the exception and set the qrCodeResult as ”You pressed the back button before scanning anything”. Display this error caused to the User.

5.4 In case of other run-time errors, catch the error and set qrCodeResult as ”Unknown error”.

6 Display the content that’s present in the qrCodeResult to the User either the successful decrypted QR result or some error.

Gantt Chart

Gantt Chart

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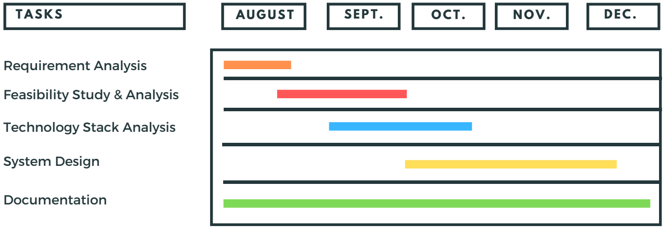
FIRST PHASE GANTT CHART



Gantt Chart

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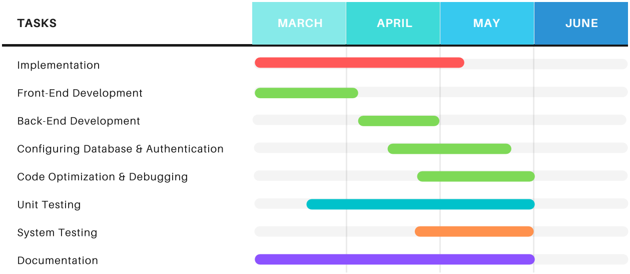
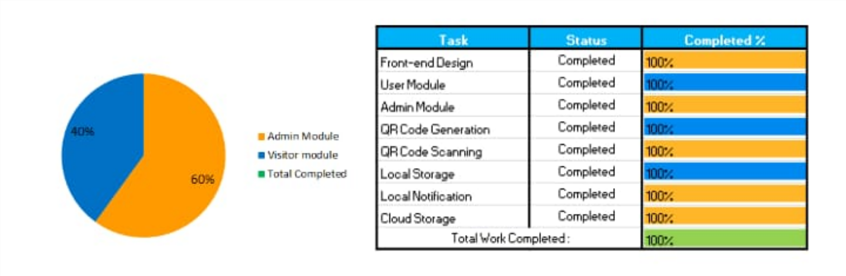
Second Phase Gantt Chart



Implementation

Completion Status

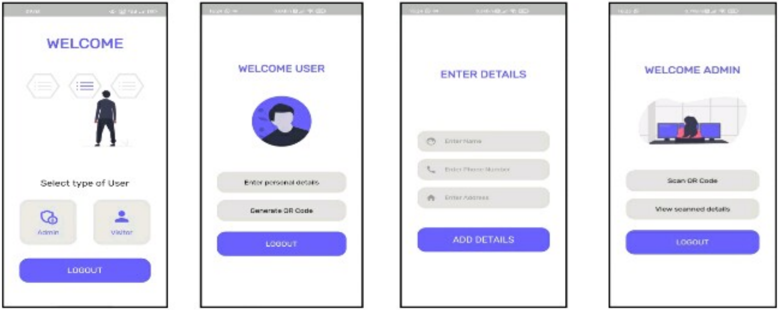


Task	Status	Completed %
Front-end Design	Completed	100%
User Module	Completed	100%
Admin Module	Completed	100%
QR Code Generation	Completed	100%
QR Code Scanning	Completed	100%
Local Storage	Completed	100%
Local Notification	Completed	100%
Cloud Storage	Completed	100%
Total Work Completed :		100%

Team Contribution

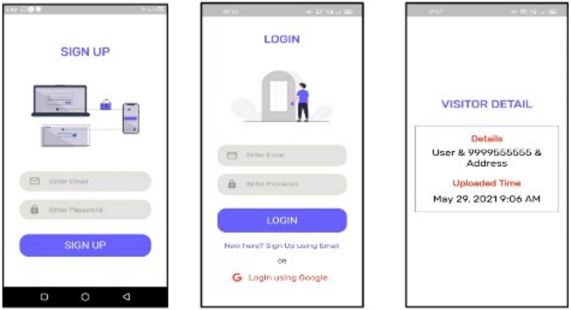
- Front end Design and login validation- Lakshmipriya R
- Login, signup (Front-End) and validation - Salu K.L
- Qr code scanner, generator & Online database - Rahul Mahesh
- Local database & minor frontend development and local notification - Abhijith K.D
- Local database & minor frontend development and local notification - Muhzin Nassar

Implementation



(a) Homepage (b) User options (c) User details (d) Admin Options

Done by Lakshmipriya R



Details

User & 9999555555 & Address

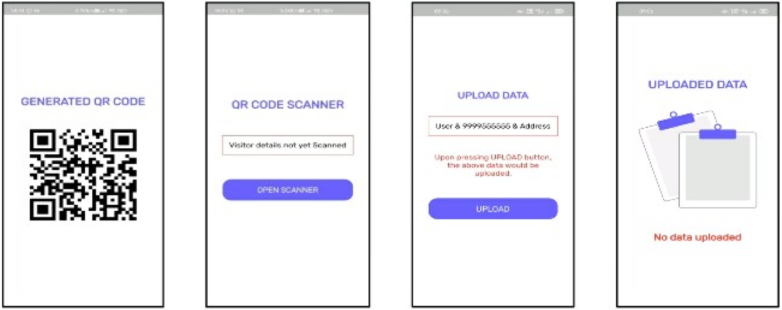
Uploaded Time

May 29, 2021 9:06 AM

(a) Signup (b) Login (c) Visitor Details

Done by Salu K.L

Implementation



GENERATED QR CODE

QR CODE SCANNER

Visitor details not yet Scanned

UPLOAD DATA

User & 9999555555 & Address

Upon pressing UPLOAD button, the above data would be uploaded.

UPLOADED DATA

No data uploaded

(a) QR Code Generation (b) QR Code Scanning (c) Upload Data (d) Uploaded Data

Done by Rahul Mahesh

References

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1. Sumit Tiwari , 2016 “An Introduction To QR Code Technology”,. [Online]. Available: *https://ieeexplore.ieee.org/document/7966807*,
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4. Chetan Sharma, Indira Joshi Dilkap, 2020 “Virtual Queueing System using Cloud Computing” [Online]. Available: *https://www.irjet.net/archives/V7/i5/IRJET-V7I5137.pdf*

THANK YOU