



IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

e-ISSN: 2319-8753 | p-ISSN: 2320-6710



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 7, July 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569



9940 572 462



6381 907 438



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A Novel Approach of Digital License and Vehicle Tracking for RTO Management using Firebase

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ABSTRACT: Just imagine what happens if you are pulled over by a Traffic sergeant, and you did not have your driver's license with you. Without it, you cannot drive a vehicle on public roadways so it is possible for cop to fine you. Therefore, it is important for you to carry your Driver's License everywhere. On the other side, it is hectic job for a Cop to verify if the Driver's license is original, is it valid, or is the driver has punishments pending. To overcome all this issues Digital License Digital-V is used to access digitally stored license details of all users in Firebase database, which is retrieved as JSON objects through Java Programming language.

Where in this application you can store your personal information in an encrypted format. To date, online storage has become one of important tools for document storage and management. Online storage has reduced the dependency to the storage devices that are bound to size limit, cost and risk. A part of the storage capability, online storage can be used to share documents by allowing others to access the individual or a group of documents. In this study online storage namely Digital-V has been used to store digital media such as PAN card, Aadhaar card, Driving License, etc. Thus, the use of Hard copy can be reduced. In addition the documents can be safely kept and access at any time and location that are connected to the internet.

Searching a suitable parking space in populated metropolitan city is extremely difficult for drivers. Serious traffic congestion may occur due to unavailable parking space. Automatic smart parking system helps us to find the nearby parking place.

I. INTRODUCTION

For decades, driver's license is being existing; the reason it is being playing an essential role is because mandatory rule for the drivers to have a Driving license with him or her whenever and wherever he or she travels else they can be fined or can also be charged for it. Therefore, it is important for a driver to carry the license every time. However, what if the driver has lost, stolen, or damaged his license? On the other hand, if he has forgot to carry his license from home or workplace.

On the other side, the details of each and every person's driving license is stored in database that is accessible only by the cop or traffic police who catches a driver when they (the driver) bar the traffic rules. Therefore, it is necessary for a cop to have a quick access to the database where any punishment can be able to add on him or her and can have a view on his previous or pending punishments. This is a vague process to access the database through a website and there is possibility that the cop cannot check the originality of a license or the validity of the license quickly.

Nowadays Android app has become common and very essential in our daily life and every person carries a phone with him so having this in mind, Digital-V is an android mobile app that can downloaded by every user and by using this anyone can generate there Virtual driving license and show that to the cop.constraint of space, storage and processor, thus make it "unlimited" to everybody. The online storage can be used to store and backup documents, automatically synchronized the content, and content management facility to manage the content online. Various online storage has been introduced such as Google Drive, Makayla, JustCloud., OpenDrive, MyDrive, Dropbox, and many more.



Also, Cloud computing technology has reduced the constraint of space, storage and processor, thus make it “unlimited” to everybody. The online storage can be used to store and backup documents, automatically synchronized the content, and content management facility to manage the content online. These features are considered vital to secure, protect and easy access to the documents from any location. Online storage has potential to be used in conjunction to the traditional storage method that relies on the storage devices. Storage devices are traditional prone to virus, damage, missing, limited space, high cost and etc.

And, now a day's most of the parking areas are manually managed by human manpower and there is no automatic system to manage the parking area in an efficient way. There is great analogy that when a driver enters any of the parking lot he must look for some kind of information board that tells him about the status of the parking lot that whether it is fully occupied, partly occupied or vacant. Most of the times the drivers have to circle around the parking area in search of the free parking space.

This kind of problem mostly occur in cities near the shopping malls, hospitals etc., where the number of vehicles is greater as compared to the parking spaces. The process for searching the free parking space is time consuming and also wastage of fuel. Most of the times the parking spaces remain unoccupied, however the total occupancy is low because of bad management of parking lot. This causes ineffective use of the parking area and also results in traffic jams and congestion near the parking lots. To properly manage the parking lot and display each parking division's information to the drivers before entering the parking lot have become an important issue to be resolved. Via this app, a system is proposed that will detect the total number of available parking spaces and displays the information to the drivers so that they can easily parked their cars.

II. BACKGROUND AND RELATED WORK

Firebase the technology that used in this solution is Upgrade to old version of google cloud messaging that use their own console to push notification to Mobile Application Throw ID of Application that created in the Google Cloud Messaging server and now google is officially use Firebase as New Version of google Cloud Messaging because GCM Message delivery is unpredictable this New Version is Very Easy and have powerful features.

A typical implementation of Firebase Cloud Messaging system will include an app server that interacts with FCM (Firebase Cloud Messaging) either using HTTP or XMPP protocol and a client app. Messages and notifications can be sent to the client app using the app server or the Firebase notifications console. Briefly FCM makes android cloud messaging very easy especially for beginners in android development.

III. METHODOLOGY

The design is based on International Journal on Multimedia and biquitous Engineering, which focus on creation of android app with the use of SDK. Digital license mv is an android app that is designed to be used by traffic sergeants to check driver's licenses and its originality.

The Registration processes for each cop are done through a webpage that stores Cop's ID and other such details in a

- In this system, firebase cloud messaging technology is used to send data to applications, which can change the behavior of the application according to the type of data that sent to the application.



- The data that send to the Mobile Application can be for one user using token id, or specific group, or all users. The data is send as notification that contain information represented as JSON (Key-Value pairs) that will be extracted by a programmer from This Data Message and data message in this solution could be collected from other source or other database.
- In this system the data will be sent as JSON format to extract the information from it through Mobile applications, this system can handle more than one application and send more than one user at the same time. Data could be send to single device or number of users who follow a specific group or to all users.
- This system can manage the applications that was added to in the local database and control the messages that related to specific applications by deleting, adding or modifying Via this system.

IV. EXPERIMENTAL STUDY

The design is based on International Journal on Multimedia and Ubiquitous Engineering, which focus on creation of android app with the use of SDK. Digital-V is an android app that is designed to be used by traffic sergeants to check driver's licenses and its originality. The Registration processes for each cop are done through a Database manager person that stores Cop's ID and other such details in a database table. To maximize security, standard encryptions have been done over the server side. The cop simply needs to login into the Digital-V App by providing their login credentials. Once the cop successfully logged in into his account, complete access to the license details database table is provided to the app. Therefore, cop can check licenses by simply providing D.L. number or driver's mobile number. Similarly, drivers need to register themselves by providing license details in order to avail the Digital-V feature. JSON (JavaScript Object Notation) is a lightweight data interchange format, used for storing and exchanging data. Briefly, it gives us a human readable collection of data that we can access in a logical manner. The app and Database can make use of this JSON responses and requests to function the app.

Now, the above architecture diagram explains how the app designed. As shown, Login screen comes as the first activity to authenticate cop. In the login screen, the cop gives the necessary credentials to the app. These data are passed via network to the server in order to validate the login request.

When the cop is authorized to access the app, main screen appears. The driver details can be fetched using two ways – DL Number (Driving License) which is unique for each license holder or pre-registered Mobile Number.

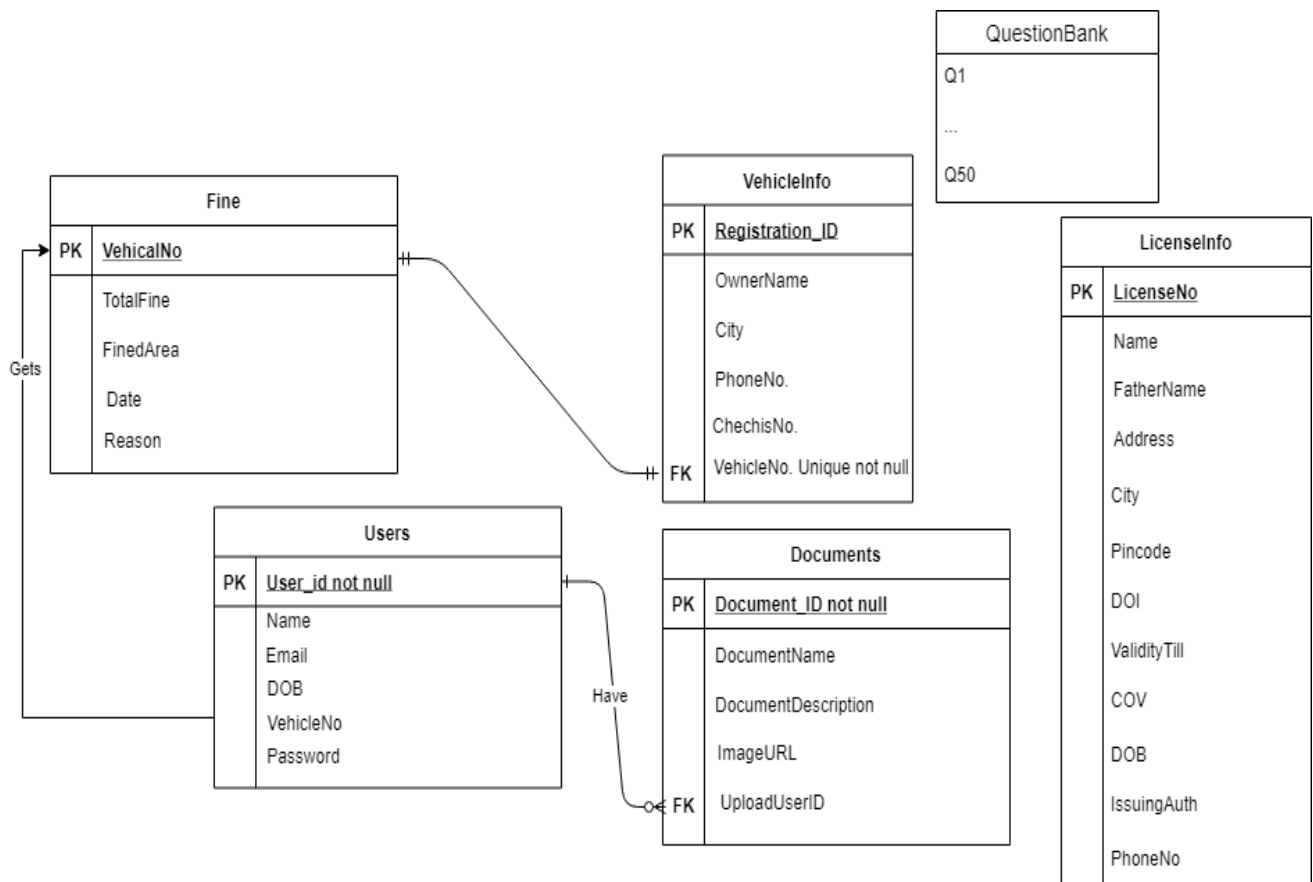


Fig. ER diagram of Digital-V

Now, the above ER- diagram explains how the app designed. Where, Login screen comes as the first activity to authenticate cop/user. In the login screen, the cop/user gives the necessary credentials to the app. These data are passed via network to the database in order to validate the login request. When the cop/user is authorized to access the app, main screen appears. The driver details can be fetched using two ways –DL Number (Driving License) which is unique for each license holder or pre-registered Mobile Number. The App sends request to the backend service that processes query about a particular user and returns the required data in a JSON string and object format, which can be received and parsed using JSON parses class, which extracts data from the received JSON object. After a quick check of credentials either DL no or the Mobile number the app processes the data based on query and by doing so the user information will be prompt and Authorize person can fine that particular user without catching him.

This is a Login screen where user wants to enter their Email and Password then, Click on Login!

Fig 3. Login Page Screenshot

This is a registration screen where user wants to enter their Name, Email, Vehicle No., DOB and Password then, Click on register!

Fig 2. Register Page Screenshot

V. WORK FLOW

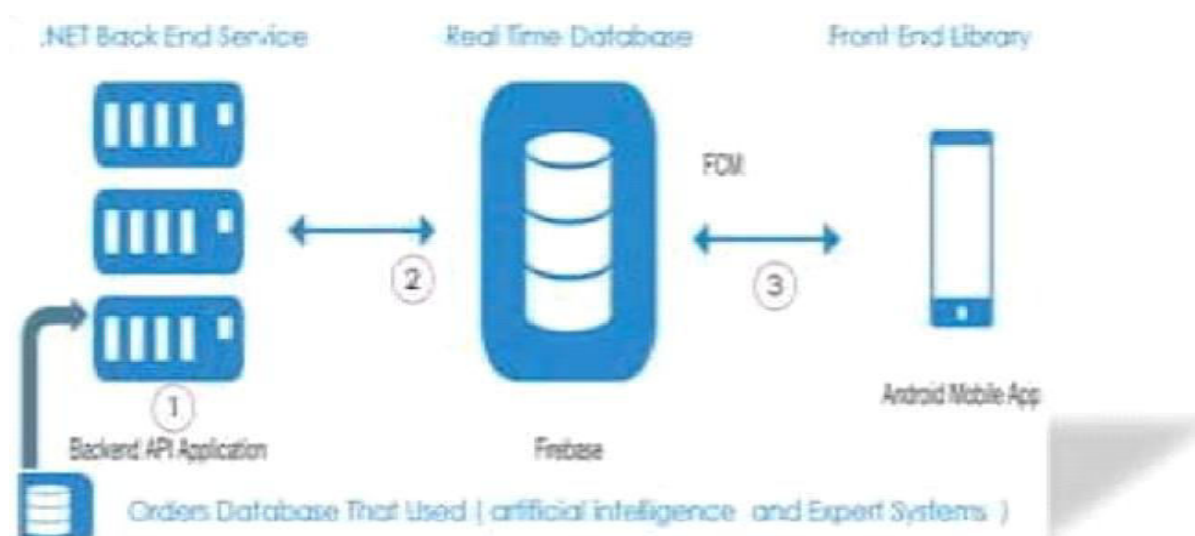


Fig. The Proposed Scenario work flow

This figure explain how the Data is Send from the Back End Application to Mobile device as data message throw the Firebase Cloud Messaging Using The Application that Made using C# and sql server to manipulate the Data of

Applications and messages .in the beginning of this scenario the developer create an application on Firebase website after that the developer copy the app id from Firebase Console and then store this id as new firebase application in the developed Application and then create data message using data message generator method in the developed application and then the developer edit or send this data message to device's that run the mobile application that need to push this data to it as FCM notification .

The developer must handle this data message in the app when he received this data as preface or file and store this data as key value then use this key value to change the behavior of the mobile application.

VI. CONCLUSION

As a conclusion, we get some result that is the proposed system can help the developers to send update faster to mobile application using FCM with efficient and less effort and Some recommendations have been made to improve the proposed system in the future where it is preferred to save these commands directly without needing to apply this Data from the user, and save this data directly when notification is received in the mobile application and convert this application from desktop application To web application to be more sharable to any developer from any ware any time.

The number of driver's license frauds and forgeries can be reduced or completely eliminated with the help Digital-V App. The driver's license is very crucial and important in order to drive motor vehicles on public roads. It is



more to forget license at home or workplace, or pretend to forgetting license at home to escape from Cops. Driver's license scams cannot be identified when it is done for smaller reasons like applying for SIM cards. Digital-V is simple and powerful to manage and access license details of all users digitally and securely. In addition of this Digital-V provide feature like finding Near-by parking place, Store document securely in encrypted format, having user friendly UI for accessing everything very quickly. By using dashboard user can edit document entity.

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**Impact Factor:
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