

VEHICLE DETECTION AND MANAGEMENT SYSTEM USING QR CODE SCANNING

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Abstract - QR, that is "Quick Response" code applied different application streams such as marketing, security, academics etc. This paper is about implementing QR code-based vehicle detection and management system. QR technology useful for buildings, malls, airport, college, security parking etc. code provides high data storage capacity, fast scanning and damaged code can read successfully. The code consists of unique id which is decoded using Smartphone. This application is designed for colleges. This application able to show vehicle entry and exit time, correct parking slot. In addition, it is also checking the vehicle is registered in the organization or not from the database.

Keywords: -QR CODE

INTRODUCTION

Day to day life number of vehicles increasing, different organization has different set of vehicles. The organization such as college, hospital, shopping malls, etc. They have basic alert system which protect from unauthorized entry of vehicles. In daily life the number of crimes increased which related to vehicle details. missing of vehicle thus lack in the security of the system

The problem is solved using QR code vehicle detection and management system. QR code method is weightless, less expensive, fast and accurate as compared to other systems.[7][3] The code is easy to connect with android system. Consist of matrix bar code of two dimensional, which can be read by using Smartphone.[5]

The QR code can store large amount of data such as text, uniform resource locator (URL), email where the data can be fetched. The code is a matrix form, so it can be scanned any direction horizontal and vertical and it is a black module with white as back side.

The registered vehicle details stored in the database. When QR code is scanned using camera of Smartphone the stored data are decrypted. The system aims to avoid the entry of unauthorized vehicles into the organization and provide effective parking method [4].

During the process of scanning, notification produces on system when unauthorized vehicle enters to the organization. Each and every vehicle are monitored and data will be stored in the database of the system. The identity of vehicle is shared to organization on registration. So, each vehicle can register before enters

to the organization using user application and corresponding bar code id can be generated.

The different organization provide different functionalities. Depending upon how much hour the car may present. In daily life maintains of vehicle is important. The organization like shopping malls, theater, apartments are providing facility more convenient to the users, thus they become a prime location for people for entertainment and shopping in one go.

First users can register their vehicle using user application, generate QR code. Then user can apply for the functionalities. The application mainly considers for institutions. The institution will have live records of vehicle entering and leaving from the campus. The vehicles can be categories in to student, faculty, and higher authorities of the institution. Here the admin or security of institution plays an important role rescanning the QR code generated and storing it in the database. The person with unauthorized vehicles does not permit inside the college campus. It provides high security, data retrieved using unique id.

While using this application the organization can strictly monitor the vehicles inside the parking area and get complete details of vehicles. So, the system can be defined as it is a strictly monitored vehicle management system using QR code scanning.

1. METHODOLOGY

A. QR code Standard

QR code is a two-dimensional code that store large amount of data compared to ID barcode. QR code utilizes encoding methods of information numeric, alphanumeric, byte/paired. A QR code consist of black squares arranged in a white background which can be read by an imaging device such as camera and processed using Reed-Solomon error correction until the image can be appropriately interpreted.[7]

The required data is then extracted from patterns that are present in both horizontal and vertical components of the image. The Smartphone is used to read the data stored in the code. The data decoding takes place quickly, so the names comes Quick Response code.[3] User application the QR code is generated The QR code system consist of data encoder and data decoder. The encoder responsible for generation of QR code and

encoding data. The decoder is responsible for decode the data from the QR code.

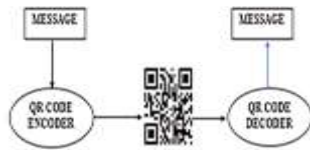


Fig.1 Overview of QR Code

Figure (1) shows overview of the QR code working. The data, URL, given to the QR encoder and it generate corresponding QR code. When we want to access the data QR code is decoded using decoder and retrieve the data of QR code.

B. USER Application

The application is designed for the users, mainly consist of registration form and selection of organization required. The user can fill the basic details according to the requirements. The verification procedure is done by the client side as entry of vehicle to their respective zones.

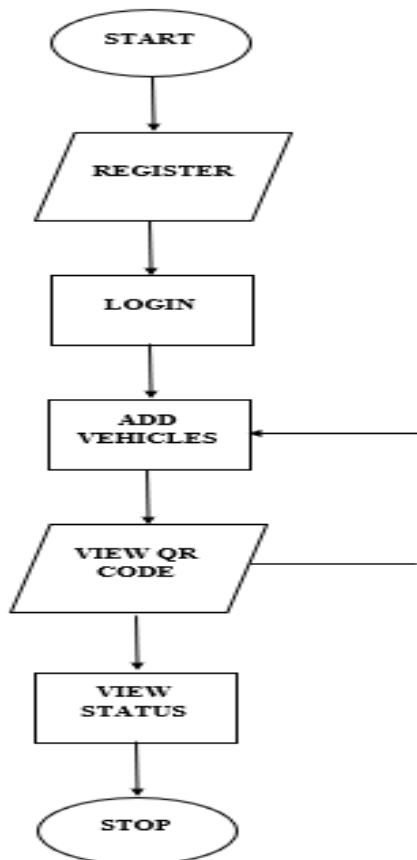


fig.2 flow chart of the user module

When the registration is completed the details are stored on the database of the respective organization. This

application is developed for the convenient of user, security reasons crime occurred in the vehicle missing as such. The user can also check for the past status of vehicle in the history provided in the application.

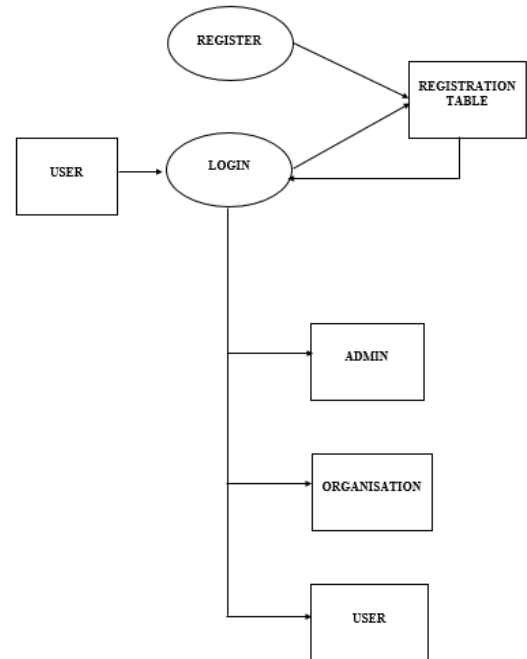


Fig.3 state diagram for the user module

When the user registers the information in passed into the registration table. The details in the registration table matched with vehicle id and organization which they prefer to. The user login to application where the details are shown, Admin or organization who check the information and update the status

C.Admin Application

The admin application is the main controller of the system. It is an android application based on the SQL request architecture.

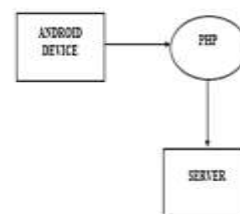


Fig.4 SQL Request Architecture

The application utilizes camera function which is available in the android device. The admin scan and capture the QR code. Then allows to enter the corresponding date and record the entry time. In this application admin can identify the vehicle owners name and which organization belongs to. When vehicle is leaving in the parking area the exit time also captured and store both entry and exit time in the database. [6]

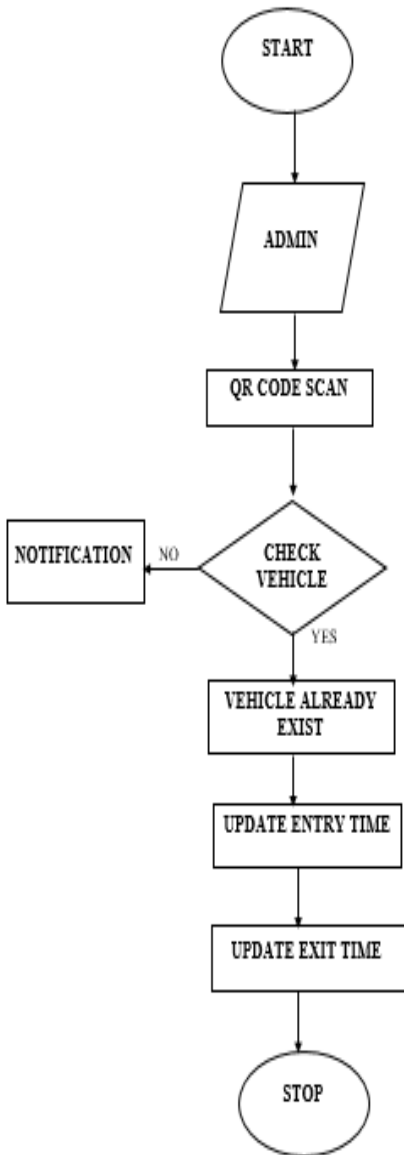


Fig. 5 Admin Application

The figure (5) shows the overview of Admin Application. Here first admin will scan QR code by using android phone and decode the unique id checks the data stored in the database. The already registered vehicles can only enter to the parking area. The scanned image will be matched to stored data in the database, otherwise shows notification admin application.[6]

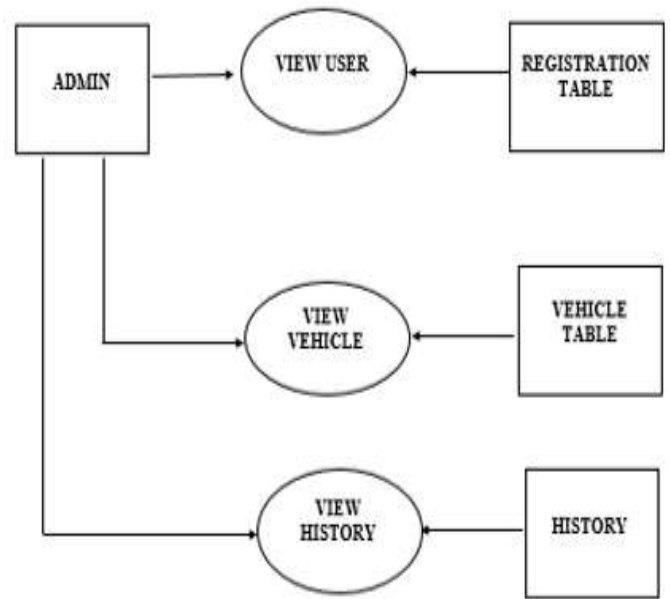


Fig.6 state diagram of admin module

In this system admin get the user information from the registration table. They can view the details such as color model the users matching with vehicle id in vehicle table.

When registered vehicle enters into the organization check in the database. The application also stores location of the parking lots. along with entry and exit status from the parking area update to the database. The application does not allow unauthorized vehicles enter to the organization. The Admin Application will help the security system in the parking area.[6][2]

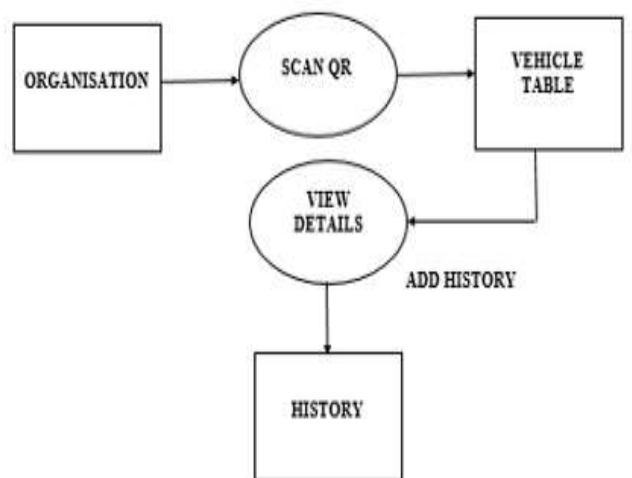


Fig.7 state diagram for the organization

Depending on the organization plays a key role in the system scan QR and fetches result from the vehicle table mapping with vehicle id and information about the user are known. Organization adds the history of vehicle into the database.

ID	NAME	DATA TYPE	DESCRIPTION
1	V.id	int	Primary
2	Vehicle data	varchar	Update Details
3	Date	date	Update Date and Time
4	Status	varchar	Entry/Exit

Table. 1 Representation of database

v id is the unique id generated by the QR code updated the name model depending upon the organization registered status of the vehicle is also updated along with the date

FUTURE WORK

From the proposed system there are many futures works possible, here the system functionality can be improved, which include maintenance of the vehicle. Here such facilities can be done by the organization according to the time of exit updated by the user. This include water wash, polishing, air filling or in the case of emergency servicing also can be performed by the organization as per user's request. By this method user can provide less time for maintenance of vehicle.

CONCLUSION

In this paper we studied QR code technology, it benefits the application areas. This paper deals with smart vehicle detection system that identifies the authorized vehicle, parking slot and provide security act as admin for the organization. There are two application helps in vehicle management .The user application register with necessary details ,select the organization generate a unique id in the bar code for authentication purpose, while the user can select the corresponding organization's admin application will scan the QR code check the status and update the result .The QR code technology grows rapidly and number of users increases exponent due its features like data storage capacity ,fast scanning, error of correction and ease of use.

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