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AUTOMATIC PENALTY CHARGING FOR TRAFFIC RULE VIOLATIONS THROUGH QR CODE TECHNOLOGY

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ABSTRACT:

In addition to handling traffic infraction penalties, the mobile app offers functions including accident reporting, license and car details, and penalty histories. It effectively tracks fines for moving violations by utilizing QR code technology. Known for their quicker readability and larger storage capacity than standard bar codes, QR codes are frequently employed in a variety of industries for activities like document management, item identification, and product tracking. Using this software, users can set up automatic withdrawals of fines from their bank accounts for breaking traffic laws. The application notifies owners of the vehicles about the broken rule, the associated fine, the date and time of the infraction, the precise amount that was taken out of their account as a penalty, and photographic proof taken with the phone camera.

Keywords: Mobile app, Traffic violation penalties, License details, Vehicle details, Penalty records, Accident reporting, QR code technology, Fast readability, Increased storage capacity, Product tracking.

1. INTRODUCTION

The purpose of this Android app is to help traffic cops record infractions committed by drivers. By using the camera on a smartphone to scan created QR codes, retailers can accept payments using the system, which makes use of QR code technology. Quick Response codes, or QR codes for short, are two-dimensional bar codes that are made up of a pattern of black squares placed on a white background in the shape of a square grid. An image device, like the camera on a smartphone, can read them. Merchants can start a payment, create a QR code, and clients can pay by transferring money by scanning the code with their phone. To transfer money to the merchant's account, the consumer uses the Easy Pay app on their smartphone to scan the QR code, which contains transaction details. This was automated.

2. LITERATURE SURVEY

The goal of the study is to comprehend driver distraction from the viewpoint of the individual driver. It seeks to pinpoint characteristics that affect how drivers perceive different in-car distractions in terms of danger. The study also presents an experimental framework for tracking driver behaviour based on past traffic infractions. The system outlined here is intended to help drivers in a variety of settings. Many moving infractions, including speeding and running stop signs, are inadvertent and stem from inattentive inattention rather than deliberate breach of the law.

Google created the Android mobile operating system, which is mostly meant for touch-screen gadgets like tablets and smartphones. Direct manipulation is the foundation of its interface, which makes use of touch movements like pinching, tapping, and swiping. Android has been customized for a number of gadgets, such as wearable (Android Wear), automobiles (Android Auto), and televisions (Android TV). The importance of automated image analysis systems has grown as a result of societal acceptance and technology improvements. Numerous gadgets, such as digital cameras, gaming consoles, laptops, and other electronics, run different versions of the Android operating system.

Android is the second most popular mobile operating system in the United States, after iOS, as of 2015. It has the greatest installed base of any operating system. Android was first created by Android, Inc., which Google acquired in 2005. The Open Handset Alliance was also founded in 2007 and Android was first introduced at that time. The goal of this partnership is to advance open standards for mobile devices by bringing together hardware, software and telecommute businesses. Over a million Android programs (also known as "apps") have been published in the Google Play store as of July 2013, and over 50 billion applications had been downloaded.

3. EXISTING AND PROPOSED SYSTEM

The current system is not online. Information on traffic violation penalties is written on a printed charge sheet. The department of traffic police keeps hard copies. Users must immediately pay traffic police. Time and corruption both rise as a result. Numerous issues with the current system exist, including traffic jams, complexity, expense, etc. Using the current Spot Billing Machine (SBM) makes maintaining the traffic offence management system challenging and adds to the paperwork. As a result, the suggested program is frequently used to resolve the aforementioned issue.

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Based on Android is the suggested system. The suggested approach will lessen any problem relating to breaking traffic laws while driving. This system has consist of sending messages, automatically receiving fines from the owner's bank account, and automatically collecting fines for violations of traffic rules through QR codes. Using this technology, a QR reader will scan the QR tag that each vehicle receives when it passes the required vehicle driving license issued by the RTO.

4. DEVELOPMENT

Google develops Android in secret until the most recent modifications and upgrades can be made public, at which time the ASCII text file is made accessible to the general population. This ASCII text file can only be used on specific devices—typically those from the Nexus line—without the need for modification. OEMs then modify the source code to make it work with their hardware. The ASCII text file for Android does not include the typically proprietary device drivers that are unquestionably required hardware components. Irina Blok, a graphic artist, created Google's green Android logo in 2007. The project assigned to the design team was to make a symbol that is instantly recognizable by adding a robot to the final design. Following a series of design iterations that aided science fiction and space exploration films, the group ultimately looked to the human symbol found on restroom doors for inspiration and transformed the figure into a robot form. Since Android is freely available, it In 2007, the green Android logo was designed for Google by a graphic designer Irina Blok. The project assigned to the design team was to make a symbol that is instantly recognizable by adding a robot to the final design. After numerous design developments supported science fiction and space movies, the team eventually sought inspiration from the human symbol on restroom doors and modified the figure into a robot shape. As Android is open-sourced, it Was agreed that the brand should be similar, and since its inception the green logo has been reinterpreted into innumerable versions on the basic design.

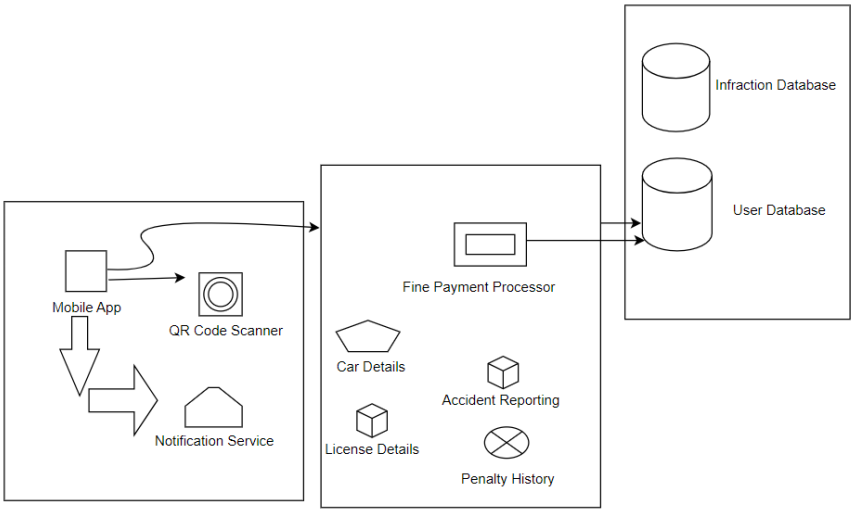
Design

In contrast to client-server administration solutions, the appliance software cannot interact with the SQL Lite engine's standalone processes. Converses. Rather, the SQLite library is integrated into the application software by being linked in. Another way to call the library is dynamically. SQLite applications require fewer setups than client-server databases because of their server-less architecture. Because it doesn't require service administration (like startup scripts) or access control supported GRANT and passwords, SQLite is known as zero-conf.

It is possible for multiple computer threads or processes to access the same database at once. Multiple read requests can be fulfilled simultaneously.

An article only in the event that no other access requests are being fulfilled can access be fulfilled. If not, a mistake code is returned and the write access can be automatically retried until a specified timeout is reached. When managing temporary tables, this concurrent access scenario would be different. When write-ahead logging (WAL) is enabled in version 3.7, concurrent reads and writes are permitted, easing this constraint.

The FTS4 (full text search) module was initially included to SQLite version 3.7.4. It has improvements over the FTS3 module. FTS4 enables users to search documents for text in full, much to how search engines search webpages. The ability to create tables without rows was added in version 3.8.2, which can increase performance and free up space. SQLite 3.8.1 introduced support for common table expressions. The full Unicode functionality of SQLite is optional.



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5. CREATE AUTOMATIC PENALTY SYSTEMS

The current system is not online. Information on traffic violation penalties is written on a printed charge sheet. The department of traffic police keeps hard copies.

Users need to immediately pay the traffic police. Time and corruption both rise as a result. There are numerous issues with the current system, including traffic issues, intricacy, expense, etc. Using the current spot billing machine (SBM) makes maintaining the traffic offence management system challenging and adds to the paperwork. As a result, the suggested application is frequently used to overcome the above-stated material.

User Login: With their username and password, only authorized users are able to access our application through this module. Several username and password are stored in the database, and only one of them needs to be entered. On a computer system, a username can be a name that identifies a user specifically. One possible configuration for a computer would be to have several accounts, each with a unique username. A password could simply be a series of characters used to confirm a user's identity throughout the authentication procedure.

QR Generation: During this module, the administrator creates a QR code that supports the recorded knowledge together with vehicle and owner details. (Application for code readers). It is an image that can be interpreted by a machine and is captured by a smartphone camera. Each QR code is made up of different black squares and dots that stand for different types of data.

Punishment Addition: This module adds information on the vehicle's punishment. It contains details such the individual's name, residence, license number, fine amount, and type of regulation violation. The car owner receives an SMS with the penalty details after the penalty addition is updated. A penalty could be the result of breaking a contract, legislation, or rule. It is typically applied to those who break the law. Penalty is frequently used in regard to monetary punishment.

E-payment Collection: This module is used to retrieve the penalty money from the bank account of the car's owner. It contains details like the license number, name, address, kind of rule breaking, and punishment amount. Details are communicated to the vehicle owner via SMS following the collection of the penalty from the vehicle owner. Any kind of non-cash payment that doesn't require a paper check is considered an electronic payment.

6. IMPLEMENTATION AND TESTING

Testing

Testing is essential to the system's performance. System testing assumes logically that if every component of the system is functioning as intended, the objectives would to be accomplished successfully. During the testing phase, we evaluate the specific system in a company and collect mistakes from the newly implemented system to ensure it functions as intended. System testing is the step of implementation that aims to ensure the accuracy and efficiency of the system.

Fig;1 QR code on number plate

The testing procedure focuses on the software's logical intervals, which guarantee that every statement is tested, and on the function intervals, which involve testing to find errors and confirm that defined inputs will yield actual results that are consistent with the expected results.

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System Implementation

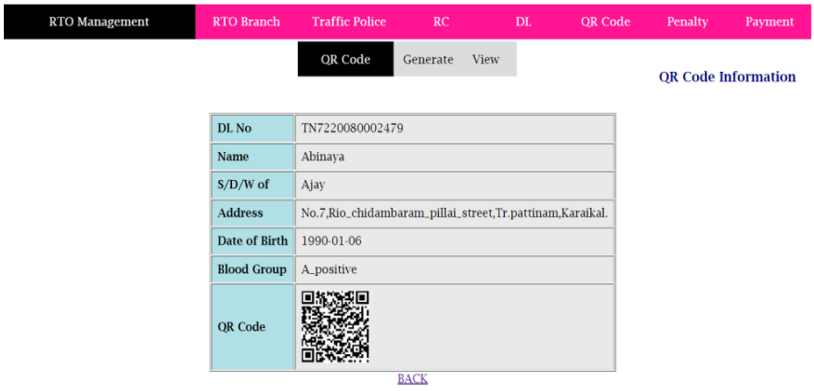
In the life cycle of a system, analysis and design are completed before system installation and maintenance take place. Implementation encompasses a wide range of tasks, from the conversion of a simple program to the total replacement of a computer system. Put another way, implementation refers to the process of turning a newly created or updated system design into a functional one.

7. FUTURE SCOPE

Navigation systems may try to avoid the crucial zone in the case of a road network.

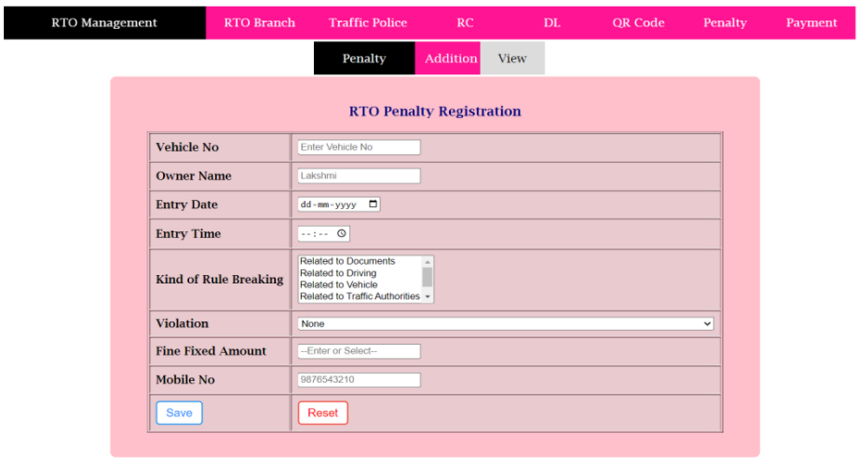
In order to direct vehicles around the crucial area, traffic management systems can also alert drivers to the possibility of a traffic jam. Many sensors and methods are employed to identify traffic in order to address traffic-related issues. A web service-designed application can be connected into numerous websites. You can email the admin with the details of your feedback.

Output Designs



Admin management

QR code management



Penalty per user

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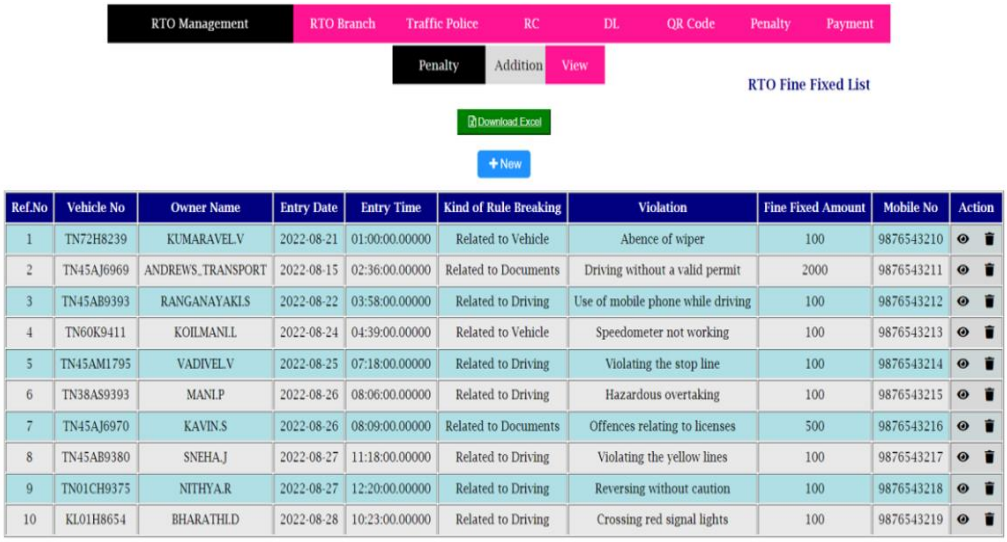
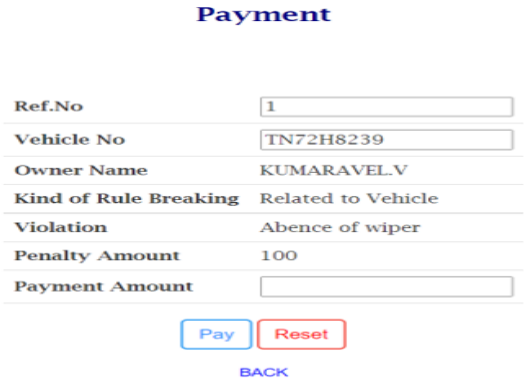


Ref.No	Vehicle No	Owner Name	Entry Date	Entry Time	Kind of Rule Breaking	Violation	Fine Fixed Amount	Mobile No	Action
1	TN72H8239	KUMARAVEL.V	2022-08-21	01:00:00.00000	Related to Vehicle	Abence of wiper	100	9876543210	
2	TN45AJ6969	ANDREWS_TRANSPORT	2022-08-15	02:36:00.00000	Related to Documents	Driving without a valid permit	2000	9876543211	
3	TN45AB9393	RANGANAYAKI.S	2022-08-22	03:58:00.00000	Related to Driving	Use of mobile phone while driving	100	9876543212	
4	TN60K9411	KOILMANI.L	2022-08-24	04:39:00.00000	Related to Vehicle	Speedometer not working	100	9876543213	
5	TN45AM1795	VADIVEL.V	2022-08-25	07:18:00.00000	Related to Driving	Violating the stop line	100	9876543214	
6	TN38AS9393	MANI.P	2022-08-26	08:06:00.00000	Related to Driving	Hazardous overtaking	100	9876543215	
7	TN45AJ6970	KAVIN.S	2022-08-26	08:09:00.00000	Related to Documents	Offences relating to licenses	500	9876543216	
8	TN45AB9380	SNEHA.J	2022-08-27	11:18:00.00000	Related to Driving	Violating the yellow lines	100	9876543217	
9	TN01CH9375	NITHYA.R	2022-08-27	12:20:00.00000	Related to Driving	Reversing without caution	100	9876543218	
10	KL01H8654	BHARATHI.D	2022-08-28	10:23:00.00000	Related to Driving	Crossing red signal lights	100	9876543219	

Admin fine fixed list



Payment portal

Payment Receipt

8. CONCLUSION

The problems associated with breaking traffic rules on the road are lessened because to this project. This interface aids in the management of corruption as well as the breaking of traffic laws. This project has the ability to automatically reduce fines from the owner's bank account, making it simple to collect fines. Because it is designed to be an Android application, anyone can download or share it with others. The program has undergone thorough testing, and higher end user satisfaction has been seen.

The web application will cut down on paperwork, which will save time and effort while searching the car. The payment of the fine is simpler, and the individual will even be aware of how many infractions they have done, which will eventually encourage them to cease committing new ones. The RTO database could be used to increase the efficiency of this system.

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