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Master of Information Technology

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Implementation of online motor traffic violation management system.

**A dissertation submitted for the Degree of Master
of Information Technology**

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Abstract

In Sri Lanka, traffic violation is becoming a very bad impact on society. In 2013 all registered vehicles were almost 5,204,000. But in 2017 it has increased up to 7,247,122. So with the increase in vehicles, traffic violations also become high. With this hectic lifestyle, drivers have to spend more time and money to pay traffic fines. And with this paper-based system, Sri Lanka police are getting complicated to analyse traffic violation data.

This web-based system is connected with higher police officers in Sri Lanka police department, traffic police officers, RMV officers and citizens in Sri Lanka. This system helps to connect these parties together and make traffic fine payment more easy and accurate. In addition to that, with the help of the system police officers can add/update police fine details and generate reports.

The system gathers traffic violation data and keeps a track of each of the records. The system keeps an image of the License. With respect to the state of the traffic violation, the police officer may produce a guilty party into the courts. In this scenario, the system keeps all the court records.

This web-based system has developed from PHP with MySQL. In addition to that major technologies, the system used Bootstrap, Ajax and javascript front end designing technologies also.

The NIC or License number is enough to get the history of a traffic violation. In addition to that, the guilty party can pay the fine via the system.

The system was successfully tested and verified by regression, functional, stress and security testing. These testing results were used to make the system improvement.

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I would be grateful to the University of Colombo School of Computing Lectures of Master of Information Technology program for giving me this opportunity to apply the knowledge which I have gained through the degree program.

My gratitude also to all my family and friends for your moral support throughout the whole project and encouraging me to do my best in difficult times.

Declaration

The thesis is my original work and has not been submitted previously for a degree at this or any other university/institute.

To the best of my knowledge, it does not contain any material published or written by another person, except as acknowledged in the text.

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under my supervision. The thesis has been prepared according to the format stipulated and is of an acceptable standard.

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Chapter 1. Introduction

1.1 Introduction

Generally, the traffic and traffic violations in Sri Lanka has been checked physically by the traffic police and the normal practice is to punish those who violate the traffic rules and regulations. Few of motor traffic violations in Sri Lanka are;

- Driving without driving license and even without the national identity card
- Driving under the influence of liquor/narcotics
- Transporting passengers for hire while being under the influence of liquor
- Causing injuries/death to a person while driving under the influence of liquor
- Driving through railway crossings in a haphazard manner
- Driving without a valid insurance cover
- Speeding
- Overtaking from the left side/breaching road rules

Usually, the traffic guilty party will have to pay a fine and will have to get a temporary driving license as the original driving license will be taken to the traffic police authority of the respective region.

In order to get the driving license, the guilty party need to follow the following steps;

Step 1 – the guilty party needs to get the penalty payment form from the regional traffic police division.

Step 2 – then, must pay the fine to the regional post office and get a receipt for the payment.

Step 3 - need to provide the relevant slip to the regional police station.

This is a manual process which is old and consumes more time and documentation. In a way, this is a cumbersome process to both parties (police and guilty party). As an example, if a person from Colombo goes for a trip in Badulla and if he is caught for a traffic violation in Badulla, no matter how urgent the person's situation and how long the process, the person has to make an effort to follow the above steps to get his driving license.

Further, to link this process the traffic police need to maintain much more administrative work, where it takes more time, effort and additional cost too. When it is manual and when the fine is made, the police officers have to make an additional effort to find out the vehicle and license records manually.

This is a problem faced by many Sri Lankan people in their day to day life. Third-party (regional post office) involvement makes the process too long and cumbersome. Therefore it is clear that an online motor traffic violation management system is required in Sri Lanka too to save time, wipe out additional effort and to be more efficient and effective.

But, by introducing and implementing an online motor traffic management system can make this long and time-consuming process simple and more effective. The online system will save time, effort and wipe out all unnecessary administrative work and make the process easier for both parties. As Sri Lanka is still a developing country, it is essential to have more effective and efficient processes to develop both people and country.

1.2 Objectives of the Project

Objectives are a specific result that a person or system aims to achieve within a time frame and with available resources. Objectives are measurable, defined, operational, simple steps and specific. It is easier to measure than goals. Therefore, these are the objectives of the research study;

- To introduce and maintain reliable and transparent payment methods.
- To ensure the security and confidentiality of relevant documents and specific details.
- Facilitate auditing processes easy - e.g. How many violations caught in the Colombo – Kandy route for the last three months.
- To view previous records of violations.
- To empower penalty payment.
- Grant accessibility for guilty parties to view violent details (e.g. If the license suspended/canceled by court, any party can view the reason given by court for the license suspended/canceled).
- To enhance the traffic point system.

- Newly implementation of report generation for valiant information. (traffic officer perspective and court perspective)

1.3 Scope of the Project

The proposing online system consists of web based and mobile based application which offers user verification and on time online payment system.

The mobile based application is for the use of traffic police officers and the functions are as follows.

- ✓ Check the validation of driving license
- ✓ Tracking the driving license number to check past violation history
- ✓ Online fine charging system

The web-based application is for three main parties. Accordingly, for traffic police – Sri Lanka, registry of motor vehicles (RMV) and for the public.

Following are the functions of web based online system;

- ✓ Traffic police officer registration
- ✓ Insert and update traffic laws
- ✓ Can generate reports as per the requirements of the user (Traffic Police Authority of Sri Lanka)

Since this new implementation the strategy is to implement the system initially to western provinces. Also the required infrastructure needs to be given to the relevant parties. Such as smartphones to traffic police officers

- Once registration is completed from the web-based system, the traffic police officers can enter the claim of traffic violations (fine) through mobile application.
- After the driver (guilty party) details are entered by the **police** officer through a mobile app, the driver can make the payment via driver's web application by entering their license number.

- Considering the weight of the violation, the traffic police officer has the authority to decide whether to cancel the particulate person's license or not. For that the police need to get a court's decision. Based on the court's decision and RMV Consultation the license cancellation can be done online from the RMV's web application.
- Also it is easy to generate reports to the Traffic police authority of Sri Lanka to monitor past records and to make future decisions.

Chapter 2. Background

2.1 Introduction

This chapter analyses the strengths and weaknesses of the system to review the features and technologies of existing similar systems.

2.2 Literature Review

2.2.1 History of traffic violation management system

The very regular reason for traffic is people. From diverted or alcoholic heading to languid driving or enthusiastic driving, there are numerous risky situations — even with our opposable thumbs and huge frontal flaps — that people trigger out and about.

There are four kinds of gridlock: ecological, mechanical, human and framework related. Take a profound jump on gridlocks and their causes.

How long is squandered on traffic? It's the time spent hitting your brakes, as you can't help thinking about why this spot on the road consistently goes to a sudden end. It's the time spent creeping forward, as you slither along the gridlocked street ahead. It's the time spent sitting, as you frustratingly question how the gridlock even started.

Types of Congestion

There are two, generally speaking, kinds of gridlock, as per the Department of Transportation: repeating and non-repeating. The DOT expresses that about portion of gridlock is the common kind, which happens day by day and is because of an absence of limit out and about — or as such, there are a bigger number of vehicles going at a given time than can genuinely fit. The other kind of clog, non-repeating, is the thing that the DOT calls "brief interruptions" in movement, for example, awful climate or a vehicle crash.

Inside these two kinds of gridlock, we'll take a gander at four more explicit classifications:

- Environment (non-recurring)
- Mechanical (non-recurring)
- Human (non-recurring)
- Infrastructure (recurring)

Taken together, these reasons account for why city-dwellers are likely to see what should be a 30-minute commute turned into a 45-minute commute.

1. Environment

An examination by Dr Jean Andrey and Daniel Unrau found that car accidents increment by around half during a day of downpour. From blustery or foggy climate to the extraordinary blizzard that leaves drivers speechless, the climate uncontrollably affects traffic as well as street conditions also. Indeed, even delicate downpour can have an effect if all drivers hinder together.

Something more genuine, for example, an unexpected landslide couldn't possibly stop traffic, however, aim an impact if a driver happens to be in an inappropriate sloppy spot at an inappropriate sloppy time. This is a case of how climate can have an exacerbating impact on traffic by making awful circumstances, or by making effectively awful traffic circumstances far and away more terrible.

All things considered, the awful climate is the fundamental offender in 15% of gridlock cases, as indicated by the DOT.

2. Mechanical

Another factor that can cause gridlock is the situation of mechanical disappointment. While ostensibly a mechanical fizzling could fall into a human-caused classification, for example, if the individual neglected to appropriately keep up the vehicle's tires, this isn't generally the situation.

Mechanical failings can likewise occur because of outer factors, for example, a sharp article out and about and can happen unexpectedly while driving, regardless of whether you simply had your vehicle kept up.

While people can help forestall and decline mechanical issues by examining vehicles before each outing and ensuring preventive upkeep cycles are followed, in any case, these issues require the driver to get off the street. At the point when you're on a five-path roadway, this undertaking can demonstrate troublesomely. At the point when different drivers hurry to get around the halted vehicle, it just further hauls out the effect on traffic as drivers converge into encompassing paths as opposed to halting to let the individual rapidly get to the shoulder.

Once more, while in certain situations a driver may have had the option to forestall the issue, even the absolute generally prepared and dependable drivers can wind up in these circumstances.

3. Human

The very basic reason for traffic is people. From occupied or alcoholic heading to languid driving or enthusiastic driving, there are numerous risky situations — even with our opposable thumbs and enormous frontal flaps — that people trigger out and about. Simply investigating exactly 2016 traffic casualty insights from the National Highway Traffic Safety Administration gives a plain perspective on the confusion our choices can cause out and about:

There were 29 liquor debilitated driving fatalities every day. This number has been consistently expanding throughout the most recent couple of years.

In the traveller vehicle portion, 21% of drivers engaged with a deadly crash had a blood liquor substance of .08 or higher.

Speeding-related mishaps represented 27% of fatalities.

The 2016 NHTSA report additionally found that occupied driving and languid driving declined contrasted with 2015. While occupied driving probably won't cause the same number of fatalities, it is a region where driver conduct can affect traffic consistently. Think about this — in an AAA Foundation for Traffic Safety concentrate on the mind's intellectual burden during driving, it takes a normal of 27 seconds for the driver to turn out to be totally centred around driving once more.

Apparition Traffic Jams:

It's obvious then that drivers wind up settling on brisk choices and participate in practices like a minute ago slowing down. When a driver hammers on the brake since the individual in question was diverted, an expanding influence starts. Contingent upon other traffic conditions, this one mix-up in slowing down could slow deal with that path and encompassing paths for quite a long time. This is what's alluded to as ghost gridlocks in light of the fact that as drivers overcome the drowsy spot, it will appear like literally nothing had caused the log jam. Analysts depict it as a similar expanding influence that a bomb makes.

Peruse the Geotab report: [Predicting Traffic Congestion with Driving Behavior](#).

The far more terrible circumstance is the point at which that last-minute slowing down situation transforms into a minor accident. Once more, that time getting off the street causes much more remaining traffic, particularly while "snooping" is available.

In any case, in all actuality, a great part of the clog brought about by people is because of a lot less complex explanation than any of those recorded above — driver preparing. Huge numbers of our armada perusers who have experienced driver preparing programs probably concur. To get a permit, a driver must show a comprehension of the standards of the street, not really how to best proceed onto a road or utilize the quickening agent rather than a minute ago slowing down to manage unpredictable traffic. In the event that all drivers experienced the preparation and armada wellbeing instructing that many armada drivers do, it's doubtful that some gridlock could be forestalled.

4. Infrastructure

Another classification that could likewise ostensibly be human-caused is a framework. In any case, while people made it, the framework is so huge and it's general surroundings changing so quickly, that is it's not really the deficiency of specialists who didn't predict the requests which would be put on streets at exponential rates. From potholes that cause log jams to bottlenecks in regions that out-populate their streets, the framework is the concealed savage that intensifies traffic issues in numerous metropolitan and rural zones.

Bottlenecks alone record for 40% of gridlock causes, as indicated by the DOT.

Incidentally, in our endeavours to improve foundation, development likewise causes 10% of traffic.

[1]

2.2.2 Current System

Nowadays road traffic has become a real problem in one-tier and two-tier cities. There are several ways to make travelling safe and one is through the Traffic Police. Responsibility of the traffic Police regarding traffic management includes directing traffic, enforcing traffic rules and regulations and penalizing the driver in case of violating traffic rules.

Another way of enforcing traffic discipline is frequent conduction of awareness programs, from the Department of Traffic Police, based on the offence data collected. But the existing system does not have a centralized repository for storing the penalized data, so this project work is an attempt to develop an android application which will help the traffic police to record the penalty information in the centralized repository. Application to be developed will also consist of the analysis part of traffic offences based on which higher authorities can take necessary measures regarding traffic discipline. [2]

2.3 Similar Systems

2.3.1 Sri Lanka RMV department online service

At present the government of Sri Lanka has given access to renew a driving license online by entering a driving license number, registered vehicle details ,enquire Ongoing Registration Number etc. [3]

This is the only government e service system that provides permissions to do above mentioned functions.

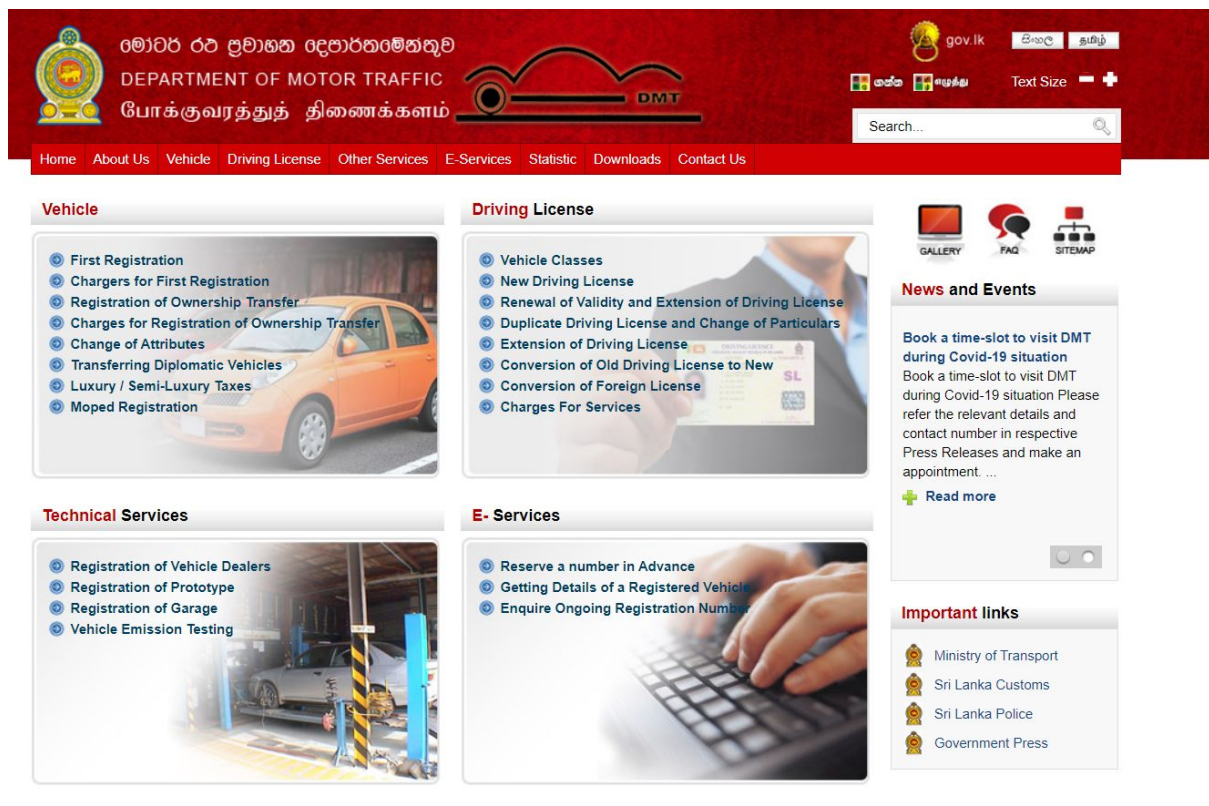


Figure 1: services grant by RMV web portal

2.3.2 Chennai India online web portal

The driver can pay the penalty fee through an online web service. Drivers need to add chassi number and vehicle no as inputs and need to select the police division also. This is a third party web application giving more services as well. [4]

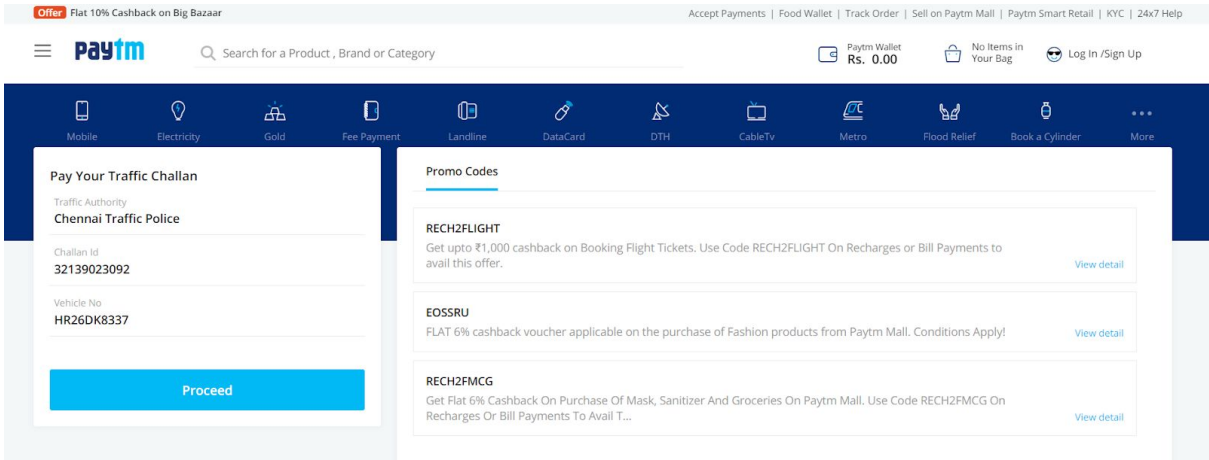


Figure 2:services granted by 3rd party web application called paytm.

2.3.3 Belgium Traffic Police department

- Belgium - the police department is sending a letter and a police report to the guilty party and the guilty party has to do the payment online. System is not fully automated because of the paper based part. Here guilty party needs to add Police Report No and Identification code before do the payment [5]

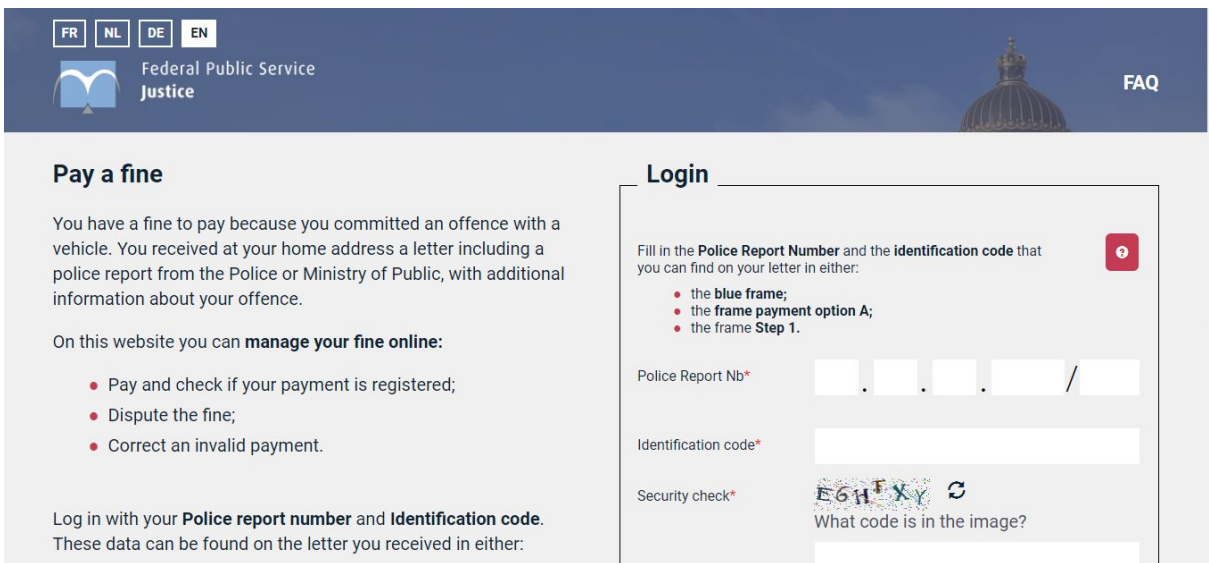


Figure 3:sending a letter and a police report to the guilty party and the guilty party

2.3.4 GRIPS system - West Bengal

West Bengal Police have a system to pay the penalty fee online. (GRIPS system). Here web portal requests several inputs before making the payment. This is same as Traffic Violation Management System but guilty party may be confused with all those inputs. [6]

Home / GRIPS Online Fine Payment

Online payments via GRIPS

Welcome to the Online Traffic Fine payment through GRIPS.

Please provide the following details to initiate your online payment. You shall be directed to the GRIPS interface and back to our website www.wbtrafficpolice.com once the online transaction is complete.

Always remember to note the GRN No. generated at the next GRIPS payment interface for reference/correspondence.

Please fill up the form below to process your Traffic fine payments via GRIPS

Depositor's Name (*)	Address (*)
<input type="text"/>	<input type="text"/>
Mobile Number (10 Digits only) (*)	
<input type="text"/>	
Email ID	Vehicle Number (*)
<input type="text"/>	<input type="text"/>
Office Name (*)	
-- Select One --	
Police Station (*)	Section (*)
--Select One--	<input type="text"/>
Compound Slip Number (*)	Compounding Officer Name (*)
<input type="text"/>	<input type="text"/>
Issue Date (*)	Payment Mode (*)
21/06/2020	-- Select One --
Amount (*)	
₹ 0	

Figure 4 : an online system for fine charge GIPS

2.3.5 Singapore Police E-services

- Singapore – have the online fine payment system. Also, provide both online e-payment methods to pay via debit/credit card to the police station. Rather than that they are providing lots of online services like Enquiry, police report,lost property, certificate of clearance, traffic accident report etc. [7]

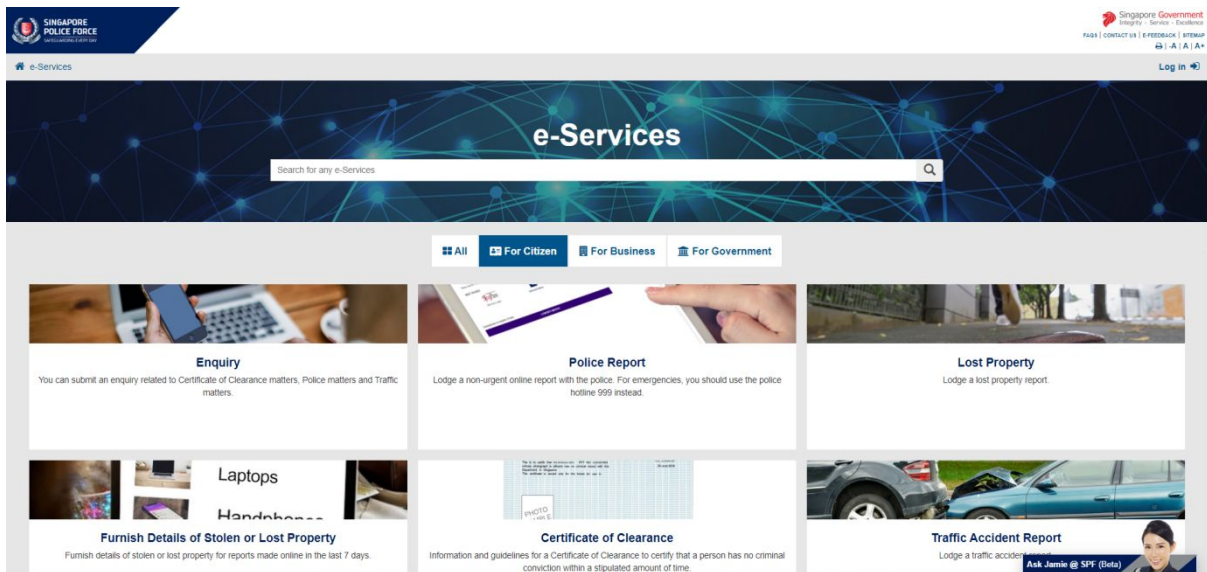


Figure 5 : an e service fine charge Singapore

2.3.6 Australia Police web based System

Australia – have an online payment system for fine charges, revenue license etc. [8]

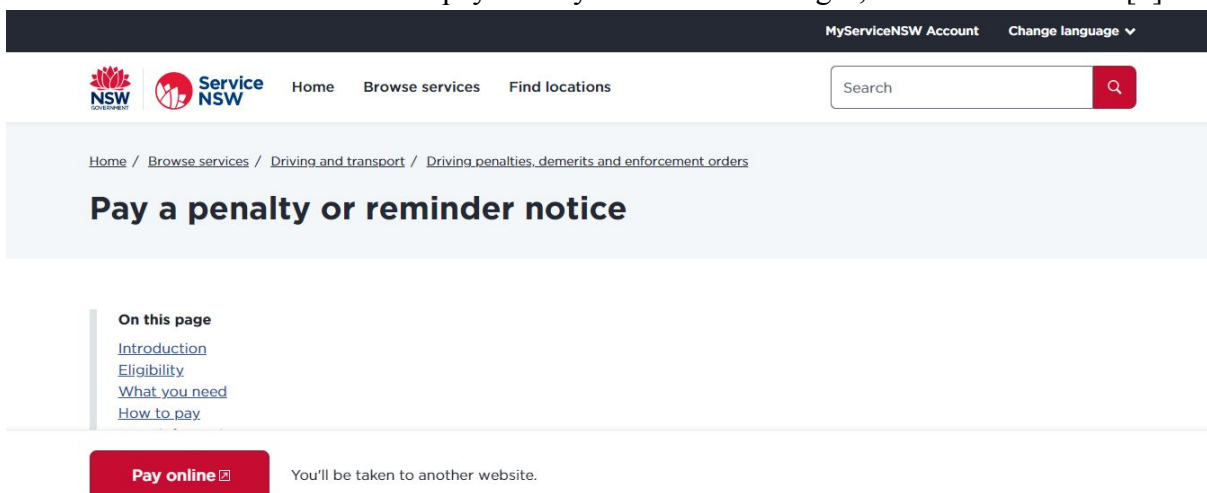


Figure 6 : an online system for fine charge Australia

2.4 Analysis

2.4.1 Current method

Usually, the traffic guilty party will have to pay a fine and will have to get a temporary driving license as the original driving license will be taken to the traffic police authority of the respective region.

In order to get the driving license, the guilty party need to follow the following steps;

Step 1 – the guilty party need to get the penalty payment form from the regional traffic police division.

Step 2 – then, must pay the fine to the regional post office and get a receipt for the payment.

Step 3 - need to provide the relevant slip to the regional police station. [9]

This is a manual process which is old and consumes more time and documentation. In a way, this is a cumbersome process for both parties (police and guilty party). As an example, if a person from Colombo goes for a trip in Badulla and if he is caught for a traffic violation in Badulla, no matter how urgent the person's situation and how long the processes the person has to make an effort to follow the above steps to get his driving license.

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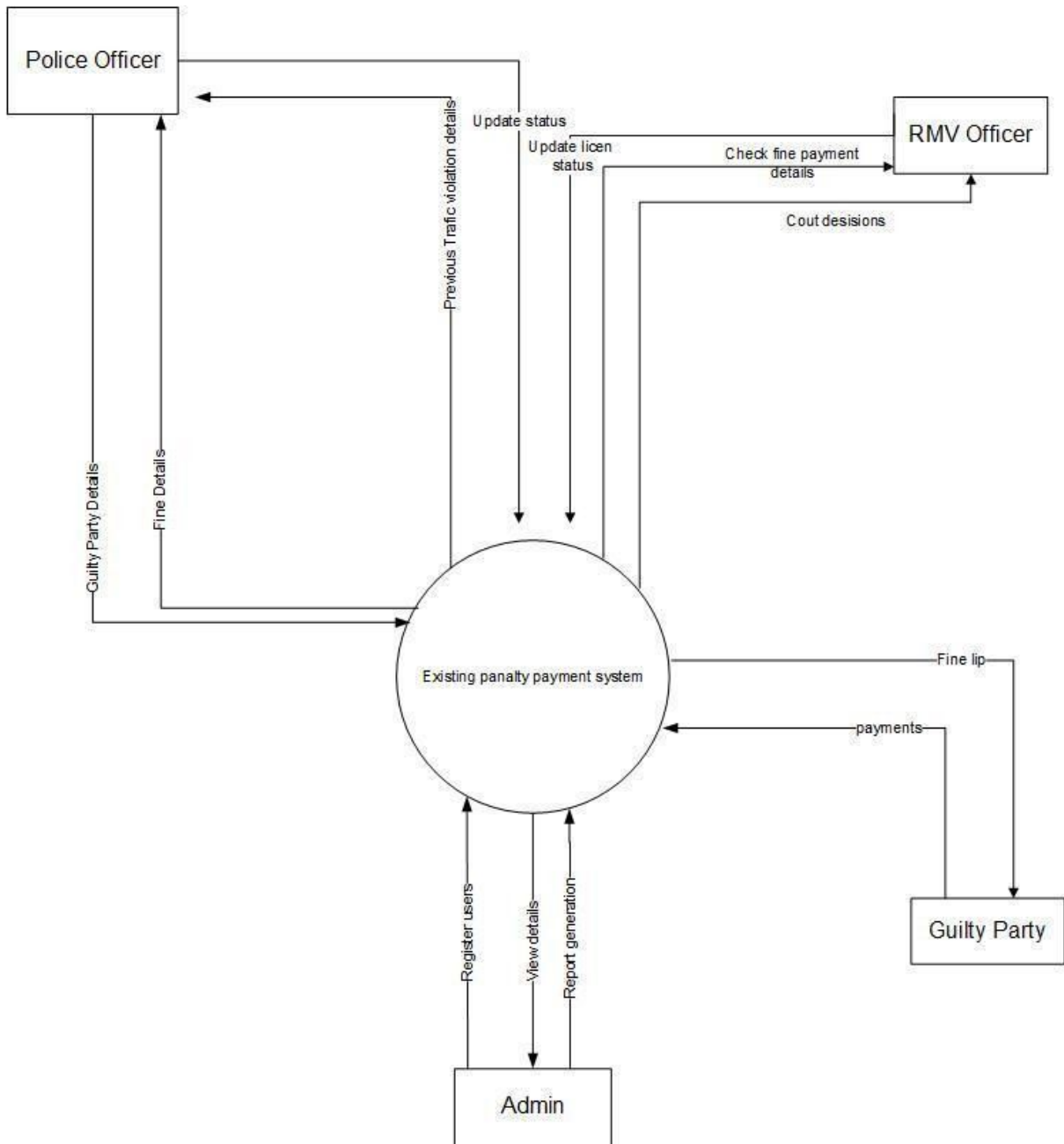


Figure 7 : DFD diagram of the current system

2.5 Proposed System



Figure 8: Proposed System

2.6 Requirement analysis

The following techniques are used to gather requirements of the system.

2.6.1 Interviews

Traffic violation management system collected information from higher officials of the police department and also the field officers by both unstructured and structured interviews. Unstructured interviews help to acquire basic information about traffic violation management systems. Advantages of unstructured interviews are as follows.

- checking to comprehend - simpler for questioner and interviewee to check each other's implications. - if the interviewee doesn't comprehend the inquiry they can pose - or if the questioner is uncertain what interviewees implications are can ask to catch up inquiries to discover more
- Adaptability - no fixed arrangement of inquiries so can investigate what's fascinating/applicable at that point. The questioner can discover novel thoughts and theories

And the structured interviews help to understand the deep view of the system. Advantages for structured interviews are

- Lesser questioner inclination – Since the inquiries and their accurate phrasing is pre-chosen, the component of 'questioner judgment' is eliminated from interviews, prompting consistency in both techniques just as the expansiveness of data accumulated from every member.
- Quicker execution – Thanks to the restricted reaction classes in organized meetings, scientists can cover a bigger crowd since they can direct the meetings moderately quicker contrasted with unstructured or semi-organized meetings.

The reasons for selecting the interviewing method for this system is for the work nature of the police officer, they have not enough time to communicate by writing or completing any questionnaires.

Interview question for Traffic OIC Perspective

If a traffic violation management system is implemented, are you confident about your officers regarding computer literacy?

1. This system is working through the internet. So is there any possibility to grant mobile phones/computers to the officers?
2. In society, citizens complain bribery is happening all over the country. Do you think due to the system implementation that bribery will be stopped?
3. Do you think after implementation of this system, there would be a higher chance of an analysis day today traffic violations and if this system can be helpful for reducing traffic violations in Sri Lanka?
4. A few years back, the Sri Lanka government had tried to implement traffic points. But there were some drawbacks with that process. This traffic violation management system has also introduced a traffic point system. Do you think it can be implemented to the citizens and get positive feedback from this?

Interview question for Deputy Commissioner - RMV Perspective

1. If a traffic violation management system is implemented, are you confident about your officers regarding computer literacy?
2. This system is working through the internet. So is there any possibility to grant computers and other resources for the officers?
3. Do you think RMV officers can work directly with police officers throughout the license suspend/cancelations process?
4. What kind of impacts you think Sri Lankan citizens will gain through this system.

. [Appendix A - Questionnaires for Sri Lankan citizens and Police Department]

2.6.2 Secondary Research

Sri Lankan Police traffic violation system is well structured and pre-defined one. Therefore, it is possible to acquire most of the initial information from trust sources. The proposed system used the Police department official website and the other government organization website as trusted sources to gather the information.

2.6.3 Data Analyzing Methods

The way toward assessing the gathered information is known as the information breaking down technique and logical strategy will be utilized to investigate the crude information.

When the information assortment is finished, the accumulated information will be investigated dependent on the fundamental research questions. So as to acquire precise and subjective data, this strategy will be utilized. This technique is more effective with regards to giving a superior yield without time wastage and any misstep.

The accompanying advances were followed while doing the examining part.

- Measurement of various estimations of factors
- Identification of the connection between every factor and look at it.
- Summarizing the data
- Coming up with the most ideal yield inevitably

Gathered information from surveys and meetings will be examined dependent on most of the reactions accumulated. The information gathered from the surveys will be registered so as to get the last yield of reaction strategies of the information breaking down stage has been utilized in request to accomplish the goals of the exploration. Following advances were utilized to do the information investigating measure.

- Graphical techniques
- Use the subjective investigates

Microsoft Office Excel was utilized as the examination toolpack to speak to the crude information in a graphical way. The gathered information were dissected utilizing bar outlines and pie diagrams. All these made it conceivable to direct the investigative cycle to concoct the most ideal arrangement precisely.

2.7 Functional Requirements

2.7.1 General Requirements

- Non-Registered users shall be able to register into the system.
- Registered and account activated users shall be able to login into the system.
- Registered and account activated users shall be able to reset the password.
- Registered and account activated users shall be able to edit their profiles.

2.7.2 Functional Requirements Related to system

- For register police officers and RMV officers who work with the system.
- For inserting new/existing traffic laws.
- For taking reports based on the requirement of stakeholders.

- For RMV to cancel/reissue license.
- For drivers to do the payment online via payment gateway.
- For the officers who work with the penalty charging process.
- For the officers who need to go through drivers past history.

2.8 Non-Functional Requirements

2.8.1 Maintainability

- The system should be able to easily adapt future charges without doing major changes in existing components.

2.8.2 Availability

- The system is guaranteed with 90% uptime.

2.8.3 Security

- The system should be able to protect against unauthorized activities.
- The system shall be able to protect against common web application security threats that include SQL injection, Cross-site request forgery and cross-site Scripting.
- Data inputs shall be validated properly.
- The number of failed attempts shall be logged.

2.8.4 Scalability

- The system should handle increases in load without impact on the performance.

2.9 Design Strategies

Software advancement is an errand that includes a few complex and tedious exercises, which are joined together to make and plan programming that is extraordinary and unique in relation to its partners, just as it has remarkable highlights and quality. Also, before starting the cycle of programming improvement, the group of engineers, analyzers, administrators, and different partners associated with the task, experience different phases of arranging, planning, programming, and the sky's the limit from there. It is simply in the wake of making progress at every one of these stages that the cycle of programming advancement is started. These different phases of Software Development Life Cycle (SDLC) are amazingly critical and convey a great deal of significance.

2.9.1 System Development Model

Waterfall methodology is the selected method for development of the system. Main reasons for selecting waterfall methodology are

- easy to understand
- easy to manage
- as the system is new to Sri Lanka model phases have to complete one at a time

The reasons for not selecting agile methodology are

- predictability is very low
- lack of documentation
- project can become ever-lasting

2.9.2 System Development Strategies

As this system is new to Sri Lanka, this needs to be developed from the beginning. Driver point module, online penalty module, licence cancellation/ suspending module and all other modules in the system needs to be developed because currently, all systems run manually. Other than that each and every module should be documented.

2.9.3 Hardware Environment

Server Configuration - Concentrated framework comprises 8Gb smash with Intel Core i5 3960x, Base clock speed 2.3Ghz, store memory 15MB with memory up to 4channel DDR3 1600. 512Mb SSD memory wants to improve fast getting to capacity with 1Tb capacity proffered as a prerequisite with very good quality equipment segments.

Chapter 3. Methodology

3.1 Introduction

A software development process may be a process of dividing software development work into distinct phases to enhance the planning , product management, and project management. it's also referred to as a software development life cycle.

3.2 Software Development Methodology

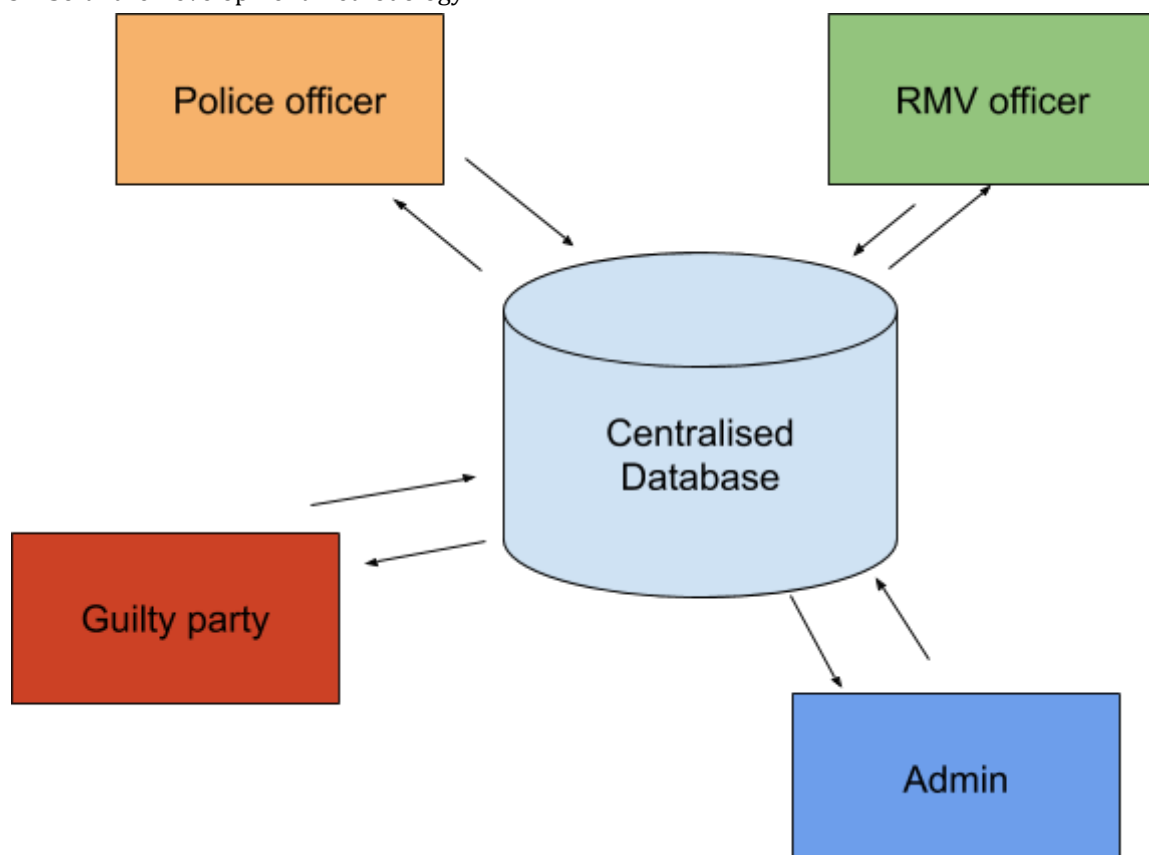


Figure 9 : System Architecture

With reference to figure 9, the web application Will be allocated to three main users according to traffic police – Sri Lanka, registry of motor vehicles (RMV) and for the public. The mobile application is to be allocated to traffic police officers. All four uses are interconnected through the system.

First and foremost, it is required to install the developed web-based and mobile-based application to relevant users. Then need to have a thorough familiarization and training on the applications and uses of the new application.

As mentioned above once the office registration is done, the relevant officer can update the details of the traffic violation online using his mobile application. Details such as the status of the violation, when, where and how can be updated. More importantly, the penalty or the fine charges can be updated at the same time as this application. This will save time as well and since the fine charging process is transparent, the tendency of taking bribery will be prevented from society too.

After updating the said details, the guilty party can pay the fine online through the web application. For this the driver has to use his driving license number as the log identification of the particulate incident will be his driving license number.

Considering the weight of the violation, the traffic police officer has the authority to cancel the driving license and, in such instance, again the officer can claim a log through his mobile application and that record automatically updates in the RMV web application. Once the license cancellation request is received, RMV does the cancellation of the license for the given time period and re-issue it based on the instructions given by the traffic police.

Also, it is possible to generate reports on the same at any time through the police web application and this is more beneficial when it comes to analyzing and decision making.

Through the Police web application, an admin police officer needs to update motor traffic penalties given by the transport ministry. And also, the admin officer is responsible for issuing credentials to other police officers regarding this web application. Any officer with the access can check about license details of drivers,

penalty detail changes done by the transport ministry etc. The police web application is linked with the Registry of Motor Vehicles (RMV).

There is another web application to RMV. From that web application, an admin officer of RMV can cancel and re-issue the license of the suspected drivers. Police officers also can view statuses of license driver wise.

Then providing access to mobile applications to each and every traffic police officer. (Access will be granted from the Police Web Application). Through this application, a police officer can enter the driver's driver license number and check whether the license is valid or not. After reading the license number, the police officer has to enter the penalty and take the driver's signature through the mobile app.

The said payment is done through a payment gateway system which links the driver and the marchland (Government of SL) For that online payment system will introduce another web application for drivers.

3.2 Methodological Approach

While it tends to be hard to make configuration changes later simultaneously, the waterfall approach loans itself well to modifications right off the bat in the existence cycle. This is incredible when fleshing out the particular records in the primary couple stages with the improvement group and customers, as adjustments can be put forth quickly and with negligible attempt since no coding or usage has really occurred up to that point.

3.2.1 Six stages of Waterfall methodology

- ❖ Requirements
- ❖ Analysis
- ❖ Design
- ❖ Coding
- ❖ Testing
- ❖ Operations

Stage No 01 - Requirements

During this underlying stage, the likely necessities of the application are systematically dissected and recorded in a detailed archive that fills in as the reason for all

future turn of events. The outcome is commonly a prerequisites record that characterizes what the application ought to do, however not how it ought to do it.

Stage No 02 - Analysis

During this subsequent stage, the framework is examined so as to appropriately create the models and business rationale that will be utilized in the application.

Stage No 03 - Design

This stage to a great extent covers specialized plan prerequisites, for example, programming language, information layers, administrations, and so forth. A plan determination will normally be made that plots how precisely the business rationale canvassed in the examination will be in fact actualized.

Stage No 04 - Coding

The genuine source code is at long last written in this fourth stage, executing all models, business rationale, and administration combinations that were determined in the earlier stages.

Stage No 05 - Testing

During this stage, QA, beta analyzers, and all different analyzers deliberately find and report issues inside the application that should be settled. It isn't phenomenal for this stage to cause a "fundamental rehash" of the past coding stage, all together for uncovered bugs to be appropriately crushed.

Stage No 06 - Operations

At long last, the application is prepared for an organization in a live climate. The activities stage involves the organization of the application, yet additionally resulting help and upkeep that might be needed to stay up with the latest.

3.3 Alternative Design Methodologies

3.3.1 Agile Methodology



Figure 10 : AGILE methodology

As this system is new to the government, stakeholders are more keen about the documentation part. Dissimilar to business measure applications, which are persistently adjusted to the variable business climate, framework applications will stay unaltered for a long while. In this way, they ought to be obviously organized and upheld by significant documentation. If so, stay away from Agile approach, as it depends upon steady collaboration and in transit transformations without away from the advancement cycle.

3.4 Software Architecture

Client-Server Architecture is a computing model in which the server hosts, delivers and manages most of the resources and services to be consumed by the client. This type of architecture has one or more client computers connected to a central server over a network or internet connection.[10]

System Architecture

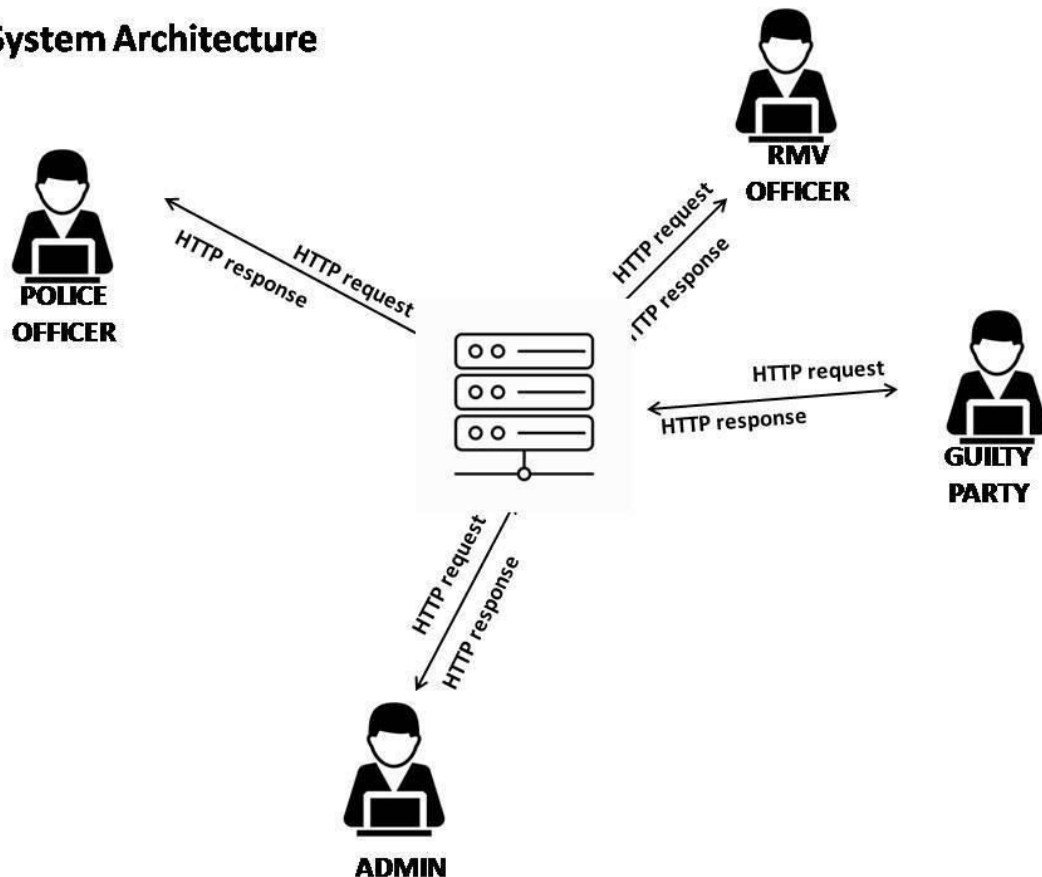


Figure 11 : Client - Server Architecture

In a client/server architecture, the relationship of the computers are separated into two roles:

- The client, which requests specific services or resources
- The server, which is dedicated to fulfilling requests by responding (or attempting to respond) with requested services or resources

An easy-to-understand example of a client/server relationship is seen when using the Internet. When using an Internet browser to access a Web site, the client would be the computer running the browser software, which would request a Web page from a Web server. The Web server receives this request and then responds to it by sending the Web page to the client computer. In VoIP, this same relationship can be seen when a client sends a request to register with a Registrar server, or makes a request to a Proxy Server or Redirect Server that allows it to connect with another user agent. In all these cases, the client's role is to request services and resources, and the server's role is to

listen to the network and await requests that it can process or pass onto other servers.

The servers that are used on a network acquire their abilities to service requests by the programs installed on it. Because a server may run a number of services or have multiple server applications installed on it, a computer dedicated to the role of being a server may provide several functions on a network. For example, a Web server might also act as an e-mail server. In the same way, SIP servers also may provide different services. A Registrar can register clients and also run the location service that allows clients and other servers to locate other users who have registered on the network. In this way, a single server may provide diverse functionality to a network that would otherwise be unavailable. [11]

3.5 System Users

It is expected to describe the activities that are performing in each user perspective.

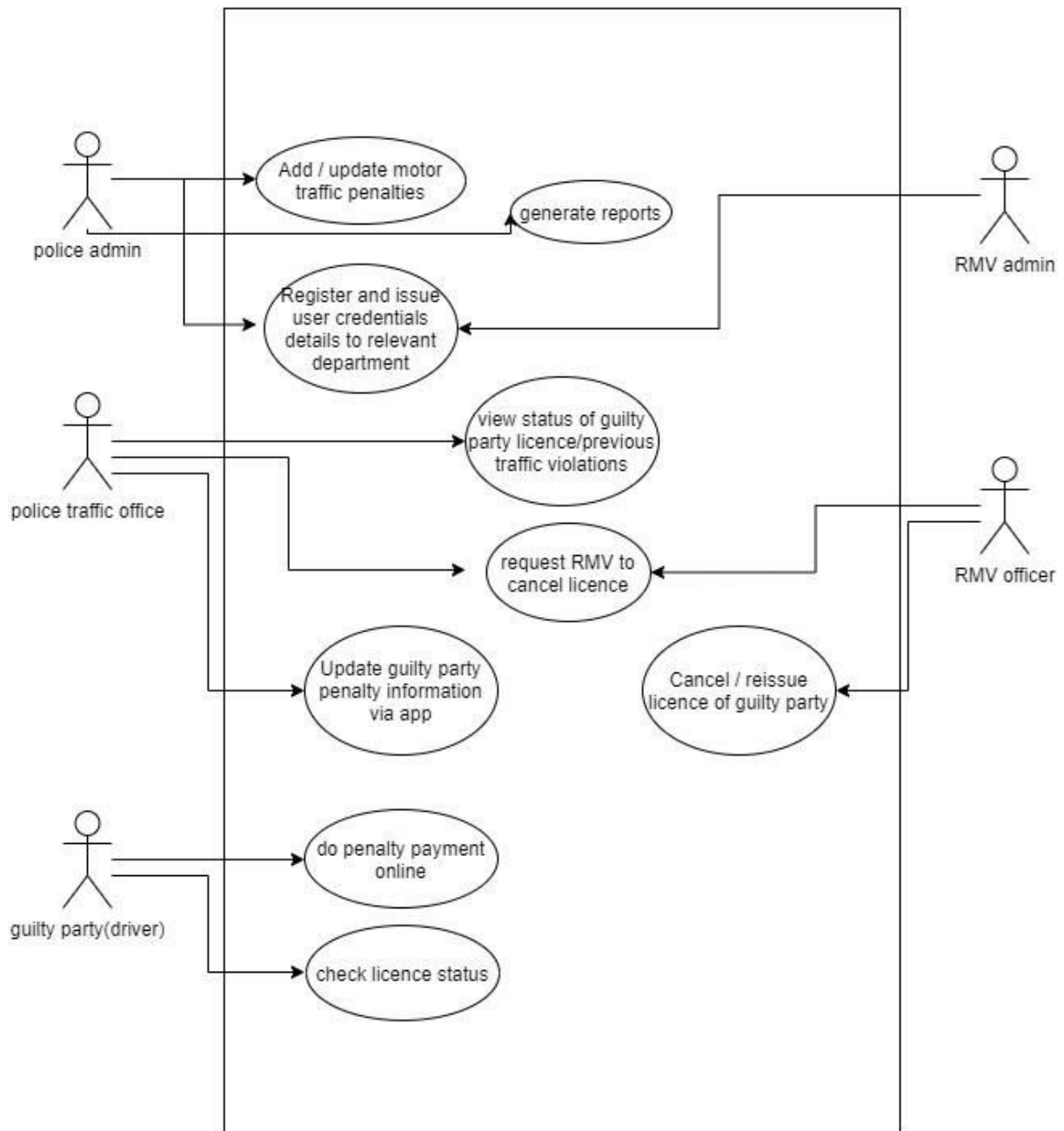
Admin : Registration of Police officers and RMV officers has to be done by System admin. Creating and updating fine details and accrue reports are also done by system admin.

Police officer : Viewing fine details, previous details of the guilty parties fines are some main features that can be done through police officer login. Updating court decisions and add new penalties also done by police officers.

RMV officer : Once the licence got suspended RMV officer can update licence according to the given timeline from the courts.

Guilty Party/SL Citizens : There's no specific login action for this section. Any citizen in Sri Lanka can be able to check his/her traffic violation points by entering the driving licence. For guilty parties who have panelized can pay their amount for the penalty.

3.6 Use Case Diagram



3.7 User Interface Design

The interface should be kept in a simple manner and want to avoid unnecessary elements. It is better to use very common UI elements in interface designing. It provides more comfort to the users and allows them to hit the target quickly.

System alerts and notifications are used in suitable colours and positions. For example, a success message should be in green and a warning message in orange colour.

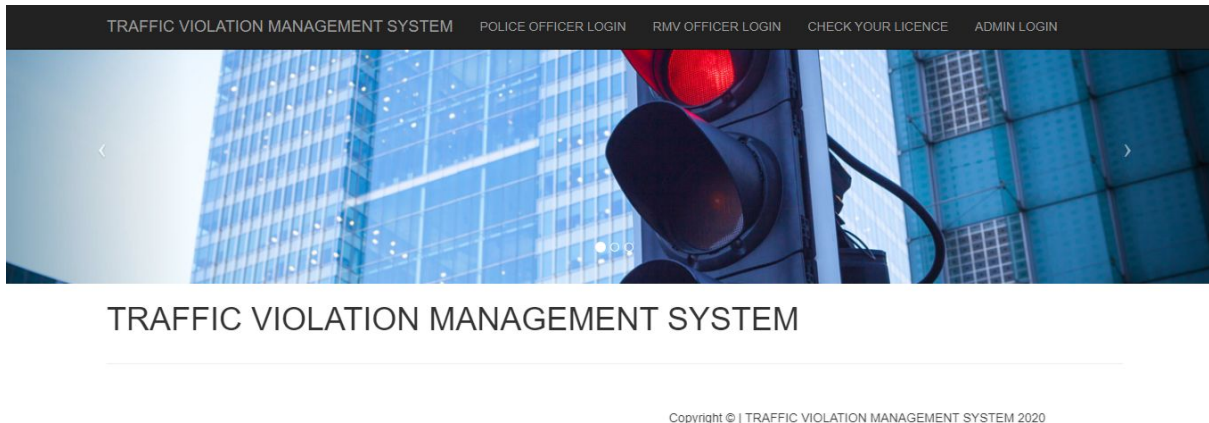


Figure 12 : Main page

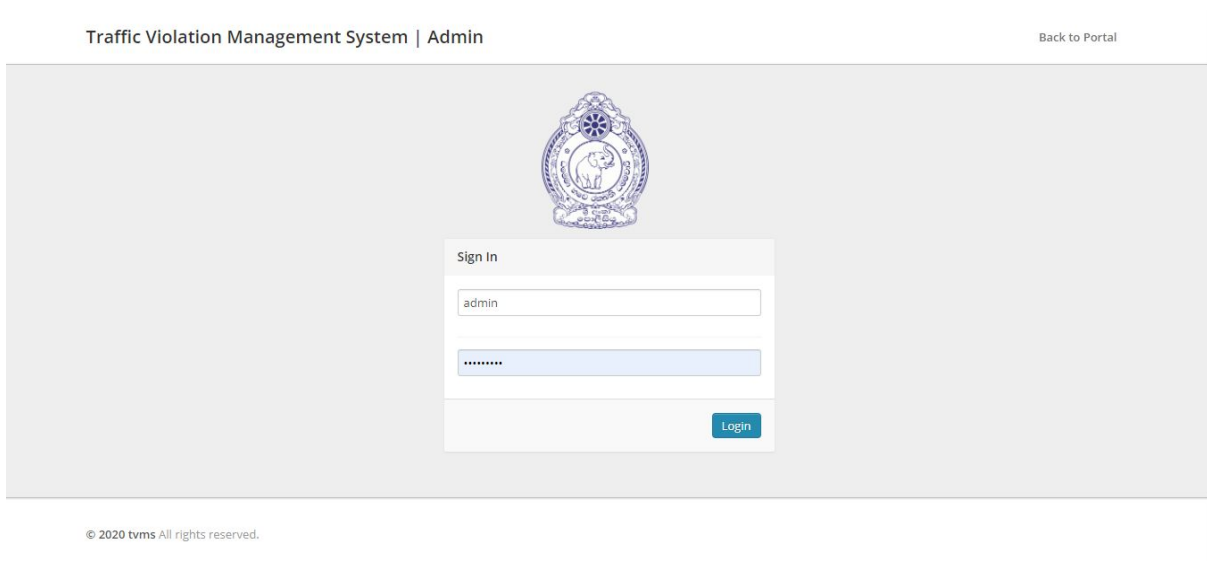


Figure 13 : Admin login page



Figure 14 : Police officer login page

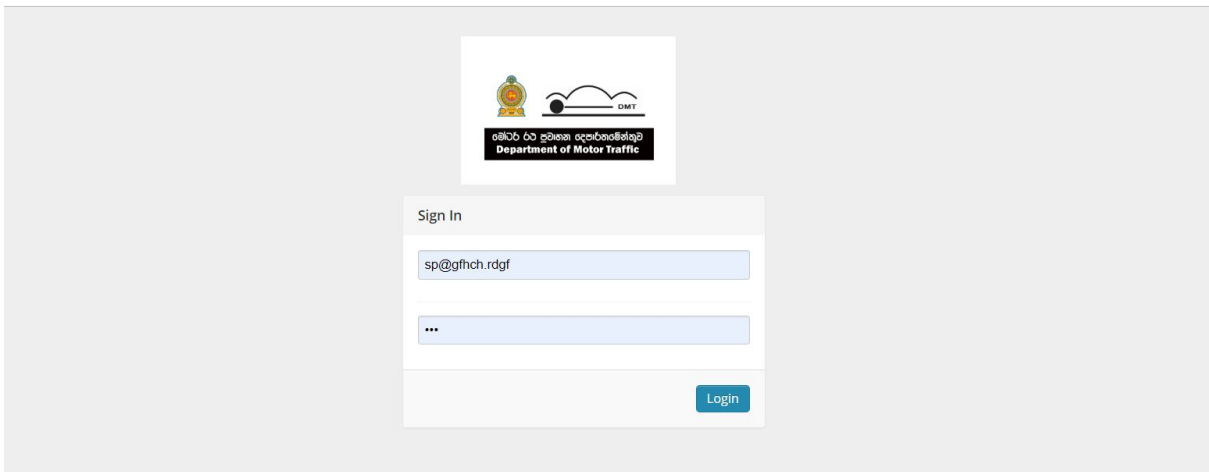


Figure 15 :RMV officer Login page



Figure 16 : Guilty Party main page for check Fine history

For other user Interface refer **Appendix B**

3.8 Implementation

3.8.1 Web-Based System

The traffic violation management system allows users to connect via the internet through a web browser. As it works in any browser system is not depending on any operating system. System can be open in any browser such as google chrome, safari, firefox, microsoft edge etc. This system is developed to handle any smart device from anywhere, anytime with a high speed transaction level. Especially this web-based system is mobile friendly as police officers need to log in via their mobile/tablets.

As this is a web-based system, users don't need to worry about any configurations. As the user's login from different locations with various technical knowledge, the web-based system will be perfect for the traffic violation management system.

3.8.2 Language and Framework - Codeigniter PHP Framework

System developed with PHP technology. PHP is an HTML-embedded Web scripting language. This means PHP code can be inserted into the HTML of a Web page. When a PHP page is accessed, the PHP code is read or "parsed" by the server the page resides on. The output from the PHP functions on the page are typically returned as HTML code, which can be read by the browser. Because the PHP code is transformed into HTML before the page is loaded, users cannot view the PHP code on a page. This makes PHP pages secure enough to access databases and other secure information. [9]

CodeIgniter is an application advancement structure, which can be utilized to create sites, utilizing PHP. It is an Open Source structure. It has a rich arrangement of usefulness, which will speed up site improvement work.

Features of codeigniter Framework

- MVC based system(model, view and controller)
- light weight
- form and data validation
- query builder DB support framework
- security is very high
- zero configuration

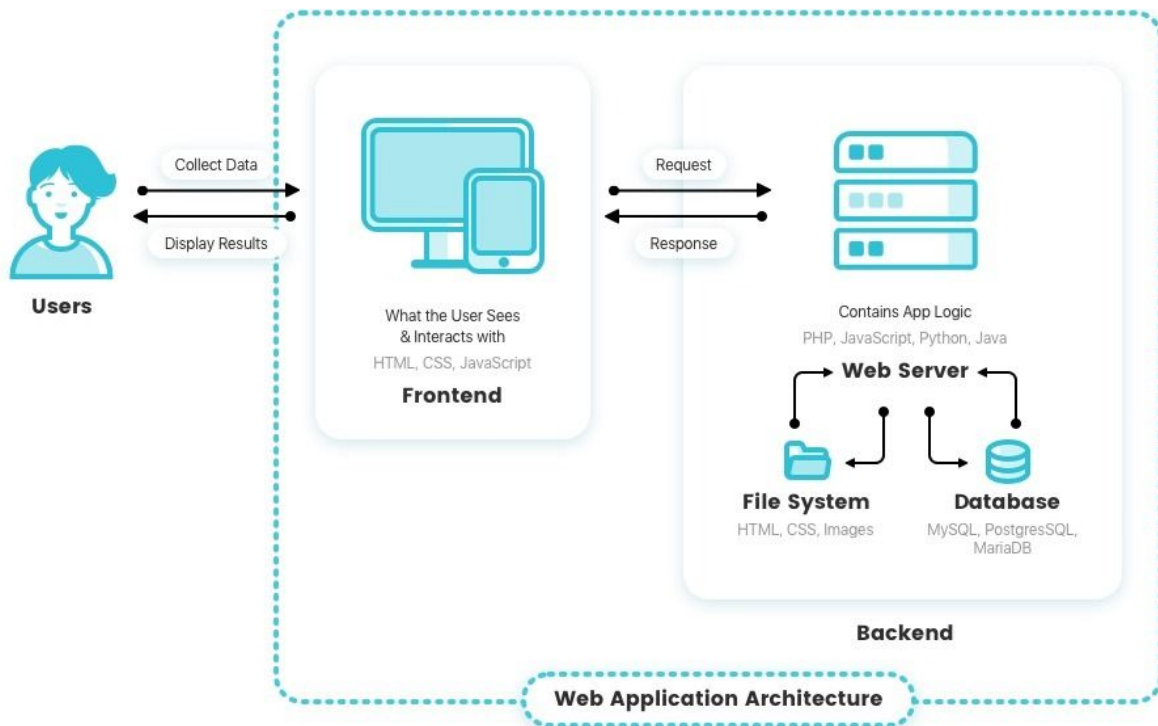


Figure 17 - Web Application Architecture

3.8.3 Hardware Environment

Server Configuration - Concentrated framework comprises 8Gb smash with Intel Core i5 3960x, Base clock speed 2.3Ghz, store memory 15MB with memory up to 4channel DDR3 1600. 512Mb SSD memory wants to improve fast getting to capacity with 1Tb capacity proffered as a prerequisite with very good quality equipment segments.

3.8.4 Database

MySQL is an Oracle-backed open source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQL runs on virtually all platforms, including Linux, UNIX and Windows. Although it can be used in a wide range of applications, MySQL is most often associated with web applications and online publishing. [10]

MySQL is based on a client-server model. The core of MySQL is MySQL server, which handles all of the database instructions (or commands). MySQL server is available as a separate program for use in a client-server networked environment and as a library that can be embedded (or linked) into separate applications. [11]

3.8.5 Development Tools

Environment	Application/Language	Software Used
Operating System	-	Microsoft Windows 10
Web Browser	-	Firefox, Chrome
Web Server	Apache Version 3.2.2	Xampp Server
Database Server	mysql	phpMyAdmin
User Interfaces	HTML 5, CSS3, JQuery, Bootstrap	Visual Studio Code

3.8.6 System Coding

For system codes refer **Appendix C**

Chapter 4. Evaluation

4.1 Introduction

In this chapter it is expected to evaluate the test plan for the given system and how all aspects of testing have performed to meet relevant specifications. Critical evaluation of the system, user evaluation and drawbacks had to be faced during the project with reasons included in this chapter.

4.2 overview of Testing

Which mainly focus on how to achieve testing objectives and how the test plan is implemented to cover all aspects of testing. It is expected to define testing areas required and inputs and outputs of specific tests have to carry out. Test cases for main functionalities defined in this section with a test plan defined in the initial stage of software development.

4.3 Testing Type

4.3.1 Regression Testing

When modification has been done for the code segment, the developer has to test whether the total system runs smoothly with the initial modification. Following test cases are regarding RMV Officer login.

Test Case #	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	RMV officer active guilty party license to active status.	1.login to the system as an RMV officer by using email and password. 2. navigate to the search bar and enter guilty party id card number and search guilty party. 3.Click on a guilty party and make status as active.	View guilty party record status as not active. And turn it on to active	successful	Pass

4.3.2 Functional Testing

Which perform to identify system functionalities run properly to achieve expected results.

Test Case #	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Police officers enter valid user name and password.	1.Enter 'police_officer@gmail.com'	Display police officer dashboard	successful	Pass
2	Police officers enter invalid username or password.	1.Enter 'abc@123'	Display error message	successful	Pass
3	Police officers enter invalid user names and invalid password.	1.Enter '123456'	Display error message	successful	Pass

4.3.3 Stress Testing

In the testing process stress testing is one of the most important testing to identify how a system behaves in high performance situations(peak time)/ how much stress can the system handle.

Test Case #	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Login as a police officer in several browsers and place penalty for the different guilty party in the same time	1.Log in as a police officer 2.navigate to the penalty tab	System runs normally with no confusions	successful	Pass

4.3.4 Security Testing

Security testing course to identify system drawbacks and eliminate chances of attacking to the system. Because it has to be done through the system, the payment gateway has to be secure using the bpo code process. other than that database protections of sql injections, unauthorized access to the system has to be eliminated. Security testing should cover all aspects of the system to facilitate a secure payment platform.

4.4 Critical Evaluation

Proposed system achieved many more objectives as expected. By introducing transparent payment methods guilty parties can accept reliable ways to pay their penalties. The traditional paper based system is going to be moderated to a system based traffic violation ticket system. It will be easy for both guilty parties and traffic police officers. By the report generation module senior officers can get ideas about the traffic violation by route wise, area wise etc. But few are unable to achieve due to restrictions of the police department and RMV. Overall as expected the system facilitates all the requirements from each and every stakeholders perspective. System introduces a secure payment method through the system to the guilty party by reducing his/her responsibility and facilitating the payment easy and quick time. On the other hand, empowering the penalty payment is another expectation by facilitating easy ways to do payments. System database follows relevant standards to secure user details and which brings confidentiality of relevant documents(court orders) and other specific details. Drawbacks of the existing system overcome the proposed system by facilitating report generation as required to the auditing process. Forecasting process, auditing and future planning are the expected outcomes of the system with regards of report generation. Proposed system mainly improves accessibility of users specially police officers and guilty parties to make ease of their process. System invents a traffic point system to Sri Lanka. Which is an initial stage implementation .

As future enhancement it will be developed to bring back to process when the government approves.

4.5 SWOT Analysis

Which is an amazing method of assessing venture status and anticipated results of an undertaking. Performing a SWOT analysis course to recognize strengths, weaknesses, opportunities and threats. Qualities and shortcomings go under the inward factors of a framework and dangers and openings considered as outside variables to the framework.

<p style="text-align: center;">STRENGTHS</p> <p>Real time access on guilty parties records. Data analysis can be done through this and decision making would be easy Web based system is easy for any party to access from any place at any time</p>	<p style="text-align: center;">WEAKNESS</p> <p>If network problem occurred whole system is not going to access. Need high data storages for save data</p>
<p style="text-align: center;">OPPORTUNITIES</p> <p>Currently Sri Lanka don't have a fully automated traffic violation management system. Gather various reports for future usage.</p>	<p style="text-align: center;">THREATS</p> <p>High security is needed for database because system is dealing with very sensitive data. In the initial stage both police officers and rmv officers met several obstacles.</p>

Chapter 5. Conclusion and Future Work

5.1 Introduction

This chapter summarizes the work, discusses its location and factors out the restrictions of the current system. And also includes the recommendation on regions for upgrades and destiny developments.

5.2 Achievement of objectives

The Traffic Violation Management System was developed to empower the penalty payment method regarding maintaining a reliable and transparent payment method.

The system was verified with all functionalities and validated with user requirements by process of testing.

This system helps the Traffic Police Department to secure the confidentiality of documents, to make the auditing process easy and to view previous records of violations.

From this system traffic department and guilty party, both can speed up the process of the penalty payment process. Additionally, this system makes the case transparent to the police department, consequently, corruption is impossible.

5.3 Major Findings and Lessons Learnt

Because of the higher work nature of police officers, system gathering was the most difficult part of the project. The project coding part of the Traffic Violation Management System focused on the reliability of the people who handle the system. Currently, in Sri Lanka this process is manual-based. So the system is focused on speed, reliability and because of the documents, the handling system is developed with relative ease to handle security as well.

The system gets each and every login IP address and time frame of system login and logout time as well.

This system is used by four parties. Higher officers who handle other users and ongoing traffic fine details, RMV officers, Police officers and the guilty party. As well as any citizen of Sri Lanka can access the system and can check their history fine details.

5.4 Future Implementation

The system is developed with PHP development language. So the system has an ability to run long-term efficiently. Currently, the system displays the guilty party's penalty points. In the future traffic police can get help from this point-based system to take action to the guilty party. Currently, the system is not supported with the SMS gateway. So it needs to be implemented with the time being.

5.4.1 Mobile React-Native Application for this system

The current version of the system supports the mobile view. But on-time GPS tracking of the police officer, push notification technology will need to be implemented through react native apps. Via firebase technology those GPS tracking and push notifications can be implemented.

For above-mentioned technologies, the system needs to implement via react native app. In the future, a police officer's portal needs to be implemented through a native app.

5.4.2 Implementation of Image Processing

The current system automates traffic violation processes. But some features are limited. As an example, it is not possible to get the guilty party's details (name, address, NIC etc) using a captured image of a license card. By image processing technology, the system can capture all the details at once.

Appendix A

Questionnaire for Sri Lanka citizens

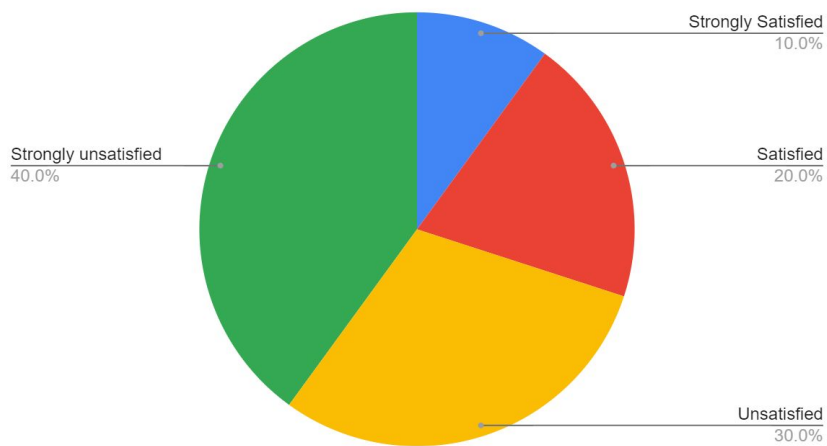
1. Basic information: Age: Licence: Gender:

18-25	None	Male
26-35	Provisional	Female
36-55	Full	

2. Are you satisfied with the current payment process of fine payment ?

- A. Strongly Satisfied
- B. Satisfied
- C. Unsatisfied
- D. Strongly unsatisfied

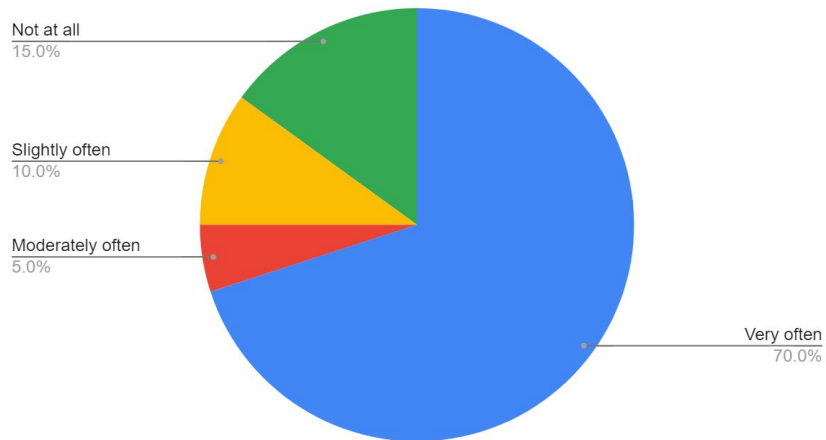
percentage



3. Are traffic police officers doing bribery ?

- A. Very often
- B. Moderately often
- C. Slightly often
- D. Not at all

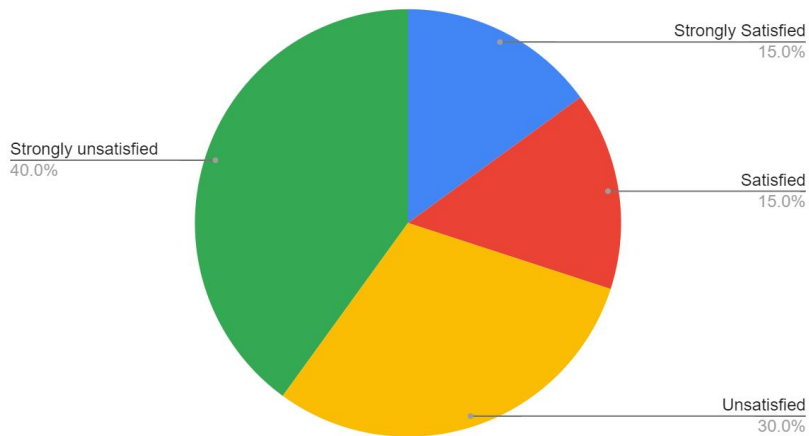
percentage



4. Are you satisfied with the current licence cancellation/suspend process ?

- A. Strongly Satisfied
- B. Satisfied
- C. Unsatisfied
- D. Strongly unsatisfied

percentage

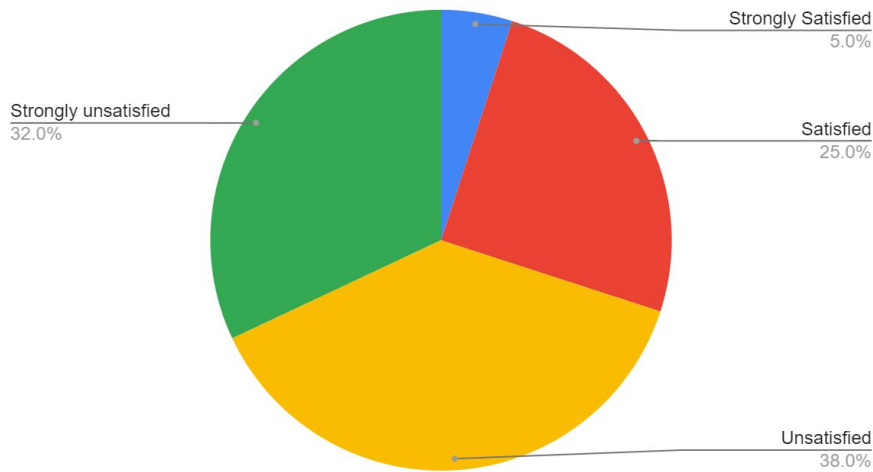


Questionnaire for Sri Lanka Police officers

1. Are you satisfied with the current documentation process ?

- A. Strongly Satisfied
- B. Satisfied
- C. Unsatisfied
- D. Strongly unsatisfied

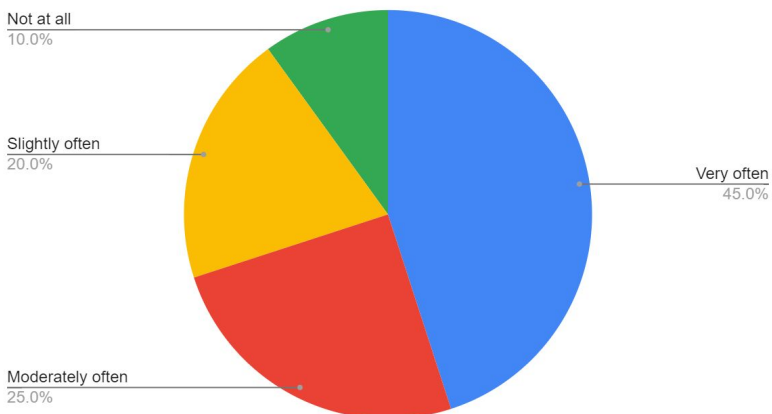
percentage



2. Do you believe police officers make mistakes in the traffic violation process ?

- A. Very often
- B. Moderately often
- C. Slightly often
- D. Not at all

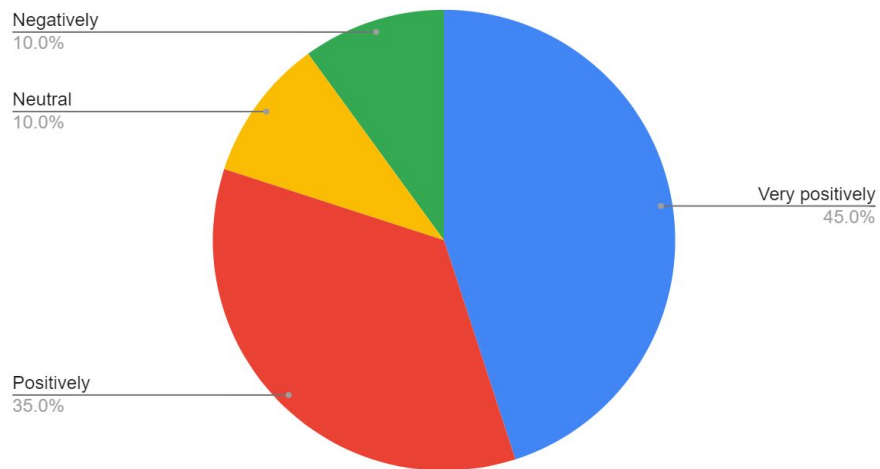
percentage



3. Do you believe police officers of Sri Lanka police are ok with online process of traffic violation?

- A. Very positively
- B. Positively
- C. Neutral
- D. Negatively

percentage



Appendix B

User Interface Design of Traffic Violation Management System

B.1 Admin :

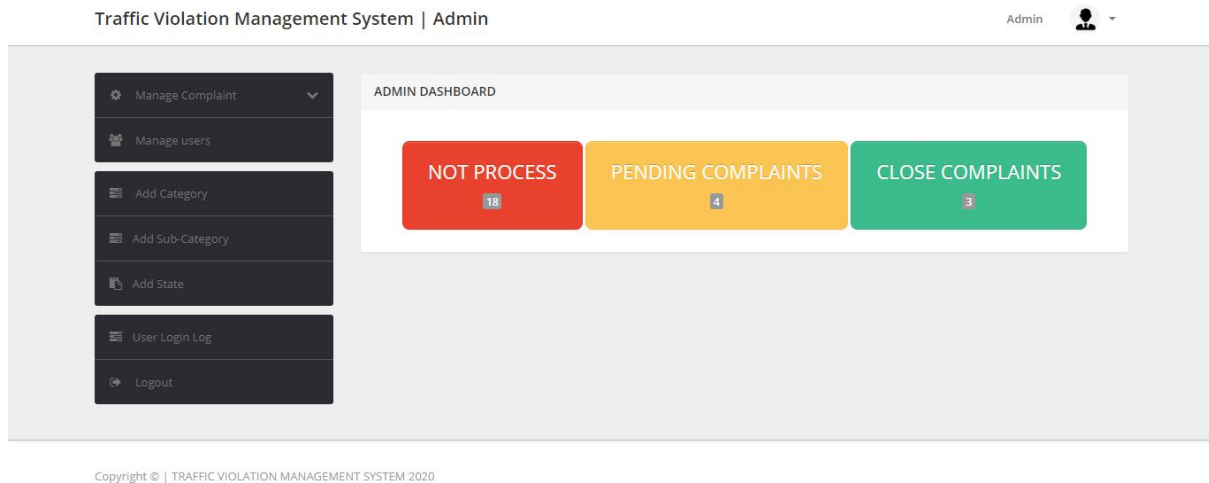


Figure 18 - Admin dashboard

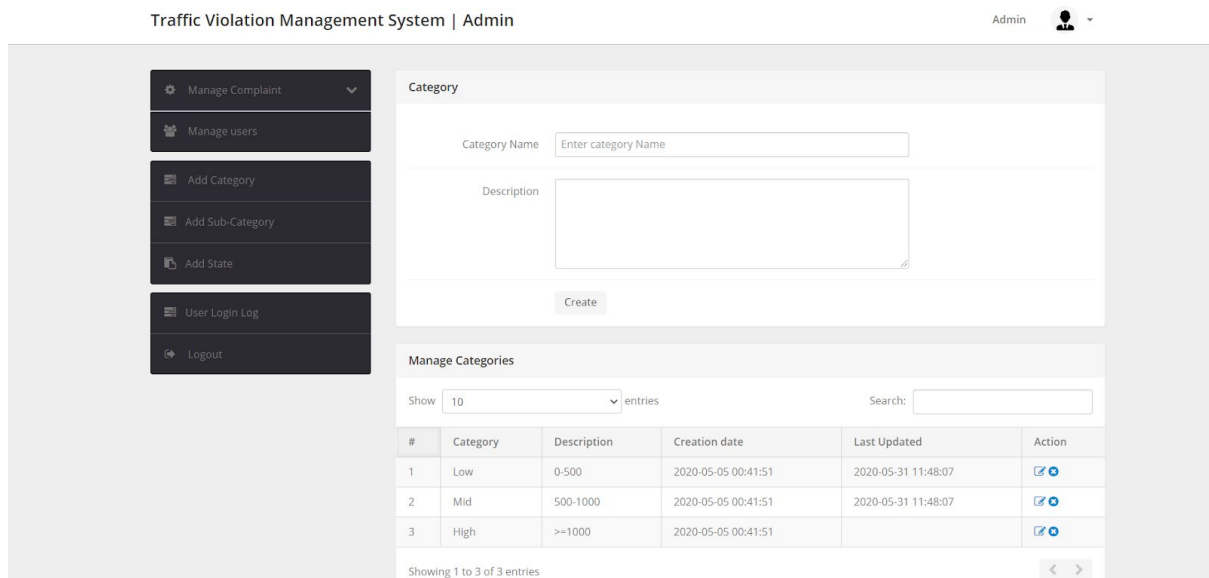


Figure 19 - Admin add Category for Fine

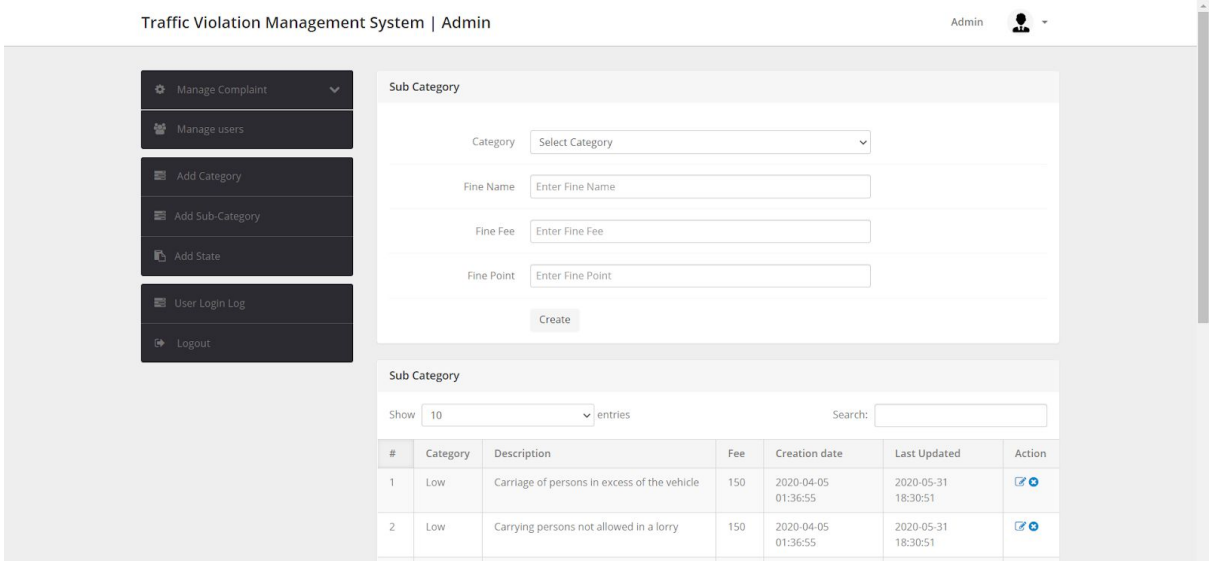


Figure 20 - Admin add Sub Category for Fine

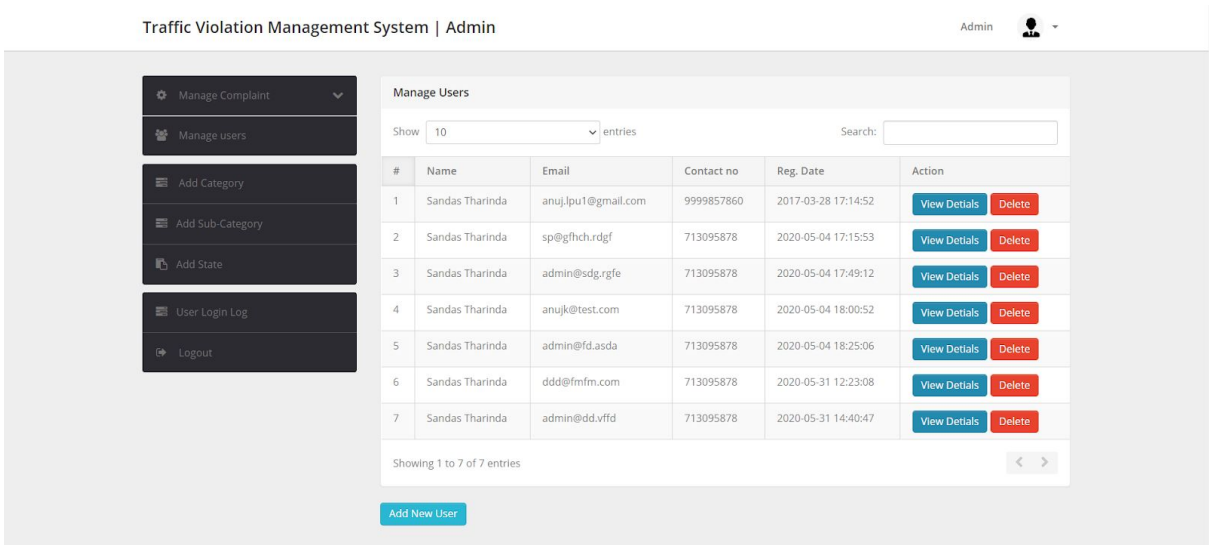


Figure 21 - Admin user List

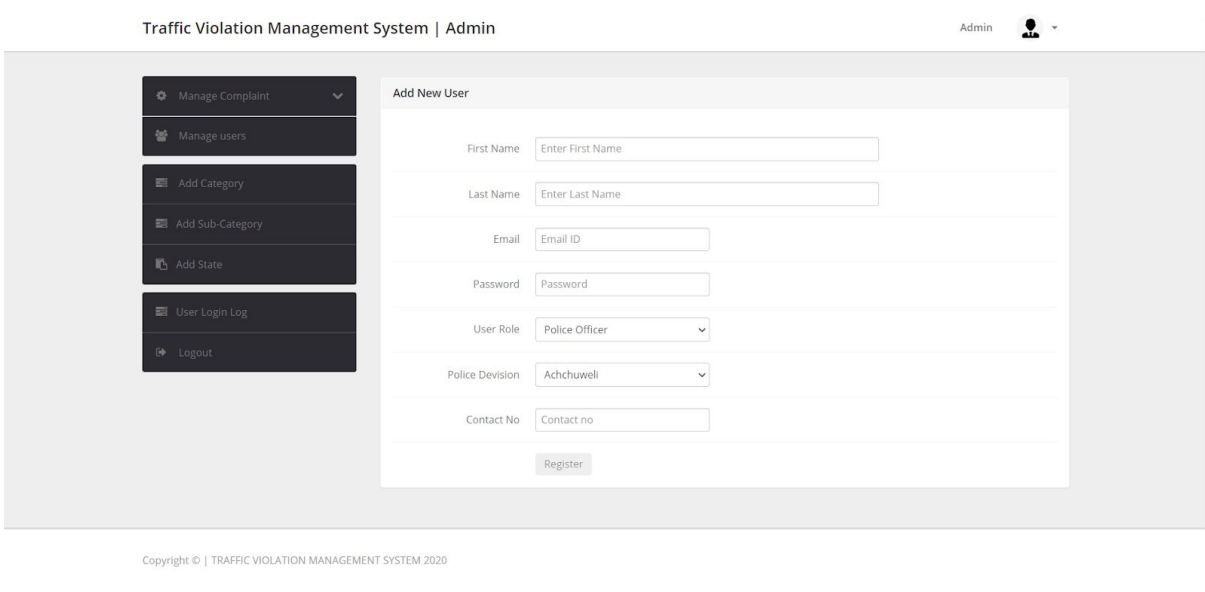


Figure 22 - Admin add new user

B.2 Police Officer :

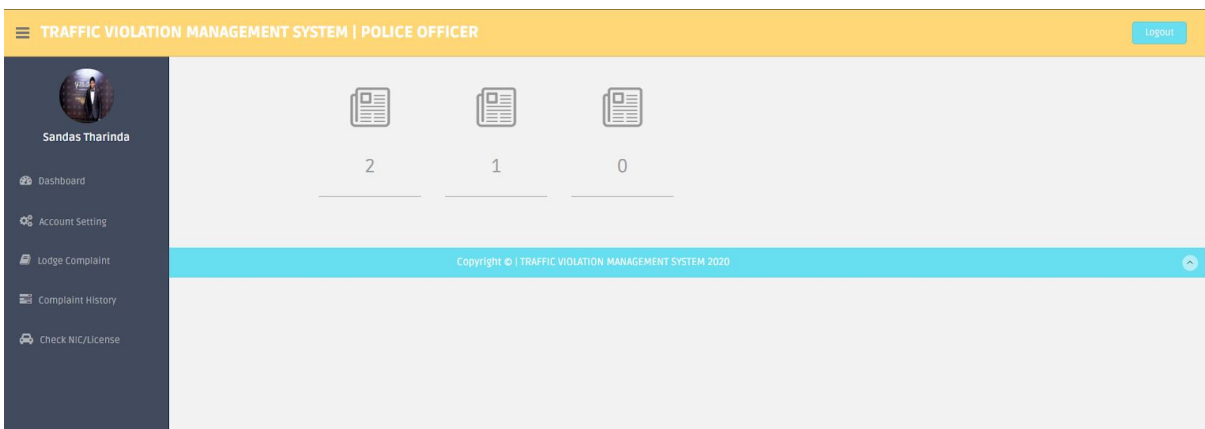


Figure 23 - Police officer dashboard

TRAFFIC VIOLATION MANAGEMENT SYSTEM POLICE OFFICER				
<div style="display: flex; justify-content: space-between;"> Sandas Tharinda >Your Fine History Logout </div>				
Complaint Number	Reg Date	Last Update date	Status	Action
24	2020-05-06 02:54:08	2020-06-09 22:12:35	Not Process Yet	View Details
25	2020-05-06 04:30:34	2020-06-15 18:52:22	In Process	View Details
26	2020-05-06 16:29:53	2020-06-15 17:29:46	Not Process Yet	View Details
Copyright © TRAFFIC VIOLATION MANAGEMENT SYSTEM 2020				

Figure 24 - Fine history that done by police officer

TRAFFIC VIOLATION MANAGEMENT SYSTEM POLICE OFFICER			
<div style="display: flex; justify-content: space-between;"> Sandas Tharinda > Fine Details Logout </div>			
Fine Number :	24	Reg. Date :	2020-05-06 02:54:08
Category :	Low	Sub Category :	Carriage of persons in excess of the vehicle
Fine Type :	Fine only	State :	Colombo 01
Nature of Fine :	test	File :	View File
Fine Details :	test description	NIC :	928623289V
Final Status :	Not Process yet	Licence No :	789965
Fine Amount :	Rs. 150 /=-		
Court Review			

Figure 25 - View fine details

TRAFFIC VIOLATION MANAGEMENT SYSTEM POLICE OFFICER			
<div style="display: flex; justify-content: space-between;"> Sandas Tharinda > Add Traffic Fine Logout </div>			
Category	<input type="text" value="Select Category"/>	Fine	<input type="text" value="Select Fine"/>
Guilty Party NIC	<input type="text"/>	Guilty Party Licence No	<input type="text"/>
Nature of Complaint	<input type="text"/>	State	<input type="text" value="Select State"/>
Complaint Details (max 2000 words)	<input type="text"/>		Is Produce to Court ? <input type="radio"/> Yes <input checked="" type="radio"/> No
Complaint Related Doc(If any)	<input type="text" value="Choose File No file chosen"/>		
Submit			

Figure 26 - add traffic fine

TRAFFIC VIOLATION MANAGEMENT SYSTEM | POLICE OFFICER Logout

Sandes Tharinda

- Dashboard
- Account Setting
- Lodge Complaint
- Complaint History
- Check NIC/License

> Fine Details

Search Results For : 928623289V

Complaint No	Complainant Name	Complainant Description	Complainant Reference Doc	Complainant State	Reg Date	Status	Points	Fine Fee
24	Carriage of persons in excess of the vehicle	test description	View File	Colombo 01	2020-05-06 02:54:08	closed	10	150
25	Incorrect shape of identification plate	test	File NA	Colombo 01	2020-05-06 04:30:34	in process	10	-

Closed Complaints : 1
All Complaints : 2
Total Points : 20

Figure 27 - view fine history by NIC/License no

B.3 RMV Officer :

Traffic Violation Management System | RMV RMV Officer

Manage Complaint

RMV Officer DASHBOARD

NOT PROCESS
0

PENDING COMPLAINTS
1

CLOSE COMPLAINTS
0

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Figure 28 - RMV officer Dashboard

Traffic Violation Management System | RMV RMV Officer

Manage Complaint

In Process Complaints

Show entries Search:

Complaint No	Reg Date	Status	Action
25	2020-05-06 04:30:34	In Process	View Details

Showing 1 to 1 of 1 entries < >

Figure 29 - Complaints of license canceled/suspended

⚙️ Manage Complaint ▼

Complaint Details

Complaint Number	25	Complainant Name	Sandas Tharinda	Reg Date	2020-05-06 04:30:34
Category	Low	SubCategory	Incorrect shape of Identification plate		
State	Colombo 01	Nature of Complaint	test		
Complaint Details	test				
File(if any)	File NA				
Final Status	in process				
Duration	3 months	Date Difference	0 years, 1 months, 16 days		
Remark	done Remark Date :2020-06-15 18:50:35				
Status	in process				
Action	Take Action				

Figure 30 - View and update license status

B.4 Guilty Party :

> Fine Details

Search Results For : 9512289V15

Complaint No	Complainant Name	Complainant Description	Complainant Reference Doc	Complainant State	Reg Date	Status	Points	Fine Fee	Action
24	Carriage of persons in excess of the vehicle	test description	View File	Colombo 01	2020-05-06 02:54:08	in process	10	150	Pay

Closed Complaints : 0
 All Complaints : 1
 Total Points : 10

Search More

Figure 31 - Guilty Party check Fine history

Appendix C

System codes of Traffic Violation Management System

C.1 Admin :

C.1.1 Login :

```
<?php
session_start();
error_reporting(0);
include("include/config.php");
if(isset($_POST['submit']))
{
    $username=$_POST['username'];
    $password=md5($_POST['password']);
    $ret=mysqli_query($con,"SELECT * FROM users WHERE userEmail='$username' and
password='$password' and userRole = '3' ");
    $num=mysqli_fetch_array($ret);
    if($num>0)
    {
        $extra="dashboard.php";//
        $_SESSION['alogin']=$_POST['username'];
        $_SESSION['id']=$num['id'];
        $host=$_SERVER['HTTP_HOST'];
        $suri=rtrim(dirname($_SERVER['PHP_SELF']),'/\');
        header("location:http://$host$suri/$extra");
        exit();
    }
    else
    {
        $_SESSION['errmsg']="Invalid username or password";
        $extra="index.php";
        $host = $_SERVER['HTTP_HOST'];
        $suri = rtrim(dirname($_SERVER['PHP_SELF']),'/\');
        header("location:http://$host$suri/$extra");
        exit();
    }
}
?>

<!DOCTYPE html>
<html lang="en">
```

```

<head>
  <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Traffic Violation Management System | RMV login</title>
  <link type="text/css" href="bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link type="text/css" href="bootstrap/css/bootstrap-responsive.min.css" rel="stylesheet">
  <link type="text/css" href="css/theme.css" rel="stylesheet">
  <link type="text/css" href="images/icons/css/font-awesome.css" rel="stylesheet">
  <link type="text/css"
href='http://fonts.googleapis.com/css?family=Open+Sans:400italic,600italic,400,600'
rel='stylesheet'>

  <style>
.aligncenter {
  text-align: center;
}
</style>
</head>
<body>

  <div class="navbar navbar-fixed-top">
    <div class="navbar-inner">
      <div class="container">
        <a class="btn btn-navbar" data-toggle="collapse"
data-target=".navbar-inverse-collapse">
          <i class="icon-reorder shaded"></i>
        </a>

        <a class="brand" href="index.php">
          Traffic Violation Management System | RMV
        </a>

        <div class="nav-collapse collapse navbar-inverse-collapse">

          <ul class="nav pull-right">

            <li><a href="http://localhost/tvms/">
              Back to Portal
            </a></li>

```

```

        </ul>
    </div><!-- /.nav-collapse -->
</div>
</div><!-- /navbar-inner -->
</div><!-- /navbar -->

<div class="wrapper">
    <div class="container">

        <div class="row">
            <p class="aligncenter">
                
            </p>

            <div class="module span4 offset4">
                <form class="form-vertical" method="post">
                    <div class="module-head">
                        <h3>Sign In</h3>
                    </div>
                    <span style="color:red;" ><?php echo htmlentities($_SESSION['errmsg']); ?><?php
echo htmlentities($_SESSION['errmsg']="");?></span>
                    <div class="module-body">
                        <div class="control-group">
                            <div class="controls row-fluid">
                                <input class="span12" type="text" id="inputEmail" name="username"
placeholder="Username">
                            </div>
                        </div>
                        <div class="control-group">
                            <div class="controls row-fluid">
                                <input class="span12" type="password" id="inputPassword" name="password"
placeholder="Password">
                            </div>
                        </div>
                    </div>
                    <div class="module-foot">
                        <div class="control-group">
                            <div class="controls clearfix">
                                <button type="submit" class="btn btn-primary pull-right"
name="submit">Login</button>

```

```

        </div>
    </div>
    </div>
</form>
</div>
</div>
</div>
</div><!--/.wrapper-->

<div class="footer">
    <div class="container">

        <b class="copyright">&copy; <?php echo date("Y"); ?> tvms </b> All rights reserved.
    </div>
</div>
<script src="scripts/jquery-1.9.1.min.js" type="text/javascript"></script>
<script src="scripts/jquery-ui-1.10.1.custom.min.js" type="text/javascript"></script>
<script src="bootstrap/js/bootstrap.min.js" type="text/javascript"></script></body>

```

C.1.2 Dashboard :

```

<?php
session_start();
include('include/config.php');
if(strlen($_SESSION['alogin'])==0)
    {
header('location:index.php');
}
else{
date_default_timezone_set('Asia/Colombo');// change according timezone
$currentTime = date( 'd-m-Y h:i:s A', time () );

if(isset($_POST['submit']))
{
$sql=mysqli_query($con,"SELECT password FROM RMV Officer where
password='".$_md5($_POST['password'])."' && username='".$_SESSION['alogin']."'");
$num=mysqli_fetch_array($sql);
if($num>0)
{

```



```

$con=mysqli_query($con,"update RMV Officer set password='".md5($_POST['newpassword'])."',
updateDate='$currentTime' where username='".$_SESSION['alogin']."'");
$_SESSION['msg']="Password Changed Successfully !!";
}
else
{
$_SESSION['msg']="Old Password not match !!";
}
}
?>
<!DOCTYPE html>
<html lang="en">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>RMV Officer| Change Password</title>
<link type="text/css" href="bootstrap/css/bootstrap.min.css" rel="stylesheet">
<link type="text/css" href="bootstrap/css/bootstrap-responsive.min.css" rel="stylesheet">
<link type="text/css" href="css/theme.css" rel="stylesheet">
<link type="text/css" href="images/icons/css/font-awesome.css" rel="stylesheet">
<link type="text/css"
href='http://fonts.googleapis.com/css?family=Open+Sans:400italic,600italic,400,600'
rel='stylesheet'>
<script type="text/javascript">
function valid()
{
if(document.chngpwd.password.value=="")
{
alert("Current Password Filed is Empty !!");
document.chngpwd.password.focus();
return false;
}
else if(document.chngpwd.newpassword.value=="")
{
alert("New Password Filed is Empty !!");
document.chngpwd.newpassword.focus();
return false;
}
else if(document.chngpwd.confirmpassword.value=="")
{
alert("Confirm Password Filed is Empty !!");
document.chngpwd.confirmpassword.focus();

```

```

return false;
}
else if(document.chngpwd.newpassword.value!= document.chngpwd.confirmpassword.value)
{
alert("Password and Confirm Password Field do not match !!");
document.chngpwd.confirmpassword.focus();
return false;
}
return true;
}
</script>
<style>
.btn-xlarge {
padding: 18px 28px;
font-size: 22px; //change this to your desired size
line-height: normal;
-webkit-border-radius: 8px;
-moz-border-radius: 8px;
border-radius: 8px;
}
#outer
{
width:100%;
text-align: center;
}
.inner
{
display: inline-block;
}
</style>
</head>
<body>
<?php include('include/header.php');?>

<div class="wrapper">
<div class="container">
<div class="row">
<?php include('include/sidebar.php');?>
<div class="span9">
<div class="content">

<div class="module">

```

```

<div class="module-head">
    <h3>RMV Officer DASHBOARD</h3>
</div>
<div class="module-body">

    <br />

    <form class="form-horizontal row-fluid" name="chngpwd" method="post"
onSubmit="return valid();">

        <div id="outer">
<div class="inner">
<div id="button">
    <p>
        <a href="notprocess-complaint.php" class="btn btn btn-xlarge btn-danger">NOT PROCESS
    <?php
Srt = mysqli_query($con,"SELECT * FROM tblcomplaints join tblcourtcomplaint on
tblcourtcomplaint.complainID = tblcomplaints.complaintNumber
where complaintType = 1 and status is null and fineType = 2;");
$num1 = mysqli_num_rows($srt);
{?<br>
<b class="label orange"><?php echo htmlentities($num1); ?</b>
        <?php } ?>
    </a>
</p>
</div>
</div>
<div class="inner">
<div id="button">
    <p>
        <a href="inprocess-complaint.php" class="btn btn btn-xlarge btn-warning"> PENDING
COMPLAINTS
    <?php
        $status="in Process";
        $srt = mysqli_query($con,"SELECT * FROM tblcomplaints join tblcourtcomplaint on
tblcourtcomplaint.complainID = tblcomplaints.complaintNumber
        where complaintType = 1 and status = '$status' and fineType = 2;");
$num1 = mysqli_num_rows($srt);
{?<br>
<b class="label orange"><?php echo htmlentities($num1); ?</b>
        <?php } ?>

```

```

    </a>
</p>
</div>
</div>
<div class="inner">
<div id="button">
    <p>
        <a href="closed-complaint.php" class="btn btn btn-xlarge btn-success"> CLOSE
COMPLAINTS
    <?php
Sstatus="closed";
Srt = mysqli_query($con,"SELECT * FROM tblcomplaints join tblcourtcomplaint on
tblcourtcomplaint.complainID = tblcomplaints.complaintNumber
where complaintType = 1 and status = 'Sstatus' and fineType = 2;");
Snum1 = mysqli_num_rows($rt);
{?}<br>
<b class="label orange"><?php echo htmlentities($num1); ?></b>
        <?php } ?>
    </a>
</p>
</div>
</div>
</div>
</div>

        </form>
    </div>
</div>

</div><!--/.content-->
</div><!--/.span9-->
</div>
</div><!--/.container-->
</div><!--/.wrapper-->

<?php include('include/footer.php');?>

```

```

<script src="scripts/jquery-1.9.1.min.js" type="text/javascript"></script>
<script src="scripts/jquery-ui-1.10.1.custom.min.js" type="text/javascript"></script>
<script src="bootstrap/js/bootstrap.min.js" type="text/javascript"></script>
<script src="scripts/flot/jquery.flot.js" type="text/javascript"></script>
</body>
<?php } ?>

```

C.1.3 Add category :

```

<?php
session_start();
include('include/config.php');
if(strlen($_SESSION['alogin'])==0)
    {
header('location:index.php');
}
else{
date_default_timezone_set('Asia/Colombo');// change according timezone
$currentTime = date( 'd-m-Y h:i:s A', time () );

if(isset($_POST['submit']))
{
    $category=$_POST['category'];
    $description=$_POST['description'];
    $sql=mysqli_query($con,"insert into category(categoryName,categoryDescription)
values('$category','$description')");
    $_SESSION['msg']="Category Created !!";
}

if(isset($_GET['del']))
    {
        mysqli_query($con,"delete from category where id = '".$_GET['id']."'");
        $_SESSION['delmsg']="Category deleted !!";
    }

?>
<!DOCTYPE html>
<html lang="en">

```

```

<head>
  <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>RMV Officer| Category</title>
  <link type="text/css" href="bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link type="text/css" href="bootstrap/css/bootstrap-responsive.min.css" rel="stylesheet">
  <link type="text/css" href="css/theme.css" rel="stylesheet">
  <link type="text/css" href="images/icons/css/font-awesome.css" rel="stylesheet">
  <link type="text/css"
href='http://fonts.googleapis.com/css?family=Open+Sans:400italic,600italic,400,600'
rel='stylesheet'>
</head>
<body>
<?php include('include/header.php');?>

  <div class="wrapper">
    <div class="container">
      <div class="row">
<?php include('include/sidebar.php');?>
        <div class="span9">
          <div class="content">

            <div class="module">
              <div class="module-head">
                <h3>Category</h3>
              </div>
              <div class="module-body">

                <?php if(isset($_POST['submit']))
{?>

                  <div class="alert alert-success">
                    <button type="button" class="close" data-dismiss="alert">×</button>
                    <strong>Well done!</strong> <?php echo
htmlentities($_SESSION['msg']);?><?php echo htmlentities($_SESSION['msg']="");?>
                  </div>
<?php } ?>

                <?php if(isset($_GET['del']))
{?>

                  <div class="alert alert-error">
                    <button type="button" class="close" data-dismiss="alert">×</button>

```

```

        <strong>Oh snap!</strong> <?php echo
htmlentities($_SESSION['delmsg']);?><?php echo htmlentities($_SESSION['delmsg']='');?>
        </div>
<?php } ?>

        <br />

        <form class="form-horizontal row-fluid" name="Category" method="post" >

<div class="control-group">
<label class="control-label" for="basicinput">Category Name</label>
<div class="controls">
<input type="text" placeholder="Enter category Name" name="category" class="span8 tip"
required>
</div>
</div>

<div class="control-group">
        <label class="control-label" for="basicinput">Description</label>
        <div class="controls">
                <textarea class="span8" name="description" rows="5"></textarea>
        </div>
</div>

<div class="control-group">
        <div class="controls">
                <button type="submit" name="submit" class="btn">Create</button>
        </div>
</div>
</form>
</div>
</div>

<div class="module">
        <div class="module-head">
                <h3>Manage Categories</h3>
        </div>
        <div class="module-body table">
                <table cellpadding="0" cellspacing="0" border="0" class="datatable-1 table
table-bordered table-striped display" width="100%">

```

```
| # | Category | Description | Creation date | Last Updated | Action |
| --- | --- | --- | --- | --- | --- |

<?php $query=mysqli_query($con,"select * from category");
$cnt=1;
while($row=mysqli_fetch_array($query))
{
?>
| <?php echo htmlentities($cnt);?> | <?php echo htmlentities($row['categoryName']);?> | <?php echo htmlentities($row['categoryDescription']);?> | <?php echo htmlentities($row['creationDate']);?> | <?php echo htmlentities($row['updateDate']);?> | <a href="edit-category.php?id=<?php echo $row['id'];?>" <i class="icon-edit"></i></a> <a href="category.php?id=<?php echo $row['id'];?>&del=delete" onClick="return confirm('Are you sure you want to delete?')"><i class="icon-remove-sign"></i></a></td> |

<?php $cnt=$cnt+1; } ?>

```



```

</div><!--/.wrapper-->

<?php include('include/footer.php');?>

<script src="scripts/jquery-1.9.1.min.js" type="text/javascript"></script>
<script src="scripts/jquery-ui-1.10.1.custom.min.js" type="text/javascript"></script>
<script src="bootstrap/js/bootstrap.min.js" type="text/javascript"></script>
<script src="scripts/flot/jquery.flot.js" type="text/javascript"></script>
<script src="scripts/datatables/jquery.dataTables.js"></script>
<script>
    $(document).ready(function() {
        $('#datatable-1').dataTable();
        $('#dataTables_paginate').addClass("btn-group datatable-pagination");
        $('#dataTables_paginate > a').wrapInner('<span />');
        $('#dataTables_paginate > a:first-child').append('<i class="icon-chevron-left shaded"></i>');
        $('#dataTables_paginate > a:last-child').append('<i class="icon-chevron-right shaded"></i>');
    });
</script>
</body>
<?php } ?>

```

C.2 Configuration :

```

<?php
define('DB_SERVER','localhost');
define('DB_USER','root');
define('DB_PASS','admin');
define('DB_NAME','cms');
$con = mysqli_connect(DB_SERVER,DB_USER,DB_PASS,DB_NAME);
// Check connection
if (mysqli_connect_errno())
{
    echo "Failed to connect to MySQL: " . mysqli_connect_error();
}
?>

```

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