Software Requirements Specification

Traffic Citation and Reporting System

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1. Introduction

This document will give a detailed description of the Traffic Citation and Reporting System. Below we will go into more details about the scope of the project.

1.1 Purpose

The purpose for this Traffic Citation and Reporting System is to detect traffic violations at any moment in time and at any place to provide safety while reshaping traffic enforcement framework. This system will then record and store data from a detection made. Finally, this data will be examined to determine if there was a traffic violation made.

1.2 Intended Audience and Reading Suggestions

This document is intended for government offices, transportation hubs, schools, parents, traffic system engineers, roadway architects, urban planners. The system requirements specification will go into detail about the structure and overlook of the proposed system. Parents' schools and transportation hubs will benefit most from reading section 2.1, 2.2 , 4.3, 6.2, 6.3, and 6.4. traffic system engineers, roadway architects, urban planners and government offices would benefit most from reading sections 2.2, 2.3, 3.3, 4.1, 4.3, 6.1- 6.4.

1.3 References

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2. Overall Description

2.1 Background
In the past few years, we have seen an increase in speeding tickets and insurance rates. This is due to the overwhelming amount of cars that are now on the road. Public transportation has become less popular in recent years and people are more comfortable driving their vehicles. While a traffic citation and reporting system is not a new idea, proper implementation is key in recognizing unlawful acts such as speeding, running red lights, disobeying signs (e.g running a stop sign). While gathering data so that those who are suspected or responsible for disobeying traffic are held responsible.

2.2 Objectives
Our traffic report will attempt to maintain traffic systems, and keep up to date with traffic status throughout the city. Our objective is to bring safe traveling for those that use the software, and ensure that the use of this software will result in fewer traffic incidents in the future, and promote safer driving in the future. The main objective is to keep all traffic citations up to date.

2.3 Constraints
- Data inaccuracies
- Incorrect violations
- Various users (e.g vehicles and pedestrians)
- Driver privacy
- Mass surveillance
- Prompt notice to drivers
- Impact on Pedestrians & Bicyclists
- Legal Issues
- Perverse Financial Incentive Structures
- Reallocating government funds
- How many active employees

2.4 Assumptions and Dependencies
This Traffic Citation and Reporting System is dependent on its classes that make up the entirety of its software. This dependency on the classes is because they are fundamental to all of the program's operations. This software is also dependent on its users because if they do not know how to properly operate and execute this program, then its results will be incorrect.

3. External Interface Requirements
3.1 Software Interfaces
The system will be implemented using Java, a high-level class-based, object-oriented language. Web browsers such as Google Chrome are compatible with Windows. System database to store, add and modify data.

3.2 Communications Interfaces
Communications could be captured through E-mail. It will contain wireless technology to connect to the internet and obtain information and send and receive signals from various databases.

3.3 Hardware Interfaces
A crucial part of the system's function is the server. The server will be responsible for holding data. Some other hardware interfaces include cameras, desktop computers. This would be the easiest for those that are users to access the information and quickly gain access to the database with a clean interface that connects.

4.0 Functional Requirements

4.1 Use cases

Traffic citation and reporting

Log in
- - - <<include>> - - -> Verify password

Registration

Check tickets received

Pay tickets <<include>> Checking remaining balance

Add money to account

Check profile

Log out

Add new tickets

Users

System Database
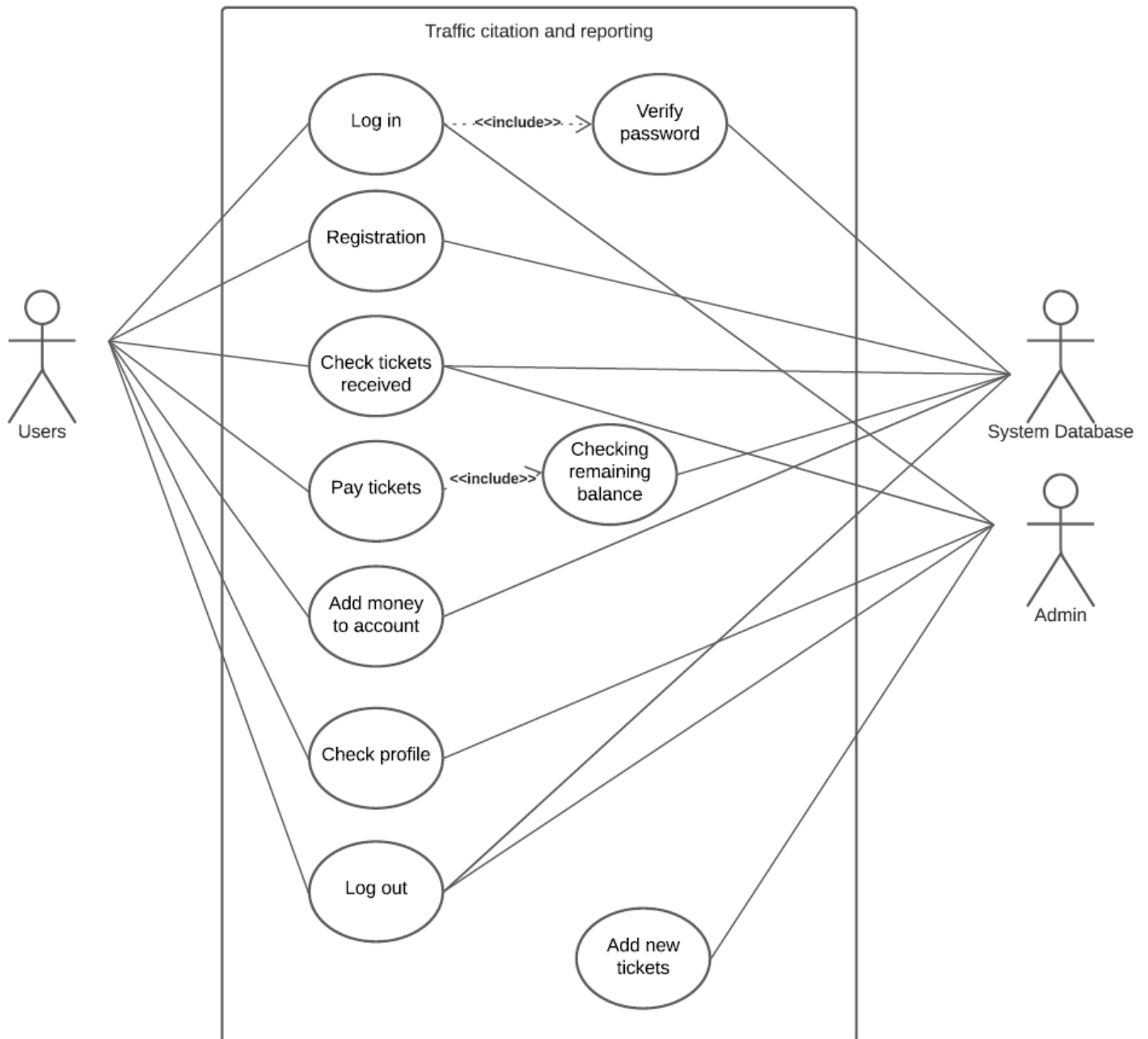
Admin

4.2 Actors

Primary Actors:
Users: The vehicle owners who have the accessibility to check the tickets they received and pay the fine.

Admin: The police officer that has the authority to give tickets and check the users' profiles.

Supporting Actor:
System database: Create, save, update and verify the information regarding tickets and user info.

4.3.1.0 User Stories

4.3.1.1 User Log In

Description
The user logs in to the app through the driver entry.

Steps
1. User opens the app.
2. Select 'Driver' entry.
3. Enter the account and password, then press 'Log in'.
4. If the password matches the account, jump to the home page. Otherwise, return to step 3.

4.3.1.2 New User Registration

Description
New user registers for a new account.

Steps
1. User opens the app.
2. Select 'Driver' entry.
3. Press 'Create a new account'.
4. Enter the first name, last name, driver's license number, e-mail address, and set a new password.
5. If all the information is valid, return to the 'Login' page. Otherwise, return to step 4 and pop an error message.

4.3.1.3 Check Tickets Received(User)

Description
User checks the list of tickets he received.

Steps

Precondition: the user has logged in by following the 4.3.1.1 user stories.
1. User selects the 'Traffic citations' button in the toolbar at the bottom.
2. User selects 'Details' from one of the tickets he received.
3. The user can view information like ticket number, time received, type of traffic violation, and fine amount.

4.3.1.4 Pay The Ticket

Description
User pays the fine for the ticket he received.

Step
Precondition: the user has logged in following the 4.3.1.1 user stories.
1. User selects the 'Traffic citations' button in the toolbar at the bottom.
2. User selects 'Pay for ticket' from one of the tickets he received.
3. User double-checks the information of the ticket then presses the 'Confirm' button.
4. If there is enough balance, pop the 'payment success' message and return to the home page.
5. Otherwise, pop the 'Insufficient balance' message and return to the home page.

4.3.1.5 Add Money

Description
User adds money to the account.

Step
Precondition: the user has logged in following the 4.3.1.1 user stories.
1. User selects 'Add money' in the toolbar at the bottom.
2. User enters the amount of money he'd like to add then press 'Confirm'.
3. If it is a valid number, pop the 'Success' message and return to the home page.
4. Otherwise, pop the 'Invalid amount' message and return to step 2.

4.3.1.6 Check Profile(User)

Description
User checks the profile of the account.

Step
Precondition: the user has logged in following the 4.3.1.1 user stories.
1. User selects 'Profile' in the toolbar at the bottom.
2. The user can check the information of the account from the profile page.

4.3.1.7 Log Out(User)

Description
User logs out of the account.

Step
Precondition: the user has logged in following the 4.3.1.1 user stories.
1. User selects 'Profile' in the toolbar at the bottom.
2. User selects the red 'Log out' button at the bottom of the page.

4.3.2.0 Administer Log In

Description
The administrator logs in to the app through the officer entry.

Steps
1. The Administrator opens the app.
2. Select 'Officer' entry.
3. Enter the account and password, then press 'Log in'.
4. If the password matches the account, jump to the home page. Otherwise, return to step 3.

4.3.2.1 Check Tickets Received(Admin)

Description
The Administrator checks the list of tickets that a certain driver received.

Steps
Precondition: the administrator has logged in following the 4.3.2. user stories.
1. Administer select the 'Traffic citations' button in the toolbar at the bottom.
2. Administer press the search bar at the top of the page.
3. The Administrator enters the driver's license number and presses the 'Search' button.
4. Administer select 'Details' from one of the tickets this driver received
5. Administers can view information like ticket number, time received, type of traffic violation, and fine amount.

4.3.2.2 Give Ticket

Description
The Administrator gives a ticket to a driver.

Steps
Precondition: the administrator has logged in following the 4.3.2. user stories.
1. Administer select the 'Give ticket' button in the toolbar at the bottom.
2. Administers enter the driver's license number and select the type of traffic violation.
3. Administer double-check the ticket information and press 'Confirm'.
4. If the license number is valid, pop 'Success' and return to the home page. Otherwise, return to step 3.

4.3.2.3 Log Out(Admin)

Description

Administer logs out of the account.

Steps
Precondition: the administrator has logged in following the 4.3.2. user stories.
1. Administrator selects 'Profile' in the toolbar at the bottom.
2. Administrator selects the red 'Log out' button at the bottom of the page.

5. Deployment Requirements
This Traffic Citation and Reporting System will be deployed via the internet. It will be available for anyone as downloadable computer software. This software was created using Java and can run on any operating system. All the user is required to do is download the file onto their desired storage location, and then run the software.

6. Non- Functional Requirements

6.1 Software Quality Attributes
Quality characteristics for the Traffic Citation and Reporting System that will be important to customers or developers are that it will be available to use on any system hardware and operating system to avoid any compatibility issues.

Maintainability
The Traffic Citation and Reporting System will also be maintained, so if there are any issues with the system in the future, updates fixing those problems will be available at no further cost.

Availability
The system should be operating 24/7. At no point should the system be idle or "off".

Reusability
The system should be designed so that it can be reused on other streets, towns, provinces, and countries.

Flexibility
The system needs to be designed with flexibility in case of any changes or exclusions.

Reliability
The system needs to be designed to allow law enforcement the reliability to ensure violations are still ticketed and punished and for them to feel they can pursue other violations and issues.

Usability
Because of the punishments associated with unpaid tickets, speeding infringements, etc., the system needs to be user-friendly. Meaning the evaluation of the 10 most fundamental heuristics, ex. visibility of system status.

6.2 Other Requirements

6.2.1 Database Requirements
A database is vital to the success of this system because it will need to store the information of the drivers, vehicle information, registration information, the traffic violations, who will authorize the violation, the administrators, etc.

6.2.2 Network Requirements
Since most drivers may not have time to go to their municipalities to pay for tickets, they can easily have access online. Also, the automated system will need the internet to send the violations to the database to issue the offense.

6.3 Safety Requirements
Authorization that this program can only be used by users. A safeguard put into place for this system are backup generators in case of a power outage and thus the system can continue running 24/7. A backup server online and offline. If there were any loss in connectivity or interference with the system, backup data will be in place to ensure tickets are still being saved to the system and payments are being processed and once the system is online, they will be processed.

6.4 Security Requirements
There will be user authentication requirements when determining the traffic citation, including IDs, driver's licenses, and other personal information. For this reason, user information must be handled with the utmost care, with privacy being a critical component of this app. To not be accessed by them. Personal data will be protected from any threats by using an admin id or driver id and password to make sure people are accessing the right accounts and unauthorized users cannot modify the view or corrupt data. There also needs to be different levels of clearance; users should only be able to make payments while administrators can view, edit and change information and those above the admin have access to all the above.