**COMSATS University Islamabad, Abbottabad Campus**

**Department of Computer Science**

**Traffic Violation Control System**

**CSC392 Object Oriented Software Engineering**

Submitted on: <Date&Time>

Group Members:

Name: Usama Sajjad (SP21-BSE-049)

Name: Shah Rafi Alam Khattak (SP21-BSE-060)

Name: Muhammad Shahan (SP21-BSE-081)

Name: Zakeen Khan (SP21-BSE-083)

Name: Shams ul Arifeen (SP21-BSE-076)

Name: Hikmat Ullah(SP21-BSE-097)

Table of Contents

[CHAPTER 1 PROJECT PROPOSAL 3](#_Toc118288358)

[Introduction 3](#_Toc118288359)

[Vision and Business Case 3](#_Toc118288360)

[Use-Case Model 3](#_Toc118288361)

[Supplementary Specification 3](#_Toc118288362)

[Glossary 3](#_Toc118288363)

[Risk List & Risk Management Plan 3](#_Toc118288364)

[CHAPTER 2 USE CASES 4](#_Toc118288365)

[Use Case Diagram 4](#_Toc118288366)

[Use Cases Distribution 4](#_Toc118288367)

[Brief Level Use Cases 4](#_Toc118288368)

[Student Name 1 (Registration Number 1) 4](#_Toc118288369)

[Use Case: Process Sale 4](#_Toc118288370)

[Fully Dressed Use Cases 5](#_Toc118288371)

[Student Name 1 (Registration Number 1) 5](#_Toc118288372)

[Use Case UC1: Process Sale 5](#_Toc118288373)

# CHAPTER 1 PROJECT PROPOSAL

## Introduction

In modern society, quick mobility is one of the most basic needs. Therefore, people can use different transportation facilities such as automotive vehicles, subways, and bicycles. However, among all these transportation facilities, automotive vehicles are still the most adopted due to their comfort and practicality. In this way, assuming continuous population growth, the number of vehicles in large cities will increase as well, but much faster than transportation infrastructure; consequently, traffic congestion will become a pressing issue. It creates several negative concerns for the environment and society such as an increase in number of traffic accidents, economic impacts, and high levels of greenhouse emissions.

This project contains all traffic rules which have to be obeyed on the road while driving. This will contain a whole network of authorities that deal with the rules of traffic violations. This will make a way of conversation between the traffic management authorities and the people whom the others violate the traffic rules daily. This project would have a proper system for charging the one who does not obey the rules. People will be able to report others that are violating the rules. In this way, you never know who reported you for the violation. This will also add up to the management of the traffic which is hard these days due to overpopulation.

This project will include a feature that will allow the user to record the violation with the help of his smartphone and report the driver. After which the assigned warden on duty would check if it is a proper violation or not. Then after analyzing the video warden would send a fine (Challan) to the driver which he has to pay or his license would be terminated. The recorder of the video will also get a cut from the payment of the challan. There is one more condition if the violation is not valid and the recorder of the video was just playing then the recorder account would get a warning not to do it again or we will not give him back the security that he had paid to register in our app.

## Vision and Business Case

The vision of this project is that we want to make a change in the discipline of the underdeveloped countries. Where there is a violation of rules at its peak. Where people do not have any fear of violating the rules or the traffic warden. This project will help to overcome the violations and will help to attain discipline in those countries. This will help to align people to obey the traffic rules. The vision also includes making it easy for traffic management authorities to locate the areas where there is a high rate of violations. Traffic management systems in underdeveloped countries are very irresponsible and lazy to a high rate of violations and people not taking them seriously. This vision will help to ease the responsibilities of that department and will help them to control the violations. This vision will give the responsibility of law enforcement to every citizen of the area. Every person who has a mobile phone can use this vision to help the authorities make action against the reported person and make him pay the fine. In this way, people will think twice before committing any violation. This will also increase the rate of efficiency because the manual system is too slow also this will require fewer people to implement which will save both time and money.

When we talk about the business case of this project, this would also help the traffic management system to take the maximum fines and create a handsome revenue. This will also help the secondary user to generate an amount by reporting the violations. This is a very useful project for the government for tax generation in the form of fines.

## Use-Case Model

The functional requirements of a Traffic Violation Management System are:

1. Register
2. Deposited Security
3. Record Violation
4. Report Violation
5. Check Rewards
6. Withdraw Rewards
7. View Violation
8. Reject Complain

9. Disable Citizen

10. Verify warden

11. View Challan

12. Issues Challan

## Supplementary Specification

These are some non-functional requirement in this project. User (Principal) validation will be done during login to insure that the user is valid and that the user only has access to his or her permission data. General users will only have access through the user interface. Moreover, Video capturing of the citizen, challan (fine) submission, the data base storage, Challan form history, challan records etc.

## Glossary

## Absolute Speed Limit Violation

if the speed limit reads 55 miles per hour (MPH), then you will be punished with absolute violations

Basic Speeding Violation

if the speed limit is 65 MPH but the roads are icy, 55 MPH would still be considered a dangerous speed—even though you’re driving below the speed limit. Thus, a basic speeding violation might prove valid if the speed you’re going puts you or others in danger due to weather and/or other driving conditions

Dash Cam

A dash cam is a video camera, capable of recording audio and video footage, usually mounted on the dashboard of police cars. Recent laws have allowed the public to request the footage collected in traffic stops, should you want to contest a charge.

Appeal

If you lose your traffic court case, you have the option of writing an appeal to a higher court petitioning to reverse or change the decisions made against you. However, filing an appeal does not guarantee that the higher court will agree to reevaluate the case.

Contest

To contest is to formally oppose or argue against someone or something by taking legal action. For example, you might wish to go to court to contest a parking ticket you feel was administered unjustly.

Traffic Violation

You incur a traffic violation when you ignore or break the traffic laws in your state. Some examples of traffic violations include reckless driving, speeding, texting and driving, driving under the influence, driving without a license, and running red lights

## Risk List & Risk Management Plan

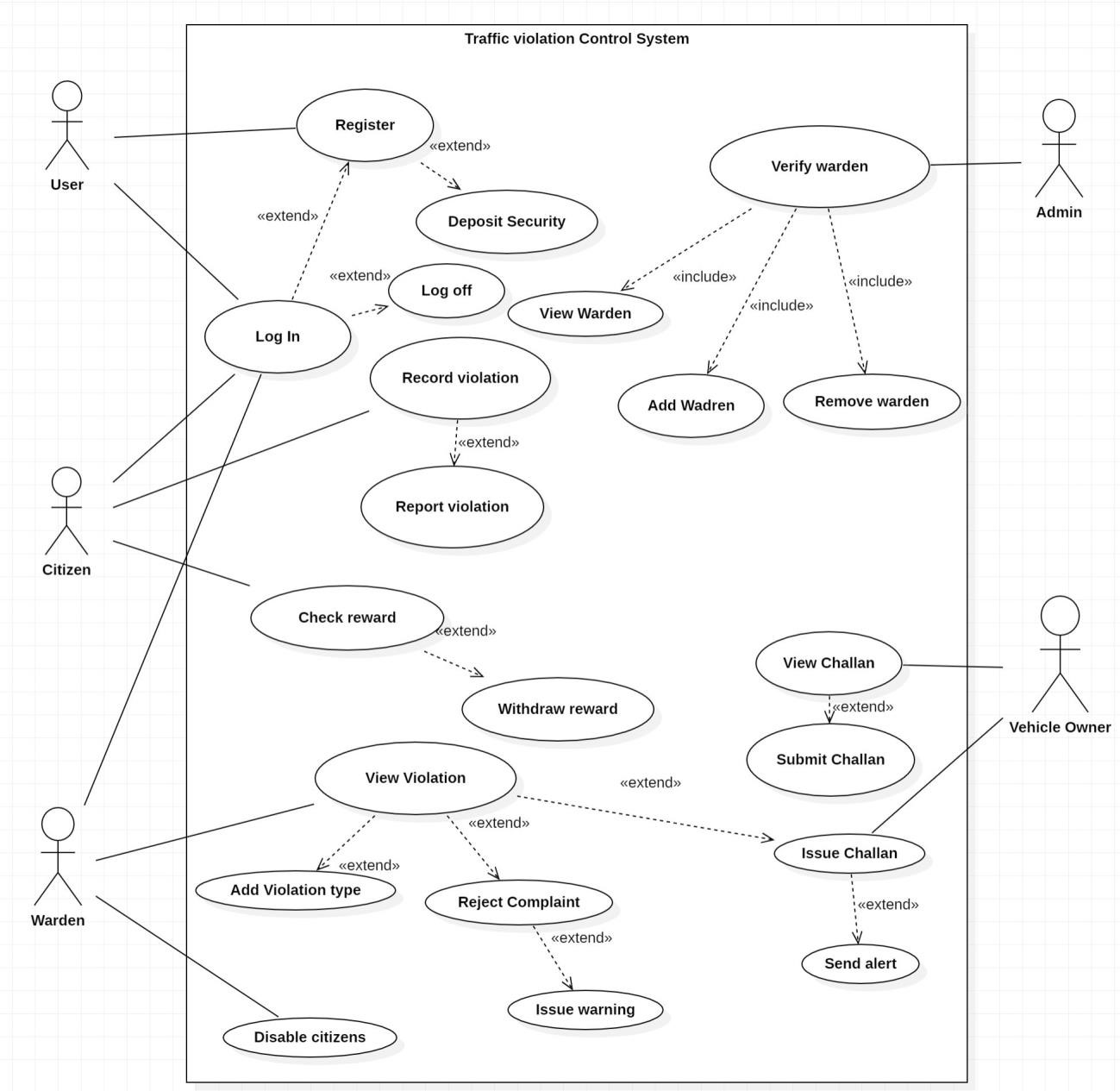
# Risk identification: classification and identification of potential road safety risks

1. Risk analysis and assessment: determination of the risk’s likelihood identified during the risk identification stage as well as their consequences. To achieve this goal, the statistical data of past years as well as previous experience are widely used.
2. Risk treatment: choice of risk management methods. The main risk management methods include risk minimization, risk acceptance, risk transfer, and risk rejection.
3. Permanent control over risks: risk monitoring, timely adequate response to changes in the system, and the assessment of the risk management effectiveness

|  |  |  |  |
| --- | --- | --- | --- |
| **S.no** | **Risk** | **Risk consequences** | **Way of Influence** |
| 1. | Violation of traffic rules by the driver/pedestrian | The danger of an accident  Decreased road safety | Availability of automatic photo-videorecording of traffic violations |
| 2. | Age/driving experience of the driver/pedestrian | The danger of an accident | implementation of an an-learning system for drivers with the most frequent accidents |
| 3. | The degree of alcohol or drug intoxication of the driver/pedestrian | The danger of an accident | Alcohol and drug control |

# CHAPTER 2 USE CASES

## Use Case Diagram



## Use Cases Distribution

|  |  |  |
| --- | --- | --- |
| S#. | Group Member | Assigned Use Cases |
| 1 | <Shah Rafi Alam Khattak>  <SP21-BSE-060> | UC 1 :Register  UC 2: Deposit Security  UC 3: Login  UC 4: Record Violation  UC 5: Report Violation |
| 2 | <Muhammad Shahan>  <SP21-BSE-081> | UC 6: View Violation  UC 7: Add Violation type  UC 8:Reject Complaint  UC 9:Issue Warning |
| 3 | <Zakeen Khan>  <SP21-BSE-083> | UC 10:Issue Challan  UC 11:Send Alert |
| 4 | <Hikmat Ullah>  <SP21-BSE-097> | UC 12: Check Reword  UC 13: Widhraw Reword |
| 5 | <Usama Sajjad>  <SP21-BSE-049> | UC 14: View Challan  UC 15: Submit Challan  UC 16: Disable Citizen |
| 6 | <Shams ul Arifeen>  <SP21-BSE-076> | UC 17: Verify Warden  UC 18: View Warden  UC 19: Add Warden  UC 20: Remove Warden |

## Brief Level Use Cases

### Student Name 1 (Registration Number 1)

#### Use Case: Process Sale

A customer arrives at a checkout with items to purchase. The cashier uses the POS system to record each purchased item. The system presents a running total and line-item details. The customer enters payment information, which the system validates and records. The system updates inventory. The customer receives a receipt from the system and then leaves with the items.

Student Name 2 (Registration Number 2)

Student Name 3 (Registration Number 3)

## Fully Dressed Use Cases

### Student Name 1 (Registration Number 1)

| Use Case UC1: Process Sale |
| --- |
| **Scope**: NextGen POS application  **Level**: user goal  **Primary** **Actor**: Cashier  **Stakeholders and Interests**:  - Cashier: Wants accurate, fast entry, and no payment errors, as cash drawer shortages are deducted from his/her salary.  - Salesperson: Wants sales commissions updated.  - Customer: Wants purchase and fast service with minimal effort. Wants easily visible display of entered items and prices. Wants proof of purchase to support returns.  - Company: Wants to accurately record transactions and satisfy customer interests. Wants to ensure that Payment Authorization Service payment receivables are recorded. Wants some fault tolerance to allow sales capture even if server components (e.g., remote credit validation) are unavailable. Wants automatic and fast update of accounting and inventory.  - Manager: Wants to be able to quickly perform override operations, and easily debug Cashier problems.  - Government Tax Agencies: Want to collect tax from every sale. May be multiple agencies, such as national, state, and county.  - Payment Authorization Service: Wants to receive digital authorization requests in the correct format and protocol. Wants to accurately account for their payables to the store.  **Preconditions**: Cashier is identified and authenticated. |

**Success Guarantee** (or Postconditions): Sale is saved. Tax is correctly calculated. Accounting and Inventory are updated. Commissions recorded. Receipt is generated. Payment authorization approvals are recorded.

**Main Success Scenario (or Basic Flow):**

1. Customer arrives at POS checkout with goods and/or services to purchase.
2. Cashier starts a new sale.
3. Cashier enters item identifier.
4. System records sale line item and presents item description, price, and running total. Price calculated from a set of price rules.

Cashier repeats steps 3-4 until indicates done.

1. System presents total with taxes calculated.
2. Cashier tells Customer the total, and asks for payment.
3. Customer pays and System handles payment.
4. System logs completed sale and sends sale and payment information to the external Accounting system (for accounting and commissions) and Inventory system (to update inventory).
5. System presents receipt.
6. Customer leaves with receipt and goods (if any).

**Extensions (or Alternative Flows):**

\*a. At any time, Manager requests an override operation:

1. System enters Manager-authorized mode.
2. Manager or Cashier performs one Manager-mode operation. e.g., cash balance change, resume a suspended sale on another register, void a sale, etc.
3. System reverts to Cashier-authorized mode.

\*b. At any time, System fails:

To support recovery and correct accounting, ensure all transaction sensitive state and events can be recovered from any step of the scenario.

1. Cashier restarts System, logs in, and requests recovery of prior state.
2. System reconstructs prior state.

2a. System detects anomalies preventing recovery:

* 1. System signals error to the Cashier, records the error, and enters a clean state.
  2. Cashier starts a new sale.

1a. Customer or Manager indicate to resume a suspended sale.

1. Cashier performs resume operation, and enters the ID to retrieve the sale.
2. System displays the state of the resumed sale, with subtotal.

2a. Sale not found.

* 1. System signals error to the Cashier.
  2. Cashier probably starts new sale and re-enters all items.

1. Cashier continues with sale (probably entering more items or handling payment).

**Special Requirements:**

- Touch screen UI on a large flat panel monitor. Text must be visible from 1 meter.

- Credit authorization response within 30 seconds 90% of the time.

- Somehow, we want robust recovery when access to remote services such the inventory system is failing.

- Language internationalization on the text displayed.

- Pluggable business rules to be insertable at steps 3 and 7.

- …

**Technology and Data Variations List**:

\*a. Manager override entered by swiping an override card through a card reader, or entering an authorization code via the keyboard.

3a. Item identifier entered by bar code laser scanner (if bar code is present) or keyboard.

3b. Item identifier may be any UPC, EAN, JAN, or SKU coding scheme.

7a. Credit account information entered by card reader or keyboard.

7b. Credit payment signature captured on paper receipt. But within two years, we predict many customers will want digital signature capture.

Frequency of Occurrence: Could be nearly continuous.

**Open Issues:**

- What are the tax law variations?

- Explore the remote service recovery issue.

- What customization is needed for different businesses?

- Must a cashier take their cash drawer when they log out?

- Can the customer directly use the card reader, or does the cashier have to do it?

**Screen Shots:**

<Paste the images from netbeans here for the relevant screen>