**COMSATS University Islamabad, Abbottabad Campus**

**Department of Computer Science**

**Traffic Violation Control System**

**CSC392 Object-Oriented Software Engineering**

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# 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

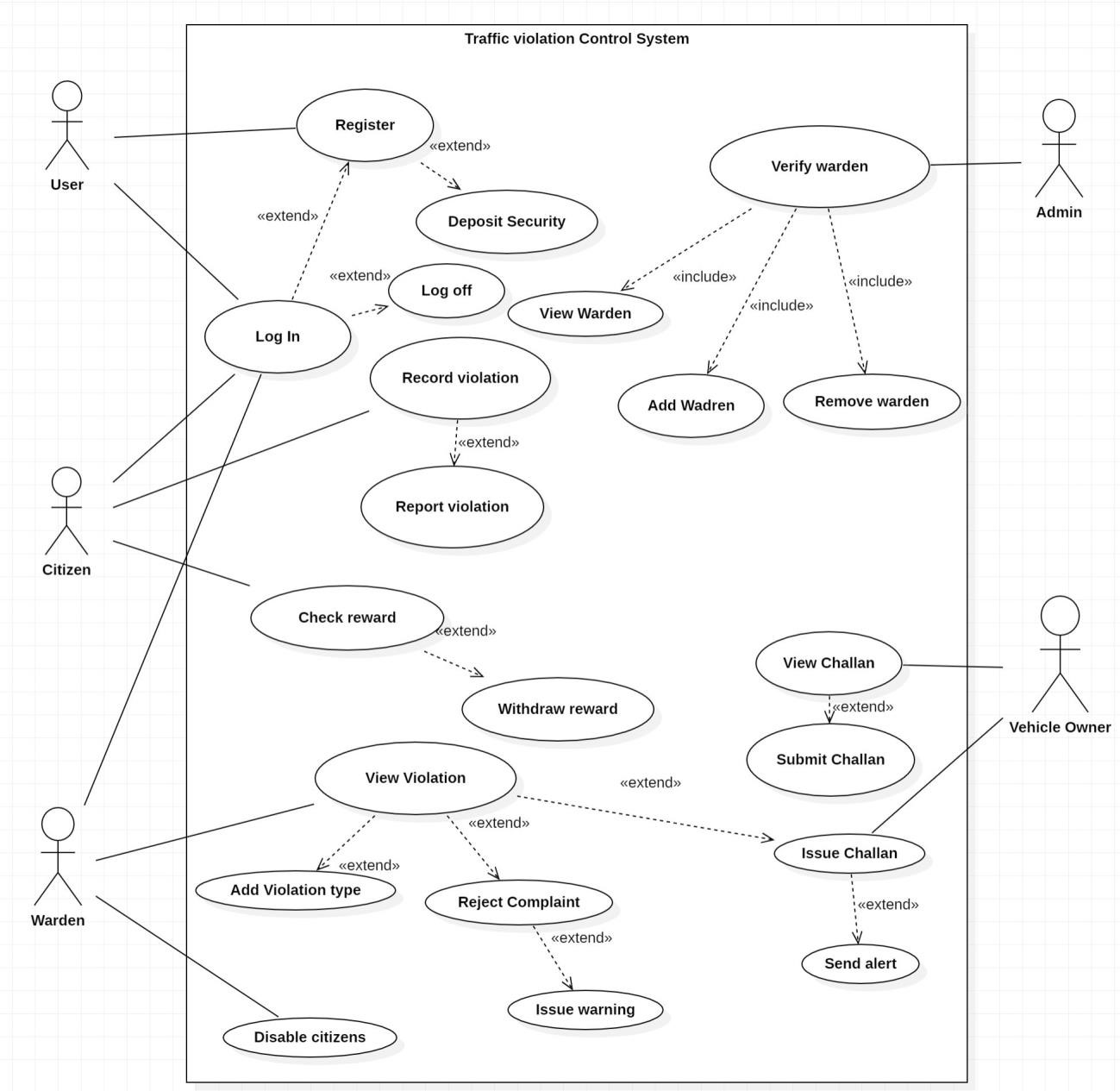
# Risk identification: classification and identification of potential road safety risks

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 |
| 2 | <Zakeen Khan>  <SP21-BSE-083> | UC 6: Issue Challan  UC 7: Send Alert  UC 8:Record violation |
| 3 | <Muhammad Shahan>  <SP21-BSE-081> | UC 9: View Violation  UC 10: Add Violation Type  UC 11: Reject Complaint  UC 12: Send Warning |
| 4 | <Usama Sajjad >  <SP21-BSE-049> | UC 14: View Challan  UC 15: Submit Challan  UC 16: Disable Citizen |
| 5 | <Hikmat Ullah>  <SP21-BSE-097> | UC 13: Check Reword  UC 14: Withdraw Reword  UC 5: Report Violation |
| 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

Shah Rafi Alam Khattak (SP21-Bse-060)

Zakeen khan (SP21-BSE-083)

Use case

Issue Challan:

Warden: Warden will detect violations and then **view violations** if the violation is major then **issue a challan** and **send an alert** to the vehicle owner and if the violation is minor, then **reject the complaint** and **issue a warning.**

Vehicle Owner: when the vehicle owner violet any rule then he will pay a challan when the challan is issued by the traffic warden then the vehicle owner gets an alert message and receive challan according to his volition. After that vehicle owner **views Challan** and **submits the challan** after receiving the violation challan from the warden.

Record Violation

Use case

Citizen:

The citizen Detects the violation in traffic record it and then reports its recorded video of violation and upload to the system.

Send Alert

Use case

The warden will Send you alert notification to the violator for his violation with penalty amount after add his details in the system.

Muhammad Shahan (SP21-BSE-081)

| Usama Sajjad (Sp21-Bse-049)  Use case  Hikmat Ullah (Sp21-Bse-097)  Use case  SHAMS UL Arifeen (SP21-BSE-076) Use Case: Verify WardenAdmin: In this block the person incharge is admin who can manage the whole system. He has the authority to change or rewrite the whole system. He can keep any one whom he wishes fit for a specific job. He can also supervise the wardens, as given below; Verify warden: The admin can verify the warden. Then admin observe that he is eligible or qualified or not and then further proceed. 1.2. View warden: The admin can view the warden daily activities and in what place his duty will be and how much challan did he gather. 1.3. Add warden: The admin can also add a person as a warden, when he login to the system. And Admin observe that he is eligible or not and add him.  1.4. Remove warden:  The admin can also remove a warden on a miss behavior with citizens or not perform duty on time. And the admin has authority to remove warden or not. Fully Addressed Used caseShah Rafi Alam Khattak (Sp21-Bse-060)Use Case: RegisterZakeen khan (SP21-BSE-083)  | Use Case: Issued Challan | | --- | | **Scope**: Issue Challan  **Level**: Warden’s goal  **Primary** **Actor**: warden, Vehicle Owner  **Stakeholders and Interests**:  Warden: warden is the man in charge to control traffic flow and look for traffic violators and for those who violate traffic rules detect the violator’s vehicle and issue a challan to the vehicle according to their violation the violator receives a challan from a traffic warden.  **Preconditions**: Need to log in. |   **Success Guarantee**: The issue challan will be exactly according to the violation and the vehicle owner will not negotiate with the warden for his violation.  **Main Success Scenario (or Basic Flow):**   * Warden will log in to the system. * Warden will issue the challan. * Warden will send an alert message to the violator. * Violators or receive challan from the warden. * Violator will receive an alert message. * Violator will submit his challan.   **Extensions (or Alternative Flows):**  No alternative flow is present for the login section.  **Special Requirements:**   * Warden Name * Password   **Technology and Data Variations List**:   * Challan printer Device.   **Open Issues:**   * The warden detects any false Violation? * The false challan is issued according to the violation. * False alert is sent.   Major violation is rejected  **GUI**   Use Case: Record violation  | **Scope**: record violation  **Level**: Citizen Goal  **Primary** **Actor**: Citizen  **Stakeholders and Interests**:   * **Citizen:** Want to register an account in the Traffic management system?   The violation of traffic is recorded by citizens and submitted to the system  **Preconditions**:   * Users must sign up and log in to the system. | | --- |   **Success Guarantee** (or Postconditions):   * The system will look for the violation if the violation is major then the system will issue a challan.   **Main Success Scenario (or Basic Flow):**   1. The traffic flow will be according to rules if there is no warden. 2. The violator will receive a challan if the warden is not present.   **Extensions (or Alternative Flows):**  No alternative flow Is present for the login section  **Special Requirements:**   * Username * Password   **Technology and Data Variations List**:   * Smart Phone * Camera   **Open Issues:**   * The citizen reports false violations.  Use Case: Send Alert  | **Scope**: Send Alert Massage to the Violator.  **Level**: Warden Goal  **Primary** **Actor**: Warden  **Stakeholders and Interests**:   * **Warden:** Want to Send the alert massage to the violator.   The warden will send the massage to the violator about his violation details .   * **Preconditions**: * Users must sign up and log in to the system. * Warden must detect some violation. | | --- |   **Success Guarantee** (or Postconditions):   * When the challan is issued the alert massage must be send to the violator.   **Main Success Scenario (or Basic Flow):**   * The violator will receive a challan if the warden is not present. * The violator is received details about his violation.   **Extensions (or Alternative Flows):**  No alternate way is present without sending alert after issued challan.  **Special Requirements:**   * Violator phone number * Violation   **Technology and Data Variations List**:   * Smart Phone * Challan Print Device   **Open Issues:**   * The citizen reports false violations alert.   **GUI** |
| --- | --- | --- | --- | --- |

#### Muhammad Shahan (SP21-BSE-081)

| Use Case: |
| --- |

#### Usama Sajjad (SP21-BSE-049)

| Use Case: |
| --- |

#### Hikmat Ullah (SP21-BSE-097)

| Use Case: |
| --- |

#### Shams ul Arifeen (SP21-BSE-076)

| | Use Case UC2: View warden | | --- | | **Scope**: Warden Goel and Admin Goal  **Level**: Warden  **Primary** **Actor**: Admin  **Stakeholders and Interests**:  Admin: Admin is a person who manage the warden. He views the warden request assign him duties and also view his all activities.  **Preconditions**: Admin can manage view warden and his all activities. |   **Success Guarantee** (or Postconditions): The admin will successfully view the warden according to the conditions that he perform his duty or not.  **Main Success Scenario (or Basic Flow):**   * Admin are the supervisor of the system so for basic flow of the system the admin will be responsible for warden activities and view him that he performs his duty or not and then act.   **Extensions (or Alternative Flows):**  The warden is must to be register in the system there is no other alternate way.  **Technology and Data Variations List**:   * Laptop * Mobile Phone * Challan Printing device   **Open Issues:**   * The admin can view the warden activities. * The citizens enrolled to warden by admin accidently.   **GUI** |
| --- | --- | --- |

| Use Case UC1: Verify Warden |
| --- |
| **Scope**: Warden Goel and Admin Goal  **Level**: Warden  **Primary** **Actor**: Admin  **Stakeholders and Interests**:  Admin: Admin is a person who manage the warden. when he sends their request to admin end and admin accept his request then he act on his request and verify him and then further proceed.  **Preconditions**: Admin can manage and verify the warden when they send a request for verification. |

**Success Guarantee** (or Postconditions): The admin will successfully verify warden according to the conditions and after the verification further proceed his request.

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

* Admin are the supervisor of the system so for basic flow of the system the admin will be responsible for warden activities and from those activities the warden will be verify the admin that he is eligible or not and then further proceed.

**Extensions (or Alternative Flows):**

The warden is must to be register in the system there is no other alternate way.

**Technology and Data Variations List**:

* Laptop
* Mobile Phone
* Challan Printing device

**Open Issues:**

* The admin verifies the warden request.

The citizens enrolled to warden by admin accidently.

| Use Case UC3: Add Warden |
| --- |
| **Scope**: Warden Goel and Admin Goal  **Level**: Warden  **Primary** **Actor**: Admin  **Stakeholders and Interests**:  Admin: Admin is a person who manage the warden. He adds the warden and assign him duties.  **Preconditions**: Admin can manage, add warden. When the person send request for warden then admin add him. |

**Success Guarantee** (or Postconditions): The admin will successfully add warden according to the conditions.

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

* Admin are the supervisor of the system so for basic flow of the system the admin will be responsible for warden activities and new requests of wardens the admin have authority to add them.

**Extensions (or Alternative Flows):**

The warden is must to be register in the system there is no other alternate way.

**Technology and Data Variations List**:

* Laptop
* Mobile Phone
* Challan Printing device

**Open Issues:**

* The admin adds the warden when he sends a request.
* The citizens enrolled to warden by admin accidently

| Use Case UC4: Remove Warden |
| --- |
| **Scope**: Warden Goel and Admin Goal  **Level**: Warden  **Primary** **Actor**: Admin  **Stakeholders and Interests**:  Admin: Admin is a person who manage the warden. He can remove warden for his false behavior and hen he did not perform his duties properly.  **Preconditions**: Admin can manage, remove warden. |

**Success Guarantee** (or Postconditions): The admin will successfully remove warden according to the conditions.

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

* Admin are the supervisor of the system so for basic flow of the system the admin will be responsible for warden activities and from those activities the warden will be remove if admin wants to remove.

**Extensions (or Alternative Flows):**

The warden is must to be register in the system there is no other alternate way.

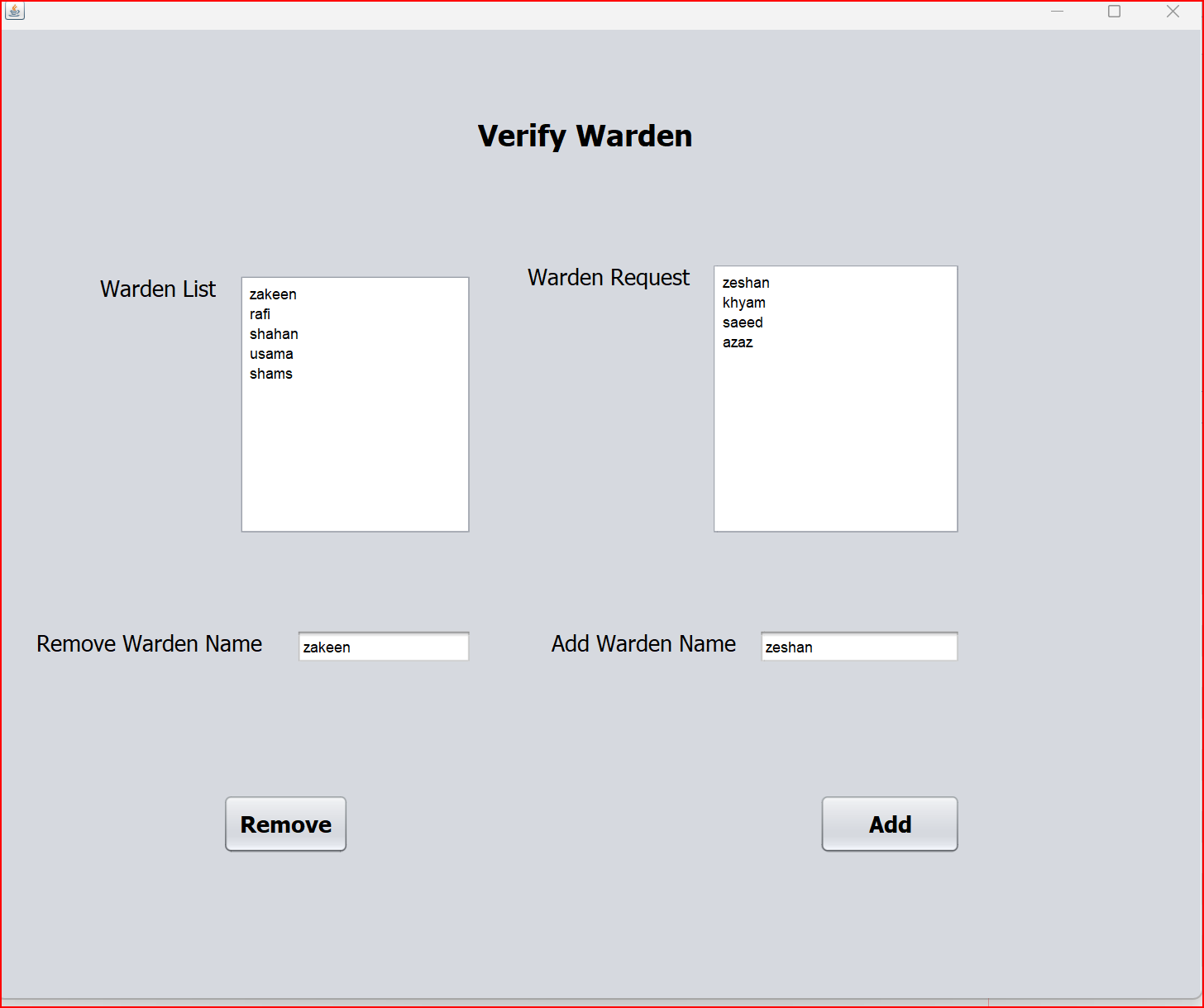
**Technology and Data Variations List**:

* Laptop
* Mobile Phone
* Challan Printing device

**Open Issues:**

* The admin remove warden accidently from the system
* The citizens enrolled to warden by admin accidently.

**GUI**



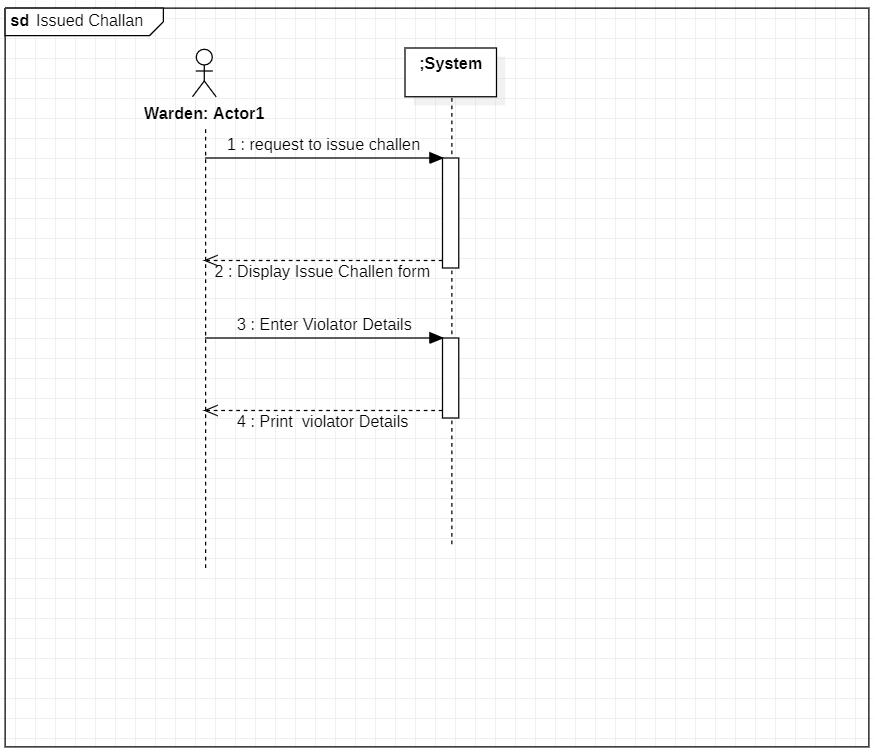
#### Chapter 3 System Sequence Diagram

#### Shah Rafi Alam Khattak (SP21-BSE-060)

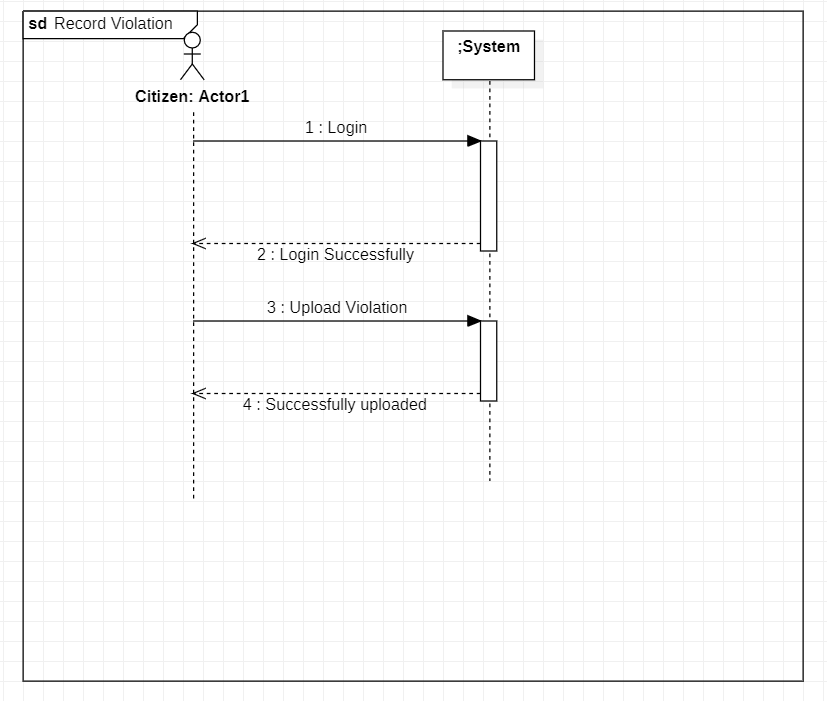
SSD:

#### Zakeen khan (SP21-BSE-083)

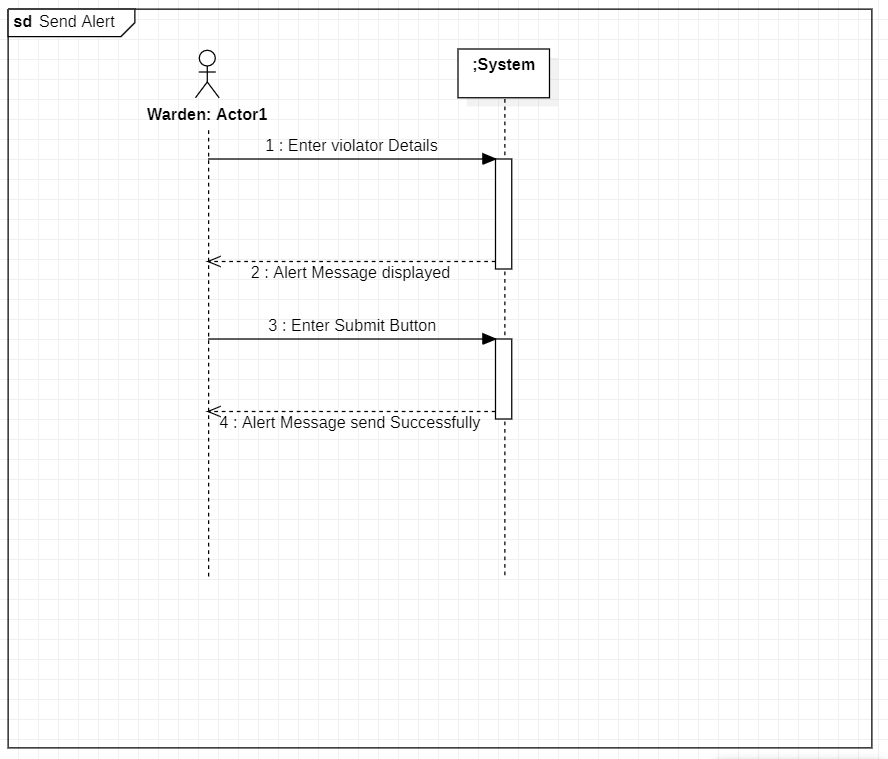
SSD: Issue Challan



SSD: Record Violation

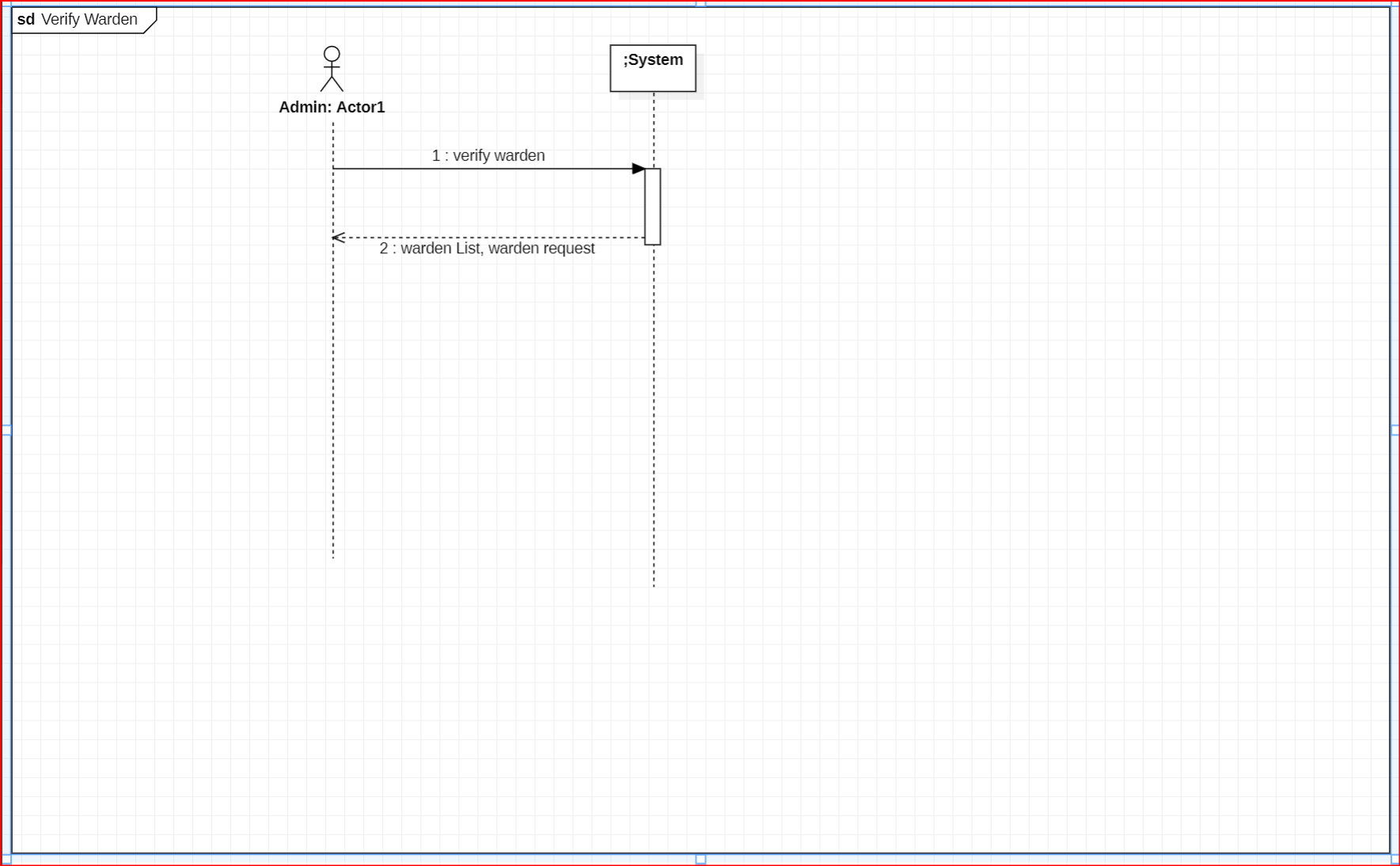


SSD: Send Alert

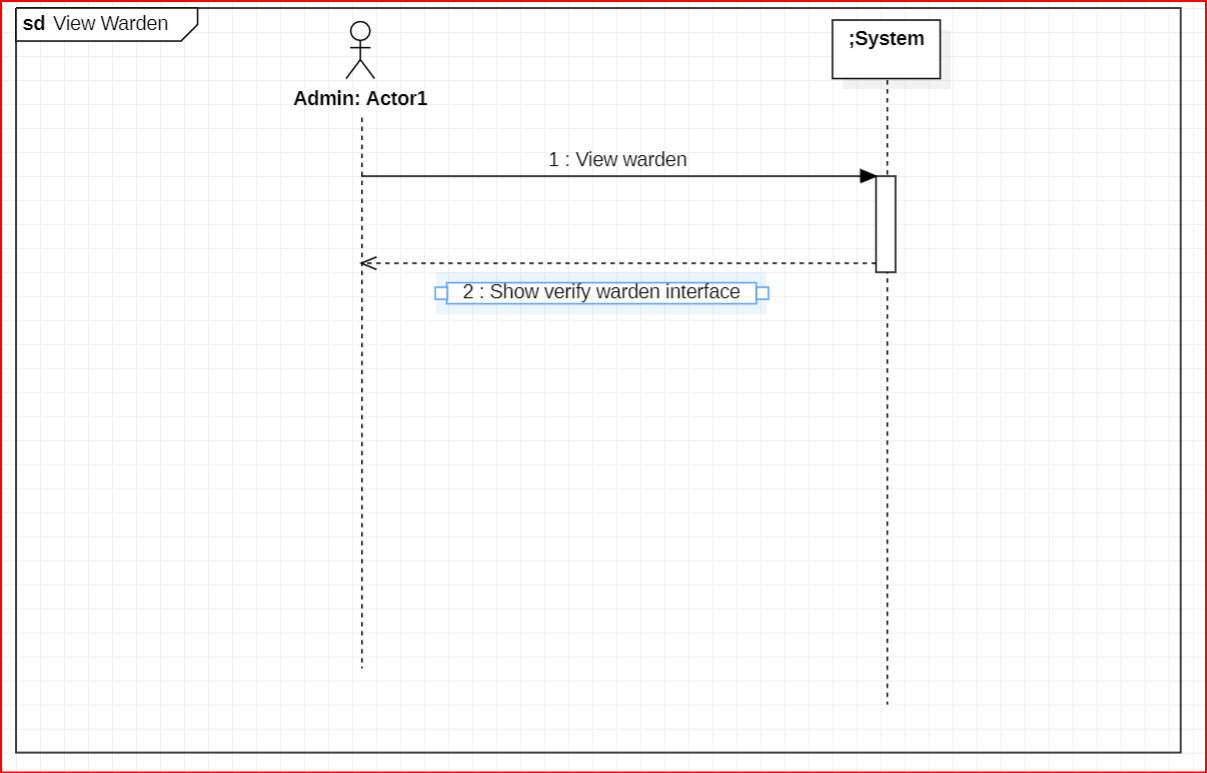


#### Muhammad Shahan (SP21-BSE-081)

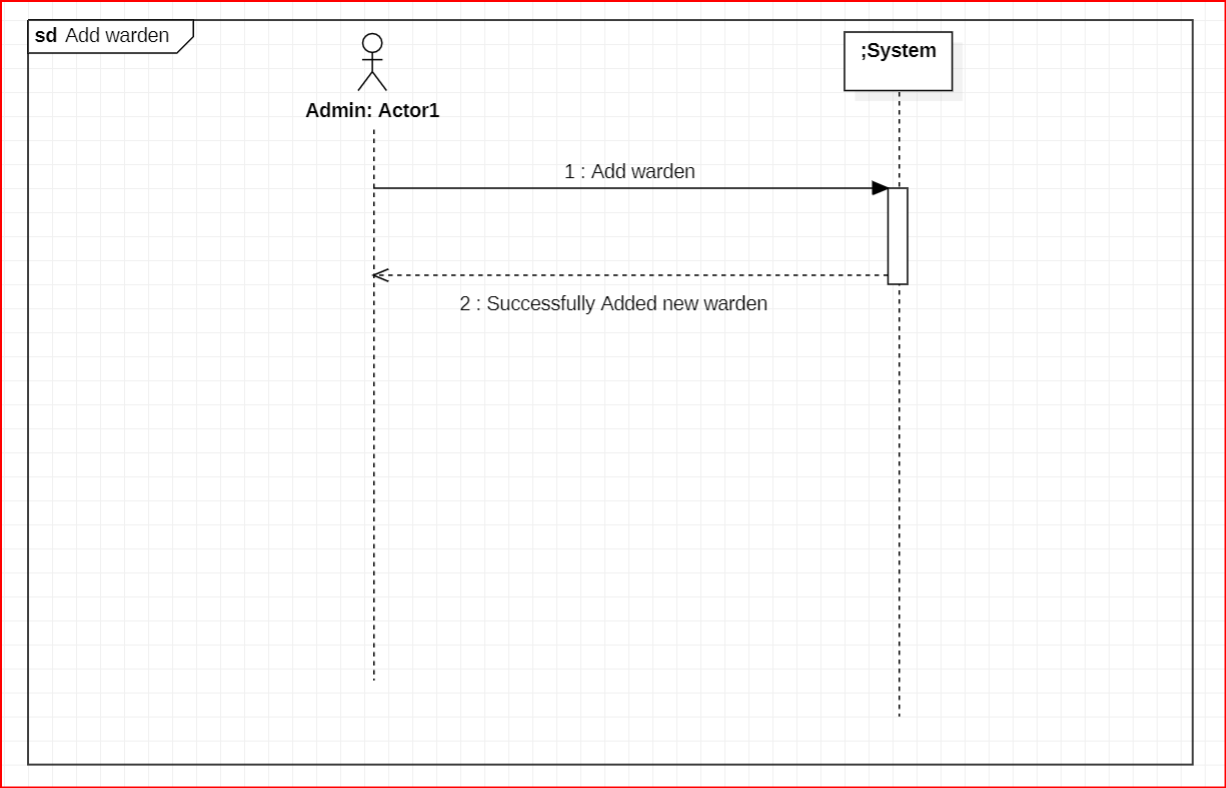
SSD: Verify Warden



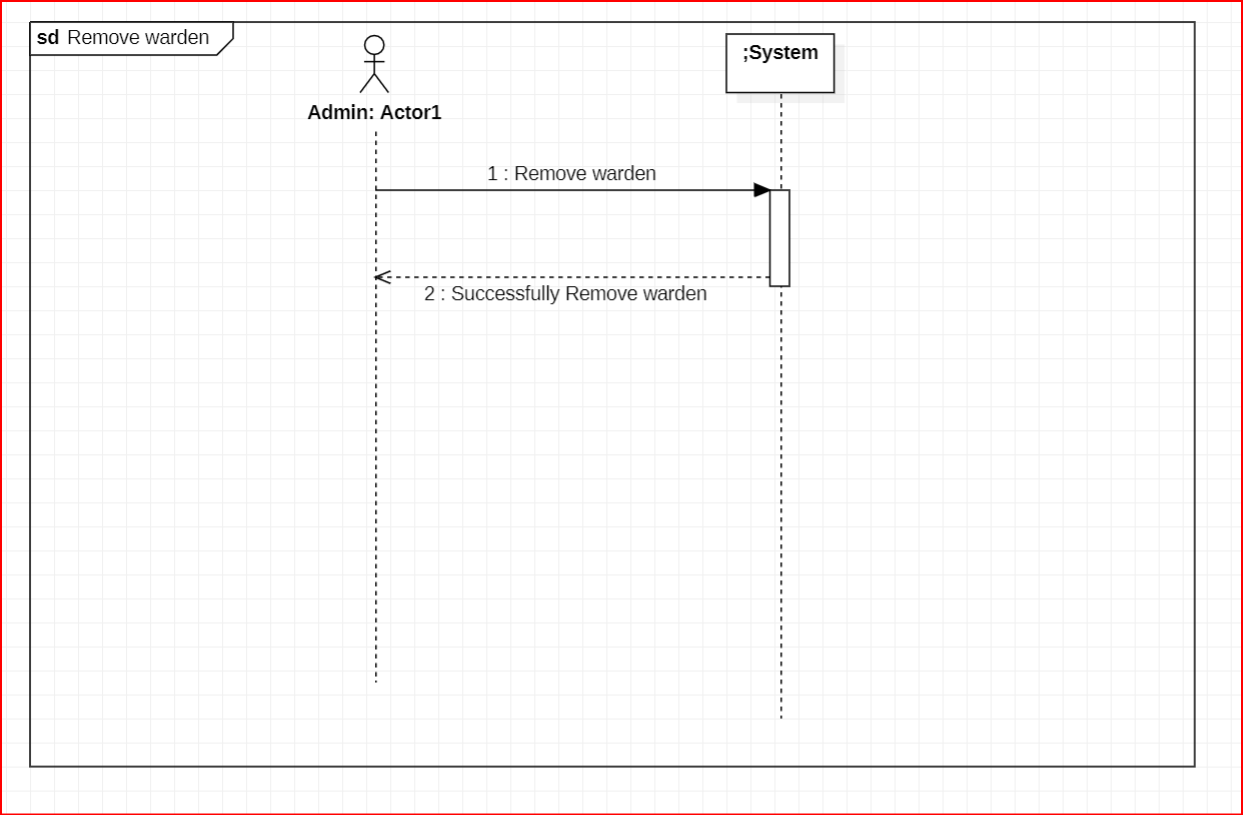
SSD: View Warden



SSD: Add Warden



SSD: Remove Warden



#### Usama Sajjad (SP21-BSE-049)

SSD

#### Hikmat Ullah (SP21-BSE-097)

SSD

#### Shams Ul Arifeen (SP21-BSE-076)

SSD

Chapter 4 Domain Model

Chapter 5 Operation Contracts

**Chapter 6 Logical Architecture:**

