Project Name: **Online FIR(First Information Report) System**

Project Member:

Rohit Ankalkhope	**210543181080**
Pavankumar Patil	**210543181062**
Rohan Pawar	**210543181068**
Tushar Shinde	**210543181099**

Abstract:

The City Police Station-to-Citizens aspect of electronic FIR (e-FIR) is the most effective use of the World Wide Web. The primary goal of an e-FIR site is to make City Police Station services online to reduce time and increase productivity and Protect police officer and citizens from Carona Pandamic.

This project deals with developing an e-FIR website for Online FIR and Citizen Complaint Management. It provides the Citizen with a catalogue of different category of Crime types to FIR available for registering in the portal. In order to facilitate online FIR a Register New FIR page is provided to the Citizen. The system is implemented using a 3-tier approach, with a backend database, a middle tier of Spring Boot MVC, and web browser as the front end client.

In order to develop an e- FIR website, a number of Technologies must be studied and understood. These include multi-tiered architecture, server and client side scripting techniques, implementation technologies such as Spring boot uses all the modules of Spring-like Spring MVC, Spring Data JPA, Spring Security etc. Programming language (such as Core Java, Advance Java), relational databases (such as MySQL).

This is a project with the objective to develop a basic website where a citizen is provided with a government application. Where the citizen will be given the power to know about his complaint and FIR status and would be able to review it. Thus, resulting in a better communication and trust between the general public and City Police Station body.

Implementation Technologies:

1. Spring Boot:

Spring Boot is a Spring module that provides the RAD (Rapid Application Development) feature to the Spring framework. Spring Boot is a project that is built on the top of the Spring Framework. It provides an easier and faster way to set up, configure, and run both simple and web-based applications.

In Spring Boot, there is no requirement for XML configuration (deployment descriptor). It uses convention over configuration software design paradigm that means it decreases the effort of the developer.

1.1 Features of Spring Boot:

1. Web Development

It is well suited Spring module for web application development. We can easily create a self-contained HTTP server using embedded Tomcat, Jetty or Undertow. We can use the spring-boot- starter-web module to start and running application quickly.

2. Spring Application

It is a class which provides the convenient way to bootstrap a spring application which can be started from main method. We can call start your application just by calling a static run() method.

3. Application events and listeners

Spring Boot uses events to handle variety of tasks. It allows us to create factories file that are used to add listeners. we can refer it by using Application Listener key. Always create factories file in META-INF folder like: **META-INF/spring.factories.**

4. Admin features

Spring Boot provides the facility to enable admin related features for the application. It is used to access and manage application remotely. We can enable it by simply using spring.application.admin.enabled property.

5. MVC Framework

Spring MVC Framework is used for developing MVC based web applications.

6. Externalized Configuration

Spring Boot allows us to externalize our configuration so that we can work with the same application in different environments. Application use YAML files to externalize configuration.

7. Properties Files

Spring Boot provides rich set of Application Properties. So, we can use that in properties file of our project. Properties file is used to set properties like: **server-port = 8082** and many others. It helps to organize application properties.

8. YAML Support

It provides convenient way for specifying hierarchical configuration. It is a superset of JSON. The SpringApplication class automatically support YAML. It is successful alternative of properties.

9. Type-safe Configuration

Strong type-safe configuration is provided to govern and validate the configuration of application. Application configuration is always a crucial task which should be type-safe. We can also use annotation provided by this library.

10. Logging

Spring Boot uses Common logging for all internal logging. Logging dependencies are managed by default. We should not change logging dependencies, if there is no required customization is needed.

11. Security

Spring Boot applications are spring bases web applications. So, it is secure by default with basic authentication on all HTTP endpoints. A rich set of Endpoints are available for develop a secure Spring Boot application.

1.2 Advantages of Spring Boot:

Spring Boot is designed to make the Spring Framework easier to use. Spring provides a loosely coupled application, which is a great feature by itself. However, when there are several loosely coupled blocks involved, keeping track of them all becomes a tedious and thankless task. This is where Spring Boot comes in, helping us keep things simple with the following Advantages:

1. Fast and easy development of Spring-based applications;
2. No need for the deployment of war files;
3. The ability to create standalone applications;
4. Helping to directly embed Tomcat, Jetty, or Undertow into an application;
5. No need for XML configuration;
6. Reduced amounts of source code;
7. Additional out-of-the-box functionality;
8. Easy start;
9. Simple setup and management;
10. Large community and many training programs to facilitate the familiarization period.

1.3 The JDBC Template:

Spring Boot supports H2 (an in-memory relational database engine) and automatically creates a connection. Because we use spring-jdbc , Spring Boot automatically creates a **JdbcTemplate** . The @Autowired JdbcTemplate field automatically loads it and makes it available.

2.1 MySQL

MySQL, the most popular Open Source SQL database management system, is developed, distributed, and supported by Oracle Corporation.

Features of MySQL:

- **MySQL is a database management system.**

A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you

need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications.

- **MySQL databases are relational.**

A relational database stores data in separate tables rather than putting all the data in one big storeroom. The database structures are organized into physical files optimized for speed. The logical model, with objects such as databases, tables, views, rows, and columns, offers a flexible programming environment.

- **MySQL software is Open Source.**

Open Source means that it is possible for anyone to use and modify the software. Anybody can download the MySQL software from the Internet and use it without paying anything.

- **The MySQL Database Server is very fast, reliable, scalable, and easy to use.**

MySQL Server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years. Although under constant development, MySQL Server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.

- **MySQL Server works in client/server or embedded systems.**

The MySQL Database Software is a client/server system that consists of a multithreaded SQL server that supports different back ends, several different client programs and libraries, administrative tools, and a wide range of application programming interfaces (APIs).

11. Hardware and Software Requirements (Minimum):

Hardware:

1. Intel i3 processor 3rd generation or later / AMD Ryzen 200 2nd generation or later
2. 3 GB ddr3 ram.
3. Windows 8 Home edition or later.
4. 200 GB Sata HDD Space
5. Data Connection 200 kbps

Software:

1. java 16.0.1 2021-04-20
2. MySQL 8.0.24 with Workbench 8.0
3. Google Version 93.0.4577.82 (Official Build) (64-bit)
4. Apache Tomcat Server 8.5
5. Maven Dependencies

12. ER Diagram:

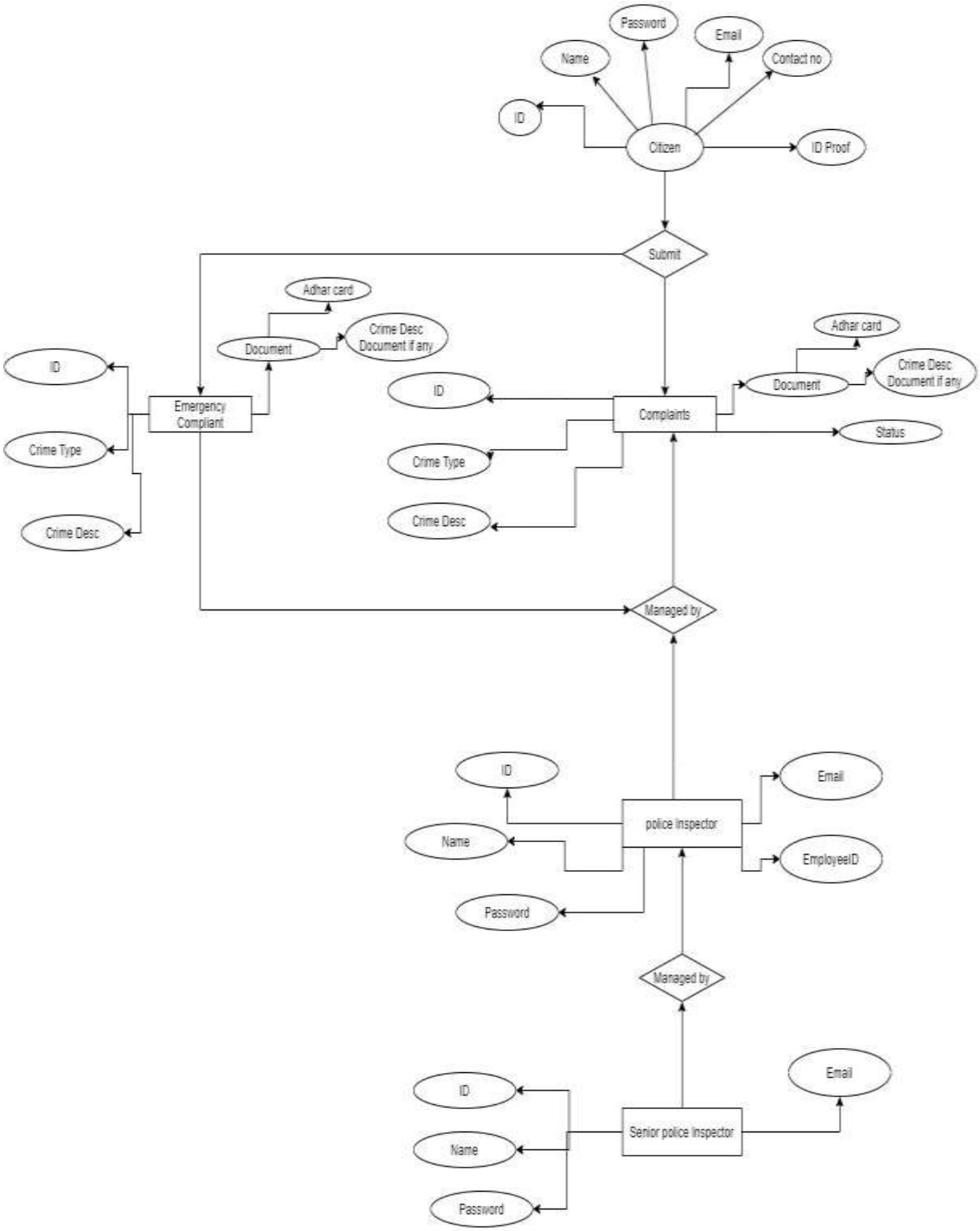

Figure 1: ER Diagram

13. Table Structures:

1. Table name: Users

Columns	Data Type	Key	Not Null	Auto Increment
Id	int	PK	-	-
Active	Bit(1)			
Password	Varchar(255)			
Role	Varchar(255)			
Username	Varchar(255)			
Senior_Police_officer_ID	bigint			
Police_officer_ID	bigint			
Citizen_ID	bigint			

2. Table name: Citizen

Columns	Data Type	Key	Not Null	Auto Increment
Id	int	PK	-	-
Email	Varchar(255)			
name	Varchar(255)			

3. Table name: Citizen Complaint

Columns	Data Type	Key	Not Null	Auto Increment
Citizen_ID	Bigint		-	-
Complaint_ID	Bigint	PK		

4. Table name: Police Inspector

Columns	Data Type	Key	Not Null	Auto Increment
Id	int	PK	-	-
name	Varchar(255)			

5. **Table name: Senior Police Inspector**

Columns	Data Type	Key	Not Null	Auto Increment
Id	int	PK	-	-
name	Varchar(255)			

6. **Table name: Complaint**

Columns	Data Type	Key	Not Null	Auto Increment
Id	int	PK	-	-
Citizen_name	Varchar(255)			
Citizen_Contact_No	Varchar(255)			
Citizen_Address	Varchar(255)			
Crime_Location	Varchar(255)			
Crime_Type	Varchar(255)			
Crime_Desc	Varchar(255)			
Adhar_No	Varchar(255)			
Status	Varchar(255)			
Image_Path	Varchar(255)			

7. **Table name: Crime**

Columns	Data Type	Key	Not Null	Auto Increment
Id	Bigint	PK	-	-
Age	int			
Location	Varchar(255)			
Name	Varchar(255)			
Status	Varchar(255)			
Crime_Type	Varchar(255)			

8. **Table name: People**

Columns	Data Type	Key	Not Null	Auto Increment
Id	Bigint	PK	-	-
Contact_No	Varchar(255)			
Place_of_Occurence	Varchar(255)			
Name	Varchar(255)			
Status	Varchar(255)			
Crime_Type	Varchar(255)			
Emergency_Complaint_ID	Bigint			

9. **Table name: Emergency_Complaint**

Columns	Data Type	Key	Not Null	Auto Increment
Id	Bigint	PK	-	-
Contact_No	Varchar(255)			
Place_of_Occurence	Varchar(255)			
Citizen Name	Varchar(255)			
Status	Varchar(255)			
Crime_Type	Varchar(255)			
Adhar_card_No	Varchar(255)			
Citizen_Home_Address	Varchar(255)			

14. UML Diagrams:

1. Use Case Diagram:

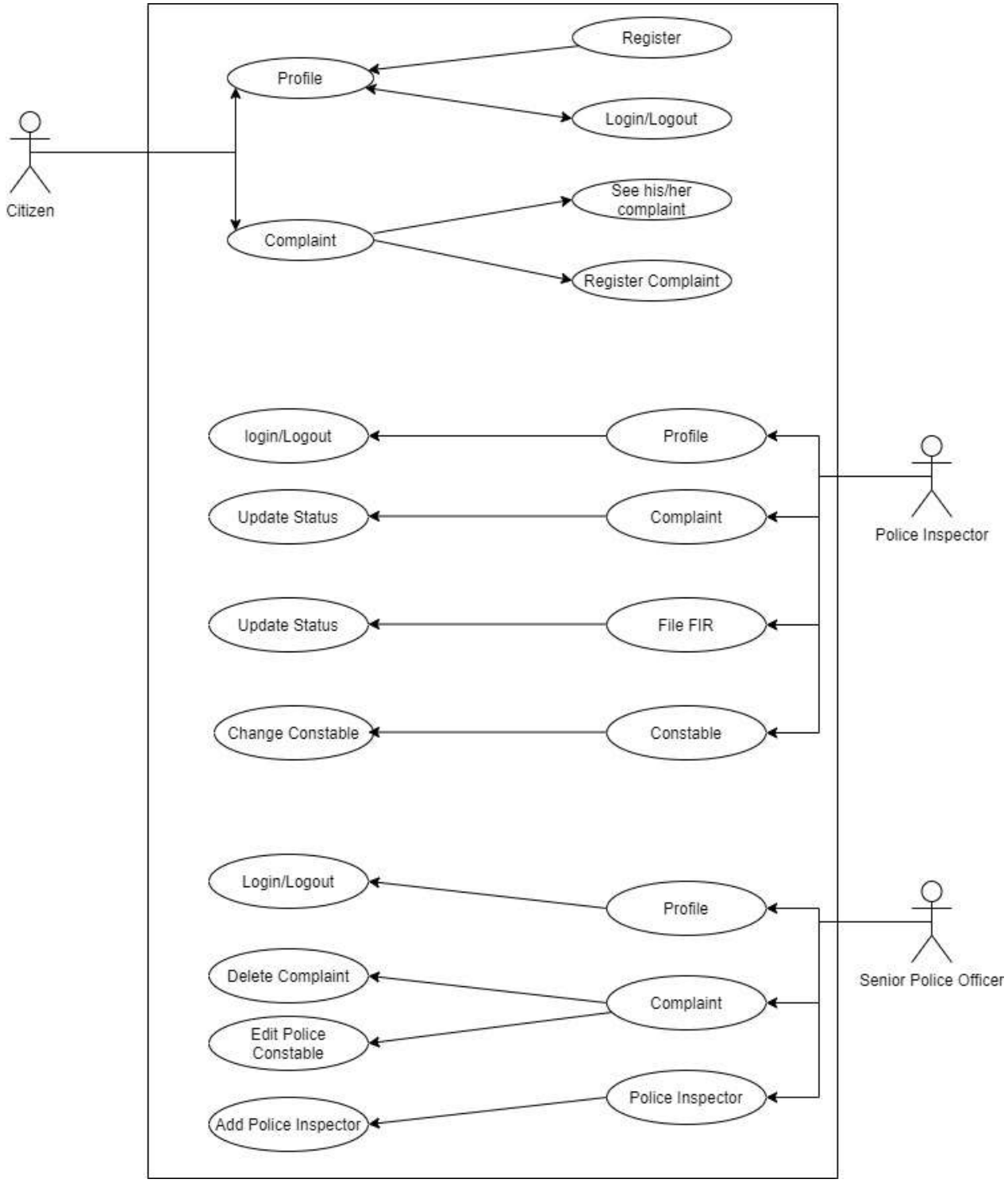

Figure 2: Use Case Diagram

2. Collaboration Diagram:

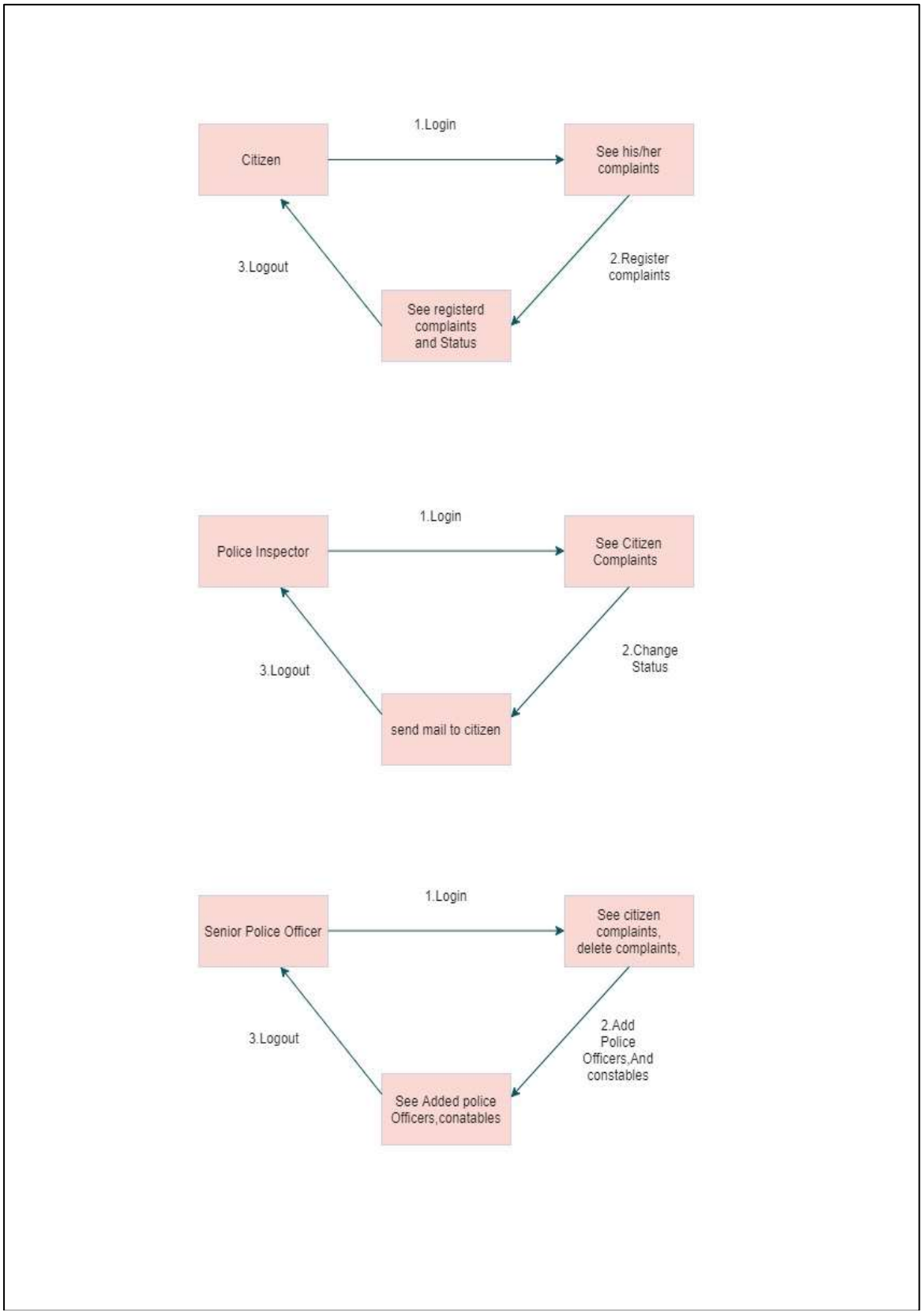

Figure 3: Collaboration Diagram

3. Sequence Diagram:

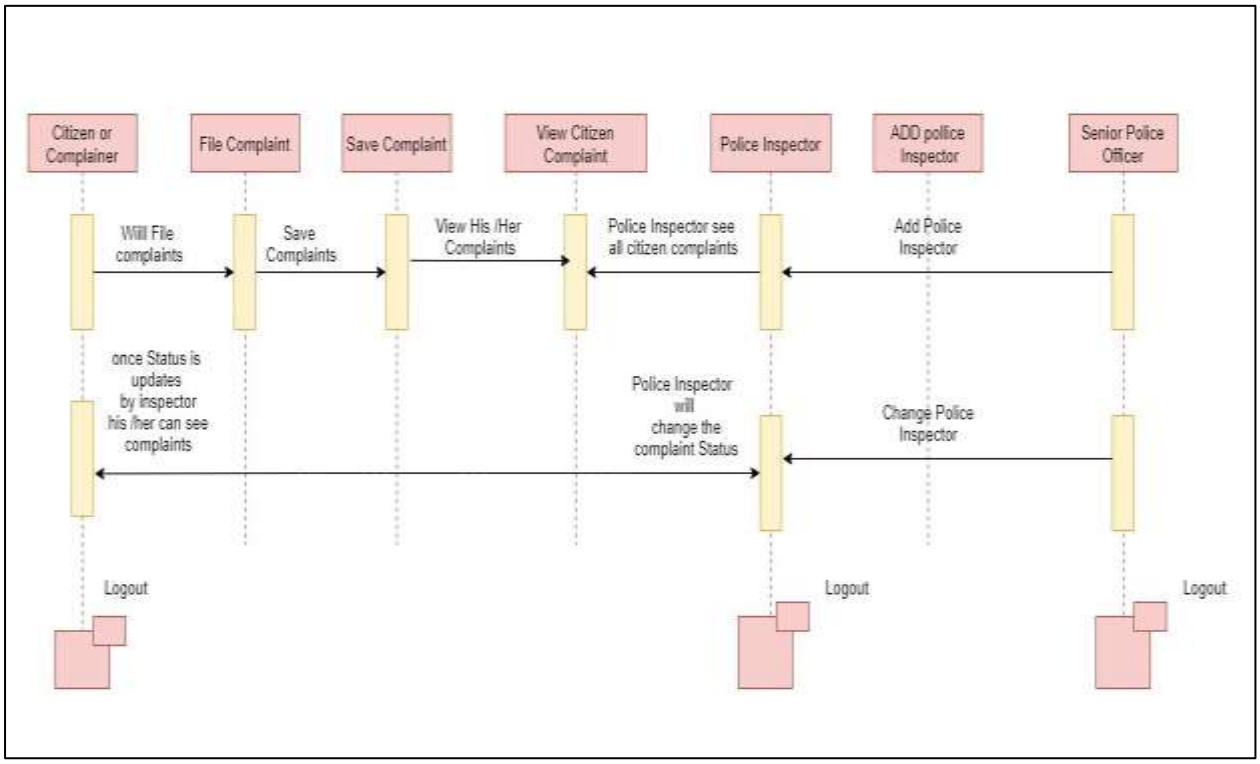

Figure 4: Sequence Diagram

4. Component Diagram:

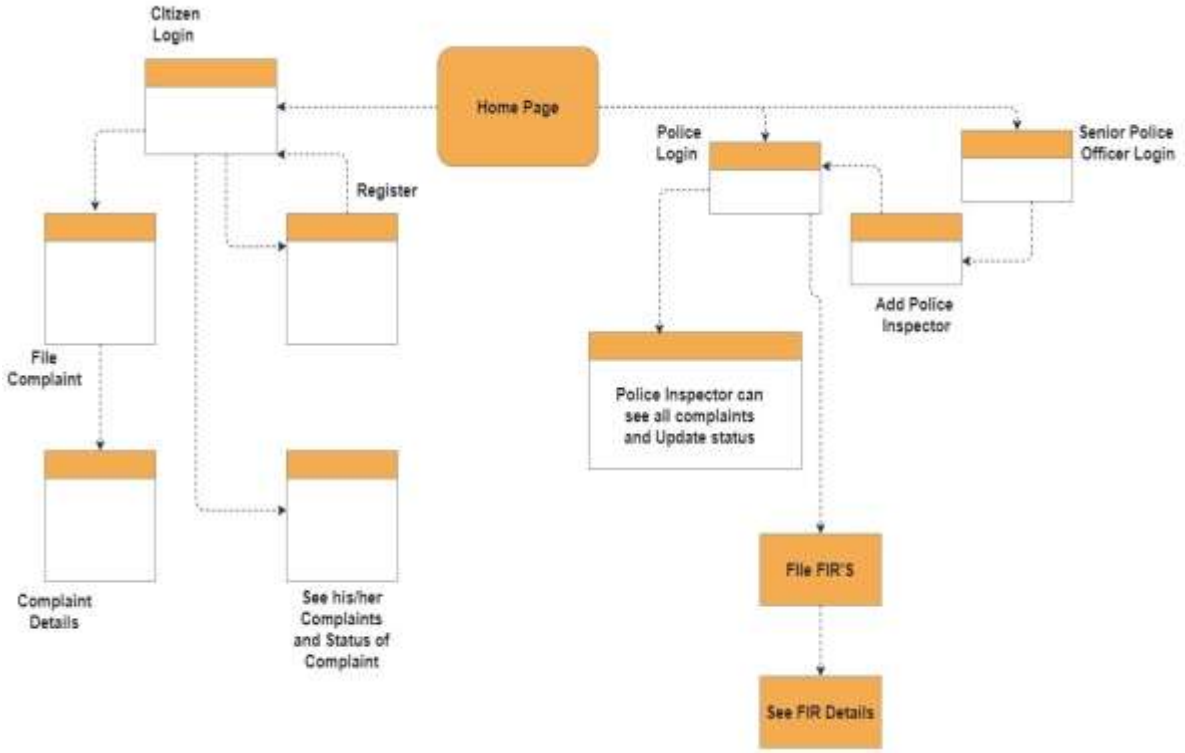

Figure 5: Component Diagram

5. State Diagram:

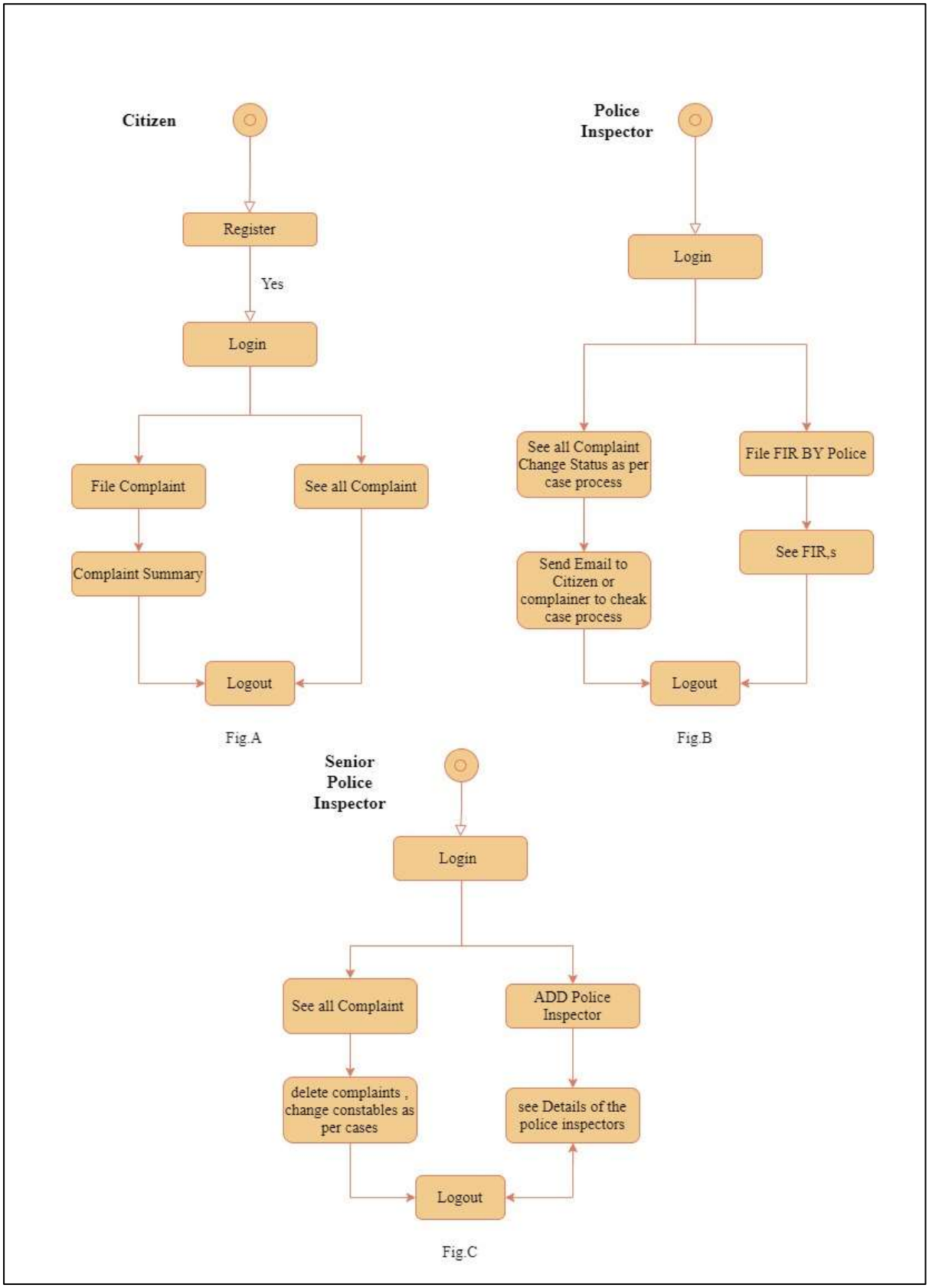

Figure 6: State Diagram

6. Activity Diagram:

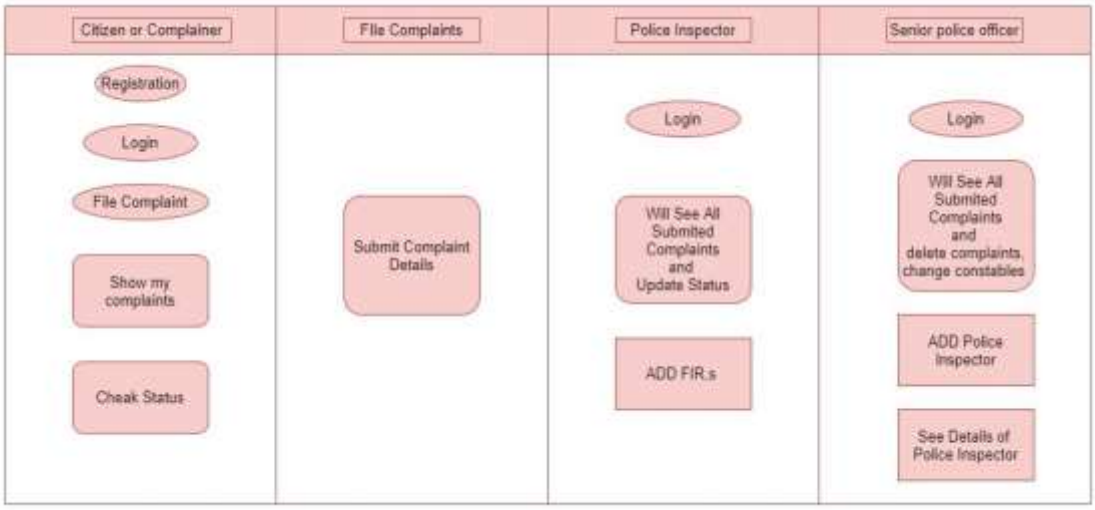

Figure 7: Activity Diagram

7. Class Diagram:

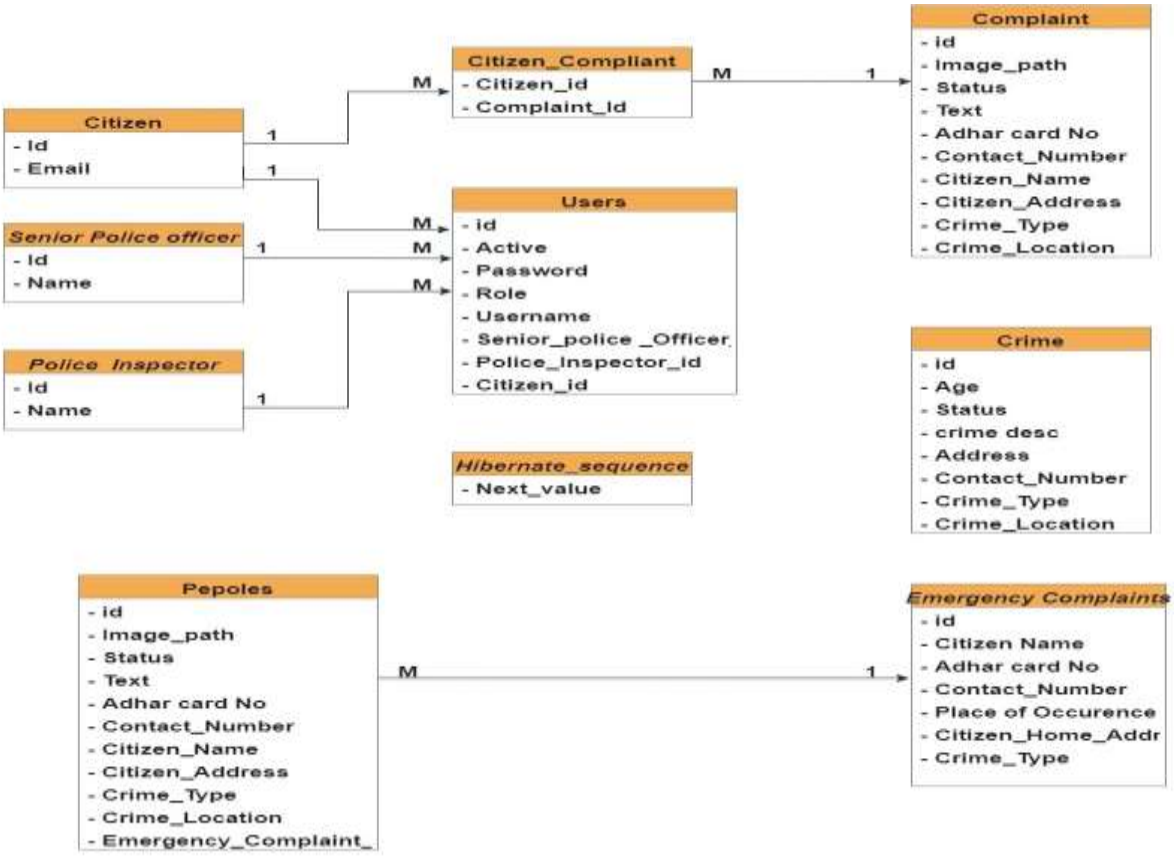

Figure 8: Class Diagram

15. End to End Flow of Application:

Citizens:

- Citizen will login to the portal or will have to register if he is not a registered Citizen.
- After registration Citizen will login and Dashboard page will be displayed to him which will display the previous complains and its status if any.
- From that page can Citizen can click on the '**file new complain'** button and reach the complaint details form page.
- In the complaint details page the Citizen has to pick a crime types among the predefined Crime types and brief about the Crime with Occurrence location (address) and image of the Id Proof if any or Adhar card number.
- A '**summary report'** will be displayed on the Website showing all the details of the complaint.
- Citizen able to see his complaint Status After the complaint has been '**Received'** or either '**Resolved'** by the respective Police Officer and his/her got a mail when police officer update the Status update the status of complaint.

Police Inspector:

- Police Inspector will login from the login page and will be able to see the Citizen Complaints filed by the Citizen of a particular City.
- Police Inspector can Review the complaint and after verifying it Police Inspector will change the complaint status as submitted succusfuly and send mail to the citizen.

- It is the job of Police Inspector to assign appropriate cases to the constables to resolve the case as soon as possible to Protect Citizen or solve the Complaints.
- After conforming about the completion/resolving of the Complaint, Police Inspector will Update the status of the Complaint as '**Resolved'** and send the mail to the citizen or complainer and head over to the next complaint if any.

Senior Police Inspector:

- Senior Police Inspector will login from the login page and will be able to see the Citizen Complaints filed by the Citizen of a particular City and previously added Police Inspectors, constables.
- Senior Police Inspector can delete citizen complaints which status rejected. Senior Police Inspector can change the constables Assigned by police inspector and he can add Police Inspector also.

16. Future Scope of Project:

This Project is made for the City Police Station but In future We Extend for State level.

We want to Add Modules Like Peoples can Apply for Procession/rally Permission, Festival Permission.

Thank You!