

ONLINE CRIME REPORTING FIR'S & CSR

A Project report submitted in partial fulfillment

for the award of the degree of

MASTER OF COMPUTER APPLICATIONS

(2023-2025)

Submitted by

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2023-2025

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CERTIFICATE

This is to certify that the project report entitled “**ONLINE CRIME REPORTING FIR'S & CSR**” is the bonafide work done by me **P. CHARAN TEJA, REGD.NO-23G21F0060** in partial fulfillment of the requirements for the award of the degree of **Master of Computer Applications**, from Jawaharlal Nehru Technological University Ananthapuramu, during the year 2023-2025.

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DECLARATION

I, Mr. P. CHARAN TEJA, Regd.No.23G21F0060, hereby declare that the project work entitled "**ONLINE CRIME REPORTING FIR'S & CSR**" done by us under the esteemed guidance of Assistant Professor **Ms. K. NISHITHA** and is submitted in partial fulfillment of the requirements for the award of the Master's degree in **Computer Applications**.

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ABSTRACT

ONLINE CRIME REPORTING FIR'S & CSR

The Crime Report Management System aims to change the current manual system into an automated system using computerized equipment and software to meet all policemen's requirements. This helps them store and access important data for extended periods. The system needs basic software and hardware that police officers can use without much trouble. It keeps digital records of all FIRs and CSRs filed for crimes. The main goal is for this system to send updates to every police officer when a criminal gets released sharing their details like their criminal ID, Name, and type of release. Also, it tells officers about new rules or upcoming events. Police departments can use this to handle First Information Report records. The system manages tasks like complaint registration and information updates, which helps save time. Police stations use this system to report crimes, file FIRs, and keep track of prisoner records. It helps make the organization more transparent and improves its quality standards.

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1. INTRODUCTION

In our connected world, technology has an impact on making public safety and law enforcement better. The old ways to report crimes and file complaints take a lot of time, as people need to go to police stations in person. To fix this problem, an Android-based Crime Reporting and FIR Management System helps people to report crimes, submit complaints, and check their case updates through the Internet.

This app comes with an easy-to-use interface that makes it simple to submit Corporate Social Responsibility (CSR) complaints and First Information Reports (FIRs). The system has an impact on openness and ease of access through secure login checks live status updates, and direct messages with police. What's more, it helps connect people with police stations leading to faster replies and better handling of complaints.

The app includes features like GPS tracking digital proof uploads and automatic case routing to make crime reporting up-to-date while cutting down on red tape. Using phone technology influences making neighborhoods safer by pushing for quick crime reports and improving teamwork between law enforcement agencies.

1.1 Objectives

The Online Criminal Record Management System applies to police stations across the district and specifically looks into the subject crime detection, conviction of criminals depending on a highly responsive backbone of information management. The efficiency of the police and the effectiveness with which it tackles crime depend on what quality of information it can derive from its existing records and how fast it can have access to it.

This system is made to keep the records about the prisoners and about the crimes. Police can login as a user and can add the details of prisoners like name, age, address, crime and punishment. They can also write the First Information Report and can save it. FIR's date, time, number and details can be seen any time if required by the registered user.

This system gives unique id to every FIR as required and the prisoner number will also be unique. Additionally, it tells about any crime that is done through the id of complaint made to the police or if any FIR is done and if the criminal gets caught, the information can be updated about the case.

1.2 SYSTEM SPECIFICATIONS

SOFTWARE REQUIREMENTS

Front End	:	HTML5, CSS3, Bootstrap
Back End	:	PHP 8.1, MYSQL
Control End	:	Angular Java Script

HARDWARE REQUIREMENTS

Processor	:	Intel 5
Installed memory (RAM)	:	4 GB
Hard Disk	:	500 GB
Operating System	:	Windows
PHP TOOLS	:	xampp – win64 – 8.1

2. LITERATURE REVIEW

Computerization of Crime Reporting Systems:

The conventional practices of crime reporting, which included physical records and manual data storage, usually resulted in inefficiencies like information loss, response delay, and inadequate tracking. Research indicates that computerized crime reporting systems greatly improve police work by allowing rapid and secure access to criminal records. Internet platforms enable the remote filing of complaints by citizens, which takes the pressure off the police stations and speeds up the response time. Electronic reporting of crime also allows for easy exchange of data across various law enforcement agencies, enhancing inter-agency coordination. Also, it negates the opportunity for tampering with physical files, which protects the integrity and transparency of data in the judicial system.

Mobile and Cloud-Based Crime Management Systems:

Research has investigated the use of mobile apps and cloud computing in reporting crime recently. Crime reporting apps based on mobile offer instantaneous reporting and monitoring, enhancing transparency as well as accountability. Cloud storage helps avoid the loss of criminal information and allows the retrieval of data from anywhere, facilitating coordination among various police units. Cloud computing offers a cost-effective and scalable option for the storage of massive amounts of crime data. Cloud-based crime management with multi-layered security features like data encryption and role-based access control guarantees the confidentiality of data and cyber threat protection. Mobile crime reporting apps also empower citizens through the ability to report crimes in real time, enabling swift law enforcement response.

Efficiency of Online FIR and CSR Systems:

A study conducted by [5] highlights that online FIR (First Information Report) and CSR (Community Service Register) systems reduce procedural delays and provide citizens with a more efficient mechanism to report crimes. These systems also facilitate better tracking of crime trends and enable data analytics for predictive policing. FIR filing automation guarantees that cases are registered in real time, eliminating human errors and possible bias in reporting. The

systems also assist in the upkeep of a well-organized database of previous complaints, which can be reviewed to determine repeat offenders and hotspots of crime.

Role of AI and Data Analytics in Crime Prevention:

Artificial Intelligence (AI) and Machine Learning (ML) have been used more and more in crime management systems. Predictive analysis based on AI assists in mapping crime hotspots, aiding in the effective deployment of Law enforcement resources .Additionally, public complaint sentiment analysis as well as social media data can also issue early warnings of possible criminal activities, strengthening proactive police strategies. Artificial intelligence-based facial recognition technologies and biometric authentication also help to identify suspect and connect them with previous criminal activities. Machine learning patterns have the ability to scan past records and foretell possible dangers, enabling law enforcement to take preventive action before crimes are committed.

Difficulties in Implementing Crime Reporting Applications:

While there are many advantages, there also exist challenges to online crime reporting systems. Cyber security threats, illiteracy in the digital space among end-users, and data privacy are some of the key challenges. A major challenge that exists is the possibility of false or fake reports being filed through online channels. In order to overcome this, verification methods like OTP authentication, AI-based anomaly detection, and manual police verification must be put in place. Also important is making the country digitally literate and creating awareness about crime reporting apps in order to enable effective usage of such systems.

Comparative Analysis with Existing Systems:

A comparison of the suggested Crime Reporting Online FIR CSR Management Application with other crime reporting systems shows that the use of mobile alerts, cloud storage, and automated verification of data presents a more effective option compared to conventional approaches. Studies on comparative systems deployed in developed countries have revealed crime response time decreases and enhanced coordination among law enforcement officials and citizens. Global crime management systems like that of the UK's Crime Reporting Online Service and the USA's Next Generation Identification (NGI) system are setting the trend in online reporting of crimes. These systems employ centralized databases, AI-based criminal

profiling, and mobile access to crime records, providing a quick and transparent crime resolution process. The system proposed here is expected to include similar advanced features to simplify crime reporting and investigation procedures in an easy-to-use manner.

2.1 Existing Solution

- In the present scenario filing an FIR/complaint is a hectic task since one must go through a very huge process for justice. It matter how small or big the crime is.
- In general, to file an FIR/complaint one must search for a nearby police station and have to wait until a cop takes upon the request and either we have to recite or have to give it as a written statement.
- The existing system of filing complaints/FIR affects our daily routine, makes us spend a lot of our precious time in it. Filing an FIR, meanwhile we could have done three. Mainly could give a lot of chances and time for verdicts to easily escape from cases making their pre bails ready or even for absconding.
- To avoid such miserable situations we have designed an application that makes everything happen in just few minutes. Below diagram represents the existing process of filing complaints/FIR in police station which starts by a simple request from a Citizen.

Disadvantages of Existing Systems:

- Lack of privacy.
- Risk in the management of the data.
- Less Security.
- Low co-ordination between client and police.
- Less User-friendly.
- Accuracy not guaranteed.
- Not in reach of distant users.
- There is no storage and automation if users have some enquiry.

2.2 Proposed System

- The purpose of this paper is to develop an application for crime area detection and store criminal records. It provides an application for the user that would provide an alternate path for the users passing by crime area.
- It allows user to report incidents and get it verified by the police officials. It will consist of an application for police officials which can perform database operations on criminal record and allows efficient retrieval of required information from the centralized database present on Cloud.
- The application targets general public and police officials for managing the incidents and crime without consuming much time. This proposed system will be divided into three major modules.
- This application will be useful for the remote access of criminal data which will be helpful for the investigations carried by police department.
- Moreover, it will also provide an alternate safe path on user's demand before entering the crime area. The database for this project will be stored on cloud to gain remote access.
- For avoiding any false incidence to be notified to other user, the information provided will be first verified by the police officials. After approval of the information it will be broadcasted to other users using the application.

Advantages of Proposed Systems:

- The main advantage of online application is an individual can report the crime any time from anywhere
- Users can scan the progress of their complaints in online
- The details of the users/ reporters won't show publicly

- Incident-based reporting contains a wealth of information that can be used to track problems such as drugs trends, find characteristics of victims and perpetrators and informs us about the different locations and time property is stolen.

3. OVERALL DESCRIPTION OF THE PROPOSED SYSTEM

System Modules:

ADMIN:

- Login
- Create category
- Create department (division)
- City
- Area / Town
- Create police user
- Manage police user
- View compliant report
- All report (CSR / FIR)

POLICE:

- Login
- View FIR
- View CSR
- View status

PUBLIC/ USER:

- Register
- Login
- Create FIR
- Create CSR

- View FIR
- View CSR
- View status
- My profile
- SOS – SMS alert
- Update location

3.1 Module Description:

This section outlines the major modules of the Crime Reporting Online Complaints system. The application is divided into three core modules, each designed to perform specific roles and responsibilities for efficient functioning of the system.

ADMIN:

- Login:

The main activities in the application are the admin login page for admin. The other modules are followed by this login page. This module records only admin and password of the admin.

- Create category:

An admin can be create category for every department directory and create a category of records.

- Create department (division)

An admin can be creating a department for an every city and sub division also. It based on records will be uploaded.

- City:

An admin create city module which be included all city list and user can access easily.

- Area / Town:

An admin will create area and town is based on the city. It will use of upload the compliant with the particular area or town to be mentioned. Then police can handle the report easily.

- Create police user:

Admin can create a police user with the personal information like police name, which department, address, Mobile number, city and area to be uploaded. Then admin can give the police user login id and password.

- Manage police user:

Admin will manage the user database if any modification admin can change the police details. If police officer will transfer to anywhere to be modified in their profile.

- View compliant report:

Admin can view the compliant report and admin will forward to corresponding police officer. Police officer will take the action for the complaint.

- All report (CSR / FIR):

Admin will check the all reports like CSR complaints and FIR complaints. Admin will maintain the total reports which all are solved complaints and dissolved complaint to be rectified. Then admin update the status of every compliant.

POLICE:

- Login:

A police officer will login the page with admin created login id and password to be used. This module records only police officer and password of the police officer.

- View FIR:

A police officer can be view the FIR complaint copies from the user. And it also have right to update the status of FIR according to current status.

- View CSR:

A police officer can be view the CSR complaint copies from the user. And it also have right to update the status of CSR according to current status.

- View status:

A police officer views the status of complaint registry. Police officer will waiting for status from the admin. Admin can update the status after police officer will take the action for the complaint.

User:

- Register:

Another main function of our proposed system is registration, in order to register with the unique application details such as name; password, email, place and time are required.

- Login:

The main activities in the application are the user login page for user. The other modules are followed by this login page. This module records only user and password of the user.

- Create FIR:

A user will create a FIR complaint contain the complainer name, address, nature of complaint and location of complaint everyone is fill the complaint registry of FIR.

- Create CSR

A community service register is a register maintained in every Indian police station for a non-cognizable offence. If the offence is a cognizable offence, then a first information report (FIR) is created and registered. A CSR is also called a daily diary report or diary report.

- View status

User can view the status of FIR complaint whether it is officer will take the action of complaint they would check the status.

- My profile

User view their my profile and if the user can update the profile details and then, the terminate their account.

- SOS – SMS alert

A user will give the alert from the SOS emergency. It is used to if anyone affected by someone or some incident they will informed from use of SOS emergency application. If officer get any SMS alert they will reach the location.

- Update location

A user can update the current location of incident place or else complaint registry place user will update.

4. DESIGN

Software design is the foundational phase of software development, transforming system requirements into a structured framework that guides the actual implementation. It serves as the blueprint for developers, ensuring that the system is well-organized, efficient, and scalable. The Crime Reporting Online FIR CSR Management Application is designed to provide a seamless digital platform for citizens to report crimes, police officers to manage cases, and administrators to oversee the overall workflow. A well-defined design ensures that all system functionalities, including user authentication, complaint registration, status tracking, and law enforcement coordination, operate smoothly.

The software design process involves multiple stages, starting with architectural design, which defines the high-level structure of the application, including its components, modules, and how they interact. This is followed by high-level design (HLD), which outlines the relationships between different system entities, such as users, police officers, administrators, and the database. The final phase, low-level design (LLD), provides detailed specifications for each module, including database schema, workflows, data flow diagrams, and backend logic.

For this project, the frontend is built using HTML, CSS, and JavaScript, ensuring an intuitive user interface, while the backend uses AngularJS and PHP to manage application logic and database interactions. The database, developed using MySQL, securely stores user credentials, complaint records, case updates, and police reports. The system architecture follows a three-tier model, with the presentation layer handling user interactions, the business logic layer processing operations, and the data layer managing records and transactions.

A crucial part of software design is the definition of system workflows and data flow mechanisms. The Crime Reporting Online FIR CSR Management Application incorporates Unified Modeling Language (UML) diagrams, such as Use Case Diagrams, Sequence Diagrams, and Collaboration Diagrams, to illustrate system functionality and user interactions. Data Flow Diagrams (DFD) are also used to represent how data moves between different components, ensuring an organized and structured approach to information processing.

Security is a vital aspect of the software design, ensuring that sensitive data such as user credentials, case details, and complaint records are protected from unauthorized access. Role-Based Access Control (RBAC) is implemented to differentiate the functionalities available to citizens, police officers, and administrators. The authentication mechanism ensures that only registered users can access specific functionalities, and all data transactions are securely processed using encryption techniques.

The design of the Crime Reporting Online FIR CSR Management Application also includes real-time notifications and alert systems, such as an SOS alert feature, which enables users to instantly notify the nearest police station in emergency situations. This functionality ensures quick response times and enhances public safety. The system is designed for scalability, allowing future expansions such as the integration of GPS tracking for crime locations, AI-based crime pattern analysis, and predictive policing measures.

Overall, the software design of this project focuses on efficiency, security, scalability, and user-friendliness. By structuring the system into well-defined modules, implementing secure database management, and utilizing UML diagrams for clear visualization, the application ensures smooth and efficient crime reporting, case management, and law enforcement coordination.

4.1UML Diagrams:

Unified Modeling Language (UML) diagrams are used to visualize, specify, and document the design of a system. These diagrams provide a structured representation of system components, interactions, and workflows, ensuring clarity in development and implementation. The Crime Reporting Online FIR CSR Management Application includes various UML diagrams that define the functionality and interaction between users and system components.

The primary UML diagrams for this system include :

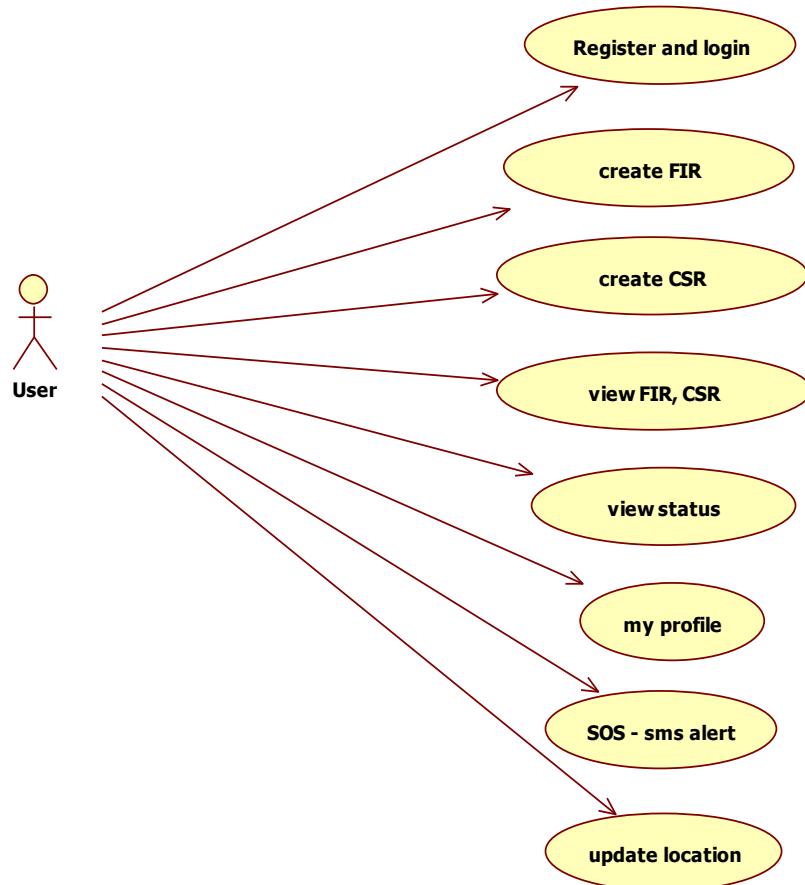
- Use Case Diagrams
- Sequence Diagrams
- Collaboration Diagram

4.1.1 Use Case Diagram:

A Use Case Diagram is a high-level representation of the system that illustrates the interaction between different actors(users) and use cases (functionalities). It helps in understanding how the system responds to various user actions and ensures that all essential features are accounted for during development.

Use case diagram consists of use cases and actors and shows the interaction between the use case and actors.

- The purpose is to show the interactions between the use case and actor.
- To represent the system requirements from user's perspective.
- An actor could be the end-user of the system or an external system.



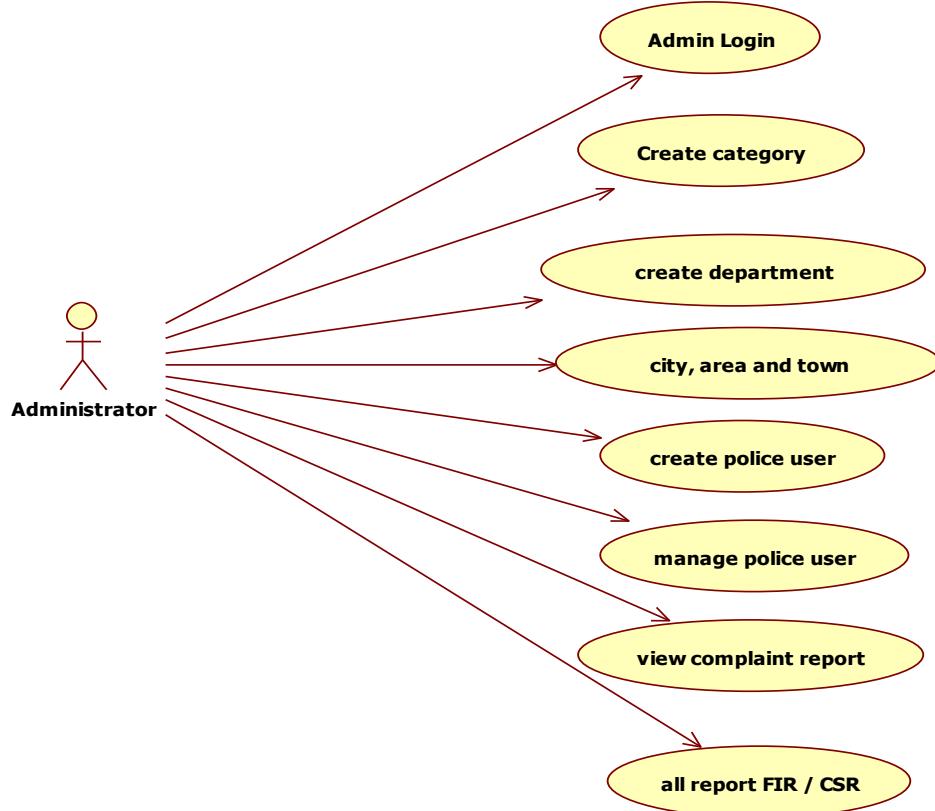
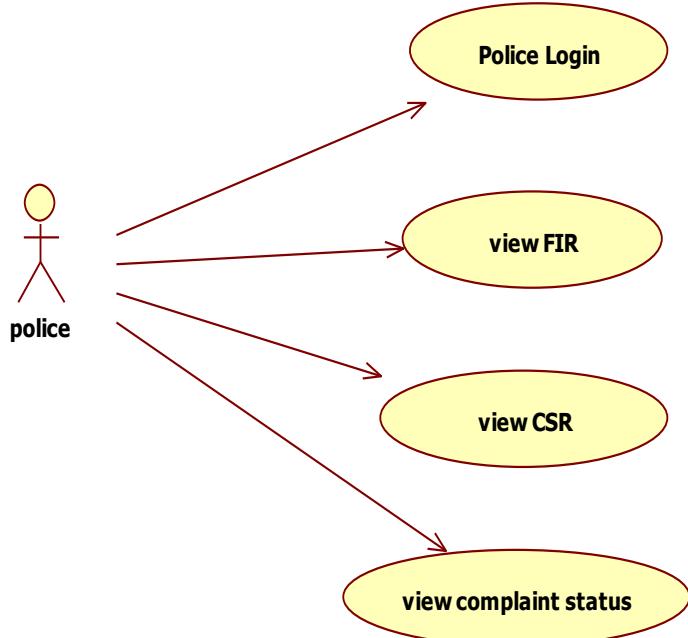


Fig: Use Case Diagrams

4.1.2 Sequence Diagram:

A Sequence Diagram is a type of UML diagram that visually represents how objects in the system interact over time. It shows the chronological order of messages exchanged between different system components, ensuring a structured flow of operations.

For the Crime Reporting Online FIR CSR Management Application, the Sequence Diagram illustrates how users interact with the system, how data is processed, and how police officers and administrators manage crime reports. The time-based nature of this diagram helps in understanding the step-by-step execution of system functionalities.

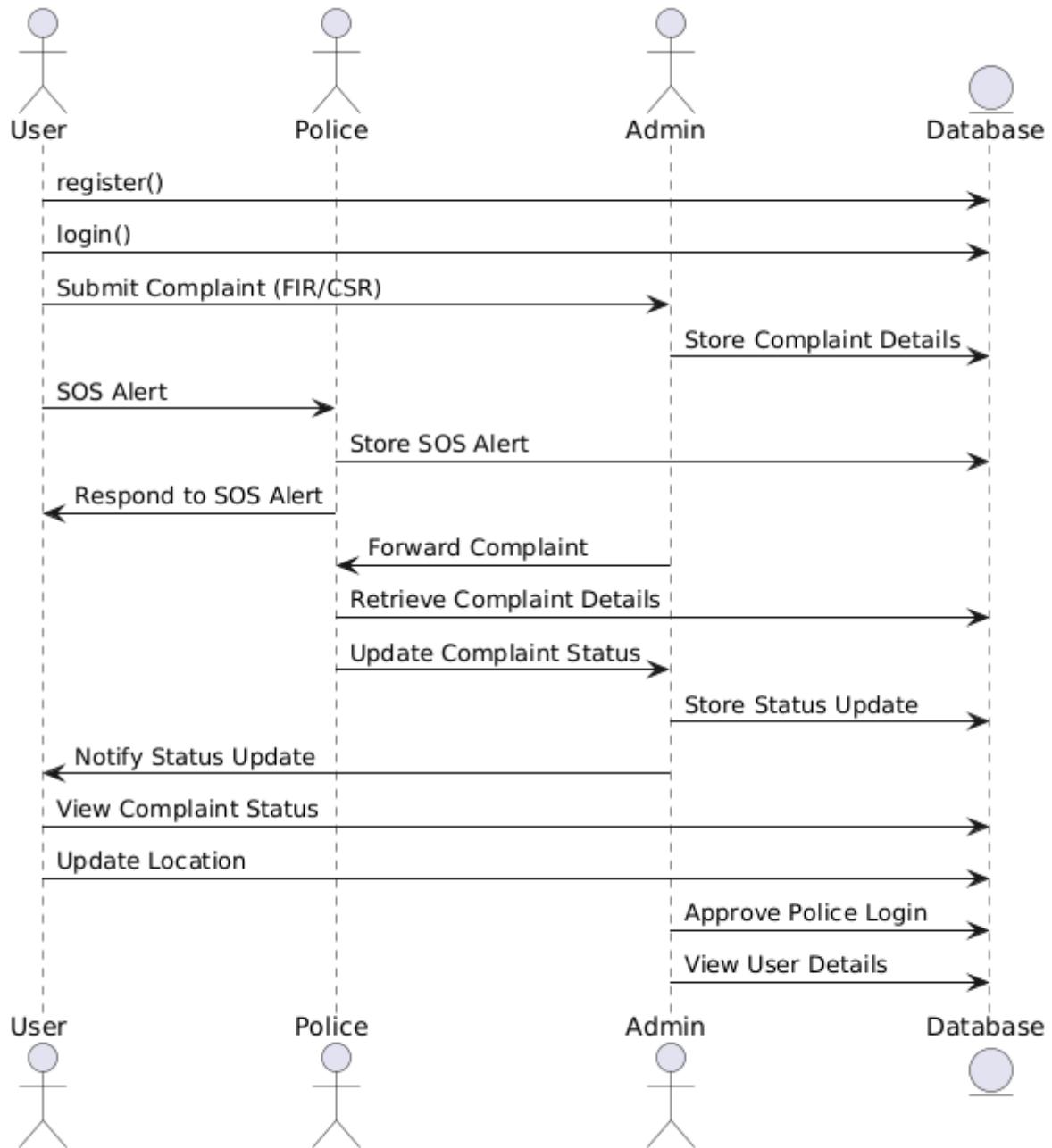


Fig: Sequence Diagram

4.1.3 Collaboration Diagram:

A Collaboration Diagram(also known as a Communication Diagram) is a type of UML diagram that represents interactions between objects in a system. Unlike a Sequence Diagram, which emphasizes the order of interactions, a Collaboration Diagram focuses on the relationships between objects and how they work together to complete a process.

For the Crime Reporting Online FIR CSR Management Application, the Collaboration Diagram illustrates how different entities, such as Users, Police Officers, the Admin, and the System, interact with each other to file complaints, update case statuses, and manage crime reports efficiently.

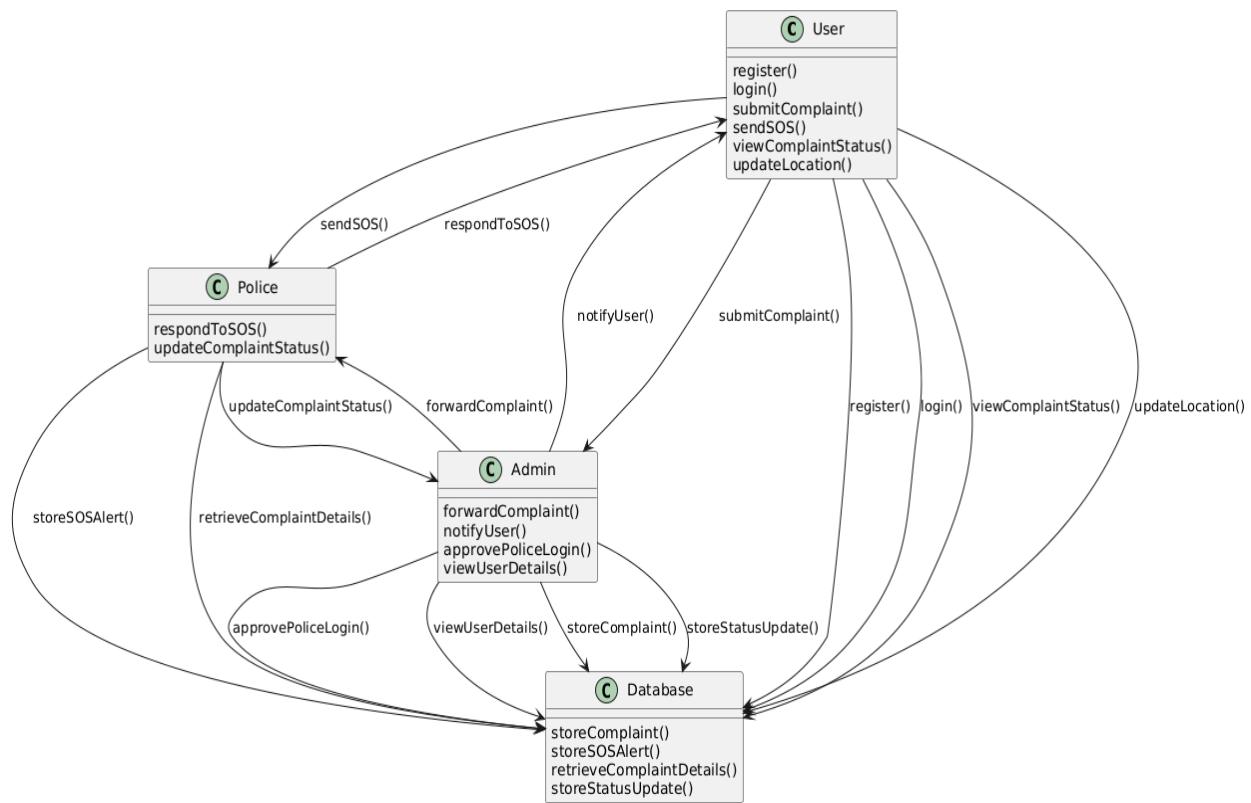


Fig: Collaboration Diagram

4.1.4 Architecture Design:

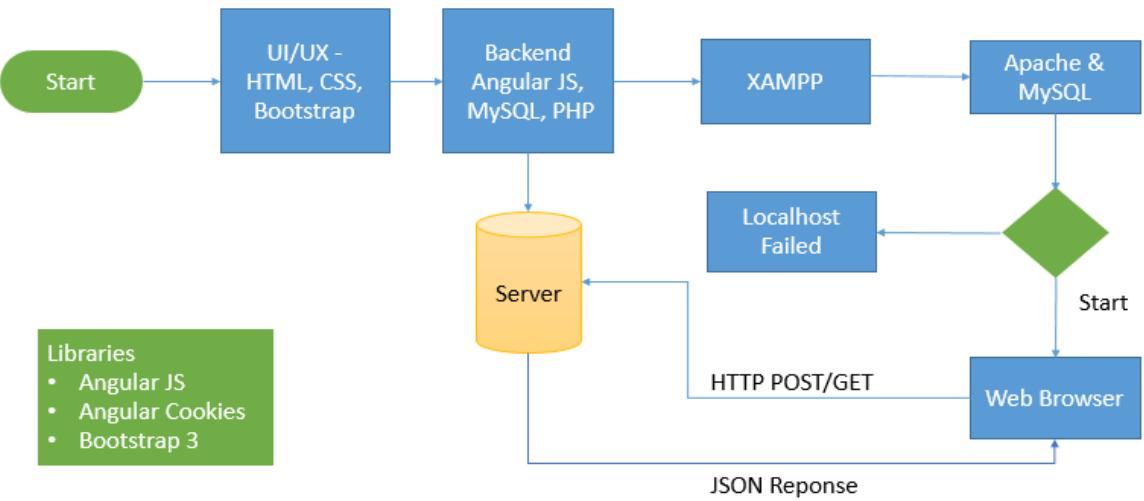
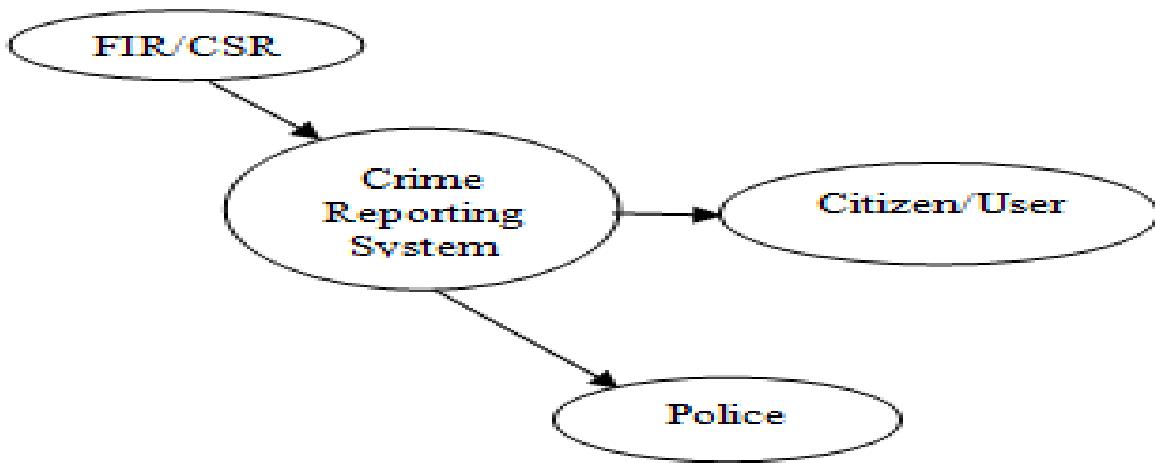
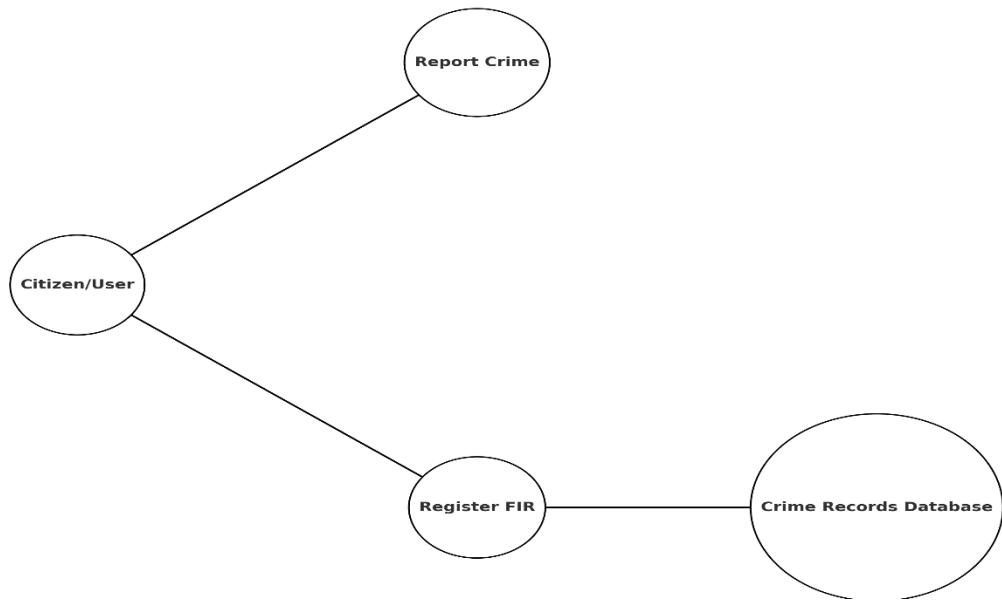


Fig: Architecture Design

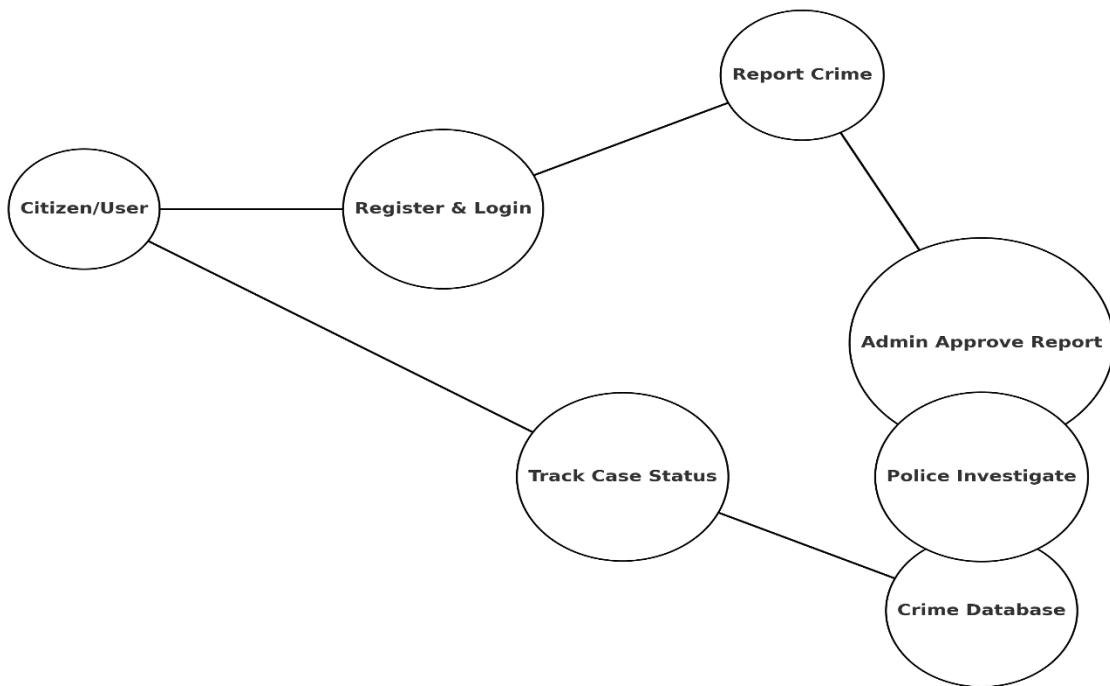
4.1.5. Data Flow Diagram:

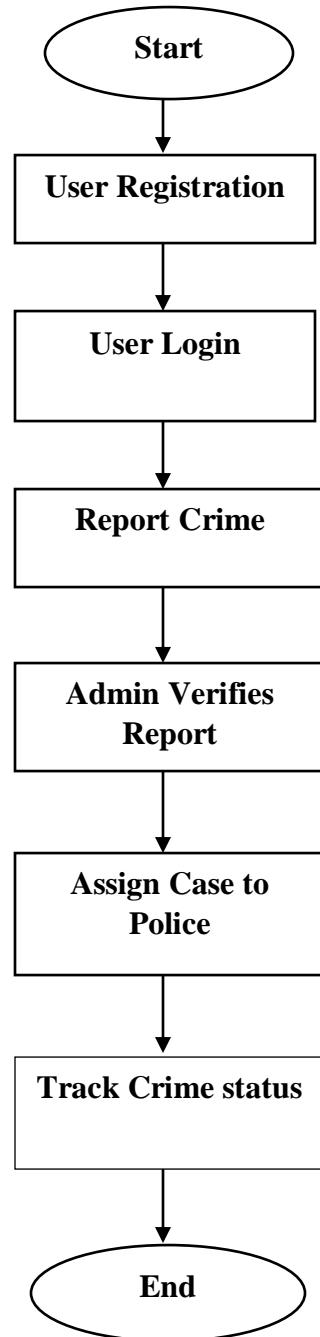


1 – LEVEL DFD:



2-LEVEL DFD:





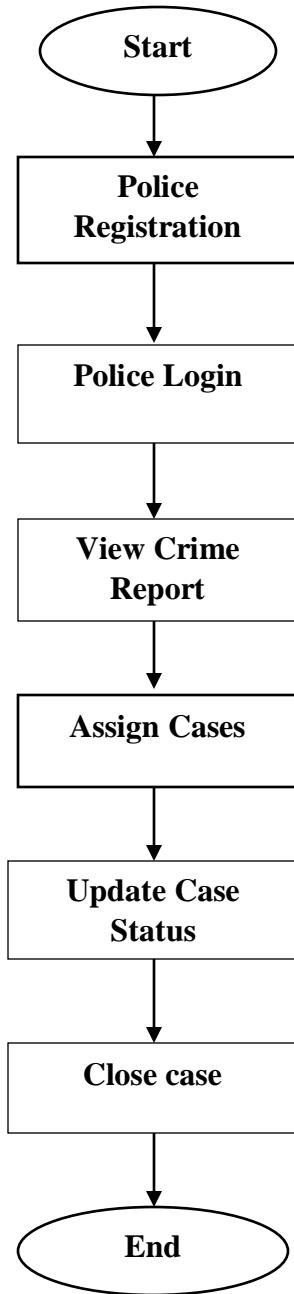


Fig: Data Flow Diagram

4.1.6 Class Diagram:

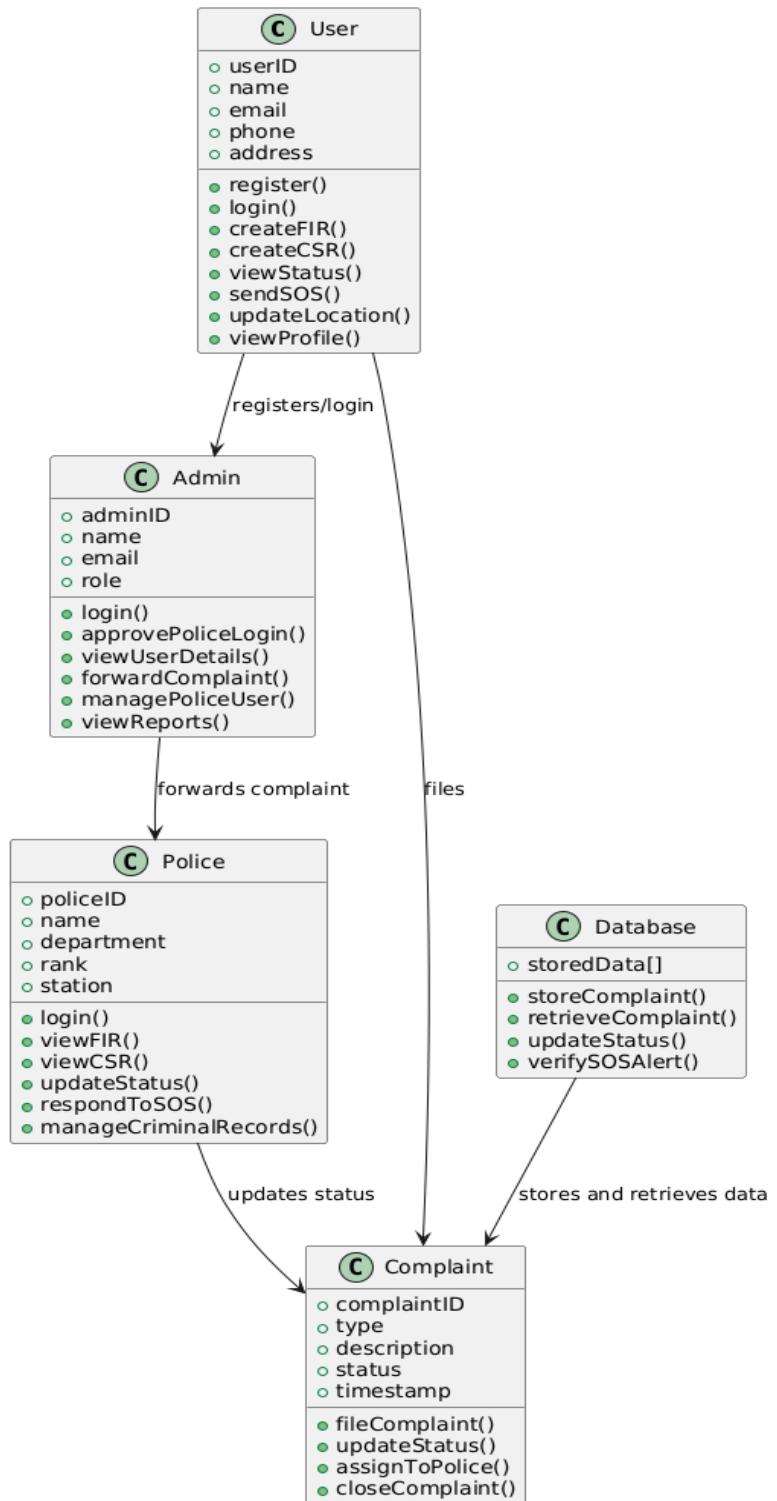


Fig: Class Diagram

4.1.7 Table Design:

Admin

Field	Type	Description
id	int(11)	Primary Key
username	varchar(255)	Admin username
password	varchar(255)	Hashed password

User's

Field	Type	Description
id	int(11)	Primary Key
name	varchar(255)	Full name of the user
email	varchar(255)	Unique email address
password	varchar(255)	Hashed password
created_at	timestamp	Registration time

Police

Field	Type	Description
id	int(11)	Primary Key
name	varchar(255)	Officer name
email	varchar(255)	Officer email
password	varchar(255)	Hashed password
created_at	timestamp	Added date

Firs

Field	Type	Description
id	int(11)	Primary Key
user_id	int(11)	Foreign Key to users
title	varchar(255)	FIR title
description	text	FIR description
location	varchar(255)	Incident location
status	varchar(100)	Default: Pending
assigned_to	int(11)	Foreign Key to police (nullable)
created_at	timestamp	Submission timestamp

Csr's

Field	Type	Description
id	int(11)	Primary Key
user_id	int(11)	Foreign Key to users
title	varchar(255)	CSR title
description	text	CSR description
location	varchar(255)	Incident location
status	varchar(100)	Default: Pending
assigned_to	int(11)	Foreign Key to police (nullable)
created_at	timestamp	Submission timestamp

Sos_alerts

Field	Type	Description
id	int(11)	Primary Key
user_id	int(11)	Foreign Key to users
location	varchar(255)	Emergency location
created_at	timestamp	Alert generation time

4.1.8 ER Design:

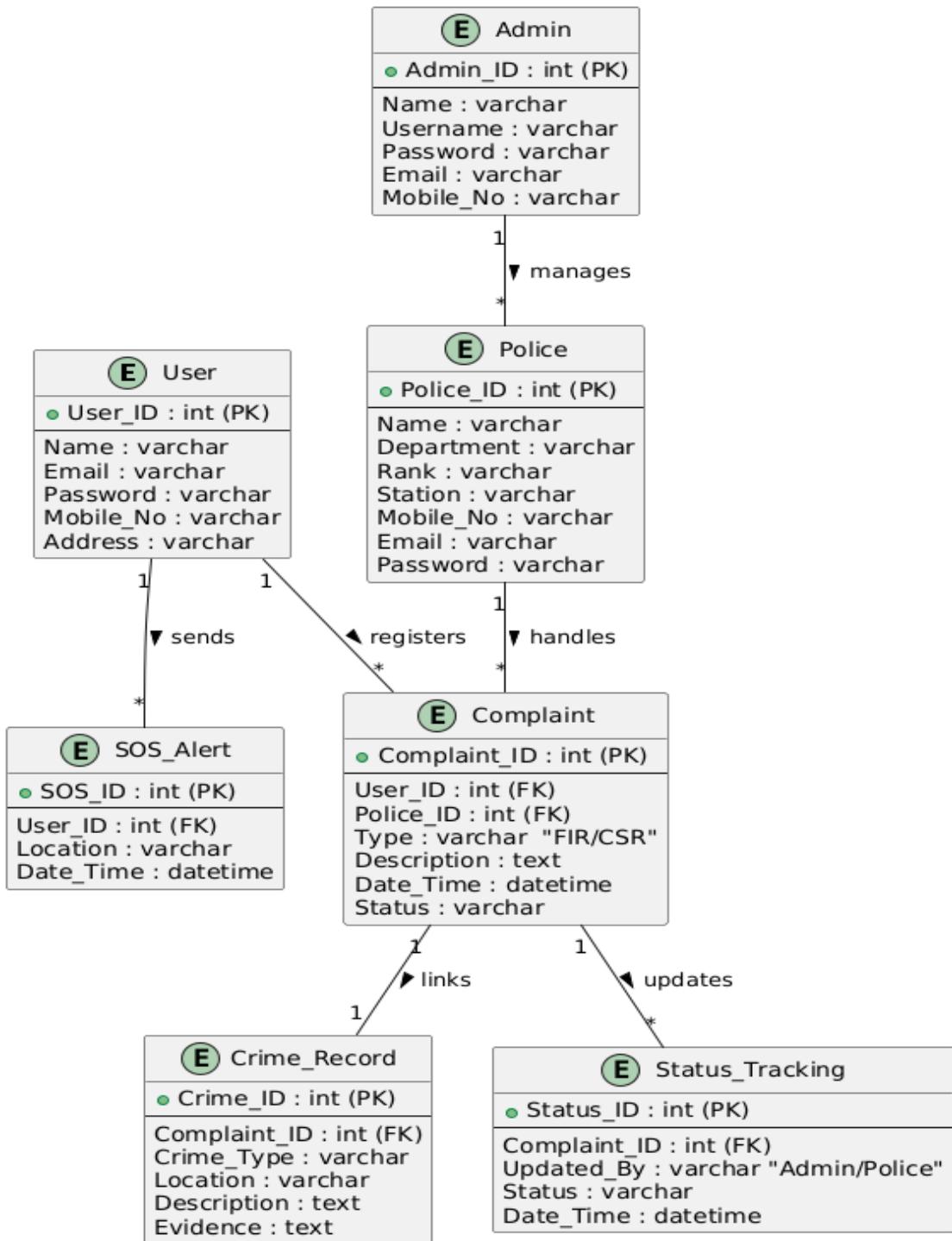


Fig: ER Design

4.1.8 Activity Design:

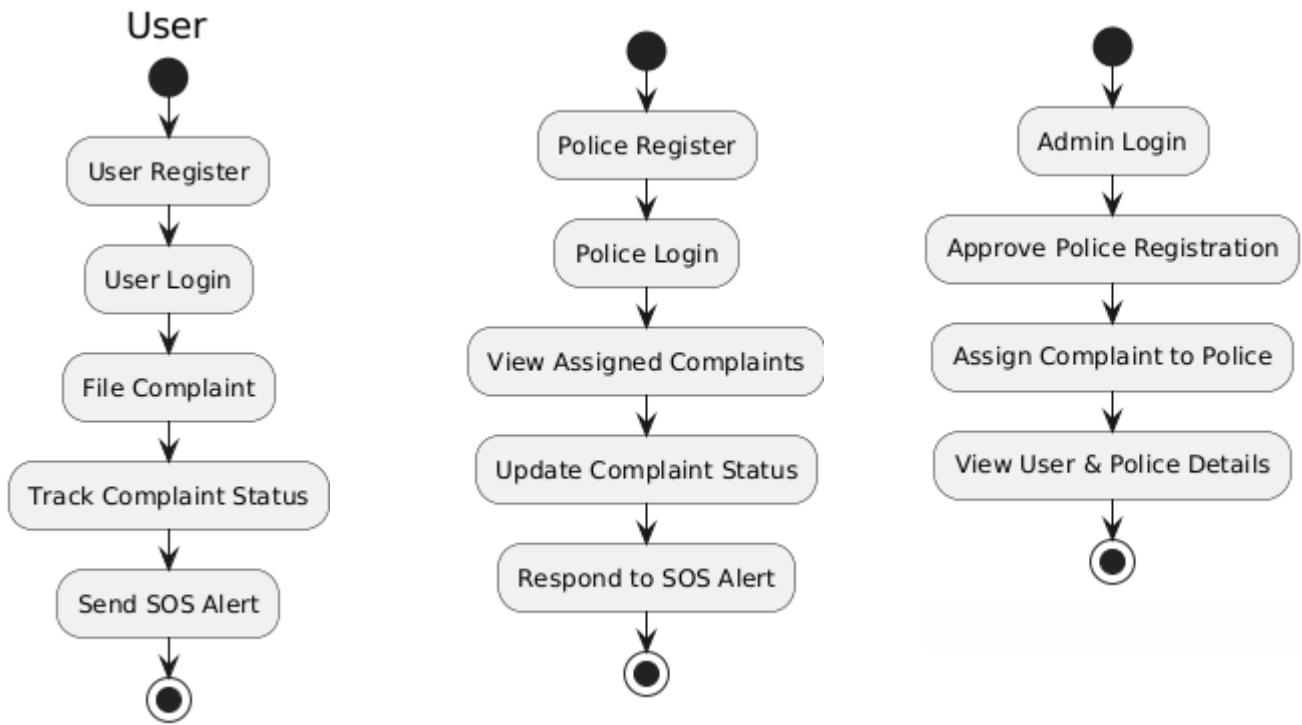


Fig: Activity Design

4.1.9 Workflow Diagram:

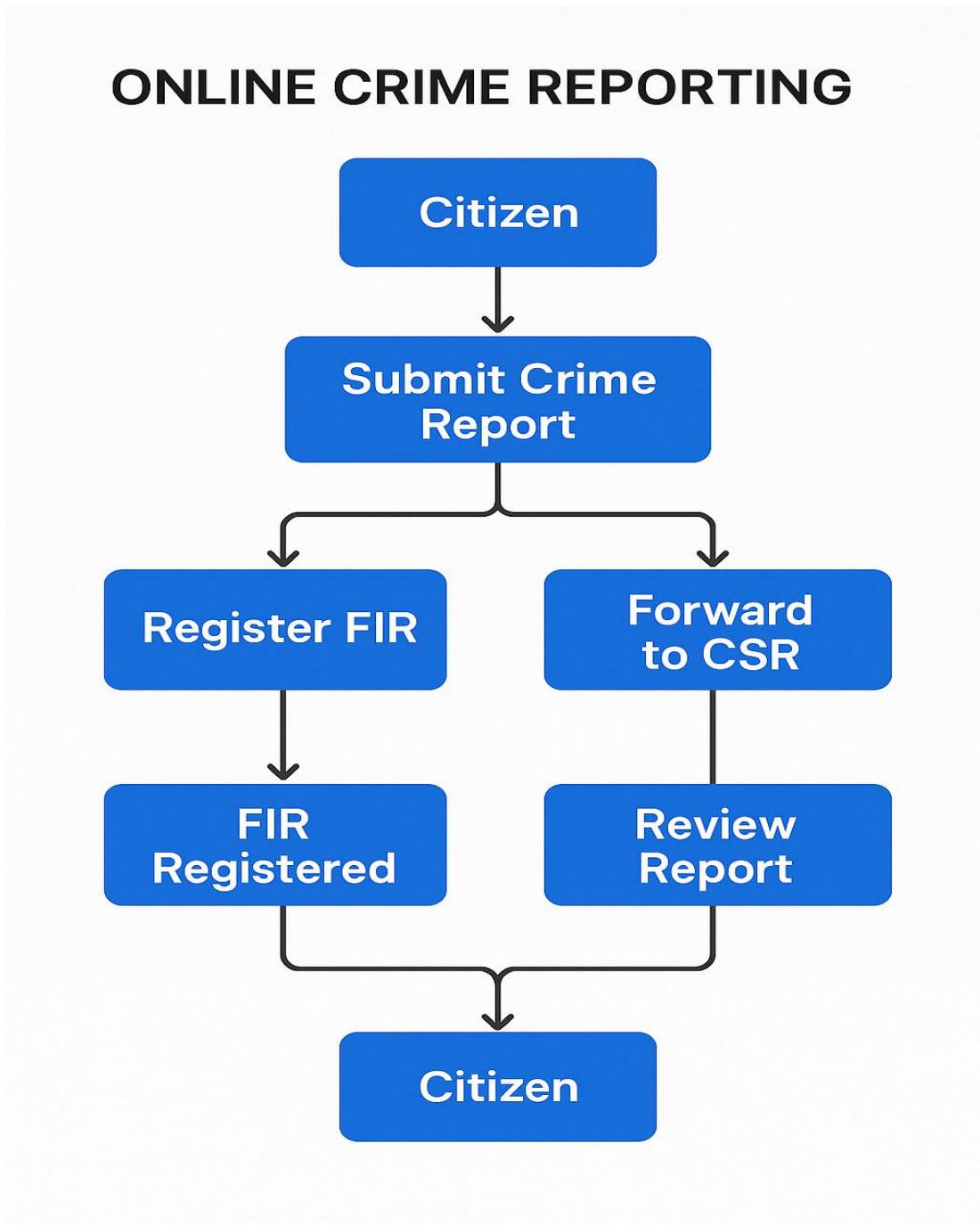


Fig: Workflow Diagram

5. SCREEN SHOTS

HOME PAGE

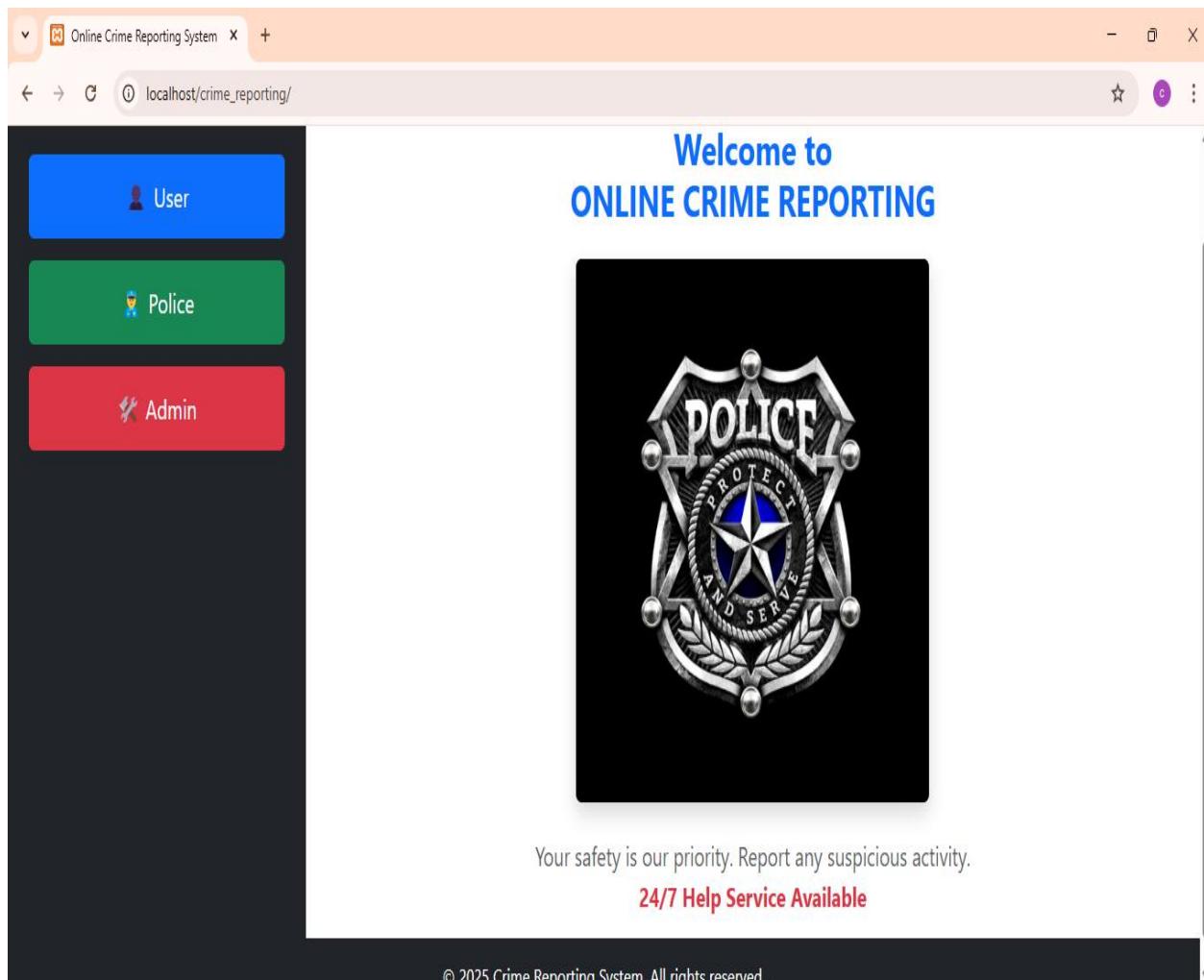


Fig1: Home Page

USER LOGIN PAGE

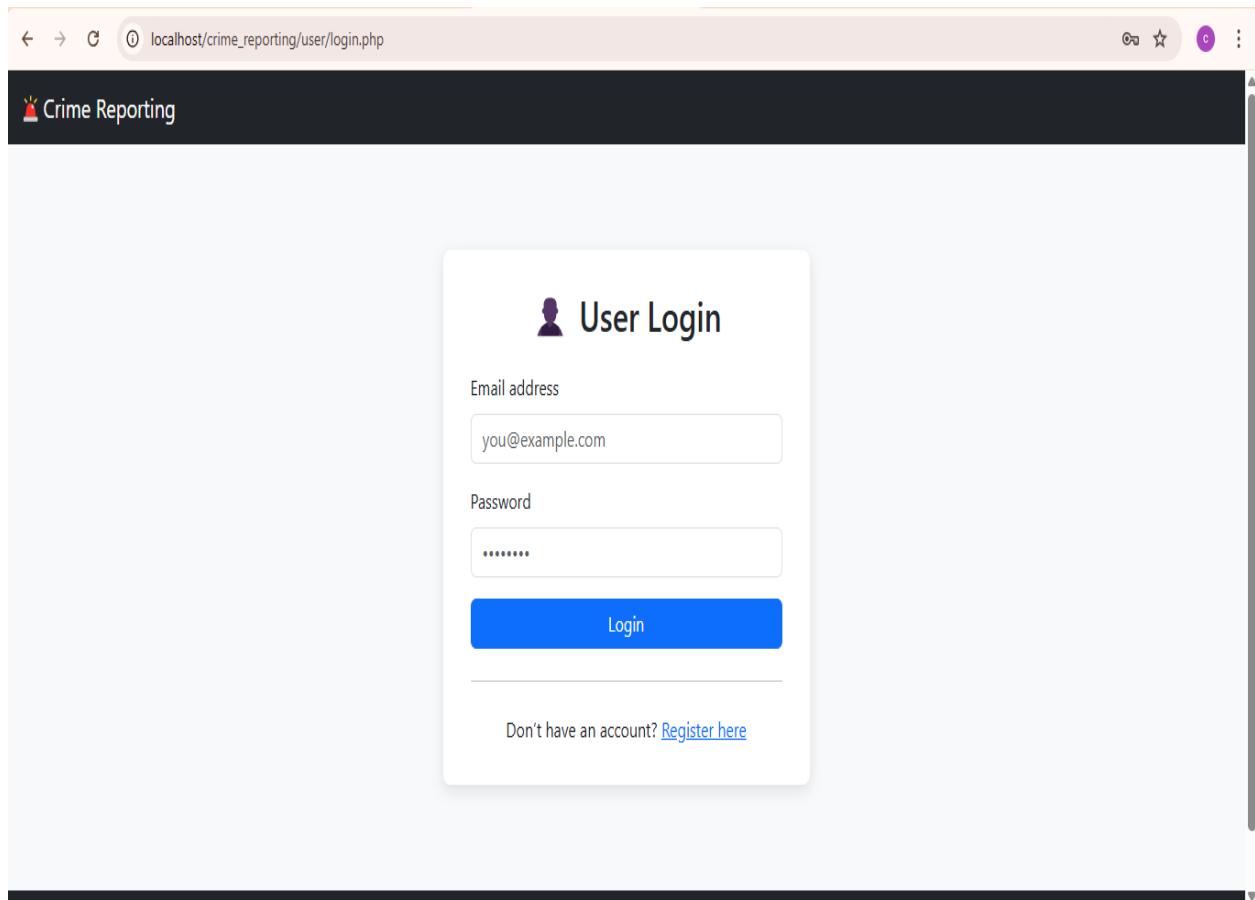


Fig2: User Login Page

USER REGISTRATION PAGE

The screenshot shows a web browser window titled "Online Crime Reporting System". The address bar displays "localhost/crime_reporting/user/register.php". The main content area has a dark header with a red warning icon and the text "Crime Reporting". Below this is a title "User Registration" with a user icon. The form consists of six input fields: "Full Name", "Email", "Mobile", "City", "Area", and "Password". A blue "Register" button is positioned below the password field. At the bottom of the page is a dark footer with the copyright notice "© 2025 Crime Reporting System. All rights reserved."

Fig3: User Registration Page

USER DASHBOARD

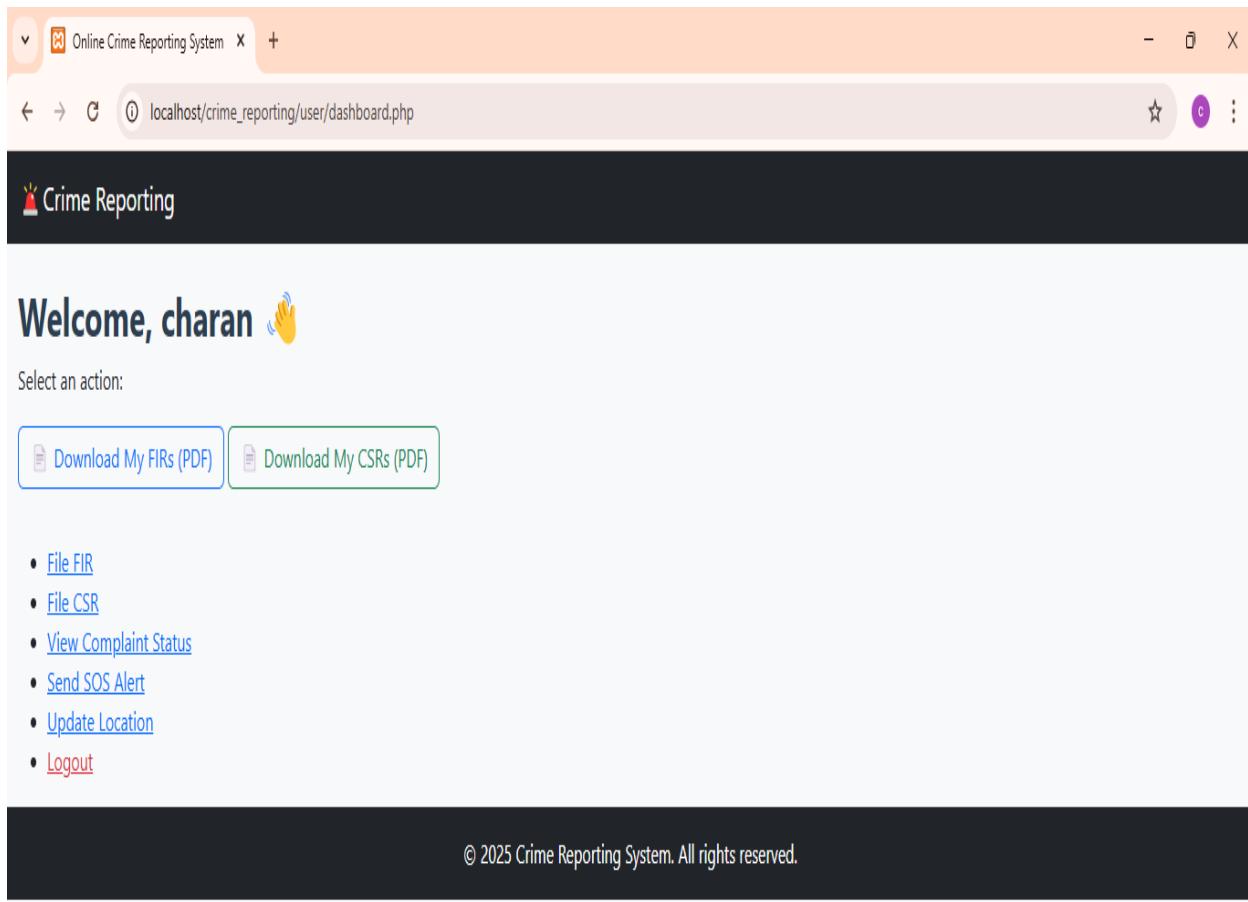


Fig4: User Dashboard

TO FILE A FIR

The screenshot shows a web browser window for the 'Online Crime Reporting System'. The title bar reads 'Online Crime Reporting System'. The address bar shows the URL 'localhost/crime_reporting/user/create_fir.php'. The page has a dark header with a red warning icon and the text 'Crime Reporting'. The main content area is titled 'File FIR'. It contains three input fields: 'Title' (empty), 'Description' (empty), and 'Location' (empty). Below these fields is a red button labeled 'Submit FIR'. At the bottom of the page is a dark footer with the text '© 2025 Crime Reporting System. All rights reserved.'

Title

Description

Location

Submit FIR

© 2025 Crime Reporting System. All rights reserved.

Fig5: To File a Fir

USER COMPLAINT STATUS

The screenshot shows a web browser window for the 'Online Crime Reporting System' at the URL 'localhost/crime_reporting/user/view_status.php'. The page title is 'Your Complaint Status'. It displays two sections: 'FIR Reports' and 'CSR Reports', each with a table.

FIR Reports

ID	Title	Description	Status	Filed On
1	robbery	i am walking on the foot path a boy grabbed my chain and run away	Resolved	2025-04-16 15:40:45

CSR Reports

ID	Title	Description	Status	Filed On
2	car accident	i am p. charan teja, a car accident at nellore bus stop road	Assigned	2025-04-17 12:01:26

© 2025 Crime Reporting System. All rights reserved.

Fig6: User Complaint Status

POLICE LOGIN PAGE

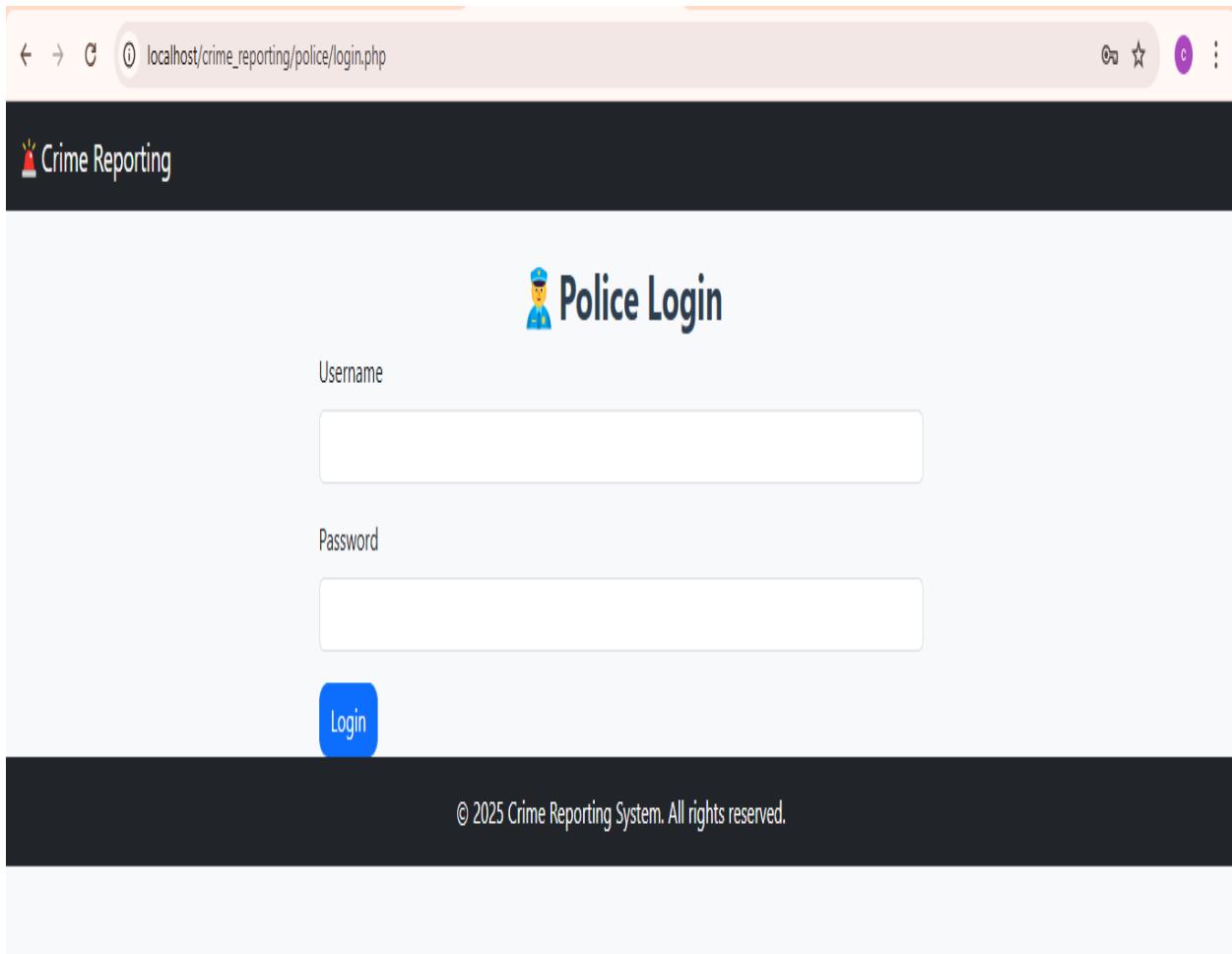


Fig7: Police Login Page

POLICE DASHBOARD

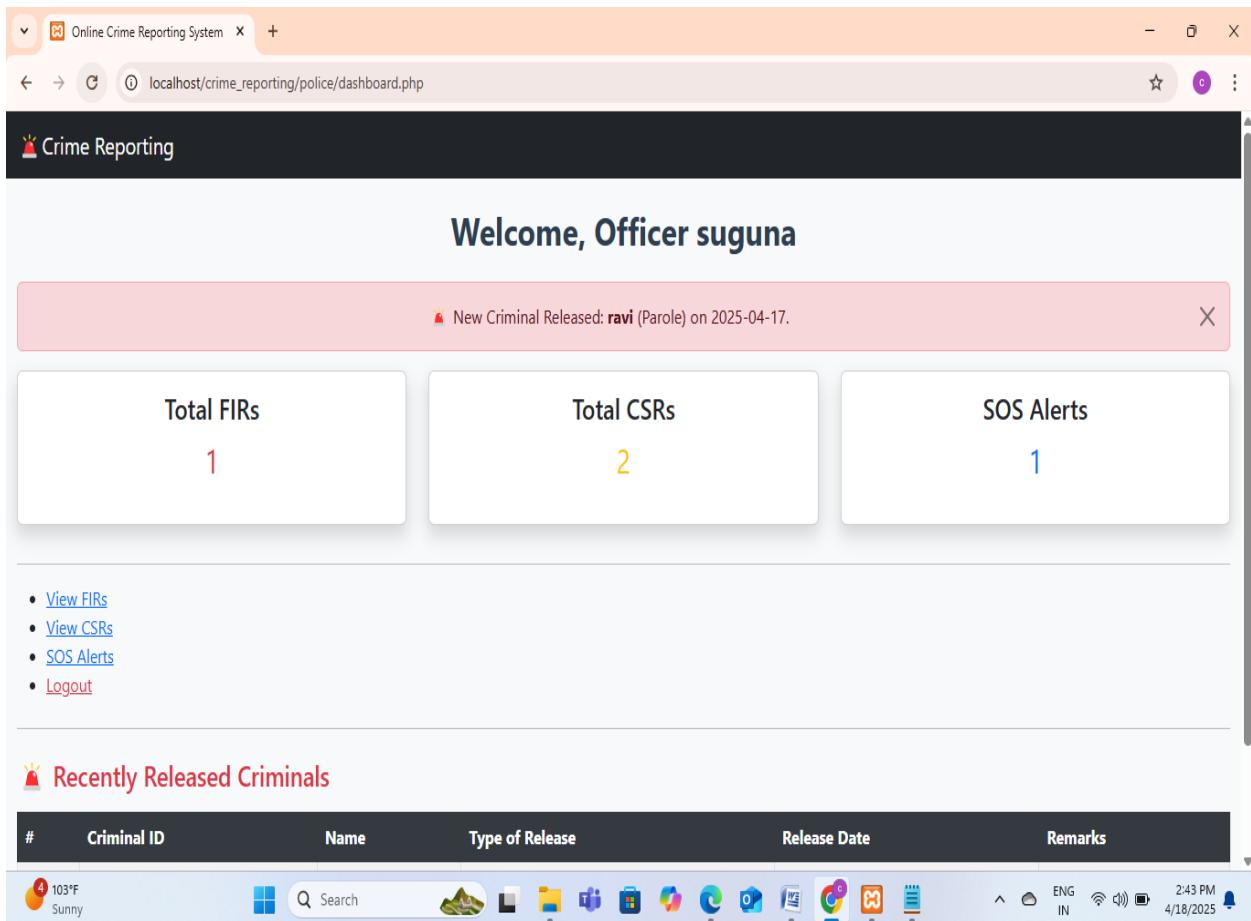


Fig8: Police Dashboard

ASSIGNED FIR COMPLAINTS

The screenshot shows a web browser window for the "Online Crime Reporting System". The title bar reads "Online Crime Reporting System". The address bar shows the URL "localhost/crime_reporting/police/view_fir.php". The page header features a dark banner with the text "Crime Reporting" and a red warning icon. The main content area is titled "Assigned FIR Complaints". It includes a blue button labeled "Download Assigned FIRs (PDF)". Below this is a table with the following data:

ID	User ID	Title	Description	Location	Status	Filed On	Update
1	1	robbery	i am walking on the foot path a boy grabbed my chain and run away	gudur near water tank street	Resolved	2025-04-16 15:40:45	<div>Resolved</div> <div>Update</div>

At the bottom of the page, a dark footer bar contains the text "© 2025 Crime Reporting System. All rights reserved."

Fig9: Assigned Fir Complaints

ASSIGNED CSR COMPLAINTS

The screenshot shows a web browser window for the "Online Crime Reporting System". The URL in the address bar is `localhost/crime_reporting/police/view_csr.php`. The page title is "Assigned CSR Complaints". A button labeled "Download Assigned CSRs (PDF)" is visible. A table lists one complaint:

ID	User ID	Title	Description	Location	Status	Filed On	Update
2	1	car accident	i am p. charan teja, a car accident at nellore bus stop road	mgb, bus stand	Assigned	2025-04-17 12:01:26	Pending Update

At the bottom, a copyright notice reads: © 2025 Crime Reporting System. All rights reserved.

Fig10: Assigned CSR Complaints

SOS ALERT TO POLICE OFFICER

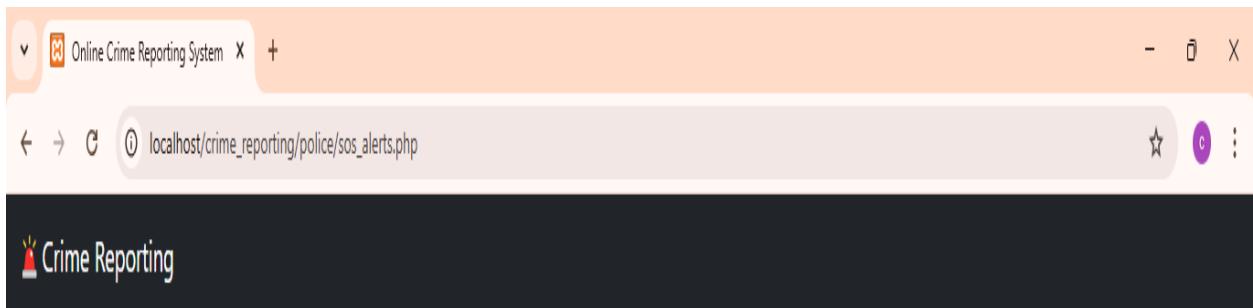


Fig11: SOS Alert To Police Officer

ADMIN LOGIN PAGE

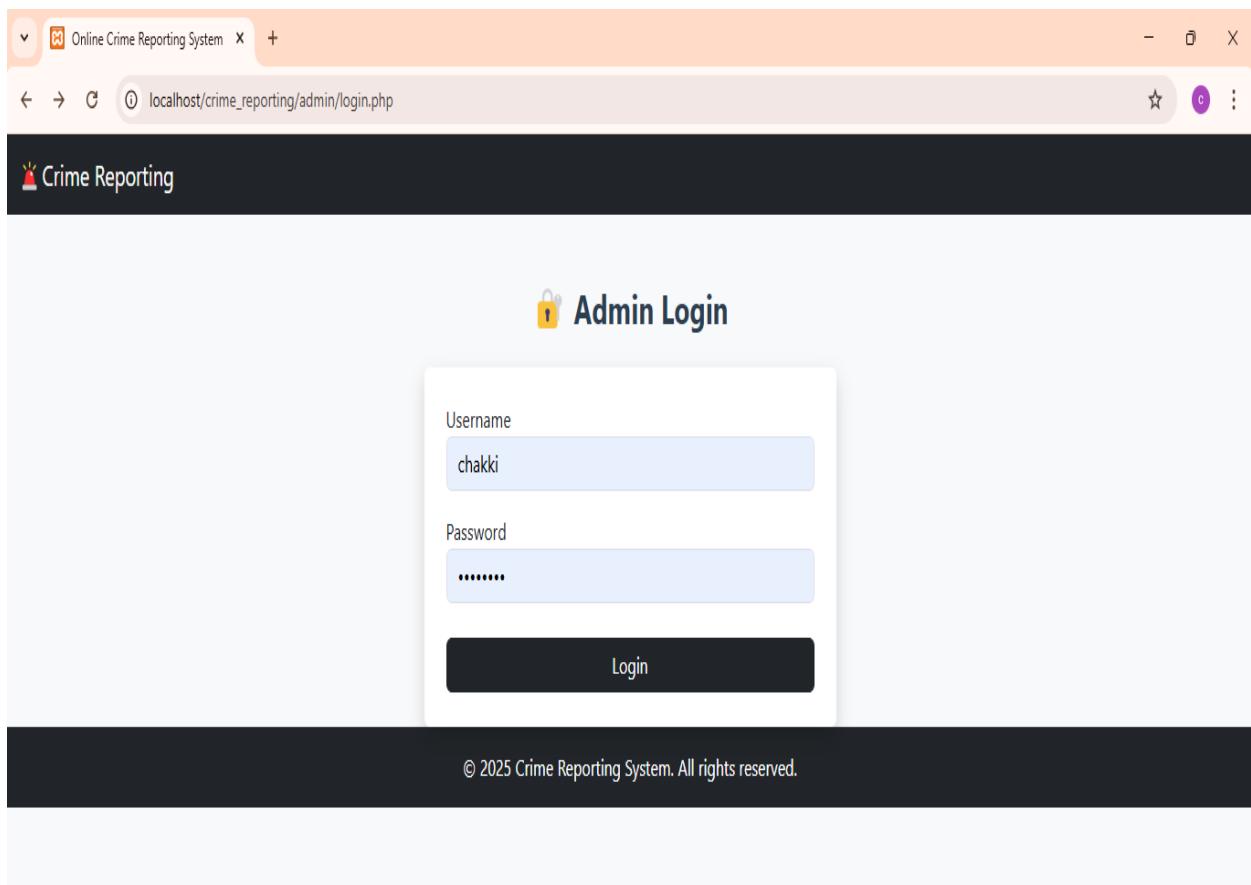


Fig12: Admin Login Page

ADMIN DASHBOARD

The screenshot shows the Admin Dashboard of the Online Crime Reporting System. At the top, there is a header bar with the title "Crime Reporting". Below it, a welcome message reads "Welcome, Admin chakki 🎓". A sub-header below the welcome message says "Here is the overall system summary:". The dashboard features six data cards arranged in a 2x3 grid:

Total FIRs	Total CSRs	SOS Alerts
1	2	1
Registered Users	Police Accounts	Released Criminals
3	2	1

Below the cards is a blue button labeled "+ Add Released Criminal". At the bottom of the dashboard, there is a section titled "Manage Sections".

Fig13: Admin Dashboard

MANAGE USERS

The screenshot shows a web browser window for the 'Online Crime Reporting System'. The title bar reads 'Online Crime Reporting System'. The address bar shows the URL 'localhost/crime_reporting/admin/manage_users.php'. The main content area has a dark header with the text 'Crime Reporting' and a small icon. Below it is a table titled 'Manage Users' with a person icon. The table has columns for ID, Name, Email, Mobile, City, Area, Registered, and Action. It contains three rows of data:

ID	Name	Email	Mobile	City	Area	Registered	Action
3	rupa	rupa12@gmail.com	8309178187	vendodu	kandra	2025-04-17 11:52:44	<button>Delete</button>
2	gayi	gayathri12@gmail.com	9398012643	tirupati	malayya nagar	2025-04-16 15:51:53	<button>Delete</button>
1	charan	chakki12@gmail.com	9182856702	nellore	gudur near water tank street	2025-04-16 15:37:29	<button>Delete</button>

At the bottom of the page, there is a dark footer bar with the text '© 2025 Crime Reporting System. All rights reserved.'

Fig14: Manage Users

MANAGE POLICE OFFICERS

The screenshot shows a web browser window titled "Online Crime Reporting System" with the URL "localhost/crime_reporting/admin/manage_police.php". The page has a dark header with a police siren icon and the text "Crime Reporting". The main content area is titled "Manage Police Officers" with a police officer icon. It contains a form for "Add New Police" with fields for Name (chakki), Mobile, Department, City, and Area, along with a "Add Police" button. Below this is a "Police List" table:

ID	Name	Username	Mobile	Department	City	Area	Action
3	gayi	charan	9999999921	rural	guntur	malavya nagar	<button>Delete</button>
1	suguna	chakki	9182856702	rural	nellore	gudur	<button>Delete</button>

Fig15: Manage Police Officers

ASSIGN FIR REPORT TO POLICE

The screenshot shows a web browser window for the 'Online Crime Reporting System'. The title bar says 'Online Crime Reporting System'. The address bar shows the URL 'localhost/crime_reporting/admin/view_firs.php'. The main content area has a dark header with a red fire icon and the text 'Crime Reporting'. Below it is a title 'Assign FIR Reports to Police' with a police officer icon. A blue button on the right says 'Download FIR Report (.CSV)'. The main table has columns: ID, Title, User, Description, Status, Location, Filed On, To, and Assigned. One row is shown with ID 1, Title 'robbery', User 'charan', Description 'i am walking on the foot path a boy grabbed my chain and run away', Status 'Resolved', Location 'gudur near water tank street', Filed On '2025-04-16 15:40:45', To 'suguna', and Assigned with a dropdown menu showing 'Assign to' and a blue 'Assign' button. At the bottom, a footer says '© 2025 Crime Reporting System. All rights reserved.'

ID	Title	User	Description	Status	Location	Filed On	To	Assigned
1	robbery	charan	i am walking on the foot path a boy grabbed my chain and run away	Resolved	gudur near water tank street	2025-04-16 15:40:45	suguna	<div>Assign to</div> <div>Assign</div>

Fig16: Assign FIR Report To Police

ALL CSR REPORTS

The screenshot shows a web browser window titled "Online Crime Reporting System". The URL in the address bar is "localhost/crime_reporting/admin/view_csr.php". The page has a dark header with a red warning icon and the text "Crime Reporting". Below the header, the title "All CSR Reports" is displayed with a yellow folder icon. A blue button labeled "Download CSR Report (.CSV)" is visible. The main content is a table with the following data:

CSR ID	User Name	Title	Description	Location	Status	Assigned Officer	Filed On	Assign Police
2	charan	car accident	i am p. charan teja, a car accident at nellore bus stop road	mgb, bus stand	Assigned	suguna	2025-04-17 12:01:26	<input type="button" value="Sel v"/> <input type="button" value="Assign"/>
1	gayi	bike robbery	at the road side there is a red shirted person who took a bike	vendodu, water tank beside	In Process	gayi	2025-04-16 21:28:14	<input type="button" value="Sel v"/> <input type="button" value="Assign"/>

At the bottom, a dark footer bar contains the text "© 2025 Crime Reporting System. All rights reserved."

Fig17: All CSR Reports

ADD RELEASED CRIMINALS

The screenshot shows a web browser window for the 'Online Crime Reporting System'. The title bar reads 'Online Crime Reporting System'. The address bar shows the URL 'localhost/crime_reporting/admin/view_released_criminals.php'. The main content area has a dark header with the text 'Crime Reporting' and a yellow folder icon followed by 'Released Criminals'. Below this is a blue button with a plus sign and the text 'Add New Release'. A table lists one released criminal: #1, Criminal ID 23902412, Name ravi, Type of Release Parole, Release Date 2025-04-17, Remarks nothing, and Actions with 'Edit' and 'Delete' buttons. At the bottom, a dark footer bar contains the text '© 2025 Crime Reporting System. All rights reserved.'

#	Criminal ID	Name	Type of Release	Release Date	Remarks	Actions
1	23902412	ravi	Parole	2025-04-17	nothing	<button>Edit</button> <button>Delete</button>

Fig18: Add Released Criminals

MASTER DATA MANAGEMENT

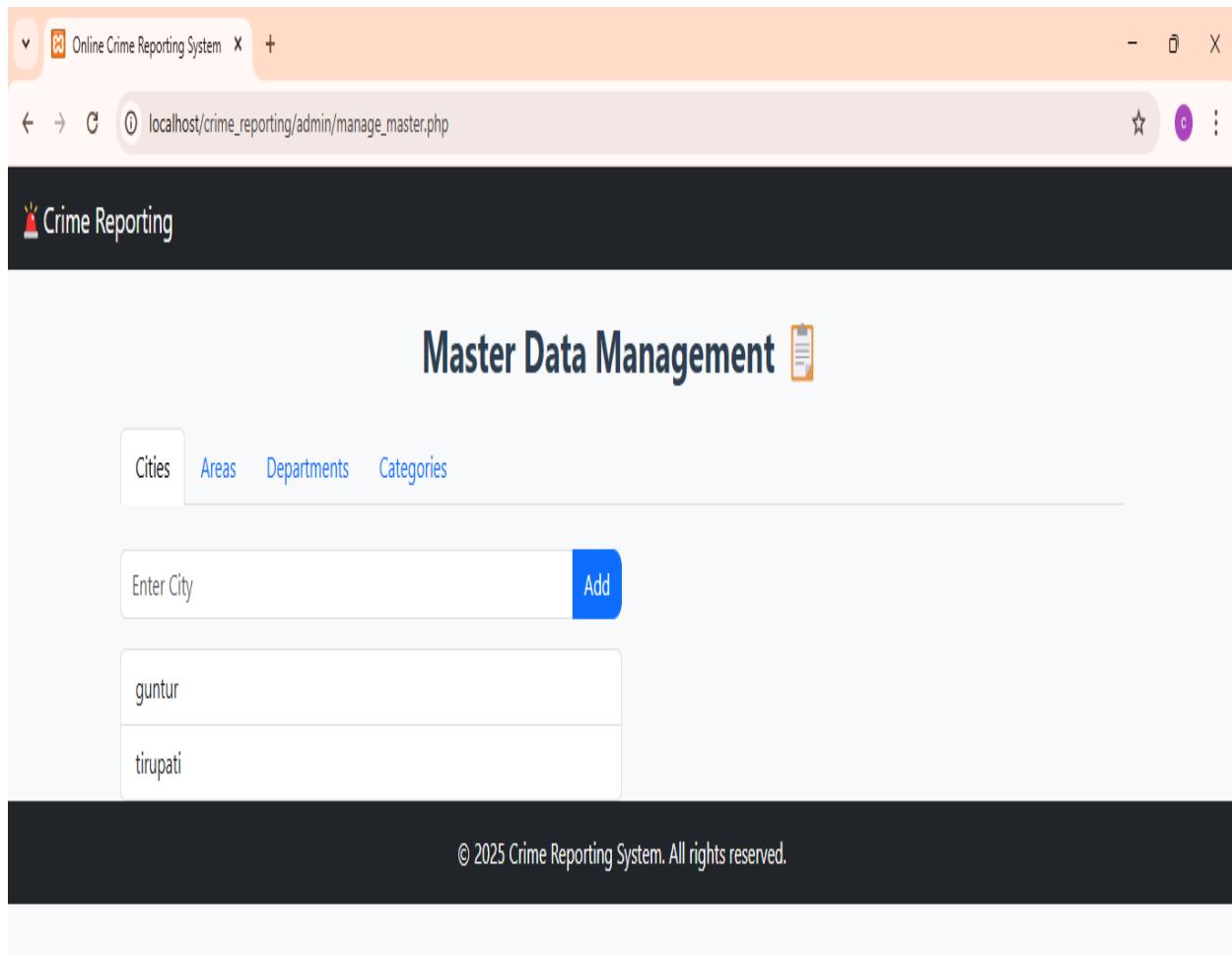


Fig19: Master Data Management

SOS ALERT FOR ADMIN

The screenshot shows a web browser window titled "Online Crime Reporting System". The address bar indicates the URL is "localhost/crime_reporting/admin/sos_alerts.php". The main content area features a dark header with a red "Crime Reporting" logo and a yellow "SOS Alerts" title with a red fire truck icon. Below this is a table with four columns: "Alert ID", "User Name", "Location", and "Alert Time". A single row of data is shown:

Alert ID	User Name	Location	Alert Time
1	charan	gudur near water tank street	2025-04-16 21:05:23

At the bottom of the page, a dark footer bar contains the copyright notice: "© 2025 Crime Reporting System. All rights reserved."

Fig20: SOS Alert For Admin

6. IMPLEMENTATION DETAILS

The implementation phase of the Online Crime Reporting System represents the transformation of design and conceptual requirements into a fully operational, secure, and user-oriented web application. This phase incorporates a wide range of technologies and best practices, carefully orchestrated to provide a seamless and powerful platform for reporting and managing criminal and community service-related incidents. The goal was to create a system that supports transparency, responsiveness, and operational efficiency for the public, police, and administrative personnel.

The application is structured using the model-view-controller (MVC) pattern to ensure clean separation of concerns and easier maintenance. It is implemented using a combination of front-end and back-end technologies that work in harmony to deliver a responsive, feature-rich web application. The frontend is developed with HTML5, CSS3, Bootstrap 5, and AngularJS for enhanced interactivity and responsiveness. The backend functionality is driven by PHP 8.1, with MySQL serving as the database engine for storing and managing structured information securely.

A robust login system is implemented to handle role-based access control. Users can register, log in, and file FIRs or CSRs, while police officers manage assigned cases and receive emergency alerts. Admins possess overarching control, allowing them to manage user and police data, assign cases, and track released criminals. Role-specific dashboards were developed to provide intuitive access to each stakeholder's relevant features.

The system was broken down into functional modules to facilitate streamlined development and testing:

- The User Module allows citizens to register, file complaints, view statuses, send SOS alerts, and download their reports in PDF format.
- The Police Module enables officers to view and update assigned FIR and CSR records, respond to SOS alerts, and be notified about released criminals.
- The Admin Module grants control over master data, enables report oversight, police assignment, and management of released criminal records.

Security features include form validation, password hashing using PHP's `password_hash()` function, and prepared SQL statements to prevent injection attacks. Session management is rigorously applied to ensure users only access data appropriate to their role.

A major addition to the system was the implementation of downloadable PDF reports. Both users and police officers can export their reports in professionally formatted PDF files using the FPDF library. This feature adds convenience and accountability by allowing offline storage and print-ready documentation of official complaint records.

A unique component of the application is the Released Criminal Notification System. Admins can input release details for individuals, including their name, ID, release date, type of release, and remarks. This data is immediately visible to all police officers through their dashboard, ensuring that field officers are promptly informed of any potentially significant developments.

Overall, this implementation phase emphasizes not only functional correctness but also performance, user experience, security, and maintainability. Every design and implementation decision was made with the intention of mirroring real-world crime reporting processes in a digital, user-friendly environment.

6.1 HTML Framework

HTML5 forms the structural backbone of the Crime Reporting System. Every user interface, whether it be for filing a complaint, logging in, or updating case statuses, is built using semantic HTML. HTML5 enables accessibility and readability by organizing content logically with tags like `<header>`, `<section>`, `<main>`, and `<footer>`. Input forms for FIRs, CSRs, SOS alerts, and login/registration utilize HTML5 input types such as `text`, `email`, `password`, and `datetime` to enforce correct data formats from the outset. These forms are complemented with HTML5 features like `required`, `maxlength`, and `placeholder`, reducing validation workload on the server side and improving overall user experience.

In conjunction with the Bootstrap framework, HTML supports responsive design, ensuring that the application adapts fluidly across screen sizes and devices. The use of grid layouts and containers aligns elements neatly while maintaining structural coherence. HTML5 is

also leveraged to embed dynamic content sections controlled by AngularJS and PHP, resulting in a modular and scalable interface.

6.2 Cascading Style Sheets (CSS)

The system's visual appeal and usability are greatly enhanced by CSS3 and Bootstrap 5. CSS defines the design language of the application, governing layout, spacing, color schemes, font styles, animations, and more. A combination of Bootstrap's utility classes and custom CSS enables rapid UI prototyping along with tailored styling for unique modules.

Color-coded themes are used to distinguish different user roles: blue for users, green for police, and red for admin. Sidebars, buttons, alerts, and headers all follow this theme for immediate visual identification. Advanced CSS features such as Flexbox, Grid Layout, and media queries provide full control over responsive behavior and layout precision. Transition effects and hover animations improve interactivity without compromising performance.

Particular focus was placed on accessibility and user guidance. Elements like form fields and tables are styled for clarity, with high-contrast color schemes, visible focus states, and meaningful icons embedded for assistive navigation.

6.3 MySQL Server

As the backend storage engine, MySQL plays a pivotal role in organizing and preserving all system data. The database schema is normalized across multiple interrelated tables such as users, firs, csrs, police, admin, sos_alerts, and released_criminals. Relationships between users and reports are maintained via foreign keys, while indexes are applied on search-heavy fields to boost query performance.

Structured Query Language (SQL) is used to manage all data manipulation tasks—whether it's inserting a new FIR, updating case status, or retrieving reports for export. SQL

JOINS are frequently used in admin and police views to fetch meaningful combined data, like user names with their respective FIR titles.

MySQL is configured to use InnoDB for all tables to ensure transactional integrity and foreign key support. Timestamps are tracked to monitor user activity and system changes, improving both usability and security.

6.4 PHP Implementation

PHP 8.1 serves as the server-side backbone of the system, managing all user interactions, business logic, database connectivity, and security workflows. The modular PHP structure separates concerns such as database connections (db.php), authentication (login.php), and dashboard rendering (dashboard.php).

PHP sessions are used extensively for role-based access. Once authenticated, users are redirected to dashboards appropriate to their roles. This ensures secure access segregation. Important operations like filing complaints, assigning cases, generating alerts, and exporting reports are all handled via PHP scripts.

Security is reinforced by using prepared statements for SQL queries, escaping user inputs, and password hashing. Each form submission undergoes both client-side and server-side validation to ensure integrity and protect against malicious input.

PDF generation is another key feature powered by PHP and the FPDF library. This enables stakeholders to download their reports in a clean, printable format with all necessary metadata and timestamps.

6.5 Angular JavaScript

AngularJS is employed to enhance the client-side interactivity of the application. Rather than relying on full-page reloads, AngularJS allows dynamic manipulation of DOM elements based on user input. It is used to toggle login/register forms, update real-time views, and validate form data before it reaches the server.

AngularJS bindings (ng-model, ng-show, ng-if) enable efficient two-way data flow. For example, the homepage dynamically reveals different login forms based on user selection without the need to navigate to separate pages. AngularJS enhances responsiveness, minimizes server load, and boosts the application's responsiveness.

Though AngularJS is used lightly, its integration demonstrates modern frontend practices while preserving compatibility with PHP-based server logic.

6.6 PDF Export Functionality

A major feature implemented in the system is the ability for both users and police officers to download reports in PDF format. This functionality is powered by the FPDF PHP library, which enables the creation of dynamic, well-formatted PDF files.

Users can download their own FIR and CSR reports, while police officers can download PDF summaries of the cases assigned to them. Each report includes fields such as complaint ID, title, description, location, status, and timestamps. The PDF layout includes borders, titles, and formatted tables to maintain professionalism.

By providing offline and printable copies of records, the system improves accessibility and ensures that users have proof of submission and follow-up. This export feature also supports internal documentation and evidence tracking for law enforcement and legal processing.

6.7 Released Criminal Notification System

An innovative module in the system is the Released Criminal Notification System. Admins can record when criminals are released—whether on bail, parole, or after completing their sentence. These records include criminal ID, name, release type, release date, and any remarks.

This data is instantly displayed on every police officer's dashboard with a visual alert. Officers can browse a table of recent releases, which aids in surveillance, preparedness, and community safety. Admins retain control over this data and can update or delete records as needed.

This module was added to reflect real-world law enforcement needs, enabling better post-release monitoring and coordination.

6.8 Security Measures

Security was implemented at every level of the system. From encrypted password storage to input sanitization and session tracking, all modules are developed with safety in mind. Access is validated through role-specific sessions, and unauthorized access is redirected to login pages.

Forms are protected with both frontend and backend validation. SQL injection is prevented through the use of prepared statements. PHP's session management ensures secure login states, while logout scripts clean up sessions to prevent hijacking.

6.9 User Interface and UX Design

User experience is central to the system's design. Clean layouts, color-coded themes, intuitive navigation, and consistent fonts and icons ensure usability across all user types. Dashboards present relevant data with card-style components and actionable links.

Icons and labels improve comprehension, while consistent use of Bootstrap components like modals, navbars, buttons, and badges provides a professional look and feel. Form inputs are spaced and labeled clearly, with validation messages displayed for incorrect entries.

6.10 Maintainability and Scalability

The system is structured into folders based on roles and modules. Each script and component is modular, enabling easy updates and feature additions. The codebase is well-commented and uses consistent naming conventions.

Future scalability includes the potential to:

- Integrate with third-party APIs (e.g., Google Maps for location tracking)
- Enable multilingual support
- Extend to mobile apps or PWA
- Add biometric or OTP-based verification

By using open-source tools and adhering to development best practices, the Online Crime Reporting System is prepared for long-term expansion and institutional adoption.

7. DATABASE DESIGN

The database design of the Online Crime Reporting System is one of the most critical components of the overall system architecture. It determines how data is stored, retrieved, updated, and managed throughout the life cycle of the application. A well-structured and relational database was implemented using MySQL to support seamless operations for all modules within the application, including user management, complaint filing, police assignments, SOS alert tracking, and criminal release notifications.

The design followed standard database development methodologies such as normalization, relationship mapping, indexing, and data integrity enforcement. At the core of this system is a collection of interrelated tables that capture key entities such as users, police officers, administrators, FIRs, CSRs, SOS alerts, and released criminals. These tables are connected through foreign keys to enforce referential integrity and maintain consistent relationships across modules.

The users table captures the details of citizens registered in the system. Each user is identified by a unique ID and has fields such as name, email, mobile number, address, and security questions. This table is linked to multiple others, such as FIRs and CSRs, allowing users to file complaints and track their statuses.

Police officers have their own dedicated table named police, which contains login credentials and contact information. This table links to the FIR and CSR tables via the assigned_to field, which enables the system to track which officer is responsible for each case.

Administrative functionalities are controlled through the admin table, which contains limited but crucial credentials for secure access to master-level system features. Admins can assign complaints, view all system data, and manage criminal release notifications.

The FIRs (First Information Reports) and CSRs (Community Service Reports) are stored in two structured tables, each containing complaint titles, descriptions, locations, timestamps, statuses, and assignment links to users and police officers. These tables serve as the operational backbone of the complaint management system, allowing both citizens and officers to monitor and update case statuses in real time.

Emergency responses are managed through the sos_alerts table. This table captures real-time user-generated alerts containing user ID, location, and alert timestamps. These alerts are immediately visible to police officers to facilitate quick action.

Another key addition to the system is the released_criminals table, which allows administrators to record the release of individuals from custody. This includes the criminal's ID, name, type of release (e.g., bail, parole, sentence served), release date, and any additional remarks. The system is designed to notify police officers of these releases upon login, supporting post-release tracking and community safety.

The database schema was carefully normalized to reduce redundancy and ensure optimal performance. All relationships are enforced through foreign keys, and constraints such as NOT NULL and default values prevent incomplete data entries. Indexing was applied to high-traffic columns like user_id, created_at, and assigned_to to support efficient querying, especially when filtering reports by user, officer, or date.

From a security perspective, the system uses hashed passwords for all users, and prepared statements in PHP prevent SQL injection. Role-based access control is strictly maintained, ensuring that users can only access data relevant to their account.

The overall structure supports scalability and extensibility. For example, the design allows for future additions such as multimedia uploads, case history tracking, or feedback and rating modules without restructuring the existing schema.

In summary, the database design of the Online Crime Reporting System is a robust, secure, and well-organized structure that underpins the functionality and reliability of the entire platform. Its modular nature, relational integrity, and optimized queries ensure the system remains responsive and scalable under real-world operational demands.

8. TECHNICAL FEASIBILITY

The technical feasibility of the Online Crime Reporting System is a critical aspect in determining whether the proposed web application can be developed, implemented, and maintained efficiently using the available technical resources. A thorough analysis of hardware and software requirements, system architecture, security measures, and scalability demonstrates that the system is not only achievable with current technologies but also sustainable and adaptable for future enhancements.

The proposed system is developed using open-source tools and technologies, ensuring cost-effectiveness and accessibility. The core of the application is built using PHP as the server-side scripting language and MySQL as the relational database management system. These technologies are widely adopted in the software development industry and offer excellent support, documentation, and community contributions, making them an ideal choice for the project.

The front-end interface is developed using a combination of HTML5, CSS3, and Bootstrap 5 to ensure a responsive and user-friendly design. HTML provides the structural foundation, while CSS and Bootstrap are used for styling and responsiveness across different devices and screen sizes. AngularJS is incorporated into the client-side scripting to improve interactivity by supporting real-time form validation, dynamic content loading, and conditional rendering. This hybrid use of both server-side and client-side technologies contributes to an efficient and seamless user experience.

One of the significant strengths of the system lies in its minimal hardware requirements. The application can be hosted on a standard server or even a local system running the Apache web server through platforms such as XAMPP or WAMP. A system with basic specifications (2GB RAM, 500MB disk space) is sufficient for hosting the web application, which ensures that even institutions with limited infrastructure can deploy and manage it successfully.

From a security perspective, the system is designed with multiple layers of protection. Sensitive information, including passwords, is encrypted using secure hashing algorithms such as PHP's password_hash(). SQL injection attacks are mitigated by using parameterized queries and prepared statements. Access control is enforced through session management, where users are assigned roles (user, police, admin), and access is granted based on authentication and authorization logic. This ensures that unauthorized users are redirected and data breaches are prevented.

Scalability is another key factor in the technical feasibility of the system. The modular architecture allows for the easy addition of new features without impacting existing functionality. The system can be extended to include modules for crime pattern analysis, police performance dashboards, mobile app integration, real-time notifications, and location-based reporting using GPS or Google Maps APIs. This future-proof design enables the application to evolve with growing demands or institutional requirements.

In terms of maintainability, the system follows a clean and organized file structure. Reusable components such as headers, footers, and database connectors are placed in separate include files to promote modularity and reduce code repetition. The use of open-source development tools like Visual Studio Code and version control systems such as Git (if adopted) further supports collaborative development and simplifies bug tracking and issue resolution.

Moreover, the application is cross-platform and compatible with all major browsers, making it accessible to a broad audience. Since the system is web-based, updates and maintenance can be performed centrally, which is particularly beneficial for institutions that aim to deploy the system across multiple departments or regions.

In conclusion, the Online Crime Reporting System is technically feasible from all perspectives—development, deployment, scalability, security, and long-term maintenance. The technologies used are not only mature and reliable but also supported by large developer communities, ensuring that the system can be enhanced, troubleshooter, and scaled as needed.

Given its low resource consumption and high adaptability, this application is a viable solution for real-world crime management and emergency reporting in both urban and rural contexts.

9. SYSTEM TESTING

System testing plays a crucial role in verifying the quality, accuracy, and reliability of a software system. For the Online Crime Reporting System, a comprehensive and structured testing process was carried out to ensure that every component of the system works seamlessly under real-world conditions. This phase involved validating both functional and non-functional requirements across all user types—users, police officers, and administrators.

The testing strategy focused on evaluating the entire system from end to end. Functional testing was performed to validate that all modules, such as user registration, login, FIR and CSR filing, SOS alerts, and dashboard access, performed their intended actions accurately. Each form and interface was tested with a wide range of input combinations to assess how the system handles both valid and invalid entries. The results showed that complaint submission, data storage, and user feedback were handled effectively without any data loss or inconsistency.

Security testing was conducted to ensure that sensitive user data is handled securely. Measures were taken to prevent SQL injection, session hijacking, and unauthorized access. Passwords were verified to be securely hashed and stored, while session variables were checked to confirm that only authorized users could access role-specific dashboards. The application was subjected to scenarios where unauthorized users attempted to gain access, and the system correctly redirected them to login screens or denied access.

In terms of usability, the system was tested with individuals unfamiliar with crime-reporting tools. They were asked to complete basic tasks such as filing an FIR or sending an SOS alert. Feedback from these users led to minor improvements in the design and navigation of the interface. Navigation through the sidebar, clarity of buttons, and the overall layout were made more user-friendly based on this feedback.

Compatibility and cross-browser testing were also key components. The system was tested across multiple browsers, including Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari. Furthermore, access via desktops, tablets, and smartphones confirmed that the responsive design was effective and the user interface adjusted correctly to different screen sizes.

Performance testing simulated the actions of multiple users accessing the platform concurrently. The application maintained a stable response time, and the database handled queries efficiently during report downloads and case assignments. Even during high traffic simulation, the system did not crash or slow down noticeably.

Bug identification and tracking were continuous throughout the testing process. Issues such as incorrect redirections, form submission problems, and UI misalignments were logged and corrected. Each bug fix was followed by a retest to confirm resolution and stability.

Finally, a complete validation test was executed after integrating all system components. This holistic review ensured that every feature worked in synchronization and the application could be used confidently in real-time scenarios by law enforcement and the public.

In conclusion, the system testing phase validated the functional robustness, security resilience, and user-centric design of the Online Crime Reporting System. It ensured that the system is ready for deployment and reliable operation, capable of supporting crime management and public safety effectively.

10. CONCLUSION

The development and implementation of the Online Crime Reporting System mark a significant stride toward digitalizing public safety services and improving the efficiency of crime management. This system was designed with the vision of enabling citizens to report crimes quickly and safely while providing law enforcement with a structured, real-time platform to manage and resolve complaints. Through its web-based interface, the system bridges the gap between the public and the authorities, making the crime-reporting process more accessible, transparent, and accountable.

Throughout the design and development phases, a modular approach was adopted to streamline the responsibilities of users, police officers, and administrators. Each user role has been carefully analyzed and provided with a tailored interface that supports their specific functions. Users can securely register, file FIRs and CSRs, check the status of their complaints, and send emergency SOS alerts. Police officers are empowered to track and resolve assigned complaints efficiently and are notified immediately of emergency alerts or the release of known criminals. Administrators maintain full control over the system's data, with the ability to manage users, assign cases, and monitor system activity through downloadable PDF reports.

By integrating technologies such as HTML5, CSS3, Bootstrap, AngularJS, PHP, MySQL, and FPDF, the system achieves a balance between user experience, functional robustness, and data security. Rigorous testing ensured that the system operates as intended, handling various edge cases, threats, and usage scenarios. Each module was validated to confirm it meets its operational requirements, making the platform reliable and ready for deployment in real-world settings.

The system's implementation also demonstrates its capacity for scalability and adaptability. Its well-structured database, modular codebase, and web-friendly design allow future enhancements, such as mobile app integration, multilingual support, biometric verification, or GIS-based location tracking, to be added with minimal disruption to the current framework. This adaptability makes the system sustainable and relevant for evolving institutional and community needs.

In summary, the Online Crime Reporting System successfully addresses the limitations of traditional crime-reporting mechanisms by offering a user-friendly, efficient, and secure digital solution. It promotes citizen involvement, strengthens communication between the public and authorities, and ultimately contributes to the timely resolution of complaints and enhancement of public safety. The project not only meets its objectives but also lays a strong foundation for future innovation in digital governance and law enforcement support systems.

11. FUTURE ENHANCEMENTS

While the Online Crime Reporting System provides a comprehensive digital platform for lodging complaints, managing case assignments, and supporting emergency response operations, there are numerous opportunities for future enhancement that can significantly expand its functionality, security, and accessibility. As technology evolves, it is essential for applications in the law enforcement domain to keep pace, ensuring public safety and institutional efficiency.

One of the key areas of future development is the integration of mobile application support. By extending the platform to Android and iOS applications, users can file FIRs, CSRs, and SOS alerts directly from their smartphones, even while on the move. Mobile integration would also enable real-time geolocation tracking and camera-based evidence submission, which would greatly enhance incident reporting accuracy.

Another promising enhancement is the incorporation of multimedia evidence uploads. Currently, the system supports textual complaint submissions. Future versions could allow users and police officers to upload images, videos, voice notes, and scanned documents related to FIRs and CSRs. This feature would add depth and context to the reports, improving investigation quality.

Biometric or two-factor authentication (2FA) could be added to improve the security of user accounts. This would be especially useful for high-profile reports or sensitive operations managed by police and admin users. OTP verification via SMS or email can also be implemented to ensure secure logins and activity tracking.

Integration with GIS (Geographic Information Systems) and Google Maps APIs could further empower the police module, enabling officers to visualize the geographic distribution of crime reports and identify hotspots. This data could be used to enhance patrolling strategies and deploy resources efficiently.

A useful addition for administrative users would be a case analytics dashboard, displaying real-time statistics of reported complaints by type, location, and resolution status. Graphs, heatmaps, and timelines can be visualized using JavaScript libraries such as Chart.js or

Google Charts. Such analytical tools can help law enforcement agencies detect trends and improve planning.

To expand community involvement, a public bulletin or anonymous tip system could be introduced. This would allow citizens to share valuable information about suspicious activities without disclosing their identity, encouraging participation in local safety efforts.

Language localization is another important enhancement. Multilingual support would make the platform more accessible to citizens who are not comfortable with English. This can be implemented using internationalization (i18n) libraries or by maintaining multilingual content databases.

To improve performance and data security at scale, the system could migrate to cloud-based hosting using services like AWS, Azure, or Google Cloud. Cloud hosting would provide high availability, disaster recovery, and elastic scaling to handle peak loads.

Additionally, the inclusion of email and SMS notifications can enhance user engagement. These can notify users of case updates, police replies, and status changes, ensuring transparency and timely communication.

Finally, to support real-time interactions between users and authorities, live chat or chatbot features could be embedded within the system. These would serve as first-level support tools to answer user queries or redirect urgent issues to the concerned departments.

In conclusion, the Online Crime Reporting System lays a strong technological foundation for digital public safety management. By implementing the aforementioned enhancements in future versions, the platform can evolve into a more intelligent, responsive, and citizen-friendly solution, capable of supporting a wider array of services and helping law enforcement agencies tackle challenges more effectively in an ever-changing digital society.

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