



**Crime Manager**

# **Crime Record Management Software Requirements Specification**

## **Version 1.1**

Submitted in Partial Fulfillment for the Award of Degree of Bachelor of Technology in Information  
Technology from Rajasthan Technical University, Kota



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# 1. Introduction

## 1. Purpose

The Crime Record Management System (CRMS) is intended to streamline the storage, retrieval, and management of crime-related data. This system enables law enforcement agencies to maintain detailed records of criminal activities, suspects, victims, and cases, ensuring accuracy, security, and efficiency in handling crime data.

## 1.2 Scope

The CRMS is a centralized application designed to:

- Record, update, and retrieve details of crimes, cases, and investigations.
- Track and manage information about suspects, victims, and witnesses.
- Provide tools for evidence and document management.
- Offer analytics and reporting for crime trend analysis.
- Support secure access through role-based authentication and authorization.

## 1.3 Definitions, Acronyms and Abbreviations

- **SRS:** Software Requirement Specification
- **API:** Application Programming Interface
- **UI:** User Interface
- **DBMS:** Database Management System
- **CRUD:** Create, Read, Update, Delete

## 1.4 References

- OpenAI GPT-3.5
- "Designing Web Interfaces" by Bill Scott and Theresa Neil

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## 1.5 Technologies to be used

- **Front-end:** JavaScript, React.js
- **Back-end:** Node.js, Express.js
- **Database:** MongoDB

## 1.6 Overview

It includes HTML, CSS, and JavaScript files, with basic components such as an index page and a resume page. The project offers a foundational structure for a resume builder, likely focusing on layout and design. There is no detailed description provided, and the repository does not have a README or other documentation yet. It is in an early stage, with minimal commits and no releases or additional features at this point.

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## 2. Literature survey

### 2.1 Review of Related Work

A literature review is a type of academic writing that provides an overview of existing Knowledge in a particular field of research that provides the entire information as part to the problem and objectives. It's a type that demonstrates the importance of your research by defining the main ideas and relationships among them. Reviews consisting of the App to trust the digital mode of flow in digital service quality.

### 2.2 Knowledge gaps

Knowledge gaps in resume builders include the lack of deep industry-specific personalization, advanced AI-powered suggestions, and the ability to fully represent soft skills like leadership or teamwork. While some tools optimize for technical skills, they often overlook how to display personal attributes effectively. Additionally, limited integration with job portals and career websites can hinder seamless application submissions.

### 2.3 Comparative Analysis

This comparative analysis evaluates existing crime record management systems (CRMS) based on their features, strengths, and limitations to provide insights for developing an enhanced and modern CRMS.

### 2.4 Summary

A **Crime Record Management System (CRMS)** is a digital platform designed to streamline the recording, tracking, and analysis of crime-related data. It enables law enforcement agencies to efficiently manage cases, track suspects, monitor evidence, and generate actionable insights through analytics.

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### 3. Specific Requirements

#### 3.1 Functional Requirement

- **User Authentication** Users must log in using a secure username and password.
- **Crime Record Management** Link criminals to specific cases.
- **Search and Reporting** Advanced search filters for complex queries.
- **Evidence Tracking** Add evidence details and update their status.

#### 3.2 Non Functional Requirements

- **Performance:** Ensure fast response times, especially when generating or previewing resumes.
- **Scalability:** Handle increasing numbers of users without performance degradation.
- **Availability:** Ensure high uptime, with minimal downtime for maintenance or updates.
- **Security:** Protect user data, especially personal information and resumes, with encryption and secure login mechanisms.
- **Usability:** Offer an intuitive, user-friendly interface with minimal learning curve.
- **Compatibility:** Ensure compatibility across different devices, browsers, and operating systems.

#### 3.3 Hardware Requirements

- **Processor:** A modern CPU (Intel i3 or equivalent) is typically sufficient.
- **RAM:** At least 4GB of RAM for smooth performance.
- **Storage:** Minimal storage is needed, as resumes are saved in the cloud.
- **Display:** A screen with a resolution of 1024x768 or higher for optimal user experience.
- **Internet:** A stable internet connection for accessing and using the web-based tool.

These requirements ensure the resume builder runs smoothly on most devices.

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### 3.4 Software Requirements

- **Web Browser:** Support for modern browsers (Chrome, Firefox, Safari, Edge).
- **Web Technologies:** HTML5, CSS3, JavaScript for frontend development; backend frameworks like Node.js, Python, or PHP may be used.
- **Database:** A relational or NoSQL database (e.g., MySQL, MongoDB) for storing user data.
- **Server:** A web server (e.g., Apache, Nginx) to host the application.
- **Cloud Storage:** For storing resumes and user data securely.
- **Security Software:** SSL/TLS for data encryption and protection.

### 3.5 Agile Methodology

Agile methodology emphasizes iterative development, flexibility, collaboration, and responsiveness to change. For CRMS, Agile will allow continuous improvements and adaptations based on user feedback, ensuring the system evolves to meet the needs of law enforcement agencies.

#### 3.5.1 Identify the Purpose

In the context of the **Crime Record Management System (CRMS)**, the purpose of using **Agile methodology** is to ensure a flexible, iterative, and collaborative development process that meets the evolving needs of law enforcement agencies. Agile allows the team to adapt quickly to changes in requirements, user feedback, and emerging challenges.

#### 3.5.2 User-Centric Design (UCD)

Agile methodology emphasizes flexibility, iterative progress, and close collaboration with stakeholders. It allows for continuous feedback and quick adaptation to changes. **UCD** focuses on designing systems based on the needs, goals, and experiences of end-users. In the context of a **CRMS**, this approach ensures that the system is intuitive, meets user expectations.

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### 3.5.3 Flexibility

Agile methodology for Crime Record Management ensures flexibility through iterative development, allowing continuous feedback and adaptation. Features are developed in small, manageable increments (sprints), with regular reviews to adjust priorities based on user needs. This approach ensures the system evolves in line with law enforcement requirements, enabling quick updates, improved functionality, and responsiveness to emerging needs.

### 3.5.4 Collaboration

In Agile methodology, collaboration is a key principle for **Crime Record Management System (CRMS)** development. Stakeholders, including law enforcement officers, administrators, and developers, work closely together in iterative sprints. Continuous feedback and regular meetings ensure the system evolves to meet real-time needs, adapting to changes in requirements and ensuring efficient and effective management of crime records.

### 3.5.5 Frequent Testing

In Agile methodology, **frequent testing** ensures the Crime Record Management System (CRMS) meets user requirements and functions properly. Testing is integrated throughout the development process with continuous feedback. Each sprint includes unit, integration, and user acceptance tests to identify bugs, improve features, and enhance system reliability. This iterative approach ensures high-quality deliverables and stakeholder satisfaction.

## 3.6 Business Process Model

In the **Agile methodology**, the development of the **Crime Record Management System (CRMS)** follows an iterative and incremental approach, ensuring continuous delivery of functional features while incorporating user feedback.



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### 1. **Requirement Gathering and Backlog Creation:**

Stakeholders, including law enforcement officers and administrators, provide initial requirements for the system. These requirements are transformed into user stories, which are stored in the product backlog.

### 2. **Sprint Planning:**

During sprint planning meetings, the team selects user stories from the backlog for the upcoming sprint. The scope and tasks are clearly defined, ensuring the team is aligned on priorities and goals.

### 3. **Iterative Development (Sprints):**

Development occurs in 2-4 week sprints, where features such as crime record input, criminal data management, case tracking, and reporting are developed. Each sprint results in a working prototype that can be demonstrated and reviewed by stakeholders.

### 4. **Testing and Quality Assurance:**

Continuous testing occurs within each sprint, ensuring features work as expected. User acceptance testing (UAT) is conducted regularly to ensure the system meets end-user needs.

### 5. **Review and Retrospective:**

At the end of each sprint, the development team reviews the progress with stakeholders, gathering feedback and refining the system for the next iteration.

This model allows flexibility, ensuring the system evolves based on real-time user feedback and changing requirements.

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### 3.7 Supplementary Requirements

In the Agile methodology, the **Crime Record Management System (CRMS)** will be developed through iterative and incremental sprints, focusing on continuous feedback and flexibility. The supplementary requirements emphasize collaboration, adaptability, and the evolution of the product based on user needs.

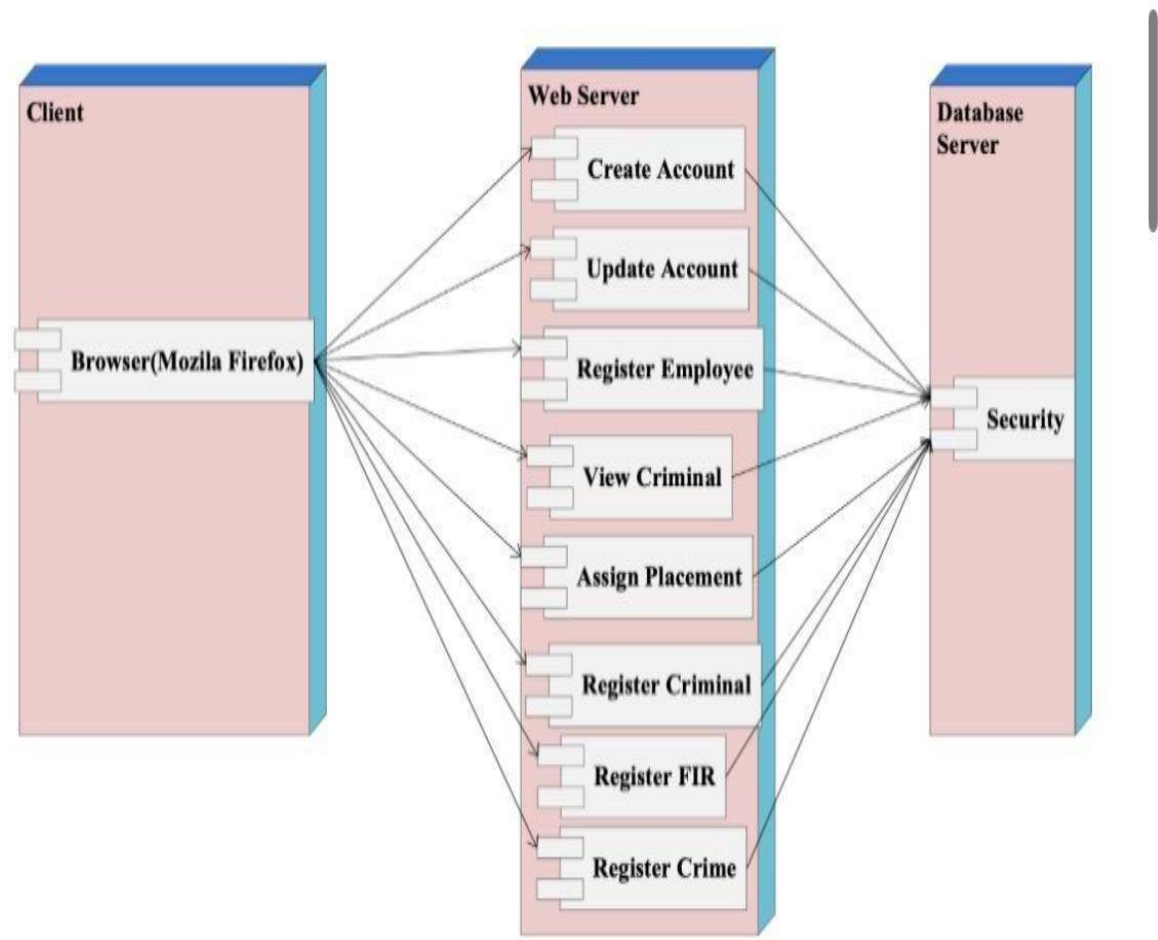
1. **Sprint-Based Development:** The CRMS will be built in **2-4 week sprints**, allowing for continuous delivery of features such as crime record management, case tracking, and evidence storage. At the end of each sprint, working versions of the software will be demonstrated to stakeholders for feedback.
2. **User Stories and Backlog Management:** Requirements will be broken down into **user stories**, prioritizing essential features based on stakeholder needs (e.g., case assignment, evidence tracking). A product backlog will evolve throughout the project, incorporating new requests or refinements as the system grows.
3. **Continuous Testing and Integration:** Quality assurance will be integrated into the development process. Automated tests will ensure that each feature meets functional and security requirements, with integration testing to validate system performance and data synchronization.
4. **Collaborative Stakeholder Engagement:** Regular **Sprint Reviews** and **Daily Standups** will ensure that developers, users, and administrators are closely involved in the decision-making process to align development with real-world needs.

This approach allows the CRMS to adapt quickly to changing requirements, ensuring a responsive and effective system.

## 4. System\_Architecture

### 4.1Client-Server Architecture

The **Crime Record Management System (CRMS)** is based on **client-server architecture**, where the system is divided into client-side (front-end) and server-side (back-end) components. This structure ensures scalability, modularity, and efficient communication between users and the system.



**Figure 4.1:** Client-Server Architecture

In the **client-server architecture** of a CRM, the system is divided into two main components:

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## I. Client Side (Frontend)

### Technologies:

- HTML, CSS, JavaScript for the web interface.
- Frameworks: React, Angular, or Vue.js for dynamic and responsive interfaces.
- Mobile Platforms: Flutter or React Native for Android/iOS apps.

### Responsibilities:

- Collect user input (e.g., adding a crime report, searching records).
- Display information retrieved from the server (e.g., case updates, analytics).
- Communicate with the server using API calls (e.g., RESTful APIs).

### Features:

- Login/Authentication Page
- Forms for adding/editing crimes, cases, and evidence

## II. Server Side (Backend)

### Technologies:

- Server Frameworks: Node.js (Express), Django, or Spring Boot.
- Database: PostgreSQL, MySQL for relational data; MongoDB for NoSQL.
- Programming Languages: JavaScript (Node.js), Python, or Java.

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### Responsibilities:

- Process requests from the client (e.g., retrieving a criminal record).
- Validate input data and enforce security measures (e.g., access control).
- Manage data storage and retrieval from the database.
- Generate reports and statistical insights.

### Features:

- RESTful APIs to handle client requests.
- Authentication and authorization services (e.g., Role-Based Access Control).
- Data synchronization and backup mechanisms.
- Logging and monitoring for system activities.

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## 5. Overall Description

### 5.1 Product feature

- **User Authentication and Authorization:**

- I. Secure login mechanisms with multi-factor authentication.
- II. Role-based access control to restrict unauthorized actions.

- **Data Management:**

- I. CRUD operations (Create, Read, Update, Delete) for user-specific data.
- II. Real-time synchronization between client and server.

- **Request-Response Communication:**

- I. Efficient handling of client requests through RESTful APIs.
- II. Server-side processing and delivery of structured responses (e.g., JSON, XML).

- **Performance and Scalability:**

- I. Support for concurrent users with optimized request handling.
- II. Horizontal scalability for growing user or data demands.

- **Security:**

- I. Encrypted communication using SSL/TLS protocols.
- II. Regular server-side validation to prevent data breaches.

- **User-Friendly Interface:**

- I. Intuitive client-side UI for web and mobile platforms.
- II. Dashboards for managing operations and monitoring data flow.

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5.2 Data Flow diagram

A Data Flow Diagram (DFD) for a Crime Report Management System illustrates the flow of information between entities like citizens, police, and administrators. Key components include input (crime reports, user data), processing (verification, categorization), and outputs (reports, case status). It ensures efficient communication and management of crime data for swift action.

5.2.1 Zero level DFD

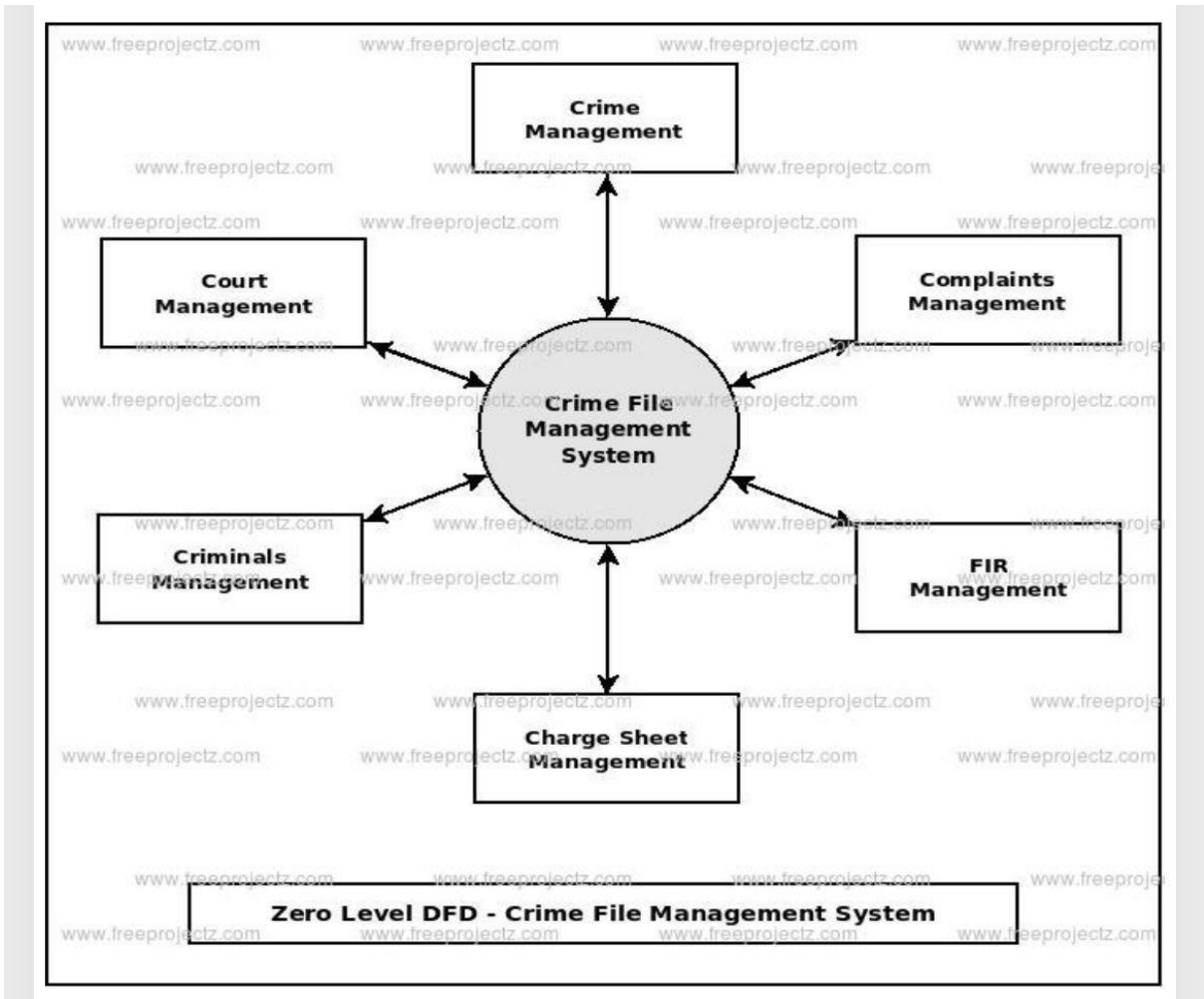


Figure 5.1.1: Zero Level DFD

5.2.2 First Level DFD

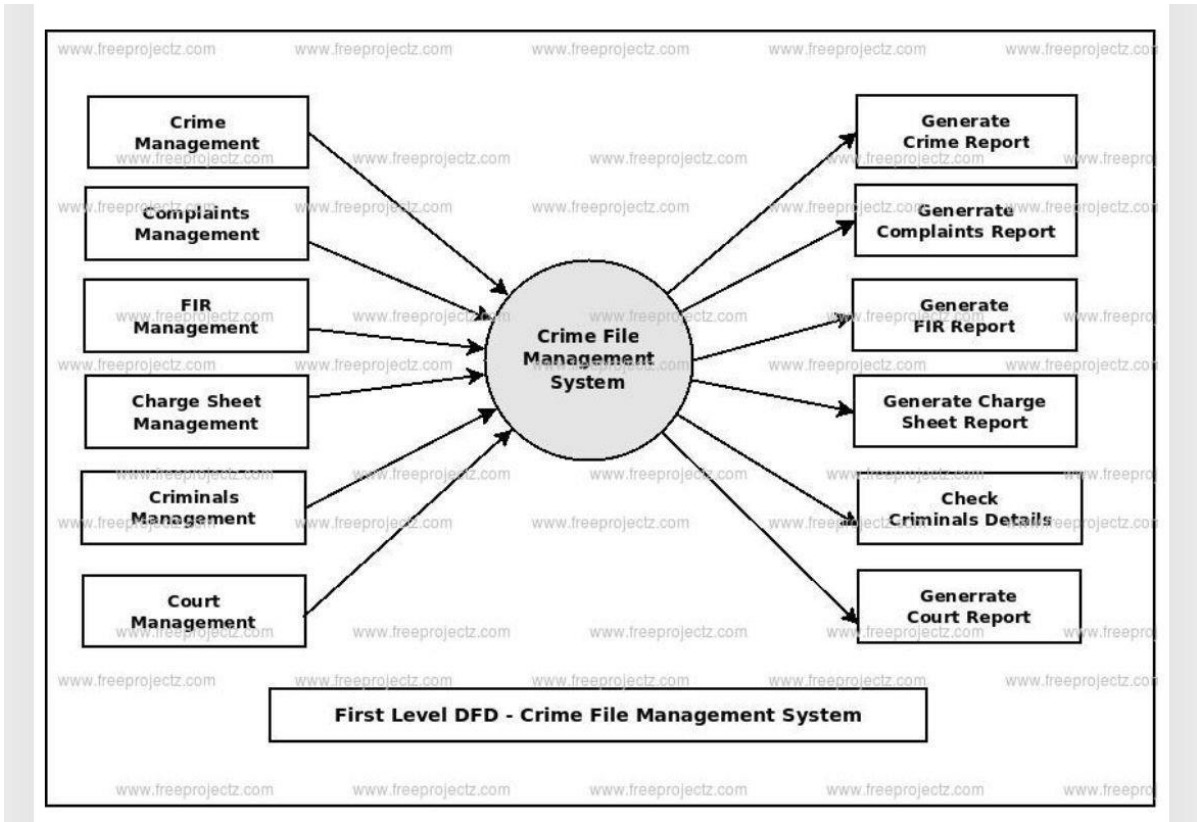
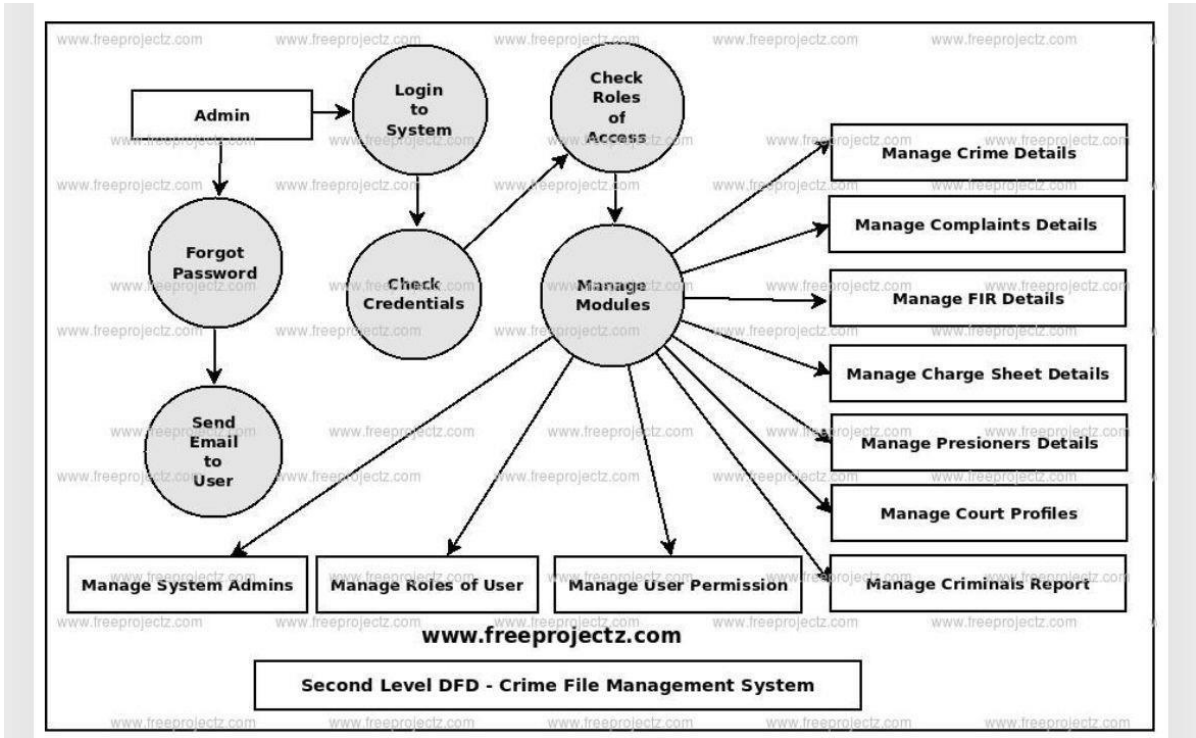


Figure 5.2.2: First Level DFD



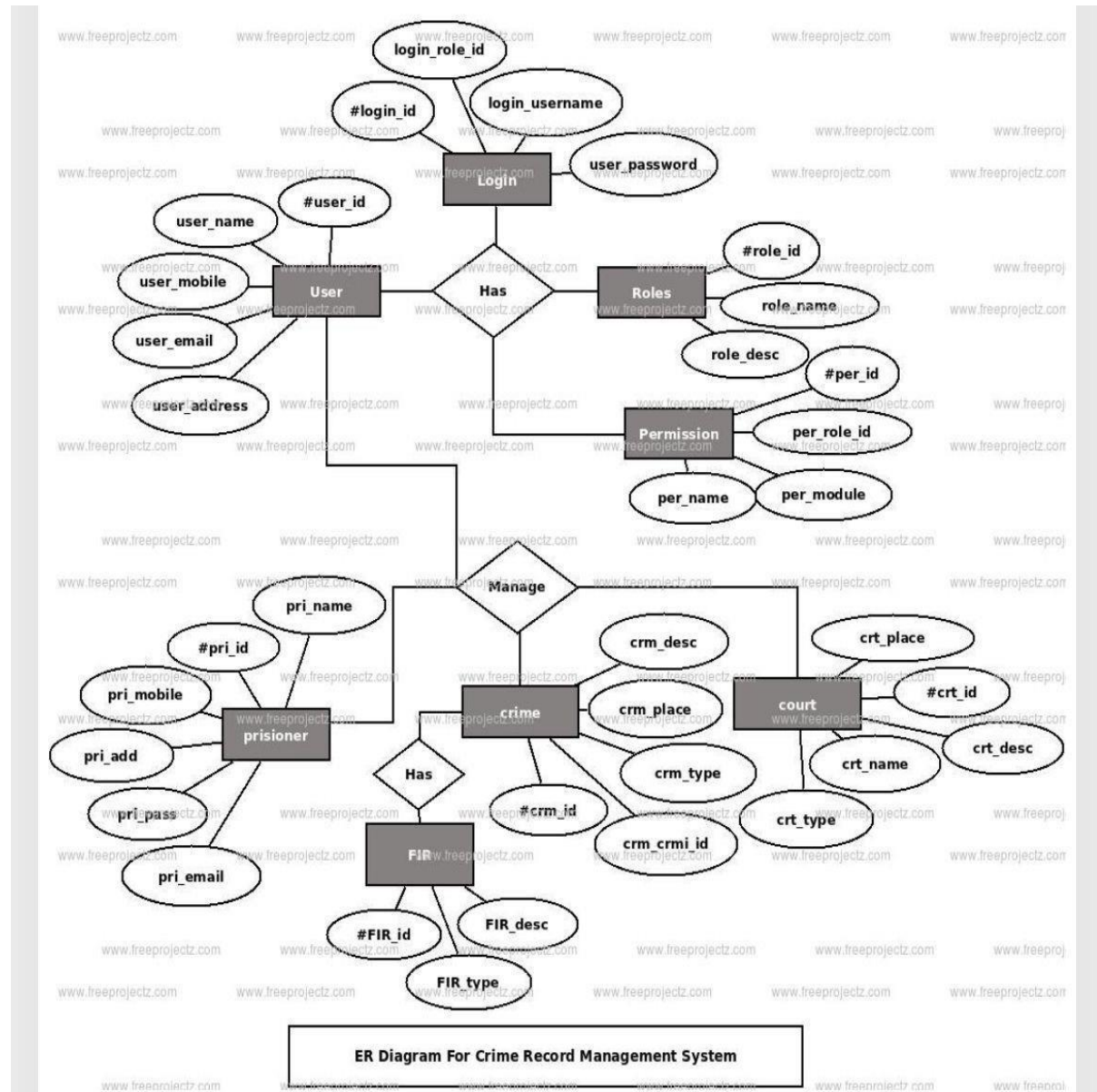
### 5.2.3 Second Level DFD



**Figure 5.2.3: Second Level DFD**

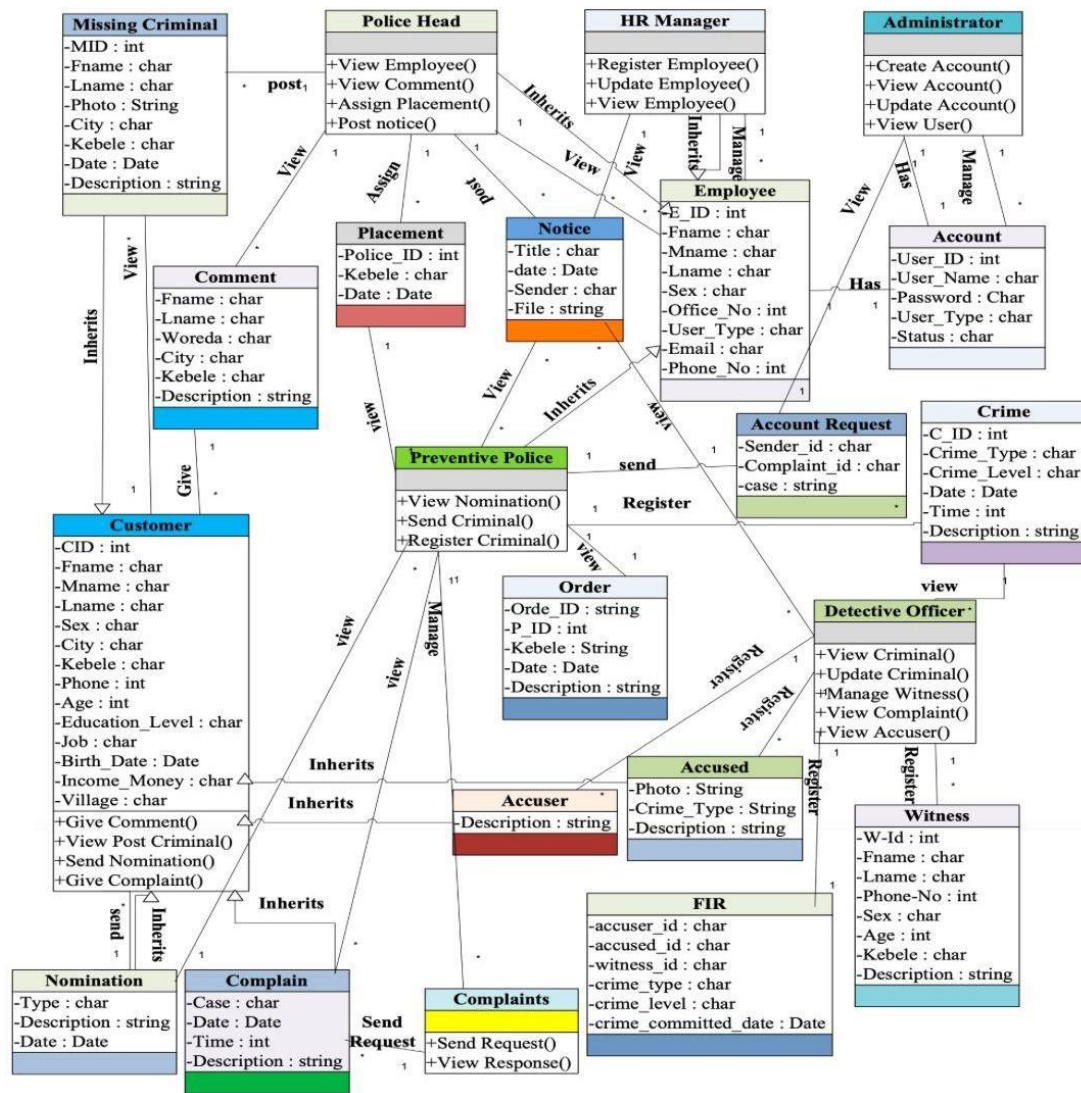
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## 5.3 E-R Diagram



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## 5.4 Class Diagram



### 5.5 Use-Case Model

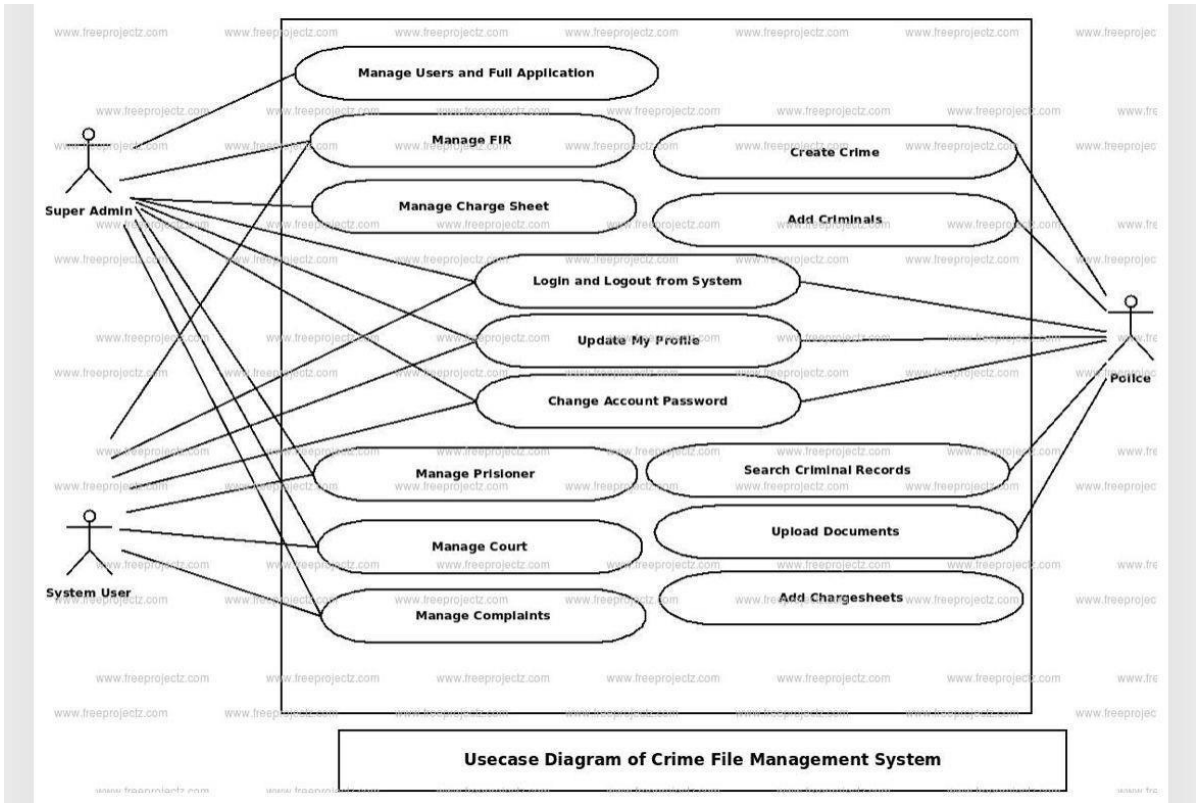
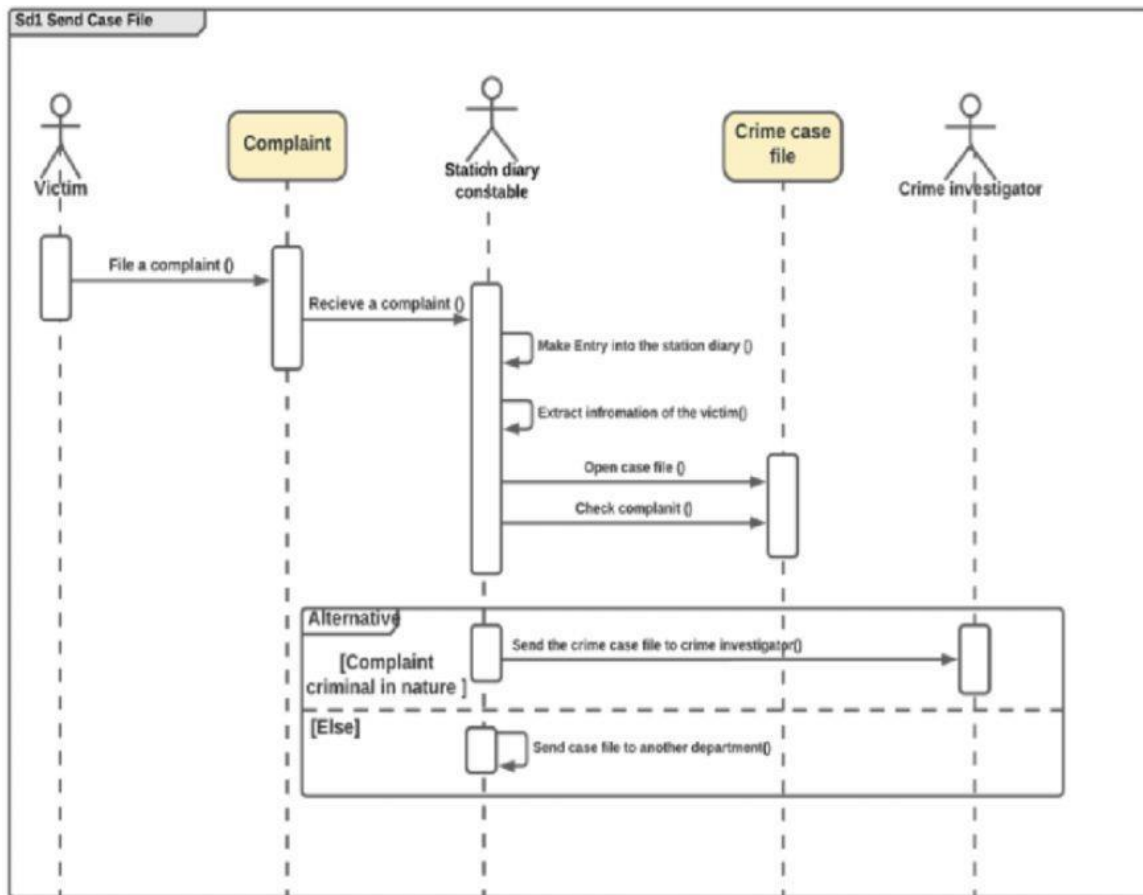


Figure 5.6: Use Case Diagram

## 5.6 Behaviors Diagrams

### 5.6.1 Sequence Diagram



**Figure 5.7:** Sequence Diagram

### 5.6.2 Activity Diagram

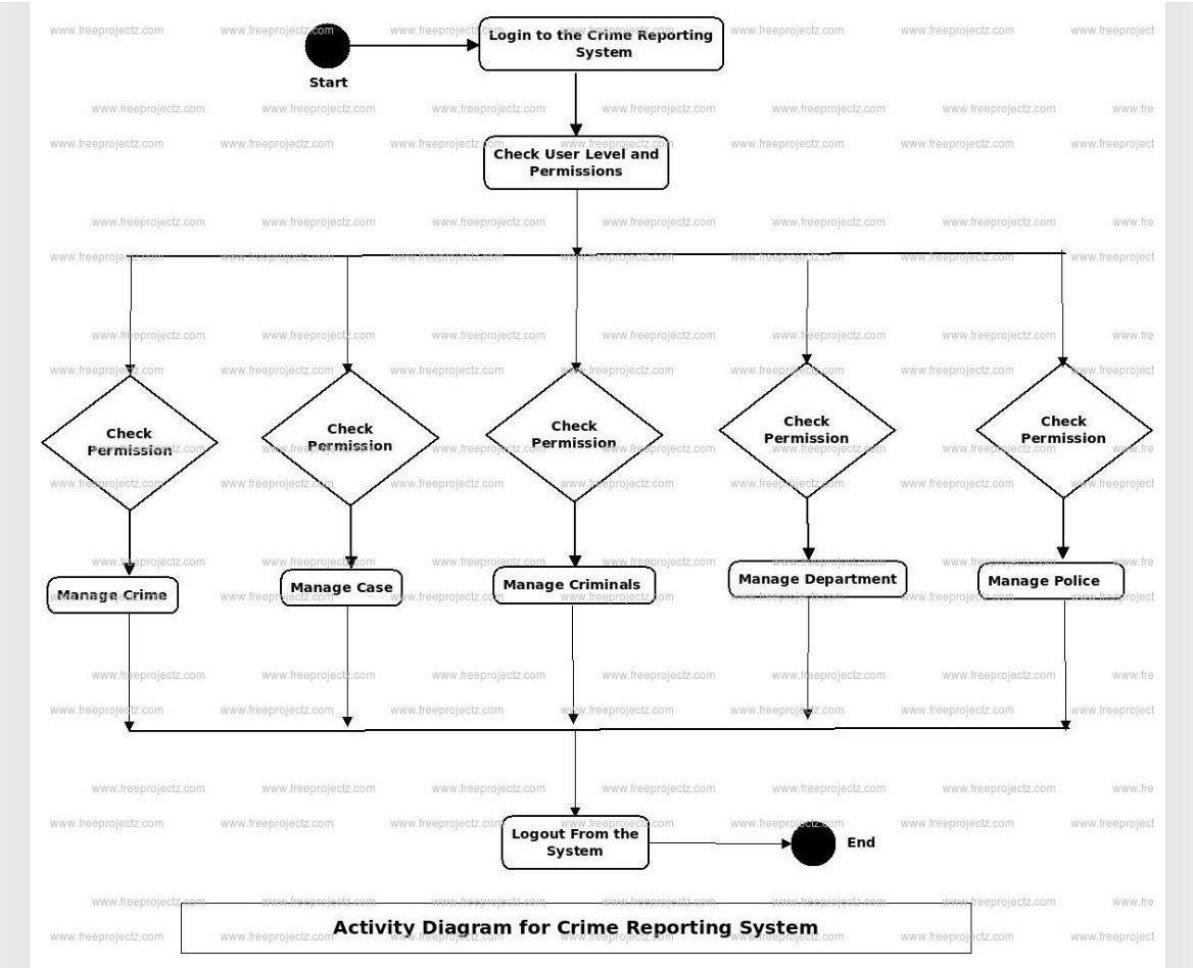


Figure 5.8: Activity Diagram

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## 5.7 Assumptions and Dependencies

### 5.7.1 Assumptions:

- Users (citizens, police, and administrators) have basic knowledge of the system interface.
- Internet connectivity is stable for system access.
- All user data entered is accurate and truthful.
- System users are authenticated before accessing sensitive data.
- The system complies with legal and regulatory requirements.
- Reports and case updates are timely and reliable.

### 5.7.2 Dependencies:

- Integration with external databases for user verification (e.g., citizen ID or police records).
- Dependence on a secure and reliable hosting server.
- Third-party software for data encryption and backup.
- Government approval for deployment and access to crime databases.
- Regular system maintenance and updates for performance and security.

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# 7. Conclusion & Future Scope

## Conclusion

The Crime Report Management System (CRMS) is designed to streamline and digitize the process of reporting, tracking, and managing crime-related information. By automating manual processes, it enhances the efficiency and accuracy of data collection and retrieval. This system offers transparency, reduces the risk of data loss, and provides a centralized platform for law enforcement agencies, enabling them to respond more effectively to criminal activities. With features such as real-time data analysis, automated report generation, and secure storage, CRMS plays a critical role in improving law enforcement operations and ensuring public safety.

## Future Scope

- **Integration with Emerging Technologies:**
  - Incorporate **Artificial Intelligence (AI)** for predictive policing and crime trend analysis.
  - Use **Machine Learning (ML)** to identify patterns and suggest crime prevention strategies.
  - Implement **IoT** (Internet of Things) for real-time surveillance and alert systems.
- **Geographical Expansion:**
  - Extend the system to rural and remote areas to improve accessibility and reporting mechanisms.

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- Integrate with national and international crime databases for wider applicability.

- **User-Friendly Enhancements:**

- Develop mobile applications for easier citizen reporting.
- Introduce multilingual support to cater to diverse populations.

- **Enhanced Security:**

- Strengthen data encryption and cybersecurity measures to prevent unauthorized access and breaches.
- Implement blockchain technology to maintain the integrity and immutability of records.

## 8. Concerns / Queries / Doubts if any

Here are potential concerns, queries, or doubts regarding a Crime Manager:

Concerns in a Crime Report Management System include ensuring data security to prevent unauthorized access, maintaining user privacy, and preventing misuse of the system. Queries may revolve around system scalability, real-time data updates, and integration with existing law enforcement systems. Doubts might arise regarding accuracy in report handling, compliance with legal frameworks, and system downtime issues.