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CRIME MANAGEMENT SYSTEM

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ABSTRACT :

The increasing complexity of crime investigations requires an efficient and centralized system for the management of criminal records, FIRs, and case details. The following paper discusses design and implementation of a **Crime Management System** with Java Full Stack technology. The system provides online FIR registration, criminal record management, case tracking, and report generation. It utilizes **Java, Spring Boot, Hibernate/JPA, and REST APIs** for the backend, **Angular/React with HTML, CSS, and JavaScript** for the frontend, and **MySQL** for the database. Role-based security guarantees protection, whereas live updates optimize efficiency for police and investigation units. The result is a scalable and trustworthy web-based application to enhance effectiveness and transparency in police work.

Keywords: Crime Management, Java Full Stack, FIR System, Spring Boot, Case Tracking, Law Enforcement

1.0 INTRODUCTION

Manual record-keeping of crimes will always lead to inefficiencies, delay, and loss of valuable information. With the progress in technology, a computerized system must be implemented to automate criminal and case records, offer secure access, and enhance investigation processes.
The ultimate goal of the project is to develop a web-based Crime Management System with Java Full Stack technologies. The system consolidates FIRs, criminal information, and case status, and grants secure access to administrators, police personnel, and investigators. This project fills the gap between academic understanding of full stack Java development and its practical applications in law enforcement.

2.0 SYSTEM STUDY / REQUIREMENT ANALYSIS

2.1 User Analysis

- Target Audience: Police stations, investigators, administrators.
- Environment of the User: Accessible through web browsers and mobile devices.
- User Requirements:
    - Register FIRs online.
    - Update criminal profiles.
    - Track and maintain case status.
    - Generate statistics and reports of crime.

2.2 Functional Requirements

- User Authentication and Role-Based Access.
- FIR Management (create, search, update).
- Criminal Record Management.
- Case Tracking System.
- Report and Analytics Generation.

2.3 Non-Functional Requirements

- **Performance**: Fast response times for large databases.
- **Usability**: Simple and intuitive interface.
- **Security**: Authentication, authorization, and encryption of data.
- **Reliability**: Stable data storage with backup and recovery.

2.4 Technology Stack Used

- **Frontend**: Angular / React (with HTML, CSS, JavaScript).
- **Backend**: Java, Spring Boot, Spring MVC, REST APIs.
- **Database**: MySQL with Hibernate/JPA ORM.
- **Authentication & Security**: Spring Security, JWT Tokens.
- **IDE & Tools**: Eclipse/IntelliJ, GitHub, Maven.
- **Server**: Apache Tomcat.

3.0 SYSTEM DESIGN AND IMPLEMENTATION

3.1 System Design

- **Use Case Diagram**: Demonstrates Admin, Police Officer, and Investigator roles handling FIRs, cases, and reports.
- **Data Flow Diagram (DFD):** Demonstrates interaction among users, backend services, and database.
- **Entity-Relationship Diagram (ER):** Entities are Users, FIRs, Criminals, Cases, Reports.

3.2 Modules Implemented

- **Authentication Module:** Manages login, role-based access through Spring Security.
- **FIR Module**: Responsible for creating, reading, updating FIRs.
- **Criminal Database Module**: Stores personal information, criminal records, biometric data.
- **Case Management Module**: Allocates investigators, updates case status, monitors progress.
- **Reporting Module**: Produces statistical reports (crime rate by region, type, year).

4.0 RESULTS AND DISCUSSION

The Crime Management System developed was tested using sample data sets. It effectively facilitates FIR registration, case tracking, and criminal record management with secure access.

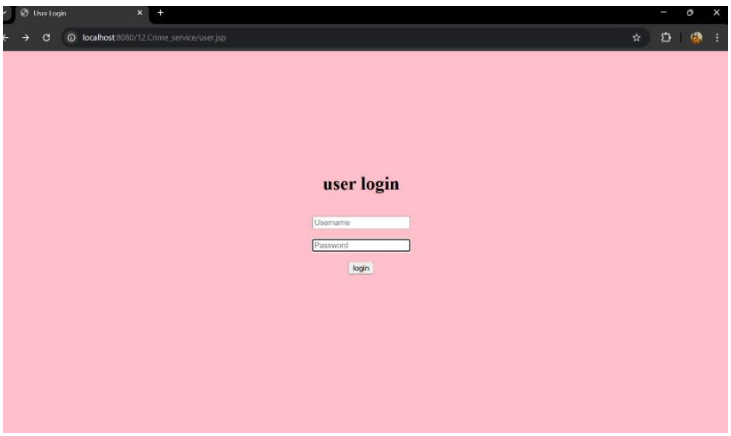

Fig 1: Login Page (Admin / Police Officer).

- **Fig 2:** FIR Registration Form.

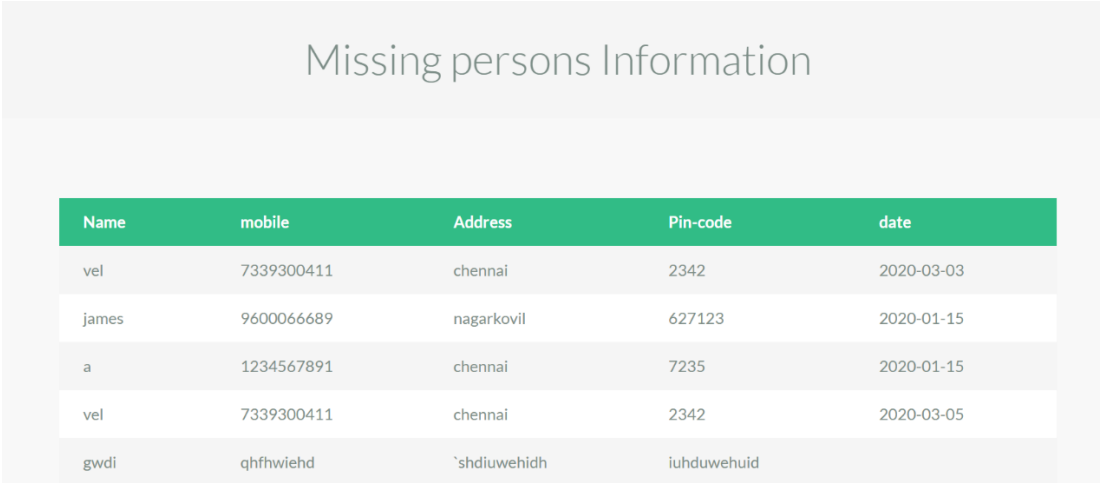

Fig 3: Criminal Records Dashboard.

The system proves Java Full Stack's capability to develop secure, scalable, and user-friendly web applications for law enforcement departments.

5. CONCLUSION

This project showcases the effective implementation of Java Full Stack technologies in the development of a Crime Management System. It simplifies FIR registration, case tracking, and criminal database management while maintaining security and reliability. The learning developed in Spring Boot, Hibernate, REST APIs, and Angular/React is a good basis for future large-scale police systems and predictive analytics offerings.

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