15SE401M – MULTI DISCIPLINARY DESIGN

A Project Report

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1. Introduction

The proposed system is a web based application. This software provides facilities for reporting online crimes, complaints, show most wanted persons details etc. Any Number of clients can connect to the server. A web Server must be maintained for temporary storage of complaints and query files for processing purposes. Each user first registers with the server for reporting crimes. There are 4 main modules in this project - User, Administrator, Evaluator and Station.

1.1 Purpose

1.1.1 Existing System

In the existing system, even though the complaint is filed online, most of the remaining process is done manually, like making a physical copy of the details in the police register, calling the complainant and accused party to the concerned police station. Hence, the system cannot be classified as completely automated. There is also no direct role of higher officials. Moreover, it leads to a wastage of paper. On top of that, victims who don't have access to the portal would have to resort to physically visiting a police station to file their complaints. They would be limited by factors such as lack of availability of transportation or no nearby police station.

More importantly, there is no existing national system for people to lodge their complaints.

1.1.2 Proposed System

The proposed system shall be completely automated from the complaint lodging stage to the FIR number generation stage. The details would be stored in a database for the police to access and generate reports from. Additionally, an extra layer of verification would be included where any citizen who registers on this site would have to upload an government issued ID proof in order to be a verified user. This would keep the false and proxy complaints to a minimum as it would be easier to track registered users.

The co-operation of the authorities is an important aspect of this system as they would evaluate every case to ascertain its genuinity and take necessary actions.

1.2 Definitions, acronyms and abbreviations

DBMS - database management system
UID - unique identification number
FIR - first information report
NCRB - national crime records bureau

1.3 Intended Audience and Reading Suggestions

This document is meant for developers, project managers, business analysts, administrative authorities, testers and end users to help them gain a comprehensive understanding of how the system works. It provides detailed user experiences for the various modules of this system and all the prerequisites.

1.4 Product Scope

The system shall provide assistance to victims of a crime to help them file their complaints without subjecting them to the undesirable elements of the administration. This project is aimed at the section of the indian population who are not very prominent in society. People who aren't famous or have no influence over the system unfortunately aren't always guaranteed justice. The system would help such people bypass the hassle of dealing with these authorities, while also maintaining a non destructible record of verified complaints.

1.5 References

Data available in NCRB website regarding crime rates over the years
Reuters news reports
GoogleForm- Survey
Bihar police online complaint filing portal
Tamil Nadu police citizen portal

2. Overall Description

2.1 Product Perspective

This project is a replacement for certain existing systems.It builds on the logic of various state police departments' complaint lodging portal and provides an additional layer of user authentication. In the long run, we hope to integrate every state's police department to create a national portal. This would require timely collaboration and complete cooperation of the authorities. This system will help ensure speedy and effective handling of complaints from the ordinary Indian citizen.

2.2 Product Functions

2.2.1 Create user

A citizen of India can freely access this portal. However, to lodge complaints, he/she must upload a government issued ID proof to get verified as a user.

2.2.2 Update user details

Users can update their details after they change it at a nearby administrative/corporation office.

2.2.3 Add station

The admin can update the portal to add a new police station to the system and give the head inspector access rights. This person is also responsible for verifying users in his/her station's jurisdiction.

2.2.4 Report crime

A verified user can report any crime which he/she witnesses or has been subject to. Upon evaluation, a FIR number will be generated which can be used to track the status of the case. An officer from the police station under whose jurisdiction the complainant resides would be the point of contact.

2.2.5 Add evaluator

This entity is tasked with analyzing the complaint and the concerned user to verify its authenticity. They would track the case and if the accused is found guilty, his/her name would be added to a national database. A person who is the station inspector’s higher authority would be assigned this role.

2.3 User Classes and Characteristics

Administrator: They are the core users and are able to add new user‟s station, review panels, and their members to the system and permit them to access the account when given authorization by the administrator, and can delete any existing operator or modify their details. They can also view in real time what a user is performing right away.

User: They login at the client level and get access to their account. They can view their profile. They can also have permission to change their password. But they cannot delete another user account or make modifications.

Evaluator: They are a team of experienced members. They can review and process all the incoming complaints. They can also have permission to approve a newly entered station by the administrator.

Station: Once the complaint is approved by the evaluator, the complaint will be forwarded to the appropriate station. The station will assign the police for immediate investigation. They can release the final report for a complaint.

2.4 Operating Environment

While the actual scope of the product is to be determined by developers, due to the limited knowledge of the team, it can be stated that the proposed system will use facilities provided to the existing systems. The site will be hosted on an in-house Apache server maintained by an IT department. Having the web server run on a virtual machine will allow for easy migration of the web server in the event that the owner wishes to outsource web hosting to an external company.

Due to the web based nature of the system, it will be largely compatible with any device having an active internet connection and a web browser. As such, Mozilla Firefox will be the recommended browser.

2.5 Design and Implementation Constraints

Developers will be required to implement support for accessing another state's case database. The other constraint is to digitize all existing paperwork to allow for a transition from a physical records based system to an electronic one. While this is out of the scope of the operations of the system, implementing this will likely be required.

2.6 User Documentation

Training manuals for IT support staff, police officers and other administrative authorities will be included that reflect the use cases for this system. The manuals will include step by step instructions on how to perform each task and what can be achieved. Detailed descriptions of the portal's features will also be discussed.

Besides training manuals, workshops will also be held to formally train all the officers of the law who will be in charge of the portal as part of the regular cybersecurity training program.

2.7 Assumptions and Dependencies

All prospective users are above 18 and have at least one government issued ID and address proof.

Every stakeholder's access is predetermined and not subject to change. No entity - be it the end user, IT staff, police officers or evaluators - can access a part of the portal that they are not supposed to.

IT management staff exists only to conduct maintenance of the system and not interfere with regular police work.

Network security and management is conducted by IT staff. Hence, hiring of independent contractors is not recommended.

All sensitive information is stored in a secure manner using industry standard encryption.

The commissioner and the head of the IT staff have full administrative control of internal systems.

Each district is assigned at least one evaluator.
Each station must be under the supervision of at least one evaluator.

People will follow a decorum while assisting those who have filed FIRs, i.e. confidentiality is expected

Support from the relevant government authorities is expected.

New policies and data centers required for the same.

It is assumed that users have decent internet connection at all stages of the process.

Proper and updated versions of the supported browsers must be installed.

3. Specific Requirements

3.1 Functional Requirements

Functional requirements specify which outputs should be produced from the given inputs. They describe the relationship between the input and output of the system. For each functional requirement, a description of the data input, their source and range of valid input are given

3.1.1 User login

This process should verify the username and password by comparing the inputs with the corresponding attribute values in the database of registered users. If the inputs are correct, the user will be able to access the portal. If not, then access will not be provided until correct credentials are entered.

3.1.2 Creating new user

The system should prompt a new user to enter his/her details - name, address, mobile number, gender, age, etc - along with a supporting ID proof (Aadhaar car, PAN card, driving licence).

Once the unique number from the given ID proof has been verified with the national database, the user will be validated and will have an active account.

3.1.3 Reporting crime

The system must allow a verified user to report a crime. Details such as name, involved parties, location and complainant address along with a description of the crime must be collected. From the given location, the system can ascertain under which station's jurisdiction the complainant resides. An officer from that station can be assigned accordingly. To make the crime reporting process easier, the category and subcategory of the crime can be selected from dropdown lists. Upon receiving verification from an evaluator, an FIR number will be generated.

3.1.4 View FIR status

The system shall provide a means for users to track the status of their FIR by using the given FIR number. If it exists in the database, the current status will be displayed.

3.1.5 Update FIR

In case a complainant wants to update minor details such as name errors, address, phone number, etc. the system will do so if the user provides a valid FIR ID that exists in the database.

3.1.6 View criminal

The system shall provide a means for users to look up the known perpetrators in a particular district. For this, the database needs to be updated after the successful processing of every case. A general search will provide the names of all the perpetrators in the system's database arranged according to state, city and district.

3.1.7 Withdraw complaint

A complainant can make a request to withdraw a case by providing a valid FIR ID. The evaluator will review the request along with the police officer assigned to the complainant.

3.1.8 Creating new station

New stations can only be added to the system by the administrator. The details of the station go in as input and a new database would be created for it with all the necessary features and documentation.

3.1.9 Add criminal details

Details of proven guilty criminals will be forwarded to the evaluator from the station inspector after the successful closing of each case. He/She will then add these details, along with an accompanying photo, to the system. The station inspector could also do this task.

3.1.10 Station login

Every station inspector will receive login credentials when his/her station is integrated with the portal. These credentials can be used to login to the system to check active cases and assign junior officers to each case. It is important to note that in every station, only one officer can access the portal.

3.1.11 Generate report

At the behest of a complainant, an officer can generate a case report upon closing the case by providing the correct FIR ID.

3.2 User interfaces

In accordance with professional website designs and UI standards, the homepage will have an interactive layout with easy navigation which will allow the user to file complaints, check complaint status, check nearby police stations, find out the contact number of the officer-in-charge, view known criminals in their area and other areas and also check crime statistics for their city/town.

Verified users can also navigate to the “my profile” section to view and add their personal details or make changes, if any.

Station inspectors will be able to view a different version of the portal which show all the active cases in their station’s jurisdiction along with their details. He/She can choose which junior officer to assign to a case. Along with that, they will be able to go to the “Known Criminals” section of the portal to add the name and details of guilty parties in closed cases. Evaluators will also have a similar view, with the exception that they will be able to view a list of registered users who have to be verified.

The administrator will have access to all sections of the portal and will be able to view details of active and closed cases in every station’s jurisdiction.

3.3 Hardware interfaces

As this portal is designed to be primarily web based, the hardware on which it resides will be any machine with an ethernet connection and can host a web server. Besides that, this machine should also be able to run virtualization software to host the web server on a virtual machine to facilitate future upgrades.

3.4 Software interfaces

This product will utilize various software components for its web based functionality including HTML, CSS, JavaScript, XML, JSP, PHP as well as MySQL databases. An Apache web server would be required to host the website.

3.5 Communications interfaces

This portal will require HTTP or HTTPS communication interfaces with client devices and be able to send automated emails and messages to users.

4. Other Non-functional requirements

4.1 Hardware requirements

Processor: Intel Pentium(III) or higher
RAM: 512 MB
Storage: 4GB
Common computer peripherals
Any modem

4.2 Software requirements

OS: Windows (any version above XP)
Languages: PHP
Front-end: HTML, CSS, JavaScript
Back-end: MySQL server
Browser: Internet explorer/Google Chrome/Safari/Mozilla Firefox

4.3 Performance requirements

Performance is measured in terms of the output provided by the application. Requirement specification plays an important part in the analysis of a system. Only when the requirement specifications are properly given, it is possible to design a system, which will fit into required environment with the specified constraints.

4.3.1 Response time

Normal user response time shall be less than 5 seconds across the portal.

4.3.2 Workload

The portal must support 100 people at any given time and be able to operate within the specified response time. Daily maintenance time must be from 12am to 6am.

4.4 Security requirements

IT manager/administrator will have full authority over all permissions. An email link will be sent to the user after successful registration. Adding to that, an SMS alert with an OTP will be sent to the user’s registered mobile number to ensure that he/she is the one who lodged the complaint