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Computer Studies Department

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**DEVELOPMENT OF BARANGAY INCIDENT LOG RECORD AND INFORMATION
SYSTEM FOR BARANGAY SAN FRANCISCO, GENERAL TRIAS, CAVITE**

A Web System Technologies Project

Presented to the Faculty of

Computer Studies Department

National College of Science and Technology

In Partial Fulfillment

Of the Requirements for the Degree

Bachelor of Science in Information Technology

By:

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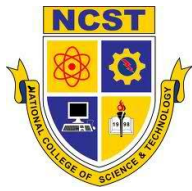
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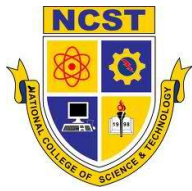


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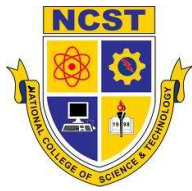
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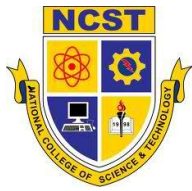
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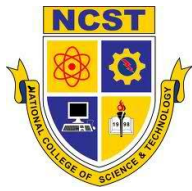
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CHAPTER 1

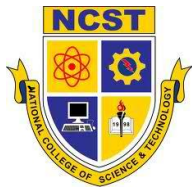
SYSTEM PROPOSAL

Introduction

Barangays are the smallest political units in the Philippines, yet they are crucial in managing local issues, providing public services, and ensuring the safety and welfare of the community. One of their main tasks is handling incidents—ranging from emergencies to complaints—and ensuring that these are properly addressed. In Barangay San Francisco, General Trias, Cavite, like many other barangays, incident reporting is still done manually. This traditional approach can lead to delays in response, lost information, and a lack of coordination when it's most needed.

This project, the Development of the Barangay Incident Log Record and Information System, aims to transform how incidents are recorded and tracked. By shifting from paper-based logs to an automated system, this project will simplify the process for barangay officials, making it easier to capture and access incident reports in real-time. The new system will improve response times, reduce errors, and ultimately contribute to a more organized and efficient approach to public service delivery.

The proposed system will be tailored to the specific needs of Barangay San Francisco, addressing local challenges like traffic-related incidents, community disputes, and emergency response coordination. It will enable barangay officials to quickly record and organize incident data, ensuring that critical information is accessible when needed.



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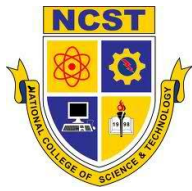
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Beyond improving day-to-day operations, the system will bring greater transparency and accountability. Having a reliable digital record of incidents will allow both residents and officials to track the status of reported issues, ensuring that nothing is overlooked. This approach not only helps the barangay operate more efficiently but also sets the foundation for a more open and responsive local government.

In the long term, this project hopes to serve as a model for other barangays in Cavite and beyond, promoting the adoption of digital solutions in local governance. By embracing technology, Barangay San Francisco can ensure better services for its residents and build a stronger, more resilient community.



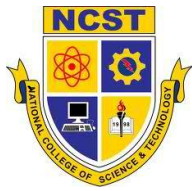
Problem and Its Background

Problems

- Difficulty in accessing incident records due to disorganized files or paper-based systems.
- Manual record-keeping of incidents leads to errors and delays in reporting.
- Limited technical skills of barangay personnel in using digital systems.
- Lack of real-time tracking of ongoing incidents or updates

Solutions

- Create a centralized digital database where all incident records can be stored and easily accessed by barangay officials.
- Develop an automated system for logging incidents to reduce human error and improve the speed of documentation.
- Design an intuitive, user-friendly interface and provide proper training for barangay staff to ensure effective use of the system.
- Integrate a real-time update feature into the system to allow instant tracking of incident status and resolution.



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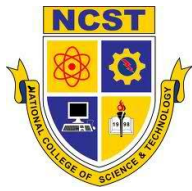
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Scope and Limitations

The proposed system focuses on recording and managing incident reports within Barangay San Francisco, General Trias, Cavite. It allows barangay officials to log incidents and monitor their status, including the type of incident, date, and involved parties. The system also enables officials to generate and view incident reports, track progress, and access incident details. Customers, or residents, can report incidents through walk-ins or online submissions. The system handles the storage and organization of incident data, making it easier for barangay staff to track and manage issues. Admins have full access to update incident records, manage user accounts, and monitor all logged incidents.

The system is limited to recording and monitoring incidents within Barangay San Francisco and does not extend to other barangays or external agencies like the police or hospitals. It only tracks incidents reported through the barangay office and cannot predict or analyze future incidents. The system supports both online and walk-in incident reporting, but advanced features like real-time data analysis or automated suggestions for action are not included. Once an incident is recorded and processed, the staff will update the status, but the system does not manage other barangay services or activities beyond incident management.



System Description and Specifications

Front End

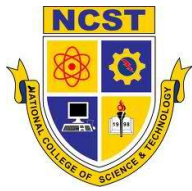
HTML (HyperText Markup Language). It is the standard language used to create and structure content on the web. It is the backbone of almost every website and web application, providing the structure for text, images, links, tables, forms, and other elements.

CSS (Cascading Style Sheets). It is a language used to describe the presentation and layout of web pages, including the design, colors, fonts, spacing, and overall visual appearance. While HTML is used to structure content, CSS is used to style that content.

JavaScript. It is a programming language used primarily to create interactive and dynamic content on websites. It allows web pages to respond to user actions, manipulate content, and interact with external resources like servers and databases. Unlike HTML and CSS, which are used to structure and style web pages, JavaScript adds functionality and behavior to websites.

Back End

PHP. It is a server-side scripting language designed primarily for web development, though it can also be used as a general-purpose programming language. It is widely used for creating dynamic and interactive websites. Unlike HTML, CSS, and JavaScript, which run on the



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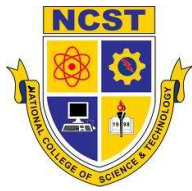
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client-side (in the user's browser), PHP runs on the server-side (on the web server), generating content that is sent to the user's browser.

MySQL. It is an open-source relational database management system (RDBMS) that uses Structured Query Language (SQL) to manage and manipulate data stored in tables. It is widely used to store, retrieve, and manage data for web applications, software development, and data analytics.



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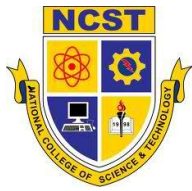
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Objectives

The aim of this study is to develop a Barangay Incident Log Record and Information System for Barangay San Francisco, General Trias, Cavite. The system intends to streamline the process of recording and managing incidents in the barangay, making it easier for officials to track and access information. This will help improve the efficiency of incident documentation, reduce manual work, and ensure better communication and decision-making within the barangay. The goal is to create a system that is simple to use, reliable, and effective in supporting the barangay's operations.



Definition of Terms

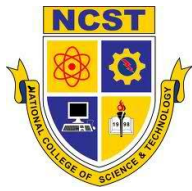
Accountability. The obligation or willingness to accept responsibility for one's actions and decisions. In a work context, it often refers to being answerable for outcomes or processes.

AJAX (Asynchronous JavaScript and XML). A web development technique that allows web pages to fetch data from a server asynchronously, without having to reload the entire page. This enables dynamic content updates, creating a smoother user experience. AJAX is often used in conjunction with jQuery to send and retrieve data without a full page refresh.

Automated System. A system that operates automatically, performing tasks with minimal human intervention. These systems often use software or machinery to carry out processes efficiently and consistently.

CSS (Cascading Style Sheets). A stylesheet language used to describe the presentation of a document written in HTML or XML. It defines how the elements in a web page should appear (e.g., colors, fonts, layout).

Data Table. A structured set of data, typically presented in rows and columns. It's often used in databases or for displaying information in a web interface. In web development, a data table can be dynamic, allowing for sorting, filtering, and pagination of data.



Efficiency. The ability to achieve a goal with minimal effort, time, or resources.

In the context of systems and processes, efficiency refers to optimizing performance and output.

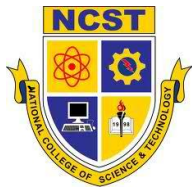
HTML (HyperText Markup Language). The standard markup language used to create the structure of web pages. HTML uses tags to define elements like headings, paragraphs, links, images, and more.

Incident Log Record. A record of incidents or events, often used in applications like ticketing systems, IT monitoring, or customer service platforms. It tracks incidents, their details, status, and resolution history.

Information System. A system designed to collect, store, process, and analyze data, typically for organizational purposes. It involves components like hardware, software, data, procedures, and people that work together to manage and utilize information.

JavaScript. A programming language commonly used to create interactive effects and dynamic content on websites. JavaScript allows web pages to respond to user actions and interact with server-side data.

jQuery. A fast, lightweight, and feature-rich JavaScript library. It simplifies tasks like DOM manipulation, event handling, animations, and AJAX calls. jQuery makes it easier to write cross-browser compatible JavaScript.



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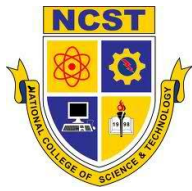
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MySQL. An open-source relational database management system (RDBMS) that uses Structured Query Language (SQL) to manage and manipulate data stored in tables. It is commonly used for web development.

PHP (Hypertext Preprocessor). A server-side scripting language used to develop dynamic and interactive websites. PHP is commonly embedded into HTML to handle backend tasks such as processing form data and managing user sessions.

Resilient. The ability to recover quickly from difficulties or challenges. In the context of systems, it refers to a system's ability to handle errors or disruptions and return to normal functionality.

Website. A collection of web pages that are accessed via the internet. A website can be informational, interactive, or used for specific services, and it typically includes HTML, CSS, JavaScript, and sometimes a backend server system.

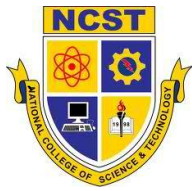


CHAPTER 2

RELATED STUDIES AND LITERATURE

Studies

Garcia, Gene Joseph (2021) developed a web-based incident reporting system for Barangay Sinisian, Calaca, Batangas, designed to manage incident reports under the katarungang pambarangay (barangay justice system). The system allows for the digital management of incident reports, notices, and settlements, while ensuring secure access to sensitive data. Garcia's study highlights the importance of data security and authenticated access, which are essential components in the development of the Incident Log Record and Information System for Barangay San Francisco. The focus on protecting sensitive information is directly relevant to the security measures intended for the current study. Carpio, Claire Ong (2020) developed an e-Barangay Management System aimed at streamlining barangay administrative processes such as document requests, complaint filing, and data management. The system emphasizes usability and efficiency, enabling barangay personnel to perform their duties without requiring extensive technical knowledge. This study underscores the importance of creating an accessible and user-friendly system, which aligns with the objectives of the Incident Log Record and Information System for Barangay San Francisco, which also prioritizes ease of use for non-technical users. Melendres, Uriel M., & Aranda, Karlo M. (2024) created a web-based resident information management system to simplify the storage and retrieval of resident data. The system was developed using the Rapid Application Development



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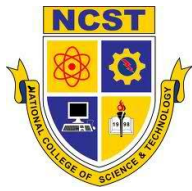
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(RAD) methodology, which emphasizes fast development cycles and high-quality outcomes. This study highlights the importance of system efficiency and security, both of which are essential aspects of the Incident Log Record and Information System for Barangay San Francisco. The application of the RAD methodology offers valuable insights into ensuring rapid and effective system development.

Laurena, Maranan, and Blancaflor (2022) developed *AidPack*, a web-based report management system aimed at enhancing community incident response in the Philippines. The system addresses the growing number of incidents and crimes by providing a centralized platform for reporting and managing community-related issues. The study highlighted the positive impacts of such systems in improving incident documentation, response time, and community safety.

However, while *AidPack* demonstrated significant benefits at the community level, it primarily catered to broader applications rather than the specific needs of barangays, which are the smallest administrative units in the country. Barangays require systems that not only handle incident reporting but also integrate local governance workflows and real-time data management. This study lays a foundation for the current research, which aims to develop an incident log and information system specifically tailored to the administrative needs of Barangay San Francisco, General Trias, Cavite.

Emergencies, both man-made and natural, occur regularly, from civil disturbances and fires to life-threatening situations like heart attacks or unexpected childbirth, as well as natural calamities such as hurricanes and flash floods. These events can affect



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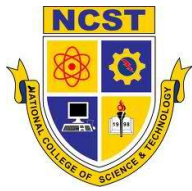
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entire communities, necessitating a fast, efficient response. Lehnardt (2017), Knoll (2016), and Krumay and Brandtweiner (2015) emphasize the importance of well-defined processes and the efficient collection, processing, and analysis of large amounts of data in managing such crises. They argue that systems capable of quickly gathering, processing, and communicating emergency-related information are critical for timely and coordinated responses. These principles highlight the need for incident management systems at the barangay level, where local authorities must handle emergencies and ensure a swift, organized response. The adoption of effective information systems in barangays could significantly improve communication, response times, and overall emergency management.

Literatures

The importance of information systems (IS) in improving barangay-level government is explained by Bacani (2020). IS assists barangay authorities in making data-driven choices by optimizing communication, storage of information, and service delivery (Bacani, 2020). Providing local governance services including healthcare, education, and infrastructure development is the responsibility of barangays, which are the smallest administrative divisions in the Philippines. With the growing digitization of government, information systems are essential for promoting responsiveness, efficiency, and transparency. Barangays often make use of a variety of data system types, such as: Digital portals known as e-government platforms were established to give residents online access to services like health care, barangay



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clearances, and public notifications (Alipon, 2020), likewise barangay papers including financial transactions, permits, and citizen data are managed automatically by the data Management Systems (Cruz et al., 2019). Last but not least, barangays have implemented financial management systems to monitor budgetary expenses and income production, resulting in more precise and transparent distribution of funds (Hernandez & Cabrera, 2021). By facilitating real-time communication between residents and local officials, the deployment of e-governance systems in barangays has been demonstrated to greatly enhance service delivery (Santitos et al., 2021). The administration of local governments might be greatly improved by the deployment of information technology in barangays, which would increase citizen engagement, transparency, and service delivery. However, significant obstacles to successful adoption are presented by budget constraints and technical difficulties. To guarantee that information systems successfully improve local administration, policymakers and barangay officials must address these concerns through focused training, the construction of infrastructure, and cautious system selection.

A collection of interrelated parts that cooperate to gather, store, process, and distribute information is referred to as an information system. Such systems facilitate decision-making, public service delivery, community outreach, and governance activities inside barangays (Llorin et al., 2019). Because they improve transparency, cut down on paperwork, and expedite procedures, information systems are essential to the digital revolution of the government. Beginning in 2016, the development of an information-



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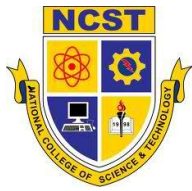
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based dashboard was evaluated by an IT specialist and approved for beta release to its intended audience. In order to declare that the system is successful, understandable, and the outcome is accurate and right, the mean score is 4.47. Following a battery of tests, the result was 4.50, indicating that it met the fundamental principle standards in processing of a request, response time and the computer usage resources and functions (R.M Labanan,2016) E-GOVERNANCE Adoption of new system has a stages of adoption, difficulties and advantages. Like, E-governance tools such as online portals for application submissions and digital payment systems are increasingly being adopted in barangays (Peralta & Bayani, 2019), also it pertains to how municipalities uses digital platforms and technologies to increase the effectiveness, responsiveness, and transparency of government services (Dela Cruz & Fernandez, 2021). CHALLENGES IN ADOPTION Given the obvious advantages, there are major obstacles standing in the way of barangays successfully implementing information systems, particularly in rural and isolated locations. Adoption of new technologies is frequently hampered by a lack of knowledge about their advantages or a fear of the unknown. This is typical in government organizations with long-standing, traditional paper-based procedures (Santos & Mendoza, 2020). In addition, the obstacle is the absence of adequate technology infrastructure, which includes access to computer systems and dependable connectivity to the internet. Another significant issue is the lack of digital literacy among barangay authorities and citizens. The implementation and efficient execution of information systems are hindered by the lack of exposure to information technology among numerous barangay

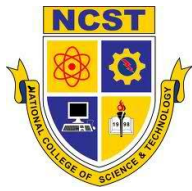


employees. To guarantee that local government workers are prepared to handle and apply IS efficiently, training and capacity-building initiatives are essential (Guevarra, 2019). By enhancing operational effectiveness, transparency, and service delivery, information systems significantly contribute to changing the governance environment at the barangay level, according to the review of related literature. However, a number of obstacles stand in the way of the general adoption of these systems, such as aversion to change, digital literacy gaps, and infrastructure limitations. In order to improve the sustainability and functionality of IS in barangays, future research and development should concentrate on removing these obstacles and investigating creative solutions.

Synthesis

The reviewed studies and literature all emphasize the critical role of information systems in improving barangay-level governance and community response. Bacani (2020) explains how information systems help barangay authorities make better decisions through data management and improved communication. This concept is extended in the work of Laurena, Maranan, and Blancaflor (2022), who developed a system, AidPack, aimed at improving incident response by centralizing community-related issues, making it easier to manage and respond to emergencies. Similarly, Garcia (2021) developed a web-based incident reporting system that focuses on secure data management, showing the importance of protecting sensitive information in barangay systems.

On the other hand, Carpio (2020) designed an e-Barangay Management System that simplifies administrative tasks for barangay personnel. This system's ease of use



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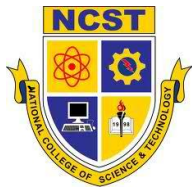
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highlights the need for accessible technology in local governance. Melendres and Aranda (2024) also emphasize efficient system development, using Rapid Application Development (RAD) methodology to quickly create systems that meet local needs. Both studies align in stressing the importance of user-friendly systems for non-technical users.

However, challenges such as limited infrastructure and digital literacy gaps, as discussed by Santos and Mendoza (2020) and Guevarra (2019), need to be addressed to ensure successful adoption of these technologies at the barangay level. These issues could hinder the effective use of information systems, even if the systems themselves offer significant potential for improving governance and emergency response.



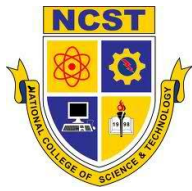
CHAPTER 3

SYSTEM DESIGN

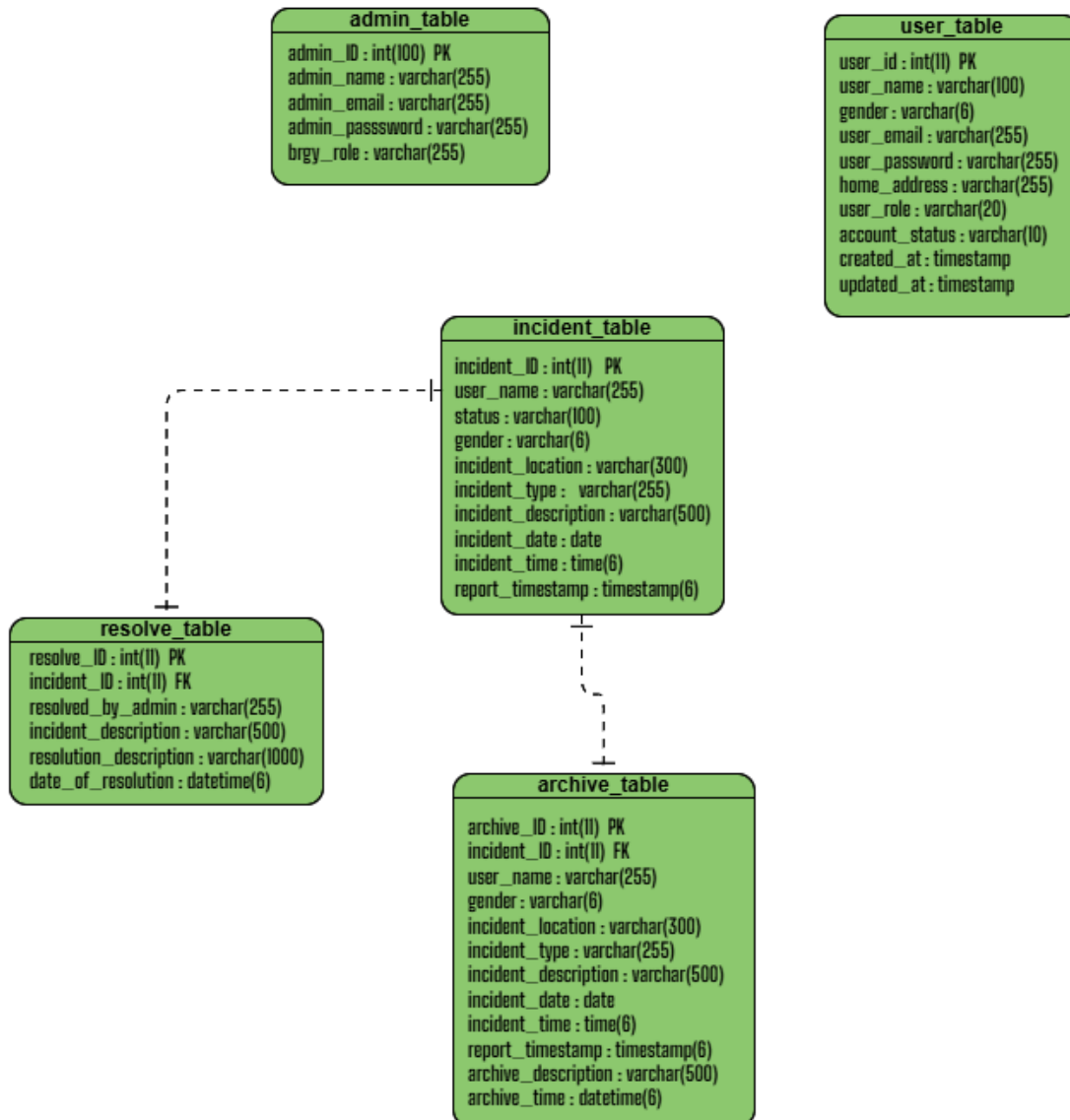
This chapter presents the System Design that describes how the researchers planned and documented the system.

Conceptual Model (IPO Chart)

Input	Process	Output
<p>User-Side Input:</p> <ul style="list-style-type: none">-Reporter's Name (auto-filled from session).-Incident Status (e.g., "Urgent" or "Non-Urgent").-Incident Location (pre-filled as "Barangay San Francisco").-Type of Incident (selected from a dropdown, with an option for "Other").-Date and Time of Incident.-Description of Incident. <p>Admin-Side Input:</p> <ul style="list-style-type: none">-Decision to resolve or archive a report.Reason/description for the action (required for resolution or archiving).	<p>User-Side Reporting:</p> <p>User completes the report form and submits it. The system validates the input fields. If valid, the system saves the report in the incident_table using prepared statements. The user sees a confirmation message and can view their submitted reports marked as "Pending" on their dashboard.</p> <p>Admin-Side Management:</p> <p>Admin views all reports in the incident_table on their dashboard. Admin selects a report to either: Resolve: Moves the incident to the resolve_table. Requires a resolution description. Removes the report from the user's dashboard. Archive: Moves the incident to the archive_table. Requires an explanation for archiving. Also removes the report from the user's dashboard.</p> <p>Database Updates:</p> <p>Upon resolution or archiving, the report is removed from the incident_table. Respective data is added to the resolve_table or archive_table.</p>	<p>User-Side Reporting:</p> <p>Confirmation of successful report submission.</p> <p>Dashboard displaying their pending reports.</p> <p>Once a case is resolved or archived, it disappears from their dashboard.</p> <p>Admin-Side Management:</p> <p>Dashboard showing all incidents with options to resolve or archive.</p> <p>Reports in resolve_table or archive_table for historical tracking.</p>



Data Modeling





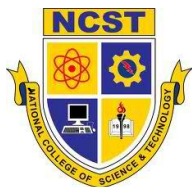
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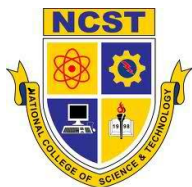
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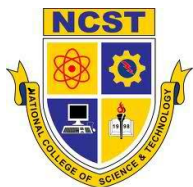
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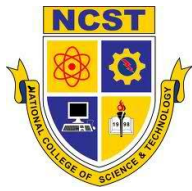
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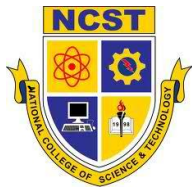
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