

Incident Management System for TPLEX Traffic Safety Management and Security Department

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A photograph of a modern, multi-story building with a mix of brick, concrete, and colorful panels. The building features large windows and balconies. The word "INTRODUCTION" is overlaid in a large, bold, black font, underlined, across the center of the image. The background is a clear blue sky.

INTRODUCTION

The San Miguel Corporation (SMC) infrastructure arm handles the construction, management, and operation of the country's largest infrastructure network. Its current portfolio includes: the Tarlac-Pangasinan-La Union Expressway (TPLEX).

The TPLEX Security Department aims to respond and to address unplanned events that can affect service operations while maintaining normal service and minimizing impact to the business. The client requires the development team to build a system that maximizes the user's productivity by providing a tool that automates the total numbers of incidents based on classification and categorization of incidents and violations.

The Incident Management System for TPLEX Traffic Safety Management and Security Department is a project that aims to develop a system for managing various incidents and violations along the Tarlac-Pangasinan-La Union Expressway (TPLEX). This document will provide a detailed description of the said project. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate.





OBJECTIVES

The main objective of this study is to create a working software incident management system for TPLEX Operations and Maintenance.

Specific Objectives:

1. Record the details and number of incidents daily.
2. Provide a daily and weekly incident summary.
3. Create a software that files incident reports.





METHODOLOGY

This project adopts the Agile methodology, which centers around incremental and iterative steps toward completion. This approach allows flexibility by allowing team members the opportunity to respond to issues as they arise, and collaboration by getting constant feedback from the clients.





PROJECT SCOPE

The scope of this project is to develop a software system that is an Incident Management System for the TPLEX Traffic Safety Management and Security Department. This system will be designed to maximize the user's productivity by providing a tool that automates the total numbers of incidents based on classification and categorization of incidents and violations in which will only require less effort for the user to interact with the system and to achieve their desired outcomes. By maximizing the user's work efficiency and production, the system will meet the user's needs while remaining easy to understand and use. Furthermore, the system provides user authentication and access control for security matters.



A modern, multi-story building with a mix of brick, concrete, and colorful panels. The building features large windows, balconies, and a prominent entrance area with a blue and yellow canopy. The text "PURPOSE AND INTENDED AUDIENCE" is overlaid in the center.

PURPOSE AND INTENDED AUDIENCE

The said project is only intended to be used within the TPLEX-TSMSD and no other outside stakeholders are involved. It will collect classified data that may be stored, analyzed and be used in developing the project and assure the confidentiality of collected data.

The software system will provide the following system specifications;

- User authentication and access control
- Incident classification and categorization based on the data
- Calculates total incidents daily and weekly
- Provides total percentage of incidents and;
- Database to store and manage the data

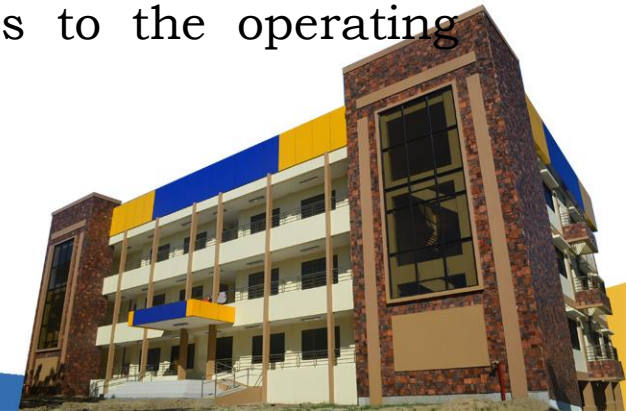




FEATURES OF THE SYSTEM

The following are the main features that are included in the Incident Management System of TSMSD.

- User account: The system allows the user to create their accounts in the system and provide features of updating and viewing data.
- Log in: The procedure used to get access to the operating system or application.
- Create New Report: To display and store a document that presents relevant information in an organized and understandable format.
- Manage Incident Detail: A process of identifying and analyzing the incident that has occurred.
- Manage Incident Type: A documentation where you can store the type of incident that occurs and the relevant cause.
- View Summary of Incident Report: It provides an overview of the number of reported incidents in each period (Daily and Weekly).
- Log out: The procedure used to terminate access to the operating system or application.



The completed management system will provide the following functionalities to the client or user and will include the ability to:

- Manage (add, and update) daily and weekly accidents and violations.
- Manage and view the daily and weekly summary of the incident report.
- Secure the data inputted in the system (data can not be simply deleted).
- Perform all the functions listed under the employee (legal, maintenance, and clerk) roles.

In addition, specific functionality for maintenance personnel will include the ability to:

- Generate vehicle history reports.



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OPERATING ENVIRONMENT

This is an application base system and hence will require the operating environment for the client and server GUI. The operating environment for the Incident Management System are the following:

- distributed database
- client/server system
- Operating system: Windows.
- database: SQL database
- platform: NetBeans/ Java



A modern multi-story building with a brick and yellow facade, featuring a large glass window and a blue and yellow awning. The building has multiple levels with balconies and a prominent entrance area with a blue and yellow awning. The text "SYSTEM DEPENDENCIES" is overlaid in the center of the image.

SYSTEM DEPENDENCIES

Expect that the product needs the following third-party product.

- Database framework to develop and release the product.
- MySQL Database Framework used to connect the application in the database of the system.
- Xampp as a Database server.





NON-FUNCTIONAL REQUIREMENTS

Security

Authentication: The system requires a secure authentication mechanism, where the user will provide a password to gain access.

Data Security: It ensures the security of sensitive data by utilizing an integrated MySQL database with robust input validation and parameter handling to prevent unauthorized access and ensure data confidentiality.



Compatibility

Operating System: The Incident Management System application is compatible with various desktop operating systems, including but not limited to Windows, Linux, and macOS, ensuring broad compatibility for users regardless of their preferred platform.



Capacity

Database Integration: The application is integrated with a MySQL database that offers a scalable and robust infrastructure, capable of efficiently handling large volumes of data generated by the application, ensuring optimal performance as the application scales.

Reliability: It consistently and accurately records user input data and performs appropriate classification based on the information provided.

Availability: The application is available for use at any time and does not require an internet connection. Users can access information, make changes, and perform updates without being dependent on an internet connection.



Maintainability and Manageability

Troubleshooting and Fixes: The development team has the expertise to promptly address any issues that may arise with the application, ensuring that troubleshooting and fixes can be efficiently performed within a short timeframe.

Regular Updates: The development team conducts regular maintenance checks and updates to ensure the application functions as intended and remains compatible with the latest web technologies.



Scalability

Accessibility: It is designed to be accessible and usable across multiple desktop devices simultaneously, allowing users to access and utilize the system concurrently.

Usability

User-Friendly Interface: The application provides a simple and intuitive user interface, enabling users to easily navigate the system and perform desired actions. It ensures usability across multiple desktop devices, enhancing accessibility for all users.





USER INTERFACES



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SOFTWARE INTERFACES





COMMUNICATION INTERFACES

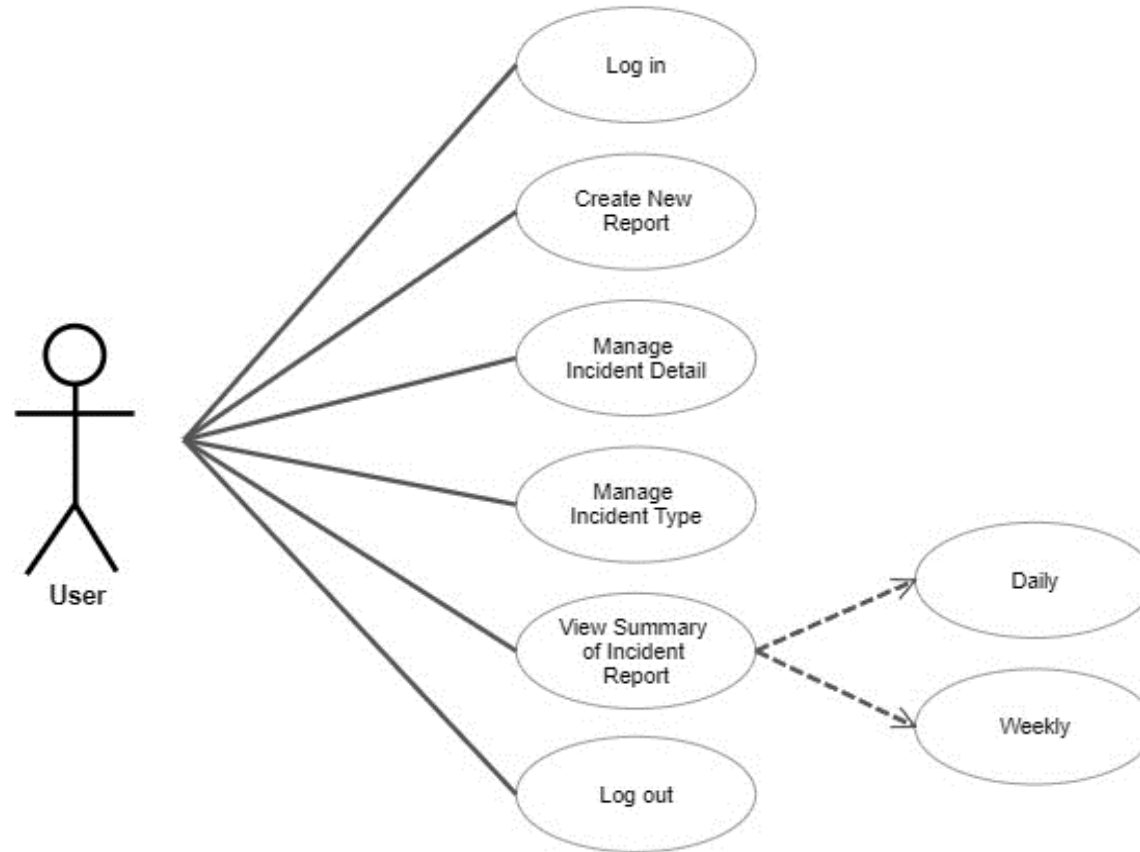
The Java program operates as the server while connecting to a MySQL database. As the server, the MySQL server serves as the client. Application in Java uses TCP/IP to connect to the MySQL server over a network and exchange data.

The JDBC driver, such as the MySQL Connector/J driver, manages the communication data and mechanisms to establish the TCP/IP connection between the Java program and the MySQL server. To connect to the server over TCP/IP, the driver uses the MySQL database URL, which includes the host address and port number.



USE CASE DIAGRAM

A photograph of a modern, multi-story building with a mix of brick and concrete. The building has several balconies with metal railings and large windows. The text "USE CASE DIAGRAM" is overlaid in the center of the image, underlined. The background is a clear blue sky.





UML DIAGRAM



A photograph of a modern, multi-story building with a mix of brick, concrete, and colorful panels. The building has a large window and a balcony. The word "DOCUMENTATION" is overlaid in the center.

DOCUMENTATION



