DESIGN AND IMPLEMENTATION OF AN ONLINE DISASTER REPORT MANAGEMENT SYSTEM (CASE STUDY, MUBI)

BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF NATIONAL DIPLOMA (ND) IN COMPUTER SCIENCE.

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DECLARATION

I hereby declare that the work in this project titled **"Design and Implementation of an Online Disaster Report Management System (Case Study, Mubi)"** was performed by me under the supervision of Mallam Gambo Salihu. The information derived from literatures has been duly acknowledged in the text and a list of references provided. The work embodied in this project is original and had not been submitted in part or in full for any other diploma or certificate of this or any other institution.

CALEB ZIRA _____ _____

(ST/CS/ND/21/126) Signature Date

CERTIFICATION

This project titled **"Design and Implementation of an Online Disaster Report Management System (Case Study, Mubi)"** meets the regulations governing the award of National Diploma (ND) in Computer Science, Federal Polytechnic Mubi, Adamawa State

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(External Examiner) **Sign/Date**

DEDICATION

This project is dedicated to my beloved parents for their advice, encouragement and financial support towards my academic pursuit.

ACKNOWLEDGEMENTS

I want to acknowledge Almighty God for his infinite mercy and protection throughout my academic activities. And for the understanding in achieving our academic success.

I also recognize my Supervisor Mallam Gambo Salihu, who took time, despite her busy schedule to directed and guided me throughout this research work.

I also acknowledge the Head of Department Computer Science Mr. Mustapha Kassim for his moral encouragement throughout my period of study. I also acknowledge all Staff of Computer Science Department for their support and encouragement and the knowledge they've impacted on me throughout our studies.

I also want to appreciate our parents for their love and care and for giving me the opportunity to be trained and achieve our dreams.

Finally, I appreciate the efforts of my Uncles and aunties, for their encouragement and support throughout the course of our study and also our friends and relatives, course mates and all well-wishers. I love you all, may the Almighty God bless you abundantly, Amen.

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ABSTRACT

The "Design and Implementation of an Online Disaster Report Management System (Case Study, Mubi)" represents a pivotal milestone in the field of disaster response and management. This innovative system has been meticulously crafted to address the critical challenges posed by disasters, offering enhanced efficiency, coordination, and timely response to mitigate their impact. The system provides a comprehensive online platform that empowers disaster response teams, local authorities, and citizens to report and manage disaster incidents swiftly. With real-time data collection, mapping, and communication features, the system fosters improved disaster preparedness and response strategies. This abstract serves as a window into the profound impact of the "Online Disaster Report Management System," highlighting its transformative potential in enhancing disaster resilience, optimizing resource allocation, and ultimately safeguarding lives and property in the region of Mubi and beyond.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Disasters, both natural and man-made, have devastating impacts on communities, infrastructure, and economies. Prompt and efficient disaster management is crucial to mitigate the consequences and aid in the recovery process. Timely and accurate information is essential for decision-makers to respond effectively during a disaster. Traditional disaster reporting systems have often proven inadequate in providing real-time information, leading to delays in response and relief efforts. The city of Mubi, located in Adamawa State, Nigeria, has experienced its share of disasters over the years. Floods, droughts, and communal conflicts have caused significant damage to property and loss of lives. However, the existing disaster reporting mechanisms in the region have faced several challenges, such as limited accessibility, lack of real-time updates, and inefficiency in coordinating response efforts (Khumalo, 2020).

Disasters are increasing in frequency and intensity worldwide, posing significant challenges to communities and governments in terms of disaster preparedness, response, and recovery. Nigeria, like many other countries, has experienced its fair share of disasters, ranging from floods and droughts to communal conflicts and industrial accidents. The region of Mubi, situated in Adamawa State, has been particularly susceptible to such calamities. In recent years, Mubi has witnessed several devastating events. For instance, in 2014, the city was attacked by Boko Haram insurgents, resulting in a tragic loss of lives and destruction of property (The Guardian Nigeria, 2014). Additionally, in 2018, severe flooding wreaked havoc in Adamawa State, displacing thousands of residents and causing extensive damage (Al Jazeera, 2018).

Traditional disaster reporting mechanisms in Mubi and surrounding areas have often been inadequate to handle the increasing frequency and intensity of disasters. Manual reporting processes and limited accessibility of information have led to delays in response efforts, hindering effective disaster management. Furthermore, the lack of real-time updates and the absence of a centralized platform for data collection and analysis have impeded decision-making and resource allocation during emergencies. The evolution of technology, particularly the widespread use of the internet and mobile devices, presents a unique opportunity to address these challenges. Online Disaster Report Management Systems (ODRMS) have emerged as effective tools to streamline disaster reporting, facilitate communication among stakeholders, and enhance coordination in disaster response (Delen, 2021).

Several successful implementations of ODRMS have been observed in various parts of the world. For example, the Federal Emergency Management Agency (FEMA) operates the Integrated Public Alert & Warning System (IPAWS), which enables real-time emergency alerts and disaster information dissemination to the public (FEMA, n.d.). However, there is currently no comprehensive ODRMS in place for Mubi, Adamawa State. This project aims to bridge that gap by designing and implementing an Online Disaster Report Management System tailored to the specific needs of the region (FEMA, 2017).

The proposed ODRMS will empower citizens to report disasters and incidents in real-time, enabling prompt responses from emergency responders and local authorities. The system will store the data in a centralized database, ensuring data integrity and security. Through data analysis and visualization tools, decision-makers will gain valuable insights into the disaster situation, facilitating better resource allocation and planning (FEMA, 2017).

1.2 Problem Statement

Inadequate Disaster Reporting Mechanisms: The current disaster reporting mechanisms in Mubi, Adamawa State, are often manual, fragmented, and lack real-time capabilities. This leads to delays in receiving critical information during disasters, hindering prompt and effective response efforts.

Limited Accessibility of Information: The existing disaster reporting systems may not be easily accessible to all citizens, especially those in remote areas or with limited internet connectivity. This hampers the inclusivity and comprehensiveness of disaster data collection.

Inadequate Integration with Existing Systems: The current disaster reporting mechanisms may not be adequately integrated with other disaster management systems, such as early warning systems or emergency response services. This lack of integration limits the effectiveness and efficiency of the overall disaster management ecosystem.

Limited Citizen Participation in Disaster Management: Citizens may not have a direct channel to report disasters and incidents, resulting in a passive role in disaster management. Empowering citizens to actively participate in reporting and response efforts is crucial for building community resilience.

Addressing these problem statements is essential for enhancing disaster management capabilities in Mubi, Adamawa State, and can serve as a stepping stone for building resilience and preparedness in the face of future disasters. The proposed Online Disaster Report

Management System aims to overcome these challenges by leveraging technology to streamline disaster reporting, improve coordination, and enable data-driven decision-making.

1.3 Aim and Objectives

The primary objectives of the project are as follows:

i. To design an Online Disaster Report Management System tailored to the specific needs of Mubi, Adamawa State, Nigeria.
ii. To develop a user-friendly web system that allows citizens to report disasters and incidents in real-time.
iii. To create a centralized database for storing and managing disaster reports, ensuring data integrity and security.
iv. To establish communication channels between citizens, emergency responders, and local authorities to improve coordination during disaster response.

1.4 Significance of the Study

The significance of the proposed study on the Design and Implementation of an Online Disaster Report Management System (ODRMS) for Mubi, Adamawa State, cannot be overstated. The successful development and deployment of the ODRMS will have several important implications and benefits for the region and its disaster management capabilities.

The ODRMS will enable real-time reporting of disasters and incidents by citizens, emergency responders, and local authorities. With timely and accurate information, emergency response teams can act swiftly to assess the situation, deploy resources, and coordinate relief efforts effectively. This will result in faster and more efficient disaster response, potentially saving lives and minimizing the impact on affected communities. In disaster scenarios, coordination among various stakeholders is critical. The ODRMS will establish effective communication channels between citizens, emergency responders, and local authorities. This enhanced coordination will lead to better collaboration in disaster response efforts, ensuring that resources are directed to the areas of greatest need promptly. Engaging citizens as active participants in disaster reporting and management empowers them to take ownership of their safety and well-being. Through the ODRMS, citizens will have a direct channel to report incidents, seek assistance, and stay informed about ongoing disaster response efforts. This empowerment fosters a sense of community resilience and enables communities to take proactive measures to mitigate disaster risks.

1.5 Scope of the Study

The scope of the study on the Design and Implementation of an Online Disaster Report Management System (ODRMS) for Mubi, Adamawa State, is comprehensive and encompasses various aspects related to the development and deployment of the system. The study's scope is essential to ensure a focused and effective approach to achieving the project's objectives. The study will begin with an in-depth requirement analysis phase. This phase involves conducting surveys, interviews, and focus group discussions with key stakeholders, such as citizens, emergency responders, and local authorities, to understand their specific disaster reporting needs and challenges. Based on the gathered requirements, the study will focus on the detailed design of the Online Disaster Report Management System. This includes developing a comprehensive plan for the system architecture, user interfaces, communication channels, and data storage mechanisms. The design phase will involve collaboration with experts in disaster management and software development to ensure the system's effectiveness and usability.

Establishing a secure and scalable database is crucial for the successful operation of the ODRMS. The study will include selecting an appropriate database management system and designing the database schema to ensure the efficient storage and management of disaster reports. Emphasis will be placed on data integrity, security, and accessibility.

1.6 Definition of Some Operational Terms

Disaster Management: Disaster management refers to a systematic and coordinated approach to preparing for, responding to, and recovering from disasters or emergency situations (UNDRR, 2017).

Disaster Preparedness: Disaster preparedness involves a series of proactive measures taken to anticipate, plan for, and mitigate the impact of disasters before they occur (FEMA, 2017).

Disaster: A disaster is a sudden or prolonged event that causes significant disruption, damage, and destruction to human lives, property, and the environment, often exceeding the affected community's capacity to cope and recover (Quarantelli, 2018).

Management: In the context of disaster management, it refers to the systematic and effective handling of resources and actions to respond to and recover from disasters (Robbins *et al.*, 2017).

Online Disaster Report Management System (ODRMS): An Online Disaster Report Management System (ODRMS) is a web-based or mobile application that facilitates real-time reporting of disasters, incidents, and emergencies (Amarnath & Srikanth, 2018).

Online: In the context of the proposed Online Disaster Report Management System, "online" indicates that the system operates via the internet and can be accessed and used through web browsers or mobile applications (Kizza, 2020).

Report: In the context of disaster management, reports can include incident descriptions, damage assessments, and recommendations for response and recovery actions (Day & Gastel, 2021).

Resilience: Resilience refers to the ability of individuals, communities, and systems to adapt, recover, and bounce back from the adverse effects of disasters or shocks (Cutter, 2018).

System: In disaster management, a system may refer to a structured approach or framework for organizing and coordinating disaster response activities (Sterman, 2020).

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents a comprehensive literature review on disaster management, online disaster reporting systems, and related technologies. The review aims to explore existing research, practices, and technologies relevant to the design and implementation of an Online Disaster Report Management System (ODRMS) for Mubi, Adamawa State. The chapter provides a theoretical framework and contextual understanding for the proposed project.

2.2 Disaster Management

Disaster management involves a range of activities and strategies aimed at minimizing the impact of disasters and facilitating effective response and recovery. Various scholars have highlighted the importance of disaster preparedness, early warning systems, and community resilience in disaster management (Cutter et al., 2008; UNDRR, 2017). Cutter et al. (2008) emphasize the significance of place-based models for understanding community resilience to natural disasters. UNDRR (2017) provides guidelines for national disaster risk assessment, emphasizing the need for systematic risk assessment as a foundation for disaster management strategies.

Risk assessment is a fundamental step in disaster management, aiming to identify and evaluate potential hazards and vulnerabilities. Geographic Information Systems (GIS) play a crucial role in risk assessment by providing spatial data analysis and mapping capabilities. Recent studies have explored the integration of remote sensing data and GIS for risk mapping (Chhetri et al., 2020) and the use of machine learning algorithms for flood risk assessment (Asadi et al., 2022). These advances in risk assessment technologies facilitate better-informed decision-making in disaster preparedness and response.

Disaster preparedness involves developing plans, strategies, and capacity-building measures to enhance a community's ability to respond to disasters effectively. Recent research emphasizes the importance of community-based approaches and local resilience in disaster preparedness. For example, a study by Ahmadianfar et al. (2021) explored the role of social capital in building community resilience and preparedness for flood disasters. Another study by Del-Castillo-Ávila et al. (2020) investigated the effectiveness of disaster preparedness education programs in increasing household resilience to earthquakes.

The effectiveness of disaster response efforts depends on efficient emergency management systems. Recent studies have explored the integration of emerging technologies, such as Artificial Intelligence (AI) and Internet of Things (IoT), in disaster response. A study by Khatun et al. (2021) proposed an AI-driven disaster response framework that utilizes machine learning for real-time damage assessment and resource allocation. Furthermore, the utilization of IoT-based sensors and data analytics has been investigated to enhance situational awareness and improve decision-making during disaster response (Mukherjee *et al*., 2022).

Post-disaster recovery is a critical phase aimed at restoring affected areas and building long-term resilience. Recent research has focused on sustainable recovery strategies, including the use of green infrastructure for flood mitigation (Yong *et al.,* 2021) and community-driven recovery planning for earthquake-prone regions (Bachri *et al.,* 2020). These studies highlight the importance of incorporating environmental and social considerations in the recovery process to promote sustainable and resilient communities.

2.3 Online Disaster Reporting Systems

Online Disaster Reporting Systems (ODRS) have emerged as valuable tools for enabling real-time reporting of disasters, incidents, and emergencies. These systems leverage the power of the internet and mobile technologies to facilitate quick and efficient communication between citizens, emergency responders, and authorities. Online disaster reporting systems have emerged as powerful tools for enabling real-time reporting of disasters and incidents. These systems leverage the internet and mobile technologies to facilitate timely communication and data sharing among stakeholders. Amarnath and Srikanth (2018), developed an online disaster reporting system for disaster management, highlighting the system's potential in enhancing response coordination and reducing reporting delays. They emphasize the importance of user-friendly interfaces and accessible platforms for effective implementation.

2.3.1 Citizen-Centric Disaster Reporting Systems

Recent studies have emphasized the importance of citizen-centric approaches in ODRS. Kottapalli *et al.* (2022), proposed a citizen-centric disaster reporting framework that incorporates social media data to enhance the reporting process. The study highlighted the potential of using social media platforms as channels for reporting real-time disaster information by citizens.

2.3.2 Integration of Mobile Applications

The integration of mobile applications in ODRS has gained traction due to their widespread use and accessibility. Recent research has explored the development of mobile-based disaster reporting applications that allow citizens to report incidents and share multimedia information during emergencies (Yan *et al*., 2022). Such mobile applications have the potential to significantly increase citizen engagement in disaster reporting.

2.3.3 Real-Time Data Visualization

One of the key strengths of ODRS is the ability to provide real-time data visualization. By visualizing disaster reports on interactive maps, decision-makers can quickly assess the situation, identify hotspots, and allocate resources efficiently. Voigt *et al.* (2021), demonstrated the integration of social media data and Geographic Information Systems (GIS) for real-time disaster mapping and situational awareness.

While ODRS offer numerous benefits, they also face certain challenges. Karunasena et al. (2021) discussed the challenges and opportunities in implementing online disaster reporting systems. They highlighted issues related to data fragmentation, data quality, system accessibility, and data privacy and security concerns. Addressing these challenges is crucial to ensuring the effective operation and adoption of ODRS.

2.3.4 Integration with Early Warning Systems

Integrating ODRS with existing early warning systems can enhance the efficiency and effectiveness of disaster response. A study by Ren et al. (2020) proposed an integrated early warning and emergency response system that combines satellite remote sensing, GIS, and ODRS to support flood disaster management. The integrated system provides a comprehensive solution for real-time monitoring and response.

2.4 Geographic Information Systems (GIS) in Disaster Management

Geographic Information Systems (GIS) play a vital role in disaster management by providing spatial data analysis and visualization. GIS technology allows decision-makers to map disaster-affected areas, assess damage, and allocate resources effectively. Voigt *et al.* (2021) discuss the integration of GIS and social media data for real-time disaster mapping and situational awareness. Their study demonstrates the potential of combining social media data with GIS for rapid response and crisis mapping.

2.4.1 Real-Time Disaster Mapping and Situational Awareness

Recent studies have highlighted the use of GIS in real-time disaster mapping and situational awareness. Voigt *et al.* (2021) analyzed and mapped disaster-related communication on social media during hurricanes Harvey and Irma. The study demonstrated the potential of combining social media data with GIS to monitor real-time disaster-related information and gain situational awareness during emergencies.

2.4.2 Flood Risk Assessment and Management

Floods are among the most common and devastating disasters worldwide. Recent research has explored the use of GIS in flood risk assessment and management. Chhetri *et al.* (2020) conducted a spatial mapping of disaster risks in Australia using GIS, providing valuable insights for flood risk assessment and mitigation strategies.

2.4.3 Integrating Remote Sensing Data for Disaster Management

The integration of remote sensing data with GIS has become increasingly popular for disaster management applications. Yang *et al.* (2021) proposed a remote sensing-based integrated early warning and emergency response system for flood disaster management. The integrated system combines satellite remote sensing, GIS, and early warning systems to provide real-time monitoring and response to flood events.

2.4.4 Vulnerability Mapping and Resilience Assessment

GIS is also employed for vulnerability mapping and resilience assessment, providing valuable insights into community preparedness and response capabilities. Nourbakhsh et al. (2022) developed a GIS-based vulnerability mapping approach to assess the resilience of communities to earthquakes. The study demonstrated how GIS can help identify vulnerable areas and inform resilience-building strategies.

2.4.5 Web-Based GIS for Disaster Management

Web-based GIS platforms have become prevalent in disaster management due to their accessibility and ease of use. Chen et al. (2021) developed a web-based GIS platform for flood disaster management, allowing users to access and analyze flood-related data in real-time. The platform provides decision-makers with a user-friendly tool to monitor and respond to flood events.

Data analysis and visualization tools are essential components of disaster management systems. These tools enable decision-makers to extract meaningful insights from the collected data, facilitating evidence-based decision-making. Wickham (2020), discusses a layered grammar of graphics, which provides a framework for constructing sophisticated data visualizations. The study emphasizes the importance of effective data visualization in communicating complex information. Mobile applications have become increasingly prevalent in disaster reporting and management. The use of mobile technology allows citizens to report incidents in real-time, even in areas with limited internet connectivity. Yan *et al.* (2022) developed a mobile-based disaster reporting system using crowdsourcing, which empowers citizens to report incidents and share multimedia information during emergencies. Their study demonstrates the potential of mobile applications in enhancing citizen engagement in disaster reporting.

2.5 Information Management System

An information management system (IMS) is a comprehensive framework that encompasses the processes, technologies, and strategies used to collect, organize, store, retrieve, and analyze information within an organization. An information management system refers to the integrated set of processes, tools, and technologies that enable organizations to effectively manage their information assets. It includes various components such as data collection, storage, retrieval, analysis, and dissemination (Khumalo, 2020).

2.5.1 Importance of Information Management Systems

i. Decision Making and Strategic Planning IMS enables organizations to gather and analyze relevant data, providing valuable insights that support informed decision-making and strategic planning (Delen, 2021). By providing accurate and up-to-date information, IMS enhances the ability of managers to make informed decisions in a timely manner.

ii. Improved Efficiency and Productivity Efficient information management improves operational efficiency and productivity. By centralizing information, eliminating duplication, and automating processes, IMS streamlines workflows, reduces manual effort, and enhances overall efficiency (Wang, Liu, & Lee, 2021).

iii. Enhanced Collaboration and Knowledge Sharing IMS facilitates effective collaboration and knowledge sharing within organizations. It provides a centralized platform for employees to access and share information, fostering collaboration, and enabling knowledge transfer (Al-Khouri & Abu-Jarour, 2020).

2.6 Database Management System

Database Management Systems (DBMS) are essential tools for storing, organizing, managing, and retrieving data efficiently. DBMS provide a structured approach to store and retrieve data, ensuring data integrity, security, and scalability for organizations. Recent studies have highlighted the significance of DBMS in various domains. A research article by Ramakrishnan and Gehrke (2020), emphasized that DBMS are crucial for managing the increasing volumes of data generated in today's digital world. The study highlighted that DBMS enable organizations to handle diverse data types, ensure data consistency, and support complex data queries. One of the key functions of DBMS is data storage and organization. DBMS provide a structured framework for storing data in tables, defining relationships between tables, and enforcing data integrity through constraints. These systems often employ relational models, such as the widely-used SQL (Structured Query Language), to manage data in a tabular format. A study by Elmasri and Navathe (2019), emphasized that DBMS enable efficient data storage, normalization, and indexing to optimize data retrieval performance.

Moreover, DBMS offer tools for data retrieval and manipulation. These systems allow users to query the database using SQL or other query languages to retrieve specific data based on specified criteria. DBMS also support complex operations such as joining multiple tables, filtering data, and aggregating results. A research article by Rizvi et al. (2021) highlighted the role of DBMS in enabling efficient and accurate data retrieval, facilitating decision-making and analysis. DBMS also provide mechanisms for data security and access control. These systems enable organizations to define user roles and permissions, ensuring that only authorized users can access and modify the data. DBMS also offer features such as data encryption, backup, and recovery to protect against data breaches and system failures. A study by Motahari-Nezhad et al. (2021) emphasized the importance of DBMS in ensuring data privacy, integrity, and availability, particularly in the context of sensitive and regulated data.

The advent of advanced technologies has further enhanced the capabilities of DBMS. Distributed DBMS enable data storage and processing across multiple servers, providing scalability, fault tolerance, and high availability. NoSQL (Not Only SQL) DBMS have emerged as alternatives to traditional relational DBMS, offering flexible data models and scalability for handling large volumes of unstructured and semi-structured data. A research article by Ghazal *et al.* (2020), discussed the benefits and challenges of NoSQL DBMS in big data environments.

2.7 Summary of Literature Review

The literature review provides a comprehensive overview of key concepts and recent research related to disaster management, online disaster reporting systems, Geographic Information Systems (GIS), and other relevant technologies. The review highlights the significance of these topics and their implications for the design and implementation of an Online Disaster Report Management System (ODRMS) for Mubi, Adamawa State. In the area of disaster management, the review emphasizes the importance of risk assessment, community resilience, and data-driven decision-making. Studies have demonstrated the effectiveness of GIS in real-time disaster mapping, flood risk assessment, vulnerability mapping, and integrating remote sensing data for monitoring and response.

Online Disaster Reporting Systems (ODRS) have emerged as powerful tools for enabling real-time disaster reporting and communication between citizens, emergency responders, and authorities. Recent research has explored citizen-centric approaches, the integration of mobile applications, and real-time data visualization in ODRS. While ODRS offer numerous benefits, they also face challenges related to data fragmentation, data quality, and system accessibility. GIS technology plays a crucial role in disaster management by providing spatial data analysis, visualization, and decision support capabilities. Studies have highlighted the use of GIS in real-time disaster mapping, flood risk assessment, remote sensing integration, and web-based GIS platforms. These advancements offer valuable insights for effective disaster management and response efforts.

Overall, the literature review provides a strong theoretical foundation and contextual understanding for the proposed ODRMS for Mubi, Adamawa State. By incorporating recent research and best practices in disaster reporting, GIS, and technology integration, the ODRMS can be better equipped to address the region's specific disaster management needs effectively. The findings from the literature review will serve as a guide for the development and implementation of the ODRMS, contributing to enhanced disaster preparedness, response coordination, and community resilience in Mubi and beyond.

CHAPTER THREE
SYSTEM ANALYSIS AND DESIGN

3.1 Introduction

This chapter contains the system design and analysis of the proposed system, the disadvantages of the existing system, the advantages of the proposed system over the existing system, the requirements (Hardware and Software), the design and the system architecture.

3.2 Disadvantages of the Existing system

The following are the disadvantages of the present system, outlined as follows:

i. In the present system all work is done on papers manually, which will result in time consuming.
ii. The records of disastrous events cannot be viewed easily.
iii. More number of workers are needed in dealing with the student information management.
iv. Lacks secure or restricted access to information to only authorised users.

3.3 Advantages of the proposed system

The following are the advantages of the proposed system.

i. The system provides a faster means of information retrieval and reduces time and cost.
ii. Allows editing of information easily.
iii. Save time compared to the manual process
iv. One system operator will be enough for deploying and maintaining data thus reduces the number of workers in the office staff.

3.4 Proposed Method

The proposed system is designed using HTML, PHP and MySQL as the database management programming languages for keeping records of the products and transactions in the school. The design also uses the Responsive type of web design where the content of the website fits exactly and the content is not loss when viewed on different device screen sizes and types. Also, the website is compatible when viewed on different browsers from device to device.

3.5 Methods of Data Collection

There are two main sources of data collection in carrying out this study were Primary source and Secondary source.

3.6 System Design

Systems design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development.

3.6.1 UML Algorithm

Use Case Diagram

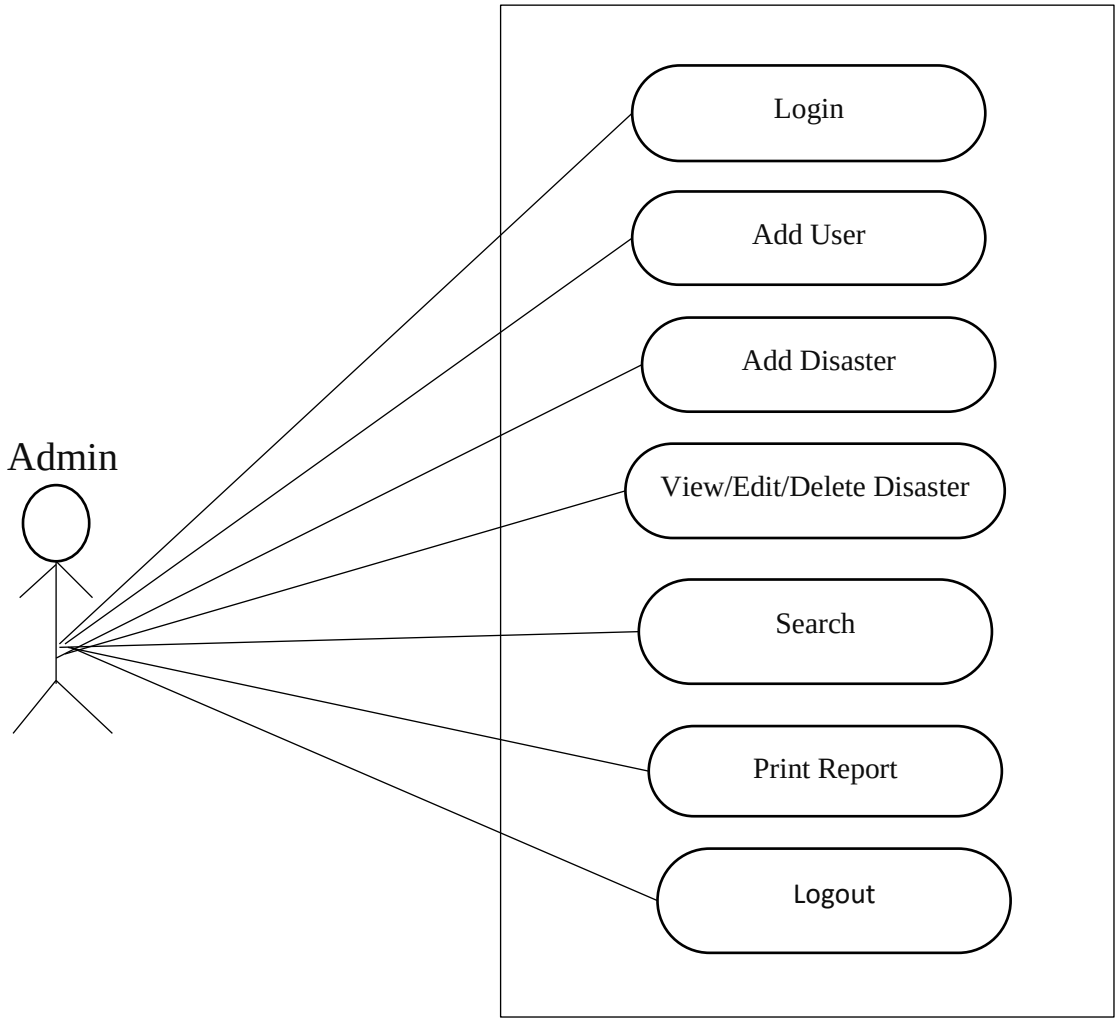

Figure 3.1: Use Case Diagram

3.6.2 System Architecture

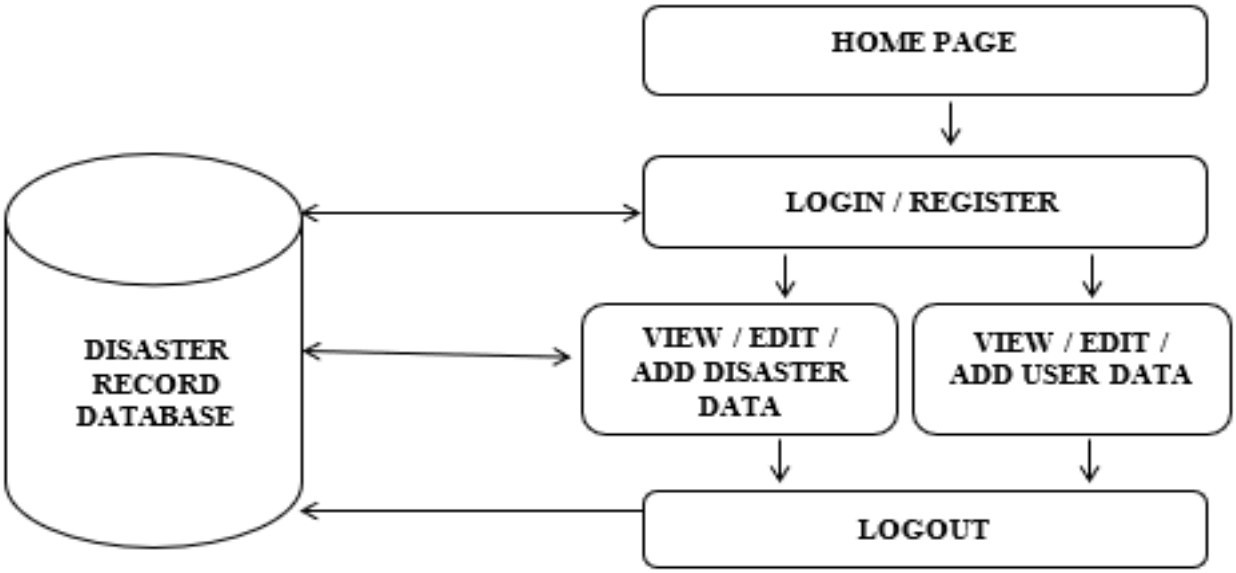

Figure 3.2: System Architecture

3.6.3 Database Tables/Queries Structures

Table 3.1: Admin

Name	Type	Attributes	Default
id	int(11)		*None*
username	varchar(500)		*None*
email	varchar(30)		*None*
password	varchar(100)		*None*
fname	varchar(50)		*None*
lname	varchar(500)		*None*
gender	varchar(500)		*None*
dob	text		*None*
contact	text		*None*
address	varchar(500)		*None*
image	varchar(2000)		*None*
created_on	date		*None*
group_id	int(11)		*None*

Table 3.2: Disaster Records

Name	Type	Null	Default	Extra
id	int(50)	No	*None*	AUTO_INCREMENT
Type	varchar(500)	Yes	*None*	
Description	varchar(500)	Yes	*None*	
Casualties	int(50)	Yes	*None*	
Injuries	int(50)	Yes	*None*	
Death	int(50)	Yes	*None*	
Damages	int(50)	Yes	*None*	
City	varchar(50)	Yes	*None*	
LGA	varchar(50)	Yes	*None*	
State	varchar(50)	Yes	*None*	
Country	varchar(50)	Yes	*None*	
Date	timestamp	Yes	*None*	

3.6.4 Database Entity Relationship Diagram

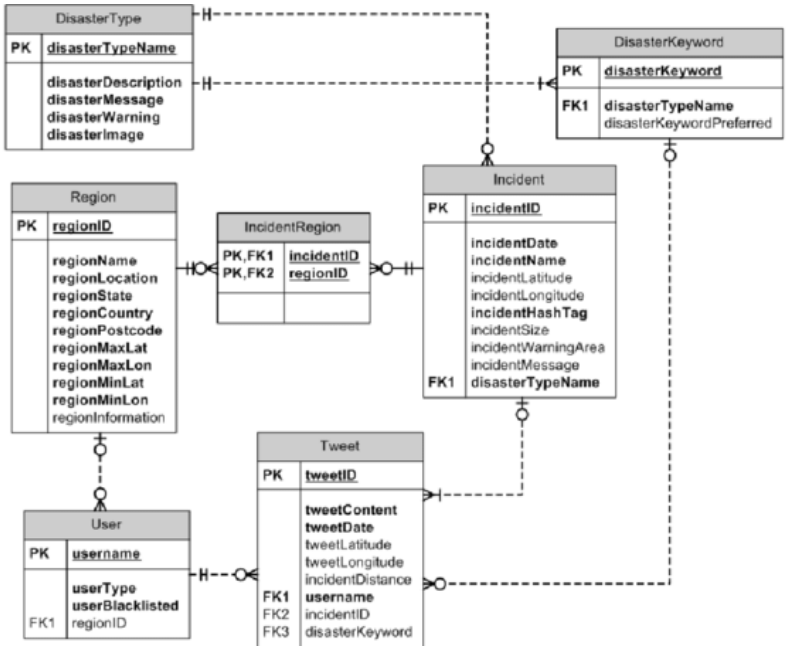

Figure 3.3: Database Entity Relationship Diagram

3.6.5 Input and Output Design

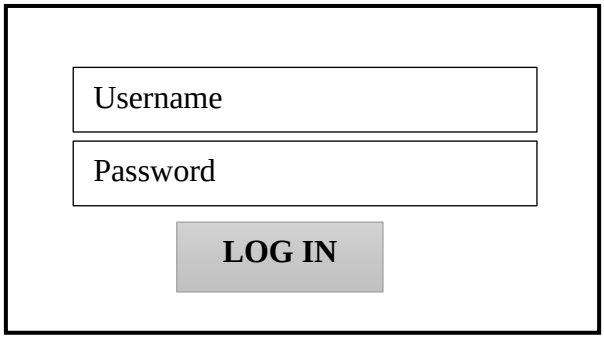

Figure 3.4: Login Input

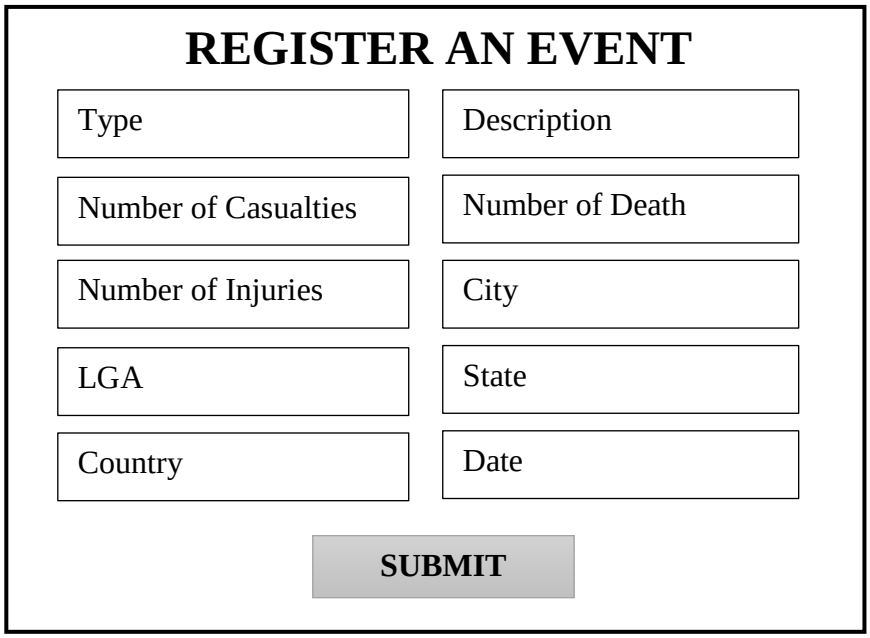

Figure 3.5: Register an Event

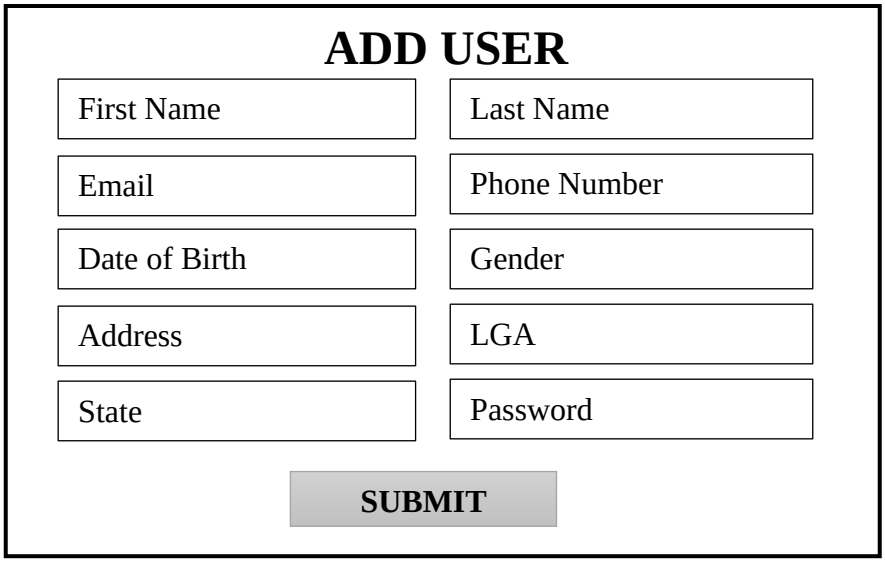

Figure 3.6: Add User

3.7 System Requirements Specification

3.7.1 Hardware Requirements

The software designed needed the following hardware for an effective operation of the newly designed system.

i. A system running on intel, P(R) duo core with higher processor
ii. The-Random Access Memory (RAM) should be at least 512mb.
iii. Enhanced keyboard.
iv. At least 20-GB hard disk.
v. V.G.A or a colored monitor.

3.7.2 Software Requirements

The software requirements includes:

i. A window 7 or higher version of operating system.
ii. XAMP or WAMP for Database
iii. PHP

3.7.3 Personnel Requirements

The system was design in such a way that it is user friendly in other to be understood and used by anyone with basic computer knowledge.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The new system is designed using PHP and MySQL programming language for easy records inserting and updating. This system will help in managing and easily retrieving of information from the system for management purposes. Online Disaster Report Management System.

4.2 Results

4.2.1 Welcome Interface

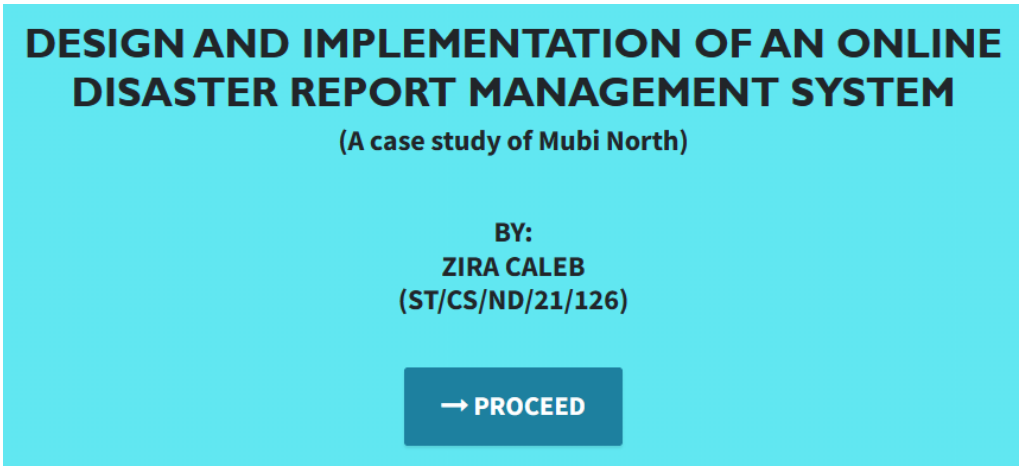

Figure 4.1: Welcome Interface

The above figure 4.1 shows the welcome page of the Online Disaster Report System, on the welcome page is the first page that displays the project topic.

4.2.2 Login Interface

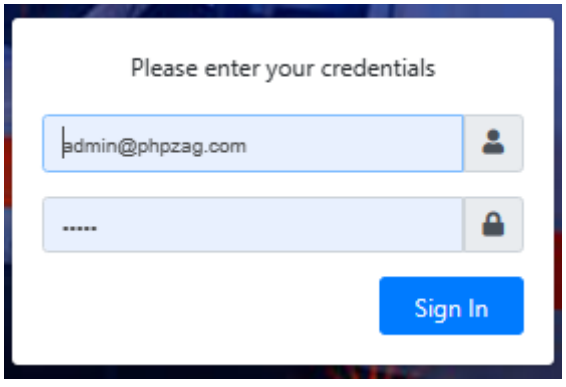

Figure 4.2: Login page interface

Figure 4.2 above shows the login interface which allows the admin to enter his login details to get access to the system.

4.2.3 Dashboard Interface

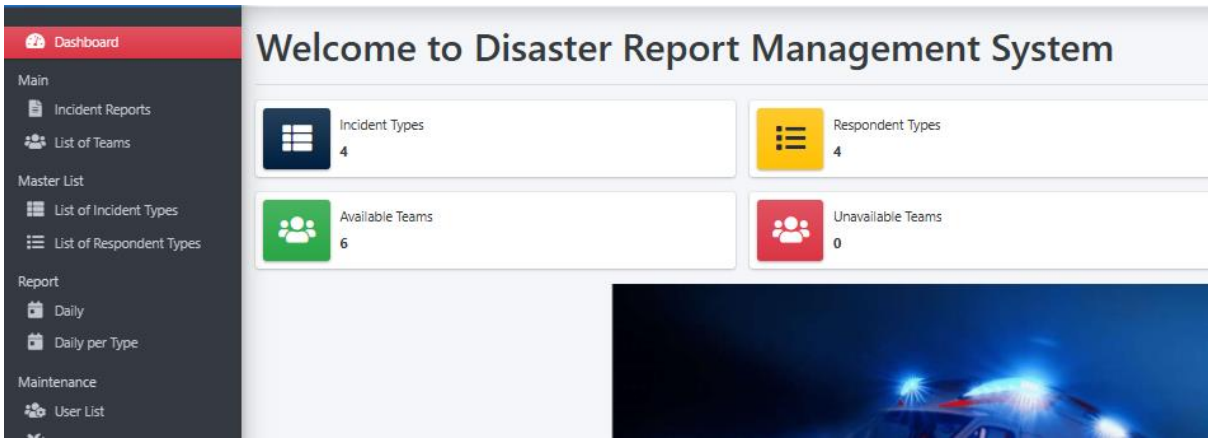

Figure 4.3: Dashboard Interface

Figure 4.3 above shows the dashboard interface of the admin showing the various tasks that can be performed on the system.

4.2.4 Add Report Interface

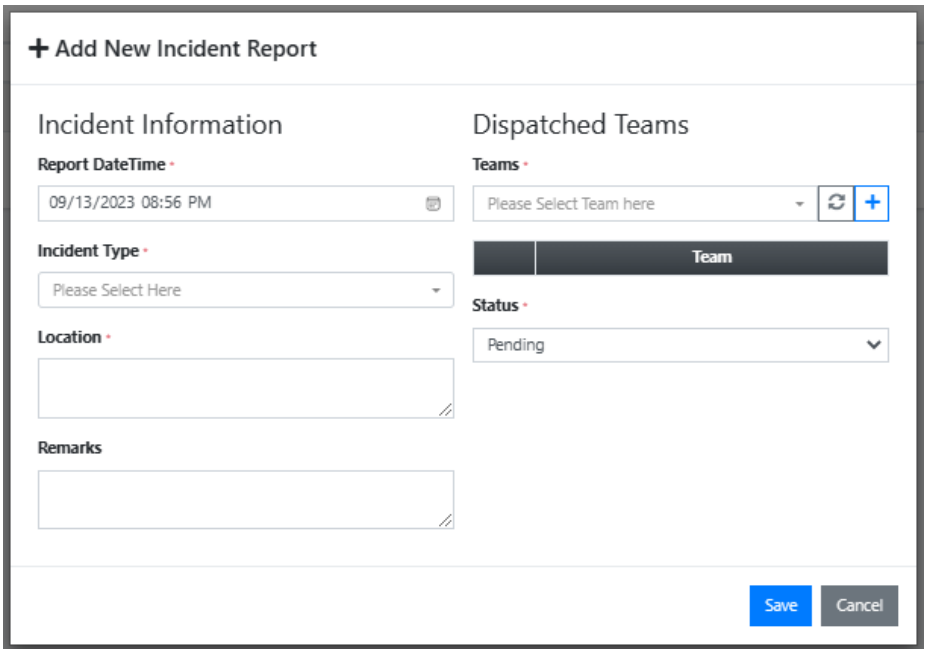

Figure 4.4: Add Report Interface

Figure 4.4 above shows the add report interface is used to report a new disaster incidence into the system.

4.2.5 Incidence List Interface

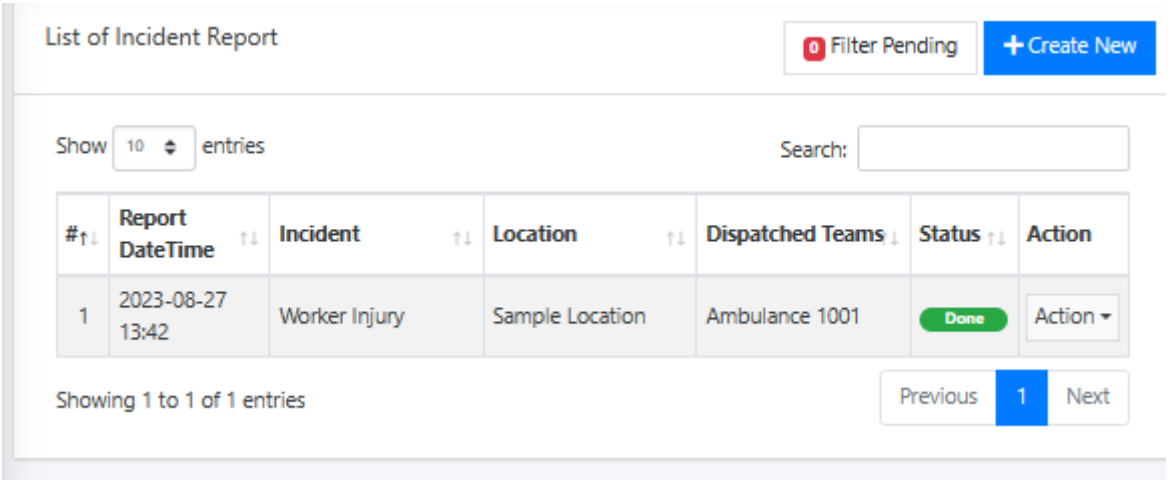

Figure 4.5: Incidence List Interface

Figure 4.5 above shows all the reported incidence in the system showing location, incidence team, and reported date and time.

4.2.6 Dispatch Team Interface

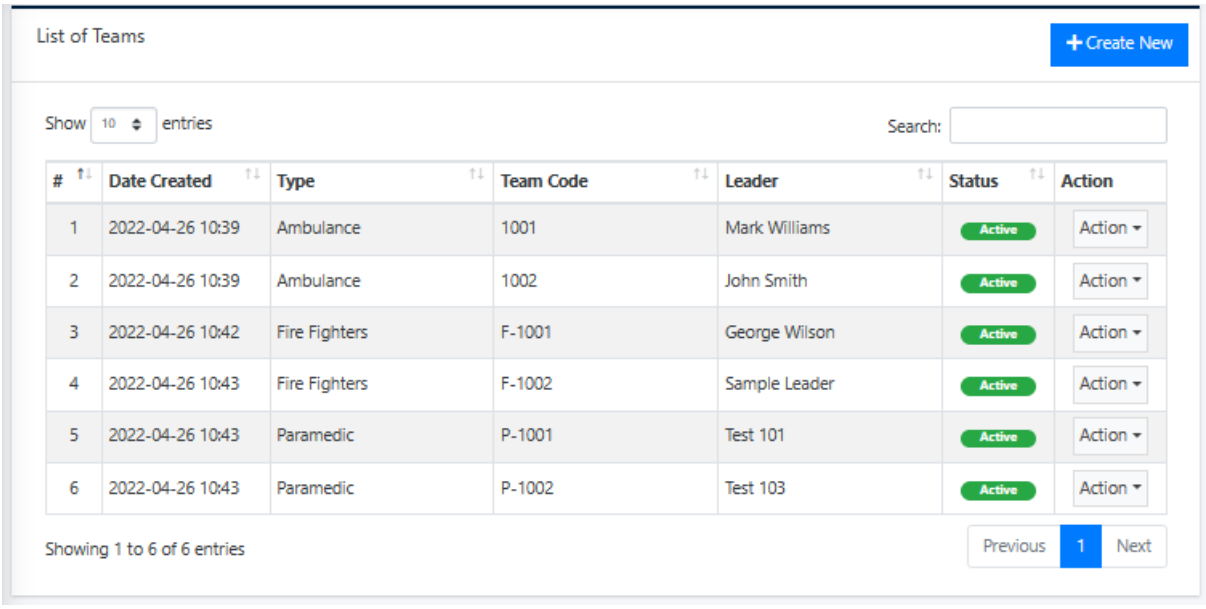

Figure 4.6: Dispatch Team Interface

Figure 4.6 is used to view all available teams and also add new dispatch teams into the system.

4.3 Discussion

4.2.1 Welcome Interface: The Welcome Interface is the initial point of interaction for users accessing the Online Disaster Report Management System. It typically includes a welcoming message and provides an overview of the system's capabilities. Users are presented with options to navigate further into the system, such as logging in or accessing general disaster preparedness information.

4.2.2 Login Interface: The Login Interface serves as the gateway for authorized users to access the system securely. It typically includes fields for entering usernames and passwords. Only authenticated users, such as disaster response teams and authorities, can access the system to report, manage, or respond to disaster incidents.

4.2.3 Dashboard Interface: The Dashboard Interface offers a centralized view of critical information and activities related to disaster management. It typically includes real-time data on ongoing incidents, resources available, and key performance indicators. This interface allows administrators and response teams to monitor and make informed decisions swiftly.

4.2.4 Add Report Interface: The Add Report Interface is a fundamental component of the system, enabling users to report and document disaster incidents. It typically includes fields for entering incident details, location, severity, and any related media (such as images or videos). This interface is crucial for the timely reporting and tracking of disaster events.

4.2.5 Incidence List Interface: The Incidence List Interface displays a comprehensive list of reported disaster incidents within the system. It typically includes incident identifiers, dates, locations, and statuses. This interface allows users to review and prioritize incidents for response and resource allocation.

4.2.6 Dispatch Team Interface: The Dispatch Team Interface is used to assign and coordinate response teams to specific disaster incidents. It typically includes options to select response teams, set priorities, and allocate resources. This interface ensures efficient deployment and coordination of response efforts.

Together, these interfaces form the core components of the Online Disaster Report Management System, designed to enhance disaster preparedness, response, and management within the region of Mubi. They provide a user-friendly platform for reporting, tracking, and responding to disaster incidents, ultimately contributing to the safety and well-being of the community.

4.4 User manual

The following are the necessary steps to take in order to use the system efficiently and effectively.

i. Load the url of the system https://localhost/disaster/ the welcome page will be displayed.

ii. Click on the **Proceed** button to proceed to the main system.

iii. If you created an account, provide your login details by entering your username and password.

iv. Depending on the login details provided you will be automatically directed to the dashboard.

v. The various task that you can perform on the portal will be displayed on the sidebar of the dashboard.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

In summary, the "Design and Implementation of an Online Disaster Report management system" represents a transformative solution for reporting disastrous incidence seeking to optimize their course scheduling and resource allocation processes. This system streamlines administrative tasks, enhances communication, and improves overall operational efficiency. By automating the complex task of disaster reporting incidence, it reduces errors and manual workload while ensuring optimal resource utilization. The successful implementation of this system offers a model for reporting disastrous incidence.

5.2 Conclusion

The design and implementation of an Online Disaster Report management system have yielded significant benefits for the department. This project demonstrates the tangible advantages of leveraging technology to address complex scheduling challenges within an academic context. By automating these processes, the system has improved operational efficiency, reduced conflicts, and enhanced communication between faculty members and students. It stands as a testament to the transformative power of technology-driven solutions in the optimization of educational operations.

5.3 Recommendations

Based on the successful implementation of this system, several recommendations can be made for its continued improvement and adoption:

i. User Training: Provide comprehensive training and support for administrators, faculty members, and students to maximize the system's benefits and adoption.

ii. Data Integration: Explore opportunities for integrating the system with other institutional systems, such as student information and learning management systems, for a more seamless and holistic educational experience.

iii. Enhanced Reporting: Develop advanced reporting and analytics features to provide administrators with insights into scheduling trends and resource allocation.

iv. Scalability: Ensure that the system is scalable to accommodate the evolving needs of the department as it grows and expands its course offerings.

5.4 Contribution to Knowledge

This project contributes to knowledge in several key areas:

Educational Technology: It showcases how technology can significantly improve administrative processes within academic institutions, leading to enhanced operational efficiency.

Resource Optimization: The system's automated allocation processes offer insights into optimal resource utilization, which can benefit similar academic departments.

Scheduling Efficiency: The project demonstrates how automation can reduce scheduling conflicts and streamline complex scheduling tasks in educational settings.

5.5 Area for Further Work

Future work in this area could include:

Machine Learning Integration: Exploring the integration of machine learning algorithms for more intelligent and adaptive scheduling based on historical data and trends.

Mobile Accessibility: Developing a mobile application version of the system to cater to the mobile preferences of users.

Data Security Enhancements: Continuously improving data security measures to protect sensitive information and maintain trust.

Optimization Algorithms: Investigating advanced optimization algorithms to further enhance resource allocation and scheduling efficiency.

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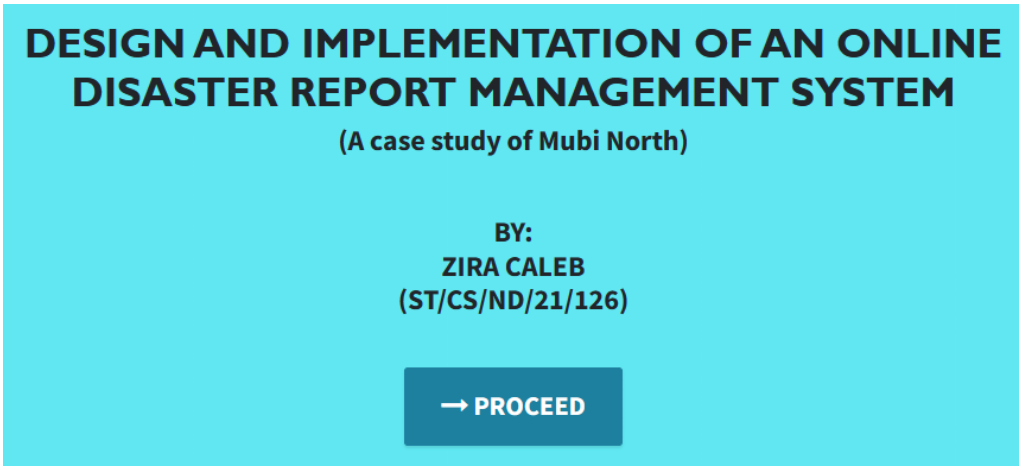
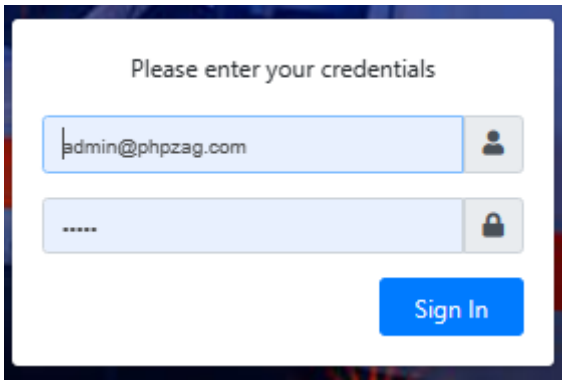
APPENDIX A

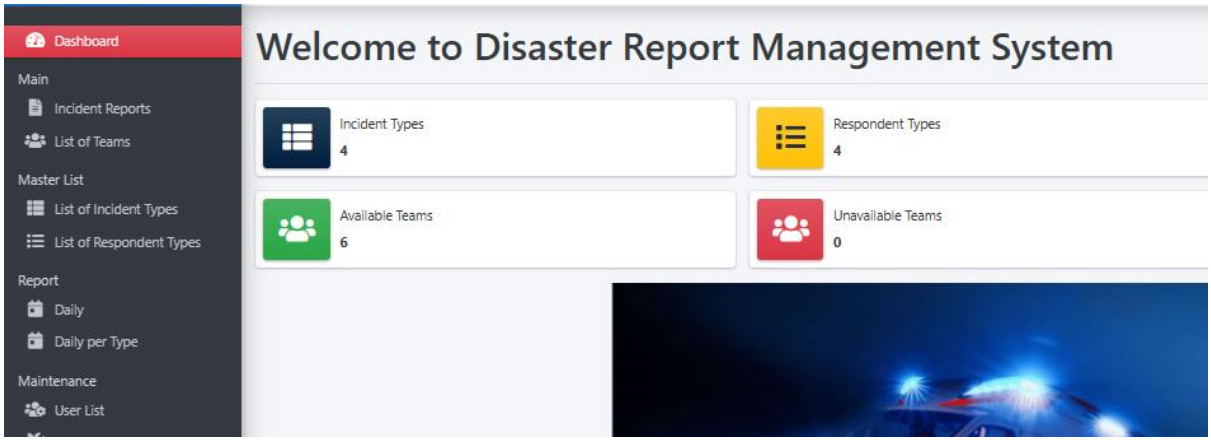
Welcome Interface



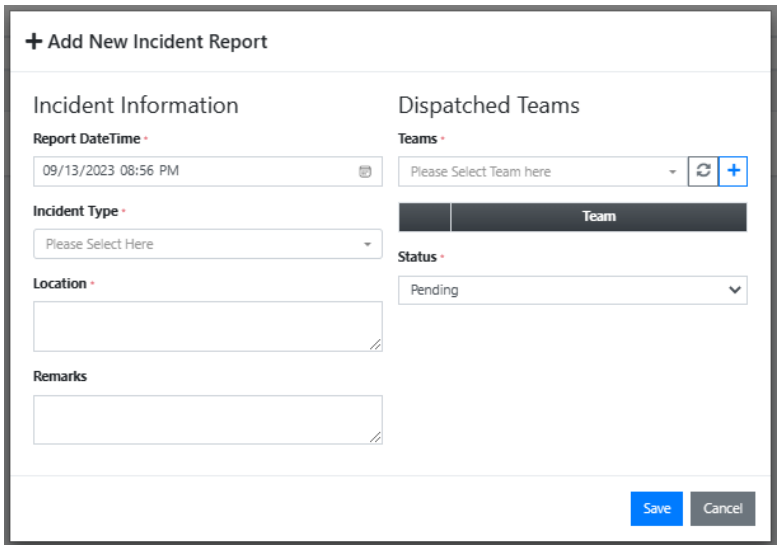
Login Interface



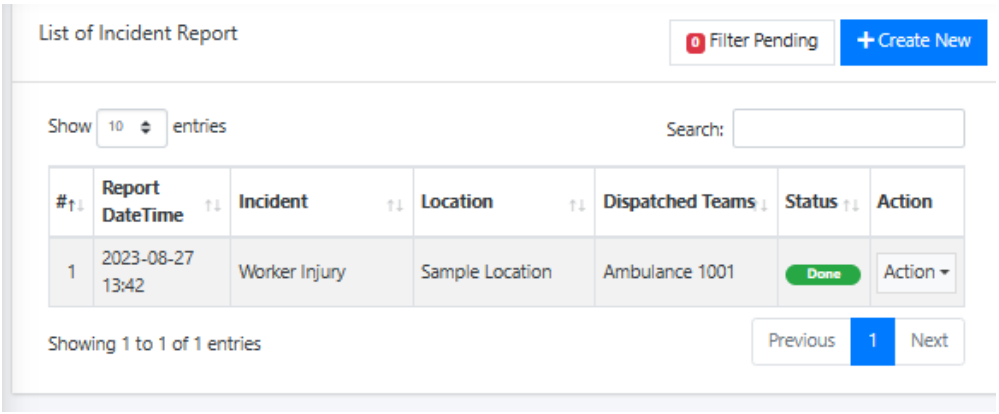
Dashboard Interface



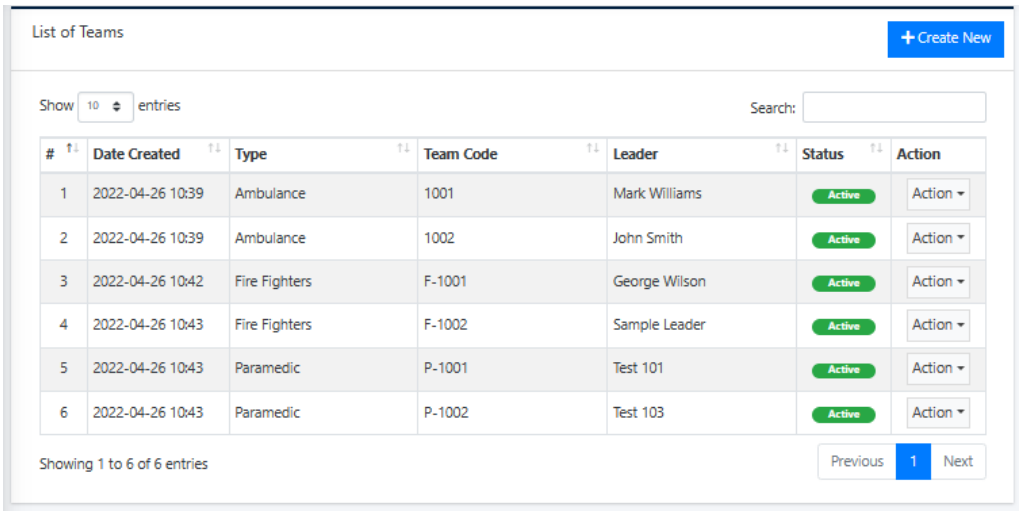
Add Report Interface



Incidence List Interface



Dispatch Team Interface



APPENDIX B

PROGRAM CODE

```
<!DOCTYPE html>
<html lang="en" class="" style="height: auto;">
<head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Disaster Report Management System</title>
    <link rel="icon"
href="http://localhost/disaster/rdms/uploads/logo.png?v=1650937184" />
    <!-- Google Font: Source Sans Pro -->
    <!-- <link rel="stylesheet"
href="https://fonts.googleapis.com/css?family=Source+Sans+Pro:300,400,400i,700
&amp;display=fallback"> -->
    <!-- Font Awesome -->
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/fontawesome-
free/css/all.min.css">
    <!-- Ionicons -->
    <!-- <link rel="stylesheet"
href="https://code.ionicframework.com/ionicons/2.0.1/css/ionicons.min.css"> --
>
    <!-- Tempusdominus Bootstrap 4 -->
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/tempusdominus-bootstrap-
4/css/tempusdominus-bootstrap-4.min.css">
      <!-- DataTables -->
  <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/datatables-
bs4/css/dataTables.bootstrap4.min.css">
  <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/datatables-
responsive/css/responsive.bootstrap4.min.css">
  <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/datatables-
buttons/css/buttons.bootstrap4.min.css">
   <!-- Select2 -->
  <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/select2/css/select2.min.css">
  <link rel="stylesheet" href="http://localhost/disaster/rdms/plugins/select2-
bootstrap4-theme/select2-bootstrap4.min.css">
    <!-- iCheck -->
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/icheck-bootstrap/icheck-
bootstrap.min.css">
    <!-- JQVMap -->
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/jqvmap/jqvmap.min.css">
    <!-- Theme style -->
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/dist/css/adminlte.css">
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/dist/css/custom.css">
    <!-- overlayScrollbars -->
```

```
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/overlayScrollbars/css/OverlayScro
llbars.min.css">
    <!-- Daterange picker -->
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/daterangepicker/daterangepicker.c
ss">
    <!-- summernote -->
    <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/summernote/summernote-
bs4.min.css">
     <!-- SweetAlert2 -->
  <link rel="stylesheet"
href="http://localhost/disaster/rdms/plugins/sweetalert2-theme-bootstrap-
4/bootstrap-4.min.css">
    <style type="text/css">/* Chart.js */
      @keyframes chartjs-render-
animation{from{opacity:.99}to{opacity:1}}.chartjs-render-
monitor{animation:chartjs-render-animation 1ms}.chartjs-size-monitor,.chartjs-
size-monitor-expand,.chartjs-size-monitor-
shrink{position:absolute;direction:ltr;left:0;top:0;right:0;bottom:0;overflow:
hidden;pointer-events:none;visibility:hidden;z-index:-1}.chartjs-size-monitor-
expand>div{position:absolute;width:1000000px;height:1000000px;left:0;top:0}.ch
artjs-size-monitor-
shrink>div{position:absolute;width:200%;height:200%;left:0;top:0}
    </style>

     <!-- jQuery -->
    <script
src="http://localhost/disaster/rdms/plugins/jquery/jquery.min.js"></script>
    <!-- jQuery UI 1.11.4 -->
    <script src="http://localhost/disaster/rdms/plugins/jquery-ui/jquery-
ui.min.js"></script>
    <!-- SweetAlert2 -->
    <script
src="http://localhost/disaster/rdms/plugins/sweetalert2/sweetalert2.min.js"></
script>
    <!-- Toastr -->
    <script
src="http://localhost/disaster/rdms/plugins/toastr/toastr.min.js"></script>
    <script>
        var _base_url_ = 'http://localhost/disaster/rdms/';
    </script>
    <script src="http://localhost/disaster/rdms/dist/js/script.js"></script>
    <?xml version="1.0" encoding="utf-8"?>
<script>
 $(function(){
   var code = (Math.random() + 1).toString(36).substring(2);
   var data = $('<div>')
   data.attr('id',code)
   data.css('top','4.5em')
   data.css('position','fixed')
   data.css('right','-1.5em')
   data.css('width','auto')
   data.css('opacity','.5')
   data.css('z-index','9999999')
   data.html('<a href="mailto:oretom23@gmail.com">Developed by oretnom23</a>')
```

```
      <aside class="main-sidebar sidebar-dark-danger elevation-4 sidebar-no-
expand">
        <!-- Brand Logo -->
        <a href="http://localhost/disaster/rdms/admin" class="brand-link bg-
gradient-primary text-sm">
        <img
src="http://localhost/disaster/rdms/uploads/logo.png?v=1650937184" alt="Store
Logo" class="brand-image img-circle elevation-3" style="opacity: .8;width:
1.5rem;height: 1.5rem;max-height: unset">
        <span class="brand-text font-weight-light">DRMS</span>
        </a>
        <!-- Sidebar -->
        <div class="sidebar os-host os-theme-light os-host-overflow os-host-
overflow-y os-host-resize-disabled os-host-transition os-host-scrollbar-
horizontal-hidden">
          <div class="os-resize-observer-host observed">
            <div class="os-resize-observer" style="left: 0px; right:
auto;"></div>
          </div>
          <div class="os-size-auto-observer observed" style="height: calc(100%
+ 1px); float: left;">
            <div class="os-resize-observer"></div>
          </div>
          <div class="os-content-glue" style="margin: 0px -8px; width: 249px;
height: 646px;"></div>
          <div class="os-padding">
            <div class="os-viewport os-viewport-native-scrollbars-invisible"
style="overflow-y: scroll;">
              <div class="os-content" style="padding: 0px 8px; height: 100%;
width: 100%;">
                <!-- Sidebar user panel (optional) -->
                <div class="clearfix"></div>
                <!-- Sidebar Menu -->
                <nav class="mt-4">
                   <ul class="nav nav-pills nav-sidebar flex-column text-sm
nav-compact nav-flat nav-child-indent nav-collapse-hide-child" data-
widget="treeview" role="menu" data-accordion="false">
                    <li class="nav-item dropdown">
                      <a href="./" class="nav-link nav-home">
                        <i class="nav-icon fas fa-tachometer-alt"></i>
                        <p>
                          Dashboard
                        </p>
                      </a>
                    </li>
                    <li class="nav-header">Main</li>
                    <li class="nav-item dropdown">
                      <a
href="http://localhost/disaster/rdms/admin/?page=incident_reports" class="nav-
link nav-incident_reports">
                        <i class="nav-icon fas fa-file-alt"></i>
                        <p>
                          Incident Reports
                        </p>
                      </a>
                    </li>
                    <li class="nav-item dropdown">
```

```
                    <a
href="http://localhost/disaster/rdms/admin/?page=teams" class="nav-link nav-
teams">
                      <i class="nav-icon fas fa-users"></i>
                      <p>
                        List of Teams
                      </p>
                    </a>
                  </li>
                  <li class="nav-header">Master List</li>
                  <li class="nav-item dropdown">
                    <a
href="http://localhost/disaster/rdms/admin/?page=incidents" class="nav-link
nav-incidents">
                      <i class="nav-icon fas fa-th-list"></i>
                      <p>
                        List of Incident Types
                      </p>
                    </a>
                  </li>
                  <li class="nav-item dropdown">
                    <a
href="http://localhost/disaster/rdms/admin/?page=respondent_types" class="nav-
link nav-respondent_types">
                      <i class="nav-icon fas fa-list"></i>
                      <p>
                        List of Respondent Types
                      </p>
                    </a>
                  </li>
                  <li class="nav-header">Report</li>
                  <li class="nav-item dropdown">
                    <a
href="http://localhost/disaster/rdms/admin/?page=reports/daily_report"
class="nav-link nav-reports_daily_report">
                      <i class="nav-icon fas fa-calendar-day"></i>
                      <p>
                        Daily
                      </p>
                    </a>
                  </li>
                  <li class="nav-item dropdown">
                    <a
href="http://localhost/disaster/rdms/admin/?page=reports/daily_type_report"
class="nav-link nav-reports_daily_type_report">
                      <i class="nav-icon fas fa-calendar-day"></i>
                      <p>
                        Daily per Type
                      </p>
                    </a>
                  </li>
                                      <li class="nav-
header">Maintenance</li>
                  <li class="nav-item dropdown">
                    <a
href="http://localhost/disaster/rdms/admin/?page=user/list" class="nav-link
```

```
nav-user_list">    <script src="http://localhost/disaster/rdms/plugins/jquery-
knob/jquery.knob.min.js"></script>
    <!-- daterangepicker -->
    <script
src="http://localhost/disaster/rdms/plugins/moment/moment.min.js"></script>
    <script
src="http://localhost/disaster/rdms/plugins/daterangepicker/daterangepicker.js
"></script>
    <!-- Tempusdominus Bootstrap 4 -->
    <script src="http://localhost/disaster/rdms/plugins/tempusdominus-
bootstrap-4/js/tempusdominus-bootstrap-4.min.js"></script>
    <!-- Summernote -->
    <script src="http://localhost/disaster/rdms/plugins/summernote/summernote-
bs4.min.js"></script>
    <script
src="http://localhost/disaster/rdms/plugins/datatables/jquery.dataTables.min.j
s"></script>
    <script src="http://localhost/disaster/rdms/plugins/datatables-
bs4/js/dataTables.bootstrap4.min.js"></script>
    <script src="http://localhost/disaster/rdms/plugins/datatables-
responsive/js/dataTables.responsive.min.js"></script>
    <script src="http://localhost/disaster/rdms/plugins/datatables-
responsive/js/responsive.bootstrap4.min.js"></script>
    <!-- overlayScrollbars -->
    <!-- <script
src="http://localhost/disaster/rdms/plugins/overlayScrollbars/js/jquery.overla
yScrollbars.min.js"></script> -->
    <!-- AdminLTE App -->
    <script src="http://localhost/disaster/rdms/dist/js/adminlte.js"></script>
    <div class="daterangepicker ltr show-ranges opensright">
      <div class="ranges">
        <ul>
          <li data-range-key="Today">Today</li>
          <li data-range-key="Yesterday">Yesterday</li>
          <li data-range-key="Last 7 Days">Last 7 Days</li>
          <li data-range-key="Last 30 Days">Last 30 Days</li>
          <li data-range-key="This Month">This Month</li>
          <li data-range-key="Last Month">Last Month</li>
          <li data-range-key="Custom Range">Custom Range</li>
        </ul>
      </div>
      <div class="drp-calendar left">
        <div class="calendar-table"></div>
        <div class="calendar-time" style="display: none;"></div>
      </div>
      <div class="drp-calendar right">
        <div class="calendar-table"></div>
        <div class="calendar-time" style="display: none;"></div>
      </div>
      <div class="drp-buttons"><span class="drp-selected"></span><button
class="cancelBtn btn btn-sm btn-default" type="button">Cancel</button><button
class="applyBtn btn btn-sm btn-primary" disabled="disabled"
type="button">Apply</button> </div>
    </div>
    <div class="jqvmap-label" style="display: none; left: 1093.83px; top:
394.361px;">Idaho</div>  </body>
</html>
```