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Ethical Whistleblowing Web Application

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This final project report is submitted in partial fulfillment of the requirements of
the Applied Information Technology (APT)

Declaration

I declare that this is my original work through my own effort and that it has not been presented in any form for academic or any other reason, to the best of my knowledge. Contributions to this work by any other person or literature have been duly cited.

Student

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Signature.....

Date.....

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I confirm that this research project report was carried out by the student under my supervision

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Acknowledgement

First and foremost, I would like to thank God for giving me the gift of life, health and being with me every step of the way throughout this academic journey, my parents for being there when I needed them, for giving me spiritual, moral and financial support, my friends for their academic and also moral support and all my lecturers especially Mr. Amos Koech for guiding me through this unit.

Definition of central terms

Products: In this case they are car spare parts.

Supplier: Is a person who owns and sells the products.

Client: Is a person who buys the products.

Nairobi online car spare parts shop: Is a computerized system where car spare parts can be bought through the internet.

Nairobi: Derived from a Swahili word meaning 'spare part'.

Abstract

Summary of back ground, problem statement, objectives, LR, Methodology, Results and Conclusion and Recommendation] –one page maximum

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

In today's global landscape, combating corruption is of paramount importance for the well-being of societies. The Ethical Whistleblowing Web Application represents a significant leap forward in empowering individuals to contribute actively to this cause. This chapter provides an overview of the app's fundamental purpose, emphasizing the critical features that ensure secure, anonymous reporting and the safeguarding of whistleblowers.

1.1 Background of the study

The pervasive nature of corruption has positioned itself as a formidable hindrance to the overall welfare of communities on a global scale. This deeply ingrained societal ill undermines trust, and hampers progress, necessitating concerted efforts to combat its deleterious effects. In response to this urgent and complex challenge, whistleblowing has emerged as a transformative force, offering a ray of hope in the ongoing battle against corruption.

The United States, widely recognized as a pioneer in whistleblower protection, has established a robust legislative framework to safeguard individuals who expose corruption within public and private sectors. Central to this commitment is the Whistleblower Protection Act, a landmark piece of legislation that serves as a cornerstone in the nation's efforts to encourage transparency. The Whistleblower Protection Act (enacted in 1989) is a comprehensive federal law designed to shield federal employees from retaliation when they disclose information about misconduct, fraud, or any form of wrongdoing within their organizations. This legislative initiative reflects the U.S. government's dedication to fostering an environment where whistleblowers can come forward without fear of adverse consequences.

The United Kingdom has demonstrated a strong commitment to whistleblower protection, employing legal frameworks and dedicated entities to create an environment that encourages individuals to expose wrongdoing without fear of reprisal. One noteworthy organization in this regard is Protect(formerly Public Concern at Work), a leading independent authority on whistleblowing. Protect operates as an independent charity in the UK, specializing in promoting whistleblowing as a valuable tool for addressing and preventing misconduct within organizations. Established in 1993, the organization has played a crucial role in shaping the landscape of whistleblower protection in the country. It provides guidance, resources, and support to both whistleblowers and organizations, aiming to foster a culture that values ethical conduct and accountability.

Australia has implemented comprehensive measures to ensure whistleblowers their safety and confidentiality. One key element of Australia's approach to whistleblower protection is the integration of secure reporting platforms. These platforms serve as confidential channels through which individuals can report instances of corruption, fraud, or other forms of misconduct. Also several government agencies and organizations in Australia have established dedicated whistleblower hotlines and reporting channels. These channels are often managed by independent bodies to guarantee impartiality and confidentiality. The Australian Securities and Investments Commission (ASIC), for example, operates a whistleblower protection program that allows individuals to disclose information about corporate misconduct while safeguarding their identity.

In South Africa, The Whistleblower Act, officially known as the Protected Disclosures Act (PDA) of 2000, establishes a crucial legislative framework aimed at affording legal protection to individuals divulging information on unlawful or corrupt activities within the workplace. The primary objective of the Act is to facilitate the reporting of such activities without the looming fear of reprisals or victimization.

Nigeria has implemented robust protective measures and legal frameworks to fortify whistleblowers in their pivotal role of reporting violations and misconduct. The Whistleblower

Protection Act serves as a foundational legal instrument, affording crucial safeguards to individuals bravely exposing wrongdoing. The Act serves to reassure whistleblowers that their disclosures will be met with protection rather than reprisal.

In Kenya, the Ethics and Anti-Corruption Commission (EACC) takes a leading role in the fight against corruption, with whistleblowing as a pivotal strategy. As the primary agency for investigating and prosecuting corruption cases, the EACC integrates whistleblowing into its approach, considering it a powerful tool for uncovering corrupt practices and fostering a culture of accountability. The commission has established mechanisms to encourage whistleblowing, providing secure and confidential reporting channels to allow individuals to disclose information about corruption without fear of reprisal.

1.2 Problem Statement

The Whistleblower Protection App aims to address the following four critical problems:

- **Lack of Secure and Anonymous Reporting Channels:**

Many potential whistleblowers are deterred from reporting corruption due to concerns about the security and confidentiality of their identity. Traditional reporting mechanisms may not provide a secure and anonymous platform, leading to hesitancy among individuals to come forward with crucial information.

- **Inadequate Case Tracking and Transparency:**

The absence of a robust case tracking system results in a lack of transparency in addressing reported corruption. Whistleblowers often remain unaware of the progress of their reports, diminishing their confidence in the reporting process.

- **Administrative Challenges:**

The absence of a centralized dashboard poses challenges for administrators in effectively managing and tracking reported cases.

- **Complex Reporting Process:**

Existing reporting processes may not be user-friendly, hindering individuals from easily submitting details about corruption securely.

1.3 Project Objectives

1.3.1 Overall Goal

To design and develop an Ethical Whistleblowing Web Application.

1.3.2 Systems design and development objectives

The Ethical Whistleblowing Web Application contains the following unique features:

- **Centralized Administrative Dashboard:**

A centralized dashboard for administrators (police and anti-corruption officials) to effectively manage and track reported cases.

- **Real-time Case Tracking System:**

The implementation of a comprehensive case tracking system with real-time updates to provide whistleblowers updates on the progress of their reports.

1.3.3 Specific Research Objectives

1.3.3.1 To find out the traditional challenges with the old Whistleblowing Systems.

1.3.3.2 To determine the benefits of the new Ethical Whistleblowing Web Application.

1.4 Project Questions

What are the traditional challenges with the old Whistleblowing Systems?

What are the benefits of the new Ethical Whistleblowing Web Application?

1.5 Scope of the Project

The Ethical Whistleblowing Web Application works in the following manner:

- **User Registration and Anonymous Account Creation:**

Individuals access the web application through a secure portal.

Users create an anonymous account without revealing personal information.

- **User-friendly Reporting Process:**

The system provides a user-friendly reporting form where individuals can submit details about corruption securely.

The form is designed to be intuitive, guiding users through the process of providing necessary information.

- **Case Tracking System (Real-time Case Tracking):**

Once a report is submitted, whistleblowers can monitor the progress of their reports through a Real-time Case Tracking System.

Regular updates are provided to ensure transparency and assurance that their concerns are being addressed.

- **Centralized Administrative Dashboard:**

Authorized administrators, such as law enforcement and anti-corruption commissions, have access to a Centralized Administrative Dashboard.

The dashboard consolidates information on reported cases, providing a comprehensive overview.

- **Security Measures:**

- **Anonymity Emphasis:**

The application emphasizes its commitment to protecting the anonymity of whistleblowers, fostering trust in the reporting process.

- **Secure Encryption Implementation:**

All user communications and information are encrypted, safeguarding the confidentiality of the reported data.

Stakeholders:

The primary stakeholders in this project include:

- **Whistleblowers:** Individuals reporting corruption seeking a secure and anonymous platform.
- **Administrators:** Law enforcement (Police), anti-corruption bodies (EACC), and other relevant authorities responsible for managing and investigating reported cases.
- **Developers:** The team responsible for designing, developing, and maintaining the web application.

Proposed Location for Implementation:

The Ethical Whistleblowing Web Application is specifically tailored for use in Kenya, providing accessibility to diverse agencies within the country.

1.6 Limitations of the study

Some of the challenges that we foresee to complete the project in 14 weeks include:

- **Limited Time Frame:**

Completing the project within the allocated 14-week period may be challenging due to the complexity of the web application and the need for thorough testing and refinement.

- **Technical Expertise:**

We may lack extensive experience in web development, particularly in building complex systems like an Ethical Whistleblowing Web Application.

1.7 Significance of the study

This study holds significant importance in addressing the pressing issue of corruption and the need for effective whistleblowing mechanisms. The Ethical Whistleblowing Web Application is designed to bring about positive change, and its significance can be summarized as follows:

- **Contribution to Sustainable Development Goals (SDGs):**

The study aligns with SDG 16 by promoting peace, justice, and strong institutions. It aims to create a system that facilitates the reporting of corruption, thereby contributing to the establishment of accountable and transparent institutions.

- **Corruption Mitigation:**

The study directly contributes to the global effort in combating corruption. By providing a secure and anonymous platform for reporting, the Ethical Whistleblowing Web Application aims to mitigate corruption by encouraging individuals to come forward with vital information without fear of reprisal.

- **Empowerment of Whistleblowers:**

Whistleblowers play a crucial role in exposing corruption, and this study empowers them by ensuring their safety and anonymity. The significance lies in fostering a culture where individuals feel confident and protected when disclosing instances of corruption.

- **Transparency and Trust Building:**

The implementation of a Real-time Case Tracking System and a Centralized Administrative Dashboard contributes to transparency. This transparency builds trust among whistleblowers, administrators, and the public, ensuring that reported concerns are addressed promptly and efficiently.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Whistleblowing stands as a pivotal strategy in the global battle against corruption, empowering individuals to expose misconduct and contribute to transparent and accountable institutions. This chapter reviews existing literature, examining international efforts in countries like the United Kingdom and Australia. The focus is on understanding the challenges within traditional systems and introducing the key features and objectives of the proposed Ethical Whistleblowing Web Application.

2.1 Analysis, comparison and criticism of existing projects with an assessment of strengths and weaknesses of existing projects

2.1.1 System One Name: Protect (formerly Public Concern at Work) country: United Kingdom

Analysis:

Protect, previously known as Public Concern at Work, has been a key player in promoting whistleblowing in the UK. It provides guidance, resources, and support to both whistleblowers and organizations, aiming to foster a culture of ethical conduct and accountability.

Strengths:

1. **Established Authority:** Protect has a strong reputation and credibility within the UK, making it a trusted resource for whistleblowers and organizations.

2. **Comprehensive Support:** Protect offers comprehensive guidance, resources, and support to both whistleblowers and organizations, helping them navigate the complexities of whistleblowing.
3. **Legislative Alignment:** Protect operates in alignment with UK whistleblowing laws, ensuring effective protection and support for whistleblowers.

Weaknesses:

1. **Limited Global Reach:** While Protect is effective within the UK, its impact may be limited globally, especially in regions with less developed whistleblowing culture and legal frameworks.
2. **Resource Constraints:** Like many non-profit organizations, Protect may face resource limitations, impacting the extent of support and services it can provide.

Criticism:

While Protect has been instrumental in promoting whistleblowing in the UK, its reach may be restricted outside the UK, limiting its effectiveness in addressing global whistleblowing challenges.

2.1.2 System Two Name: Transparency International country: Germany

Analysis:

Transparency International is a global organization dedicated to combating corruption worldwide. It conducts research, advocates for policy changes, and engages with local communities to fight corruption.

Strengths:

1. **Global Reach:** Transparency International operates globally, advocating for transparency and accountability across various countries.

2. **Research and Advocacy:** The organization conducts extensive research on corruption trends and advocates for policy changes to address systemic issues.
3. **Grassroots Engagement:** Transparency International engages with local communities and civil society organizations, fostering grassroots movements against corruption.

Weaknesses:

1. **Complex Organizational Structure:** As a large international organization, Transparency International may face challenges in coordinating efforts across different regions and managing diverse stakeholders effectively.
2. **Political Sensitivities:** Its advocacy efforts may face resistance in some countries from governments or powerful interests, limiting its effectiveness in certain contexts.

Criticism:

While Transparency International's global reach and advocacy efforts are commendable, its complex organizational structure and potential political sensitivities may hinder its impact in certain regions.

2.1.3 System Three Name: The Australian Securities and Investments Commission (ASIC)
country: Australia

Analysis:

ASIC operates a whistleblower protection program in Australia, focusing on corporate misconduct and financial crimes.

Strengths:

1. **Legal Framework:** Australia has comprehensive whistleblower protection laws, and ASIC's program operates within this framework, providing strong legal protections to whistleblowers.

2. **Secure Reporting Platforms:** ASIC offers secure reporting channels for whistleblowers to disclose information while safeguarding their identity.
3. **Government Support:** ASIC receives support from the Australian government, enhancing its credibility and resources in combating financial crimes.

Weaknesses:

1. **Focus on Corporate Misconduct:** ASIC's program primarily targets corporate misconduct, potentially leaving gaps in addressing corruption in other sectors.
2. **Limited Public Awareness:** Despite whistleblower protection laws and programs, public awareness of these resources may be limited, leading to underutilization.

Criticism:

While ASIC's whistleblower protection program is robust, its focus on corporate misconduct and potential gaps in addressing corruption in other sectors may limit its effectiveness in combating broader forms of corruption.

2.1.4 Summary of comparison of the systems

Features	Protect, United Kingdom	Transparency International, Germany	Australian Securities and Investments Commission, Australia
Cost	X	tick	tick
Easy to Install	X	tick	X
Easy to use	tick	tick	X
Efficient Database	tick	tick	X
Good Security	tick	tick	X
Vulnerability assessment	tick	tick	X

2.2 Literature review on based on the specific research objectives

2.2.1 challenges of the old Whistleblowing Systems.

Some of the challenges of the old Whistleblowing Systems include:

- **Insufficient Public Awareness:**

Lack of awareness impacted user adoption. Many potential whistleblowers were not aware of the existing systems, leading to underutilization. This lack of awareness hindered the effectiveness of the whistleblowing process.

- **Complex Reporting Process:**

Existing reporting processes were not user-friendly. The complexity of the reporting process acted as a barrier, making it challenging for individuals to submit details about corruption securely.

- **Administrative Inefficiencies:**

Older systems faced challenges in managing and tracking reported cases efficiently. The absence of a centralized dashboard for administrators posed difficulties in handling and monitoring reported cases effectively, potentially causing delays and inefficiencies.

- **Lack of Anonymity:**

Traditional whistleblowing systems often failed to guarantee anonymity to individuals reporting corruption. The fear of retaliation or exposure prevented many potential whistleblowers from coming forward, as they risked personal and professional consequences.

- **Inadequate Security Measures:**

Insufficient security measures may have exposed whistleblowers and their reports to risks. Without robust encryption and secure communication channels, the confidentiality of whistleblower reports could be compromised, discouraging individuals from coming forward.

- **Limited Whistleblower Feedback Loop:**

Lack of a structured feedback loop from administrators to whistleblowers about the status and outcomes of their reports resulted in dissatisfaction and a perceived lack of transparency. This impacted the willingness of individuals to report in the future.

- **Poor Integration with External Reporting Entities:**

Limited integration with external entities, such as other regulatory bodies, hindered a thorough and collaborative investigation. This lack of collaboration resulted in incomplete resolutions and a failure to address systemic issues.

- **Ineffective Case Prioritization:**

Absence of a clear system for prioritizing reported cases based on severity and urgency lead to delays in addressing critical issues. This impacted the system's ability to respond promptly to high-priority cases.

- **Ineffective Communication Channels:**

Lack of diverse and accessible communication channels for whistleblowers to report corruption limited accessibility. Systems that relied solely on traditional reporting methods exclude individuals who preferred digital or alternative communication channels.

2.2.2 Benefits of the new Ethical Whistleblowing Web Application.

Some of the benefits of the new Ethical Whistleblowing Web Application include:

- **Improved User-Friendly Reporting Process:**

The new reporting form is designed to be intuitive, guiding users through the process of providing necessary information. This simplification encourages more individuals to submit details about corruption securely.

- **Real-time Case Tracking System:**

The implementation of a comprehensive case tracking system with real-time updates provides whistleblowers with continuous insights into the progress of their reports. This transparency boosts confidence in the reporting process.

- **Centralized Administrative Dashboard:**

Authorized administrators have access to a centralized dashboard, enabling effective management and tracking of reported cases. This addresses administrative challenges, ensuring prompt handling of cases.

- **Secure and Anonymous Reporting:**

The new system addresses the challenge of insecure and non-anonymous reporting channels by providing a secure and user-friendly reporting form. This benefit encourages

individuals to come forward without fear of compromising their identity, fostering a safer environment for whistleblowers to report corruption.

2.3 Conclusion

The Ethical Whistleblowing Web Application offers a crucial leap in the fight against corruption. It addresses traditional challenges through secure reporting, real-time tracking, and a centralized dashboard. Its significance lies in promoting transparency, accountability, and contributing to Sustainable Development Goal 16.

CHAPTER THREE:

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

The Research Design and Methodology chapter outlines the approach taken to conduct the study on the Ethical Whistleblowing Web Application. This chapter describes the research design, including the methods and techniques used to collect and analyze data. Additionally, it provides insights into the rationale behind selecting specific research methodologies and justifies their suitability for achieving the study's objectives.

3.1 Locality of the project and Beneficiaries to the project

The Ethical Whistleblowing Web Application is specifically tailored for implementation in Kenya, with a focus on serving diverse agencies within the country.

The beneficiaries include:

- **Whistleblowers:** Individuals who report corruption or misconduct seeking a secure and anonymous platform.
- **Administrators:** Law enforcement agencies, anti-corruption commissions, and other relevant authorities responsible for managing and investigating reported cases.
- **Society at large:** The Ethical Whistleblowing Web Application serves the broader society by fostering a culture that values ethical conduct and accountability.

3.2 Research Design approach –DESCRIPTIVE

Descriptive research design will be employed in this study to provide a comprehensive understanding of the Ethical Whistleblowing Web Application and its impact.

The descriptive approach will involve both qualitative and quantitative methods to gather data from various stakeholders (whistleblowers and administrators). Qualitative data will be collected through semi-structured interviews. This method will allow for in-depth exploration of

participants' experiences.

The descriptive approach will also involve quantitative methods to gather data from various stakeholders. Quantitative data will be obtained through surveys and structured questionnaires distributed to a representative sample of users and administrators. Statistical analysis will be conducted to analyze quantitative data and identify patterns or correlations.

3.3 Population of the study(Target group) and Sampling method

The target population for this study consists of:

- **Potential whistleblowers:** i.e. employees, contractors, or members of organizations who may have witnessed or have knowledge of corrupt practices or misconduct within their workplaces.
- **Administrators:** law enforcement agencies, anti-corruption commissions.

A **stratified random sampling technique** will be employed. This method involves dividing the target population into distinct subgroups or strata based on specific characteristics (such as level of hierarchical position within the organization, organizational sector and industry type) and then taking a simple random sample in each subgroup.

3.4 Data collection methods and Primary Data collection methods

The data collection methods will include:

- **Surveys:** ie utilizing structured questionnaires to gather information.
- **Interviews:** In-depth interviews will be conducted with key stakeholders, including potential whistleblowers and administrators, to gain deeper insights into their perspectives.

Primary data collection methods will include:

- **Online Surveys:** Structured online surveys will be distributed electronically to potential whistleblowers and administrators.
- **Face-to-Face Interviews:** In-person interviews will be conducted with participants to delve deeper into issues.
- **Telephone Interviews:** Telephone interviews will offer a convenient means of data collection, allowing for flexible scheduling.

3.5 Data analysis methods

The following data analysis methods will be utilized:

- **Quantitative Data Analysis:**
 - **Statistical Analysis:** Quantitative data collected through surveys will be analyzed using descriptive statistics (mean, median, mode) and correlation analysis to identify patterns, trends, and relationships between variables.
- **Qualitative Data Analysis:**
 - **Content Analysis:** Textual data from surveys will be analyzed using content analysis techniques to identify common themes,

3.6 Testing plan for the system

The testing plan for the Ethical Whistleblowing Web Application includes:

- **Unit Testing:**
 - Testing individual units or components of the application.
 - **Time Allocation:** 1 week
 - **Activities:**
 - Develop unit test cases for each component. i.e. logging in and signing up component, uploading/component component, viewing details component, deleting component, editing component and status update component.
 - Execute unit tests (using jest) and debug any failures.

- Ensure that all individual units pass their respective tests.
- **Integration Testing:**
 - Testing the interactions and interfaces between different components or modules of the application. ie API endpoints, database interactions , integration between frontend and backend components.
 - **Time Allocation:** 1 week
 - **Activities:**
 - Identify integration points between components.
 - Develop integration test cases (using postman).
 - Execute integration tests to verify interactions.
 - Ensure proper communication and functionality between integrated components.
- **System Testing:**
 - Testing the entire application as a complete and integrated system.
 - **Time Allocation:** 1 week
 - **Activities:**
 - Conduct end-to-end testing of the entire application.
 - Test user workflows, system performance, and security.
 - Evaluate compatibility across browsers and devices.
 - Involve stakeholders in user acceptance testing (UAT).

3.7 Ethical clearance considerations

Some of the ethical clearance considerations include:

- **Informed Consent:**

Obtaining informed consent from all participants involved in surveys and interviews. Clearly explaining the purpose of the study, the nature of their involvement, and any potential risks or benefits.
- **Confidentiality and Anonymity:**

Safeguard the confidentiality of participants' information collected during the research process.

- **Respect for Privacy:**

Respect participants' privacy and avoid intrusive questioning

CHAPTER FOUR

SYSTEMS ANALYSIS AND SYSTEM DESIGN

4.0 Introduction

This chapter delves into the detailed analysis and design of the Ethical Whistleblowing Web Application. It focuses on understanding the system's requirements, functionalities, and architecture to ensure the development of a robust and effective platform for secure and anonymous reporting of corruption.

4.1 System Requirements

4.1.1 Functional Requirements

Functional requirements are the specific functions, capabilities, and behaviors that a system must possess to fulfill its intended purpose and meet the needs of its users.

Functional Requirements:

- **Anonymous User Registration:** Users should be able to register on the platform securely and anonymously.
- **Secure Reporting Platform:** The platform should provide a user-friendly reporting platform for whistleblowers to submit details about corruption securely.

- **Real-time Case Tracking System:** Whistleblowers should be able to monitor the progress of their reports through a real-time case tracking system.
- **Centralized Administrative Dashboard:** Authorized administrators (e.g., law enforcement, anti-corruption officials) should have access to a centralized dashboard.

4.1.2 Non - Functional Requirements

Non-functional requirements define the qualities or attributes that the system must possess, such as security,

Non-Functional Requirements:

- **Usability:** The user interface should be intuitive and user-friendly, allowing users to navigate the platform easily.
- **Anonymity:** The platform should prioritize the anonymity of whistleblowers, ensuring that their identities remain confidential.
- **Error Handling:** The system should provide informative error messages to users in case of invalid inputs or system failures.
- **Browser Compatibility:** The application should be compatible with all modern web browsers.

4.3 Stakeholders

Stakeholders for the Ethical Whistleblowing Web Application include:

- **Whistleblowers:** Individuals who report corruption or misconduct seeking a secure and anonymous platform for reporting.
- **Administrators:** Law enforcement agencies, anti-corruption commissions, and other relevant authorities responsible for managing and investigating reported cases.
- **Society at large:** The broader community benefits from the application's contribution to fostering a culture of ethical conduct and accountability, thereby promoting transparency and trust in institutions.

4.4 System Models

4.4.1 Systems Architecture

Below is a diagram of the system Architecture.

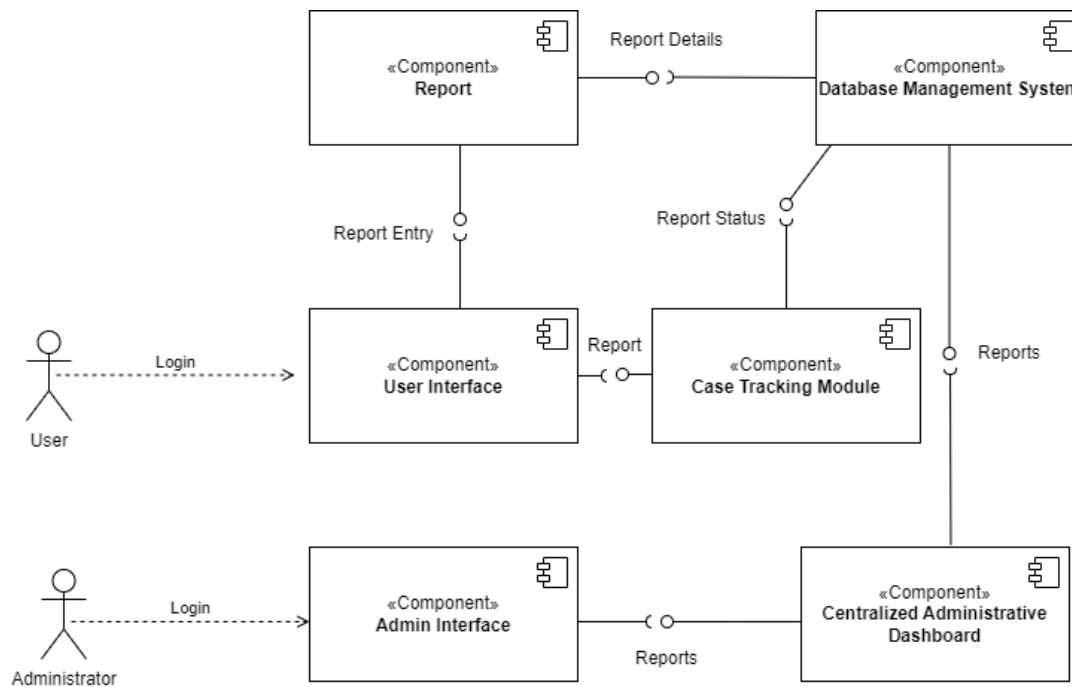


Figure 4.1: Component diagram of system architecture

4.4.2 Use Case Diagram

Below is the use case diagram:

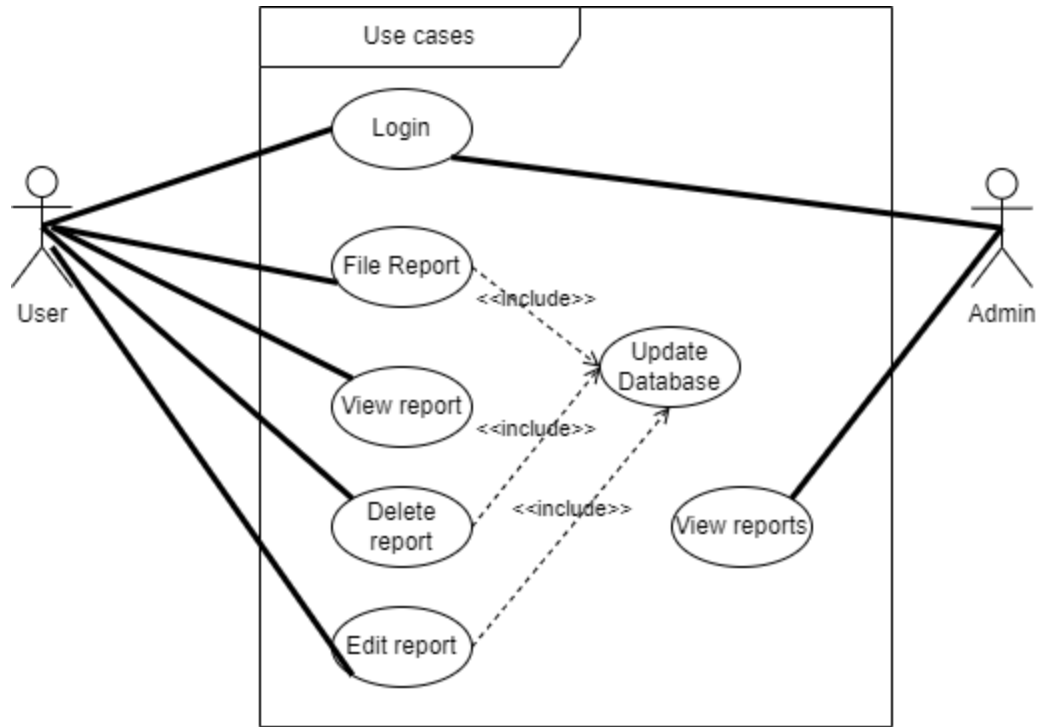


Figure 4.2: Use Case Diagram

4.4.3 Flow chart

Flowchart diagram:

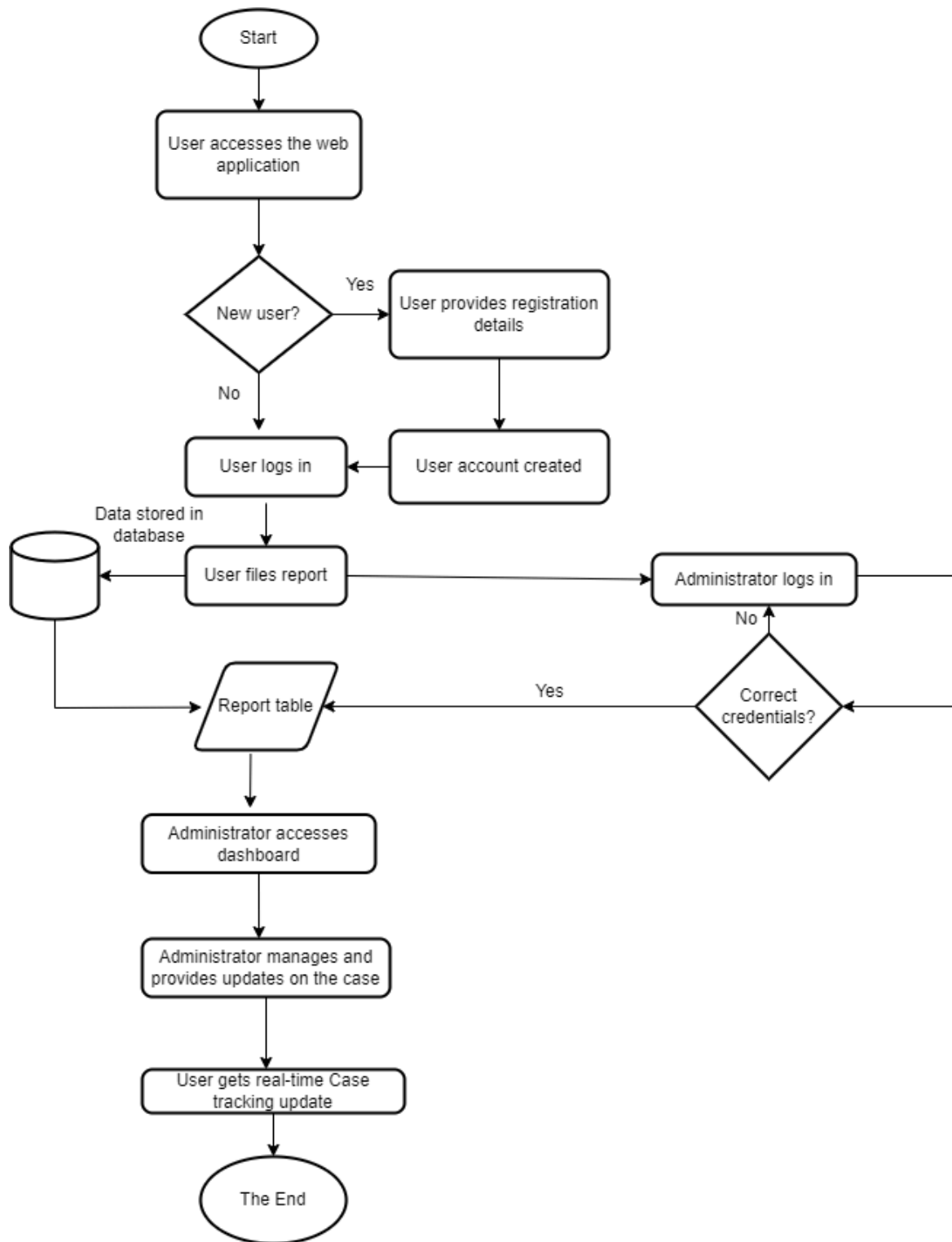


Figure 4.3: Flow chart Diagram

4.4.4 Class Diagrams

Class diagram:

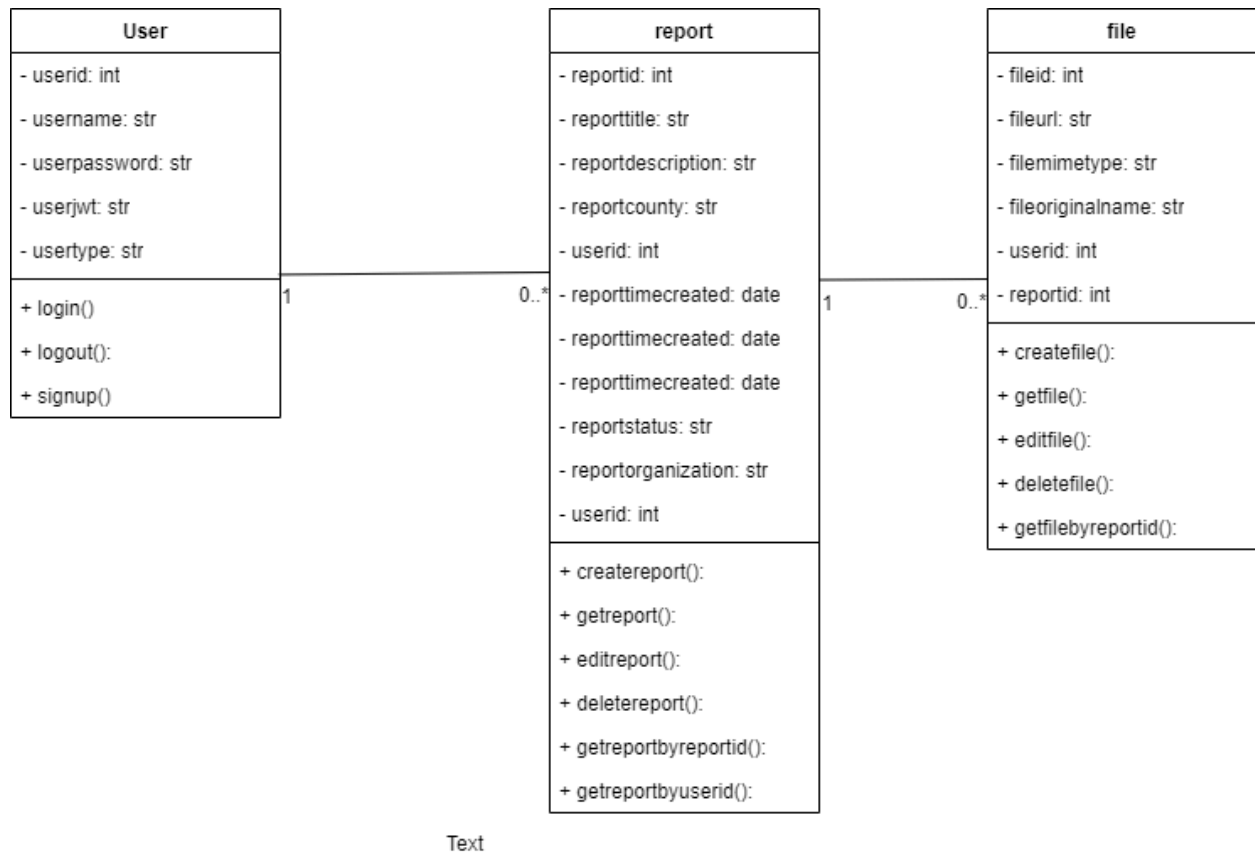


Figure 4.4: Class Diagram

4.4.5 Data Flow Diagram

A Data Flow Diagram (DFD) is a graphical representation of the flow of data through a system or process

4.4.5.1 Context Diagram 0

Context diagram:

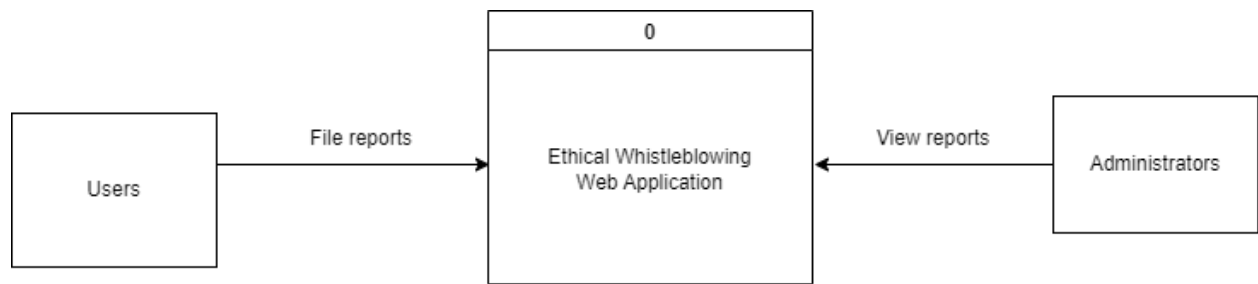


Figure 4.5: Context Diagram

4.4.5.2 Level 1 Diagram

Level 1 Diagram diagram:

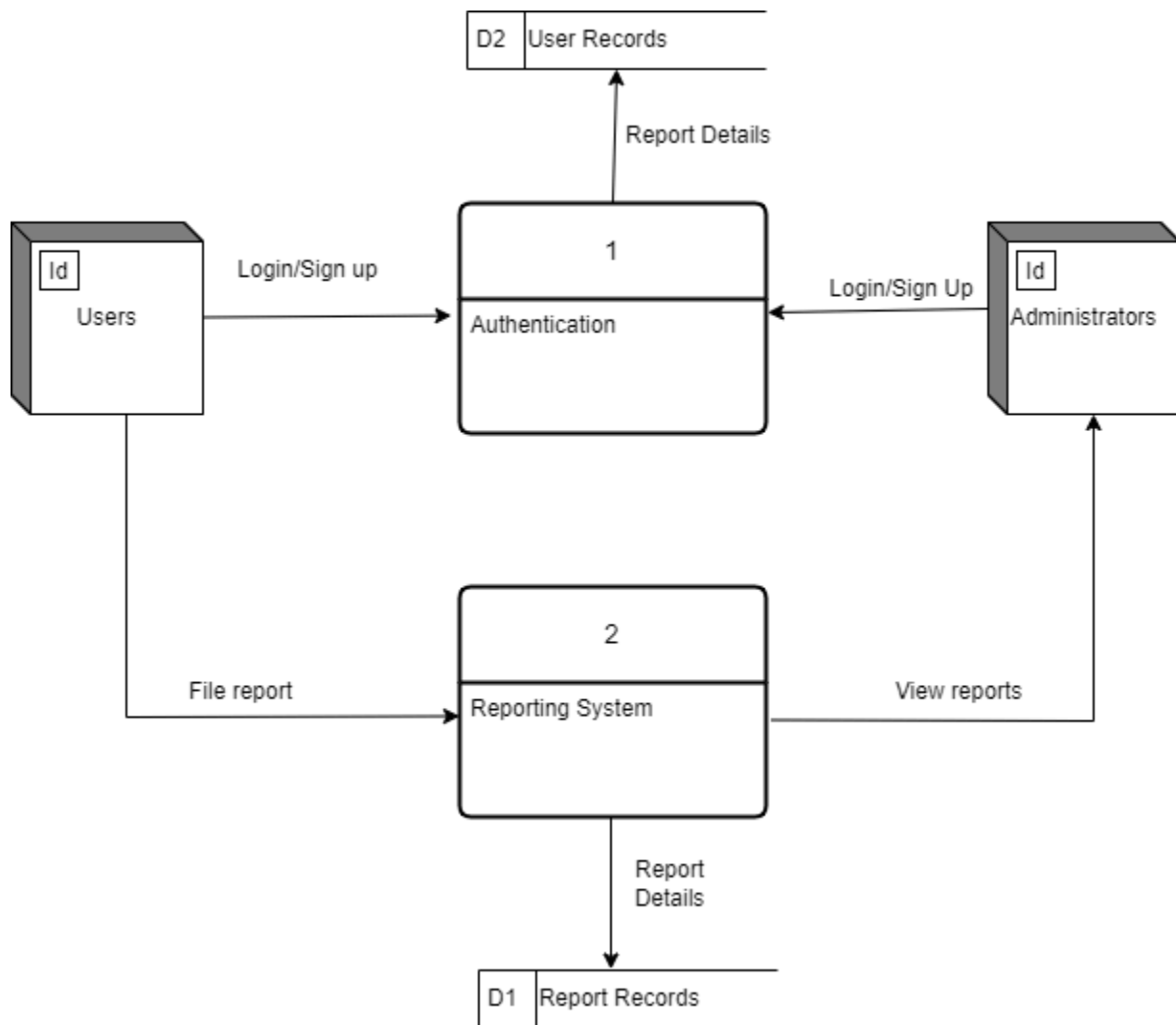


Figure 4.6: Level 1 Diagram

4.4.5.3 Level 2 Diagram

Level 2 Diagram diagram:

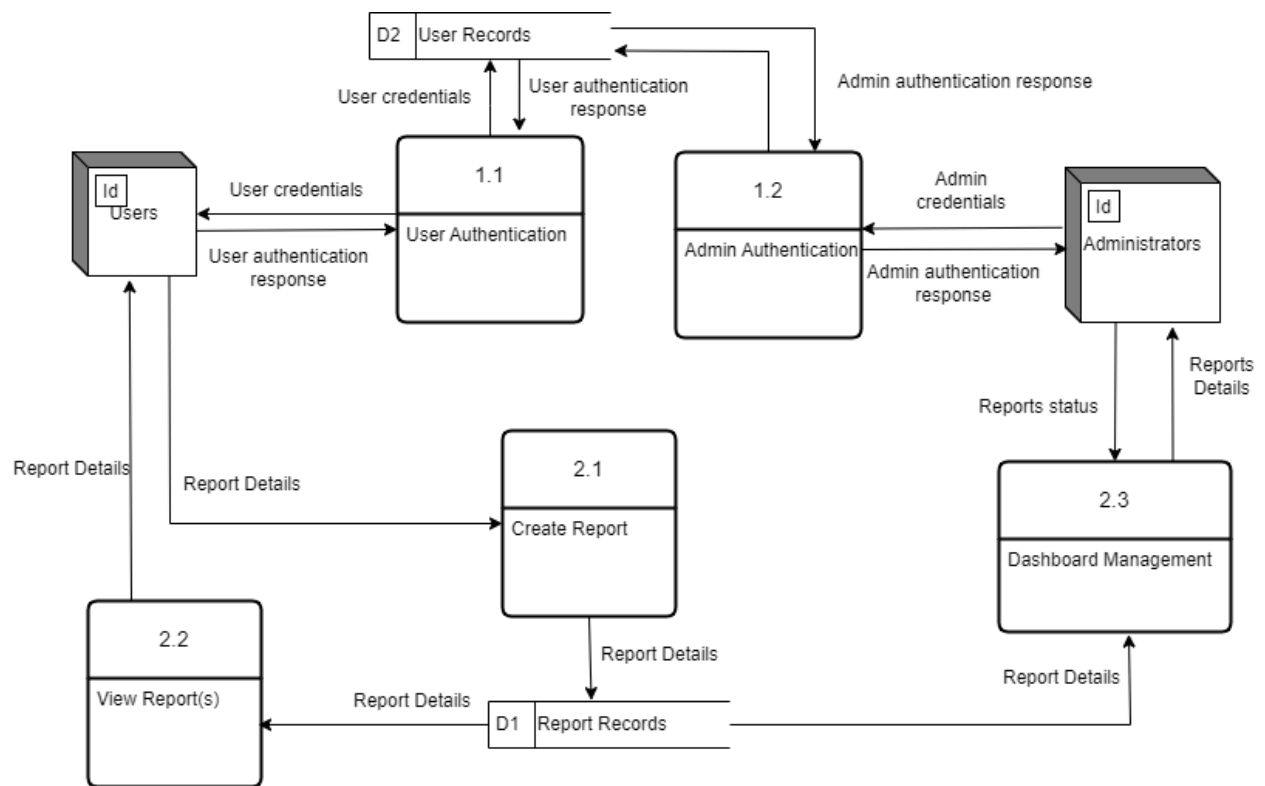


Figure 4.6: Level 2 Diagram

4.4.6 Entity Relationship Diagram

Entity Relationship Diagram:

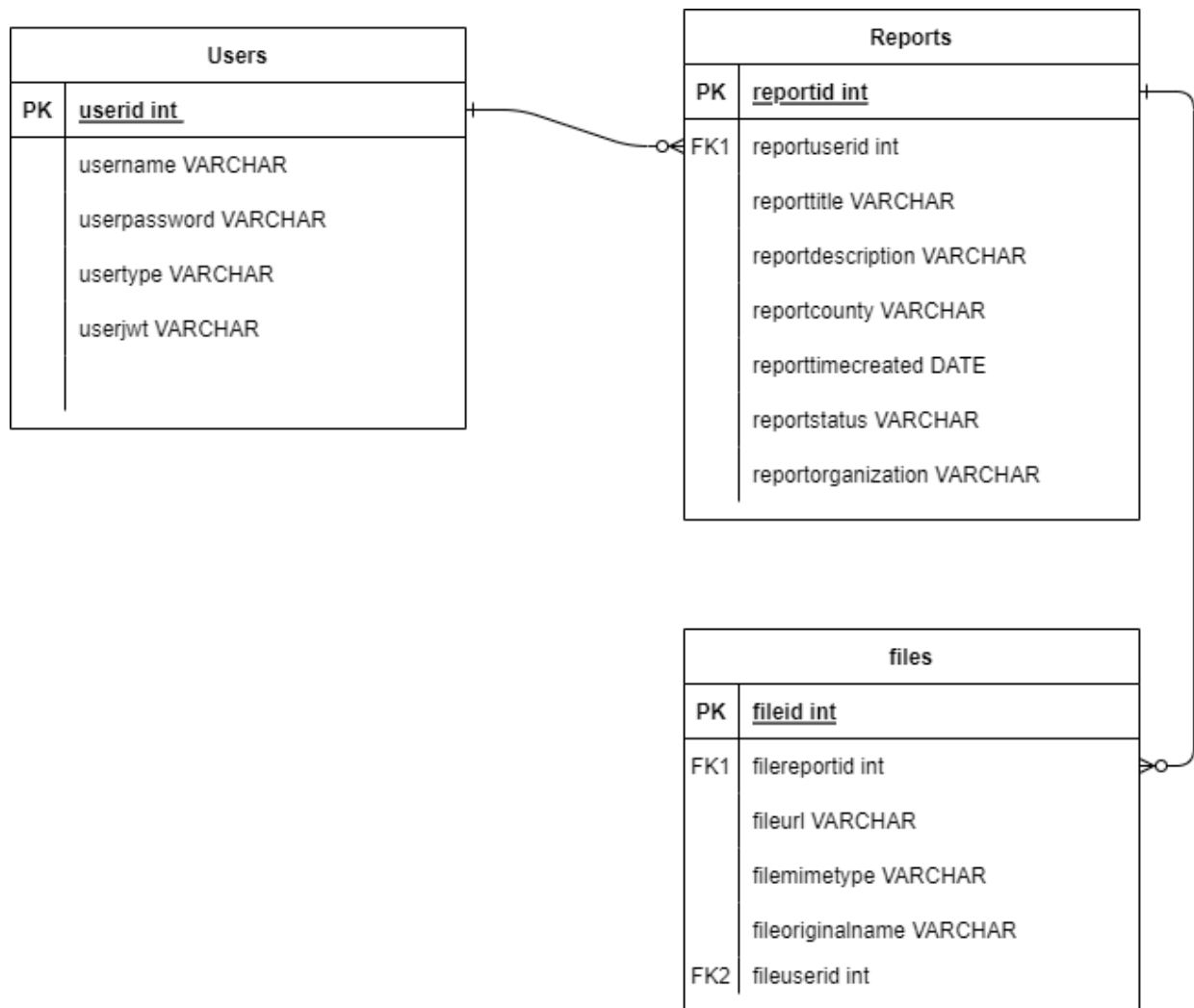


Figure 4.6: ER Diagram

4.4.7 Sequence Diagram

A sequence diagram is an interaction diagram that visualizes the interactions between objects or components in a system over time. It illustrates the sequence of messages exchanged between the different entities involved in a particular scenario or use case.

4.4.7.1 Admin Sequence Diagram

Admin Sequence Diagram:

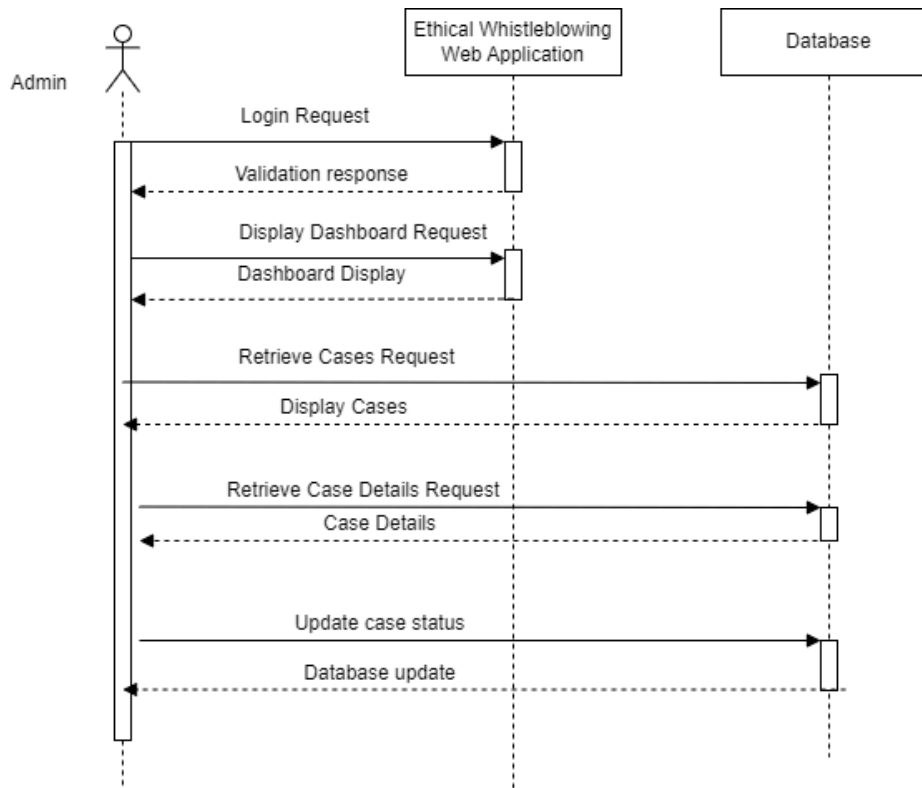


Figure 4.7: Admin Sequence Diagram

4.4.7.2 User Sequence Diagram

User Sequence Diagram:

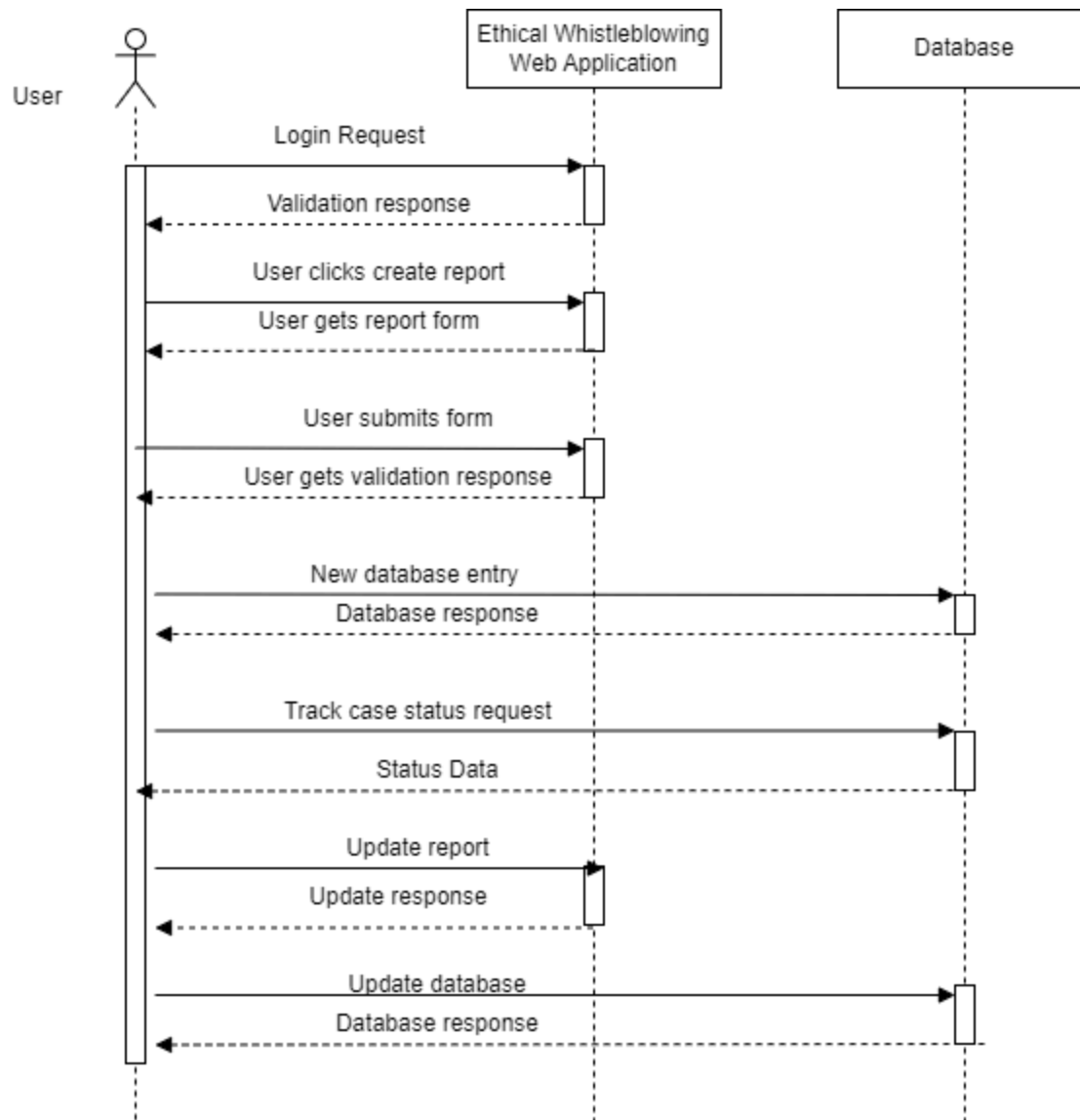


Figure 4.7: User Sequence Diagram

CHAPTER FIVE

RESEARCH FINDINGS AND ANALYSIS

5.1 Response rate

5.2 Demographics results

5.3 Results of Specific Research Objective 1

5.4 Results of Specific Research Objective 2

CHAPTER SIX

DISCUSSION CONCLUSION AND RECOMMENDATIONS

6.1 Discussion

6.2 Conclusion

6.3 Recommendations

6.4 Future work

CHAPTER SEVEN

IMPLEMENTATION (PROTOTYPE FRAMEWORK)

7.1 System Implementation

7.2 Technologies Used

7.2.1 Hardware Platform **Error! Bookmark not defined.**

7.2.2 Programming Language

7.2.3 Programming Tools

7.2.4 Software Platform

7.3 Features of the Prototype

7.3.1 Technical Manual Screenshots 1.3.2

7.3.2 User Manual Screenshots:- main activtoty step by step

7.4 Database Management System

8.0 References

APA Format

9.0 Appendix**Error! Bookmark not defined.**

9.1 Questionnaire/Interview schedule

Section A-Respondents bio data

Gender male [] female[]

Education level primary [] high [] university []

SECTION B

2.2.2

9.2 Work plan in Grant Chart format

9.3 Budget