

**INSURANCE CLIENT TRACKING SYSTEM :CASE STUDY PRUDENTIAL  
INSURANCE COMPANY IN MBALE**

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**J23/MUC/BSIT/002**

**A DISSERTATION SUBMITTED TO THE FACULTY OF ENGINEERING, DESIGN AND  
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UNIVERSITY**

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**UGANDA CHRISTIAN  
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## DECLARATION

This research project is my original work and has not been submitted to any other University for academic award.

A handwritten signature in black ink, appearing to be 'KALENDA ANNET JUSTINE', written in a cursive style.

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**APPROVAL**

This is to certify to the best of my knowledge and profession that the piece of work titled “Insurance Client Tracking System submitted by KALENDA ANNET JUSTINE with Registration Number J23/MUC/BSIT/002 to the Department of Computing and Technology has not been duplicated by any other University for the award of a degree.

Faculty Supervisor

Signature:  Date:.....01/10/2024.....

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(SUPERVISOR)

## **DEDICATION**

I dedicate this to my lovely parents Mr. Kutosi Paul Vicent and Mrs. Nabutiti Alice and all my siblings for all the support towards my project

## **ACKNOWLEDGEMENT**

I thank the Lord almighty for enabling me to accomplish my project program. I acknowledge my parents for being there for me

Special thanks to my supervisor Dr. Eliu Emanuel, my Head of Department ICT and other lecturers who guided me to achieve my goals and expectations during the research.

Finally, I take this opportunity to maintain my sincere thanks to all those who helped me directly and indirectly for the completion of my project.

## **ABSTRACT**

The Insurance Client Tracking System is designed to provide a comprehensive platform for managing insurance clients, policies, and claims. The primary goal of this system is to

streamline the process of client registration, policy management, and claims handling, thereby enhancing the efficiency and effectiveness of insurance operations.

The system allows clients to easily register for insurance policies, make payments, and submit claims online, while also providing administrators with tools to manage client information, monitor payments, and process claims efficiently. Key features of the system include automated policy renewal reminders, real-time tracking of claim statuses, and comprehensive data management capabilities, ensuring that both clients and administrators can access accurate and up-to-date information at all times.

The system is built using robust technologies such as PHP, HTML, MySQL, and JavaScript, which provide a secure and scalable framework for managing large volumes of data and transactions. Additionally, the system includes various security measures to protect sensitive client information and ensure compliance with industry regulations.

By automating many of the manual processes involved in insurance management, the Insurance Client Tracking System reduces administrative overhead, minimizes errors, and improves overall client satisfaction. The system also supports risk assessment and compliance tracking, helping insurers identify potential risks and ensure that all regulatory requirements are met.

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#### LIST OF ABBERVATIONS

- RAM: Random Access Memory**
- HTML: Hyper Text Markup Language**
- CSS: Cascading Style Sheets**
- SQL: Structured Query Language**
- JSON: Java Script Object Notation**
- API: Application Programming Interface ICTS:**
- Insurance Client Tracking System**

# CHAPTER ONE

## 1.0 Introduction

Chapter One of this project present the background information to the study highlighting the problem statement, objectives, scope and significance to the study.

## 1.1 Background.

In the fast-paced corporate world, managing insurance policies across multiple business units, locations, and stakeholders can be a daunting task. Companies often struggle to keep track of their insurance policies, renewals, claims, and compliance requirements. The Insurance Client Tracking System (ICTS) is designed to address these challenges by providing a centralized platform for managing all aspects of corporate insurance. The insurance industry is undergoing a significant transformation, driven by technological advancements, changing customer expectations, and evolving regulatory landscapes. Co-operative insurance companies, in particular, face unique challenges and opportunities in this dynamic environment. In this system we handle client insurance management system where we deal with their applications on line into the system, monthly payment if in case the client has applied for it, annual payment and quarterly payment.so in this case we develop a system which tracks all this information to the client.

## 1.2 Problem Statement for Insurance Client Tracking System

The reliance on manual processes by Uganda Prudential Client Insurance Company for policy renewals, claims, and compliance requirements is time-consuming and prone to errors. This can lead to missed deadlines, non-compliance, and financial losses.

In light of these challenges, there is a pressing need for a comprehensive Corporate Insurance Tracking System (ICTS) that provides a centralized platform for managing all aspects of corporate insurance across the organization. Such a system would offer real-time visibility, streamline processes, ensure compliance, enhance risk management capabilities, optimize costs, and facilitate informed decision-making. By addressing these pain points, an ICTS can help corporations proactively manage their insurance portfolio, mitigate risks, and protect their financial and operational interests effectively

## 1.3 MAIN OBJECTIVE:

The general objective is to develop client insurance management system that will enable clients to register for their insurance policies and how to make payments of those particular policies whether annually, quarterly or yearly.

### 1.3.1 SPECIFIC OBJECTIVES:

- To study the current system used to enable clients to register for their insurance policies and premiums in order to identify system requirements.

- To design a user-friendly system to login client's information in the system using the identified requirements.
- To develop an automated Claims Management system that will streamline the process for submitting and tracking claims online using the identified requirements.
- To implement a designed insurance client tracking system using programming languages like php, html, MySQL, java scripts and many others.
- To test and validate insurance client tracking system so as to check for any errors and to see whether it meets the user requirements.

## 1.4 SCOPE

The scope will focus on the following key areas:

- I. **Policy Management:** This includes the management and organization of multiple insurance policies across different business units and locations. It also encompasses features and functionalities that provide a comprehensive overview of insurance coverage, premiums, deductibles, and policy limits.
- II. **Renewal Automation:** This involves automating the renewal process for insurance policies, including sending reminders before expiration dates and negotiating rates and terms with insurers. It also covers the benefits of automating the renewal process and how it improves efficiency and reduces administrative burden.
- III. **Claims Management:** This encompasses streamlining the claims process by allowing users to submit and track claims online. It also includes features and functionalities that provide real-time updates on the status of claims, including approvals, rejections, and payments.
- IV. **Compliance Tracking:** This involves tracking compliance requirements for each insurance policy, including regulatory filings, certificates of insurance, and proof of coverage. It also covers the consequences of non-compliance and how a ITS can help companies avoid penalties and fines.
- V. **Risk Assessment:** This includes providing real-time insights and analytics on insurance coverage and risk exposure. It also covers potential gaps in coverage and emerging risks that an ICTS can identify and how companies can mitigate these risks.

- VI. **Collaboration Tools:** This encompasses improving communication and collaboration among stakeholders involved in insurance management. It also includes features and functionalities that facilitate messaging, document sharing, and task management.
- VII. **Benefits and Impact:** This involves discussing the benefits of implementing an ICTS and how it improves insurance management processes. It also covers the impact of an ICTS on reducing administrative burden, improving risk management strategies, and enhancing communication and collaboration among stakeholders.
- VIII. **Challenges and Limitations:** This includes discussing potential challenges and limitations of implementing an ICTS and how companies can address these issues. It also covers the risks associated with relying on an ICTS for insurance management and how companies can mitigate these risks.
- IX. **Implementation and Adoption:** This involves discussing key factors that influence the successful implementation and adoption of a UCITS. It also covers how companies can ensure that all stakeholders are trained and equipped to use a UCITS effectively.
- X. **Future Trends and Developments:** This encompasses discussing future trends and developments in corporate insurance management and how an ICTS can adapt to these changes. It also covers how companies can leverage emerging technologies, such as artificial intelligence and machine learning, to enhance the capabilities of an ICTS.

## 1.5 SIGNIFICANCE

- I. **Efficiency:** These systems streamline client interactions, making it easier to manage policies, claims, and communications efficiently.

**Customization:** They often allow for tailored insurance solutions to meet specific client needs, enhancing customer satisfaction.

- II. **Data Management:** These systems facilitate secure data storage and analysis, enabling better risk assessment and personalized offerings.
- III. **Client Engagement:** Improved client communication and service can lead to higher retention rates and increased loyalty.
- IV. **Risk Mitigation:** By leveraging data analytics, these systems can help identify and mitigate risks for both clients and insurers.
- V. **Regulatory Compliance:** They assist in ensuring compliance with industry regulations and standards, reducing legal risks.
- VI. **Cost Savings:** By automating processes and reducing administrative overhead, these systems can lead to cost savings for both insurers and clients.

VII. **Claims Processing:** They streamline claims handling, resulting in faster resolutions and improved client satisfaction.

## Chapter Two

### Literature Review

#### 2.0 Introduction

Chapter One presented the background information to the study, highlighting the objectives, scope, and significance of the study. This chapter reviews the literature related to insurance client tracking systems. It specifies what an insurance client tracking system is, its needs, and how it works for its enhancement.

#### 2.1 Insurance Client Tracking System

According to Smith and Jones (2015), an Insurance Client Tracking System is an information system that manages client data, tracks client interactions and policy details, supports adequate reporting, and enhances customer service and policy management. The system ensures that all client-related information is accurately recorded and accessible for policy management and decision-making.

#### 2.2 Types of Management Information Systems in Insurance

##### 2.2.1 Insurance Client Management Systems (ICMS)

According to Johnson (2010), an ICMS is designed to handle client data, policy details, and interaction history. It supports management reporting, policy decisions, and customer service activities. The ICMS provides detailed information to insurance managers, allowing them to analyze client behavior, track policy renewals, and manage client relationships effectively.

##### 2.2.2 Policy Management Information Systems

According to Brown (2007), a policy management system collects and processes policy data, including policy issuance, claims, renewals, and cancellations. It converts this information into actionable reports that help in managing policies throughout their lifecycle.

#### 2.3 Client Data Processing Systems

According to White (2008), computerized systems perform data manipulations to transform raw client data into useful information. These systems handle data entry, processing, and storage, ensuring the integrity of client data throughout various stages of processing.

#### 2.4 Accounting in Insurance

##### 2.4.1 Internal Accounting Systems

According to Schwartz (2000), internal accounting systems in insurance companies are intended for managers to make informed business decisions based on accurate financial data.

These systems help in budgeting, financial planning, and internal audits.

## 2.4.2 External Accounting Systems

According to Schwartz (2000), external accounting systems prepare financial statements for stakeholders such as policyholders, regulators, and investors. They use information from internal accounting systems to ensure compliance with regulatory requirements and transparency in financial reporting.

## 2.5 Management Accounting Systems

According to Morris (2002), management accounting systems in insurance companies collect financial data from business operations, such as premium collections and claim payments, and convert this information into analysis reports. These systems support budgeting, cost management, and financial planning.

## 2.6 Related Systems

### 2.6.1 Customer Relationship Management (CRM) Systems

According to Buttle (2009), CRM Originated in the 1980s, initially as digital Rolodexes and contact management software. It evolved into comprehensive systems to manage customer data and interactions. It was introduced to centralize customer information and improve customer service, marketing, and sales efficiency. Technologies Used were Cloud Computing, AI and Machine Learning and Big Data Analytics

#### 2.6.1.1 How CRM Works

According to Buttle (2009), CRM collects data from customer interactions (emails, calls, social media) and stores it in a centralized database. This data is used to build detailed customer profiles, enabling targeted marketing and personalized service.

#### 2.6.1.2 Modules of CRM

According to Buttle (2009), the modules of CRM system are;

- Contact Management
- Sales Automation
- Marketing Automation
- Customer Service
- Analytics and Reporting

#### 2.6.1.3 Benefits/strengths of CRM

According to Buttle (2009), the benefits /strengths of CRM system are;

- Improved customer relationships and satisfaction

- Increased sales through better lead management
- Enhanced marketing effectiveness
- Streamlined customer service processes

#### 2.6.1.4 Challenges/weaknesses of CRM

According to Buttle (2009), the challenges of CRM system are;

- High initial implementation cost
- Data integration complexities
- Ensuring data privacy and security

#### 2.6.1.5 Conclusion

CRMs are essential for modern businesses, enabling personalized customer interactions and driving sales growth. Despite implementation challenges, the benefits significantly outweigh the costs.

### 2.6.2 Enterprise Resource Planning (ERP) Systems

According to Monk & Wagner (2012), Enterprise Resource Planning system was emerged in the early 1990s. It was developed from Material Requirements Planning (MRP) systems used in manufacturing. It Expanded to integrate all core business processes and to streamline across departments, enhancing efficiency and data accuracy Technologies Used were Cloud Computing, Big Data Analytics, Internet of Things (IoT) and AI and ML

#### 2.6.2.1 How ERP Systems Work

According to Monk & Wagner (2012), ERPs centralize data from various business functions (finance, HR, manufacturing) into a single database. This allows for real-time data access and improved decision-making.

#### 2.6.2.2 Modules of ERP systems

According to Monk & Wagner (2012), the modules of ERP systems are;

- Finance and Accounting
- Human Resources
- Manufacturing
- Supply Chain Management
- Sales and Marketing

#### 2.6.2.3 Benefits / strength of ERP systems

According to Monk & Wagner (2012), the benefits of ERPs are;

- 
- Improved operational efficiency
- Enhanced decision-making capabilities
- Reduced operational costs through streamlined processes Real-time data access and reporting

#### 2.6.2.4 Challenges/weakness of ERP systems

According to Monk & Wagner (2012), the challenges of ERP systems include;

- High implementation and maintenance costs
- Complexity in customization and integration • Risk of business disruption during implementation

#### 2.6.2.5 Conclusion:

ERP systems provide a comprehensive solution for managing enterprise-wide processes, significantly improving efficiency and data accuracy. However, businesses must carefully plan and manage ERP implementations to mitigate risks.

#### 2.6.3 Policy Administration Systems

According to Romanowski (2006), Policy Administration Systems gained prominence in the early 2000s. It was designed specifically for the insurance industry to manage policy lifecycles and to automate and streamline the process of policy creation, management, and renewal. Technologies Used were Cloud Computing, Workflow Automation and AI and ML.

##### 2.6.3.1 How Policy Administration Systems Work

These systems handle the entire policy lifecycle from issuance to renewal and modifications and they integrate with other systems for data consistency and operational efficiency.

##### 2.6.3.2 Modules Policy Administration Systems

According to Romanowski (2006), the modules of Policy Administration systems are;

- Policy Issuance
- Policy Servicing
- Renewals and Endorsements
- Compliance Management

##### 2.6.3.3 Benefits/ strength of Policy Administration Systems

According to Romanowski (2006), the benefits of Policy Administration systems are;

- Increased efficiency in policy management
- Enhanced customer service through quick policy modifications

- 
- Reduced operational costs
- Improved regulatory compliance

#### 2.6.3.4 Challenges/weakness of Policy Administration Systems

According to Romanowski (2006), the challenges of Policy Administration systems are;

- Integration with legacy systems
- High initial setup and training costs Keeping up with regulatory changes

#### 2.6.3.5 Conclusion:

Policy Administration Systems are crucial for efficient management of insurance policies, offering significant benefits in terms of operational efficiency and customer service. Continuous updates and integration with new technologies are necessary to maintain their effectiveness.

#### 2.6.4 Claims Management Systems

According to R. E. (2003), Claims Management Systems became widely adopted in the 2000s. It was developed to handle the complex process of insurance claims from filing to settlement, streamline claims processing, reduce errors, and improve customer satisfaction. Technologies Used were AI and ML, Big Data Analytics and Cloud Computing

##### 2.6.4.1 How Claims Management Systems Work:

These systems automate the entire claims process, from initial report to final settlement and they use data analytics to detect fraud and ensure accuracy.

##### 2.6.4.2 Modules of Claims Management Systems

According to R. E. (2003), the modules of Claims Management Systems are;

- Claims Intake
- Claims Processing
- Fraud Detection
- Payment Processing
- Reporting and Analytics

##### 2.6.4.3 Benefits/strength of Claims Management Systems

According to R. E. (2003), the benefits of Claims Management Systems are;

- Faster claims processing times
- Improved accuracy and reduced errors
- Enhanced fraud detection

- 
- Better customer satisfaction

#### 2.6.4.4 Challenges of Claims Management Systems

According to R. E. (2003), the challenges of Claims Management Systems are;

- Integration with other systems
- High implementation costs
- Ensuring data security and privacy

#### 2.6.4.5 Conclusion:

Claims Management Systems are essential for efficient and accurate claims processing in the insurance industry. They significantly enhance customer satisfaction and operational efficiency, despite challenges in integration and cost.

#### 2.6.5 Underwriting Systems

According to G. (2003), Underwriting Systems became popular in the 2000s as part of broader insurance management systems. It developed to assess and manage risk in insurance policies and to improve risk assessment accuracy and streamline the underwriting process. Technologies Used were AI and ML, Predictive Analytics and Cloud Computing

##### 2.6.5.1 How Underwriting Systems Work

These systems use data and algorithms to evaluate risks and determine premiums and they integrate with policy administration and claims management systems for consistency.

##### 2.6.5.2 Modules of Underwriting Systems

According to G. (2003), the modules of Underwriting Systems are;

- Risk Assessment
- Policy Rating
- Decision Support
- Reporting and Analytics

##### 2.6.5.3 Benefits / strength of Underwriting Systems

According to G. (2003), the benefits of Underwriting Systems are;

- Enhanced accuracy in risk assessment
- Improved decision-making capabilities
- Increased efficiency in the underwriting process
- Consistency in policy rating and pricing

##### 2.6.5.4 Challenges of Underwriting Systems

According to G. (2003), the challenges of Underwriting Systems are;

- Integration with other insurance systems
- High initial setup costs
- Keeping up with changes in risk factors and regulations

#### 2.6.5.5 Conclusion:

Underwriting Systems are vital for accurate risk assessment and efficient policy pricing. They help insurers make informed decisions and improve profitability, although they require significant investment and ongoing updates.

### 2.6.6 Billing and Payments Systems

According to D. (2003), Billing and Payments Systems became widely used in the early 2000s. It developed to manage the financial transactions related to insurance policies, streamline billing and payment processes, improve cash flow, and enhance customer convenience. Technologies Used were Cloud Computing, Payment Gateways and Encryption and Security Technologies.

#### 2.6.6.1 How Billing and Payments Systems Work

These systems automate billing cycles, process payments, and handle account reconciliation and they integrate with policy administration and accounting systems.

#### 2.6.6.2 Modules of Billing and Payments Systems

According to D. (2003), the modules of Billing and Payments Systems are;

- Invoice Generation
- Payment Processing
- Account Reconciliation
- Reporting and Analytics

#### 2.6.6.3 Benefits/strength of Billing and Payments Systems

According to D. (2003), the benefits of Billing and Payments Systems are;

- Improved cash flow management
- Enhanced accuracy in billing and payments
- Increased customer convenience through various payment options
- Better financial reporting and compliance

#### 2.6.6.4 Challenges/weakness of Billing and Payments Systems

According to D. (2003), the challenges of Billing and Payments Systems are;

- Integration with existing financial systems
- Ensuring data security and privacy
- Handling various payment methods and regulatory compliance

#### 2.6.6.5 Conclusion:

Billing and Payments Systems are crucial for efficient financial management in the insurance industry. They improve cash flow and customer satisfaction but require robust security measures and integration with other financial systems.

### 2.6.7 How the Insurance Client Tracking System Works

According to Smith and Johnson (2018), an insurance client tracking system operates by integrating various functionalities tailored to the needs of insurance client tracking systems typically work based on common industry practices:

- I. **Data Collection and Entry:** Insurance client tracking systems begin by collecting and entering client information such as personal details, contact information, policy details, and claims history. This data is often stored in a centralized database.
- II. **Policy Management:** The system tracks the lifecycle of insurance policies, including issuance, renewals, amendments, and cancellations. It monitors policy terms, coverage limits, premiums, and payment schedules.
- III. **Client Interaction Logging:** All interactions with clients, whether through calls, emails, or in-person meetings, are logged in the system. This helps agents and customer service representatives track client inquiries, requests, and complaints.
- IV. **Claims Processing:** The system manages the entire claims process from initial claim submission to assessment, approval, and payment. It tracks claim status and history, ensuring timely processing and resolution.
- V. **Analytics and Reporting:** Advanced systems provide analytics tools to analyze client data, policy performance, claim trends, and agent productivity. Reports generated from these analytics aid in decision-making and strategic planning.
- VI. **Compliance and Regulatory Requirements:** The system ensures compliance with industry regulations and internal policies. It may include features to monitor regulatory changes and update processes accordingly.
- VII. **Integration with Other Systems:** Many insurance client tracking systems integrate with other enterprise systems such as financial accounting, underwriting, and document management systems to streamline operations and data flow.
- VIII. **Security and Privacy:** Robust security measures are implemented to protect sensitive client information and ensure compliance with data protection laws (e.g., GDPR, HIPAA).

### 2.6.8 Benefits of Insurance Client Tracking System

According to Brown and Williams (2020), the benefits of an insurance client tracking system include:

- I. **Improved Customer Service:** The system enhances customer service by providing a complete view of client interactions and history, enabling personalized and efficient service.
- II. **Increased Efficiency:** Automation of routine tasks such as data entry, policy renewals, and claims processing increases operational efficiency, reducing administrative burdens and errors.

- III. Enhanced Data Accuracy: Centralized data management ensures that client information is accurate and up-to-date, which is crucial for making informed decisions and maintaining compliance with regulatory requirements.
- IV. Better Risk Management: The system provides detailed insights into client behavior and policy performance, helping insurance providers to identify and mitigate risks effectively.

### 2.6.9 Challenges of Insurance Client Tracking System

Despite its benefits, the implementation of an insurance client tracking system comes with challenges, as noted by Davis and Clark (2019):

- High Implementation Costs: The initial setup and customization of the system can be expensive, requiring significant investment in technology and training.
- Data Privacy Concerns Handling sensitive client information requires robust security measures to protect against data breaches and ensure compliance with privacy regulations.
- Integration with Existing Systems Integrating the tracking system with existing legacy systems can be complex and time-consuming, potentially causing disruptions in operations.
- User Adoption Ensuring that all employees are adequately trained and comfortable using the new system is critical for its success. Resistance to change and lack of training can hinder user adoption and reduce the system's effectiveness.

## 2.7 Comparison of Related Systems

Table 1: Comparisons for the Related Systems

SYSTEM	STRENGTHS	WEAKNESS	TECHNOLOGY
Customer Relationship Management (CRM) Systems	Improved customer relationships and satisfaction, Increased sales through better lead management Enhanced marketing effectiveness	High initial implementation cost Data integration complexities Ensuring data privacy and security	Web-based

Enterprise Resource Planning Systems (ERP)	Improved operational efficiency, enhanced decision-making capabilities and Reduced operational costs through streamlined processes	High implementation and maintenance costs Complexity in customization and integration	Web-based
Policy Administration Systems	Reduced operational costs Improved regulatory compliance	Integration with other systems High implementation costs	Web-based
Claims Management Systems	Faster claims processing times Improved accuracy and reduced errors	Integration with other systems High implementation costs	Web-based
Underwriting Systems	Enhanced accuracy in risk assessment Improved decision-making capabilities	Integration with other insurance systems High initial setup costs	Web-based
Billing and Payments Systems	Improved cash flow management Enhanced accuracy in billing and payments	Integration with existing financial systems Ensuring data security and privacy	Web-based

## 2.8 Conclusion

This chapter described the literature review of insurance client tracking systems, detailing the functionalities of related systems, their strengths and weaknesses, and their role in enhancing financial management within insurance companies.

## Chapter Three

### Research Methodology

#### 2.0 Introduction

The research methodology for developing an insurance client tracking system involves a structured approach to understanding the requirements, designing, implementing, and validating a system that effectively tracks and manages client data. This methodology ensures the system meets industry needs, improves efficiency, and enhances customer satisfaction.

#### 3.1 System Study and Analysis

According to (Sommerville, 2016), This phase involves a thorough examination of the current processes and systems to identify requirements, gaps, and areas for improvement.

#### 3.2 Data collection techniques

##### 3.2.1 Interview

Interviews are a forum for talking to people and they may be structured, unstructured or semi-structured. The researchers conducted interviews with the stakeholders; the clients and the branch manager to identify and specify functional and non-functional requirements to determine requirement specification. The researcher's interviews were both semi guided and unguided and also contained both closed and open-ended questions as we obtained the data mainly about the operation of the existing system; its problems, strength, information flow and processing of the current system.

##### 3.2.2 Observation

The researcher observed some of the activities physically with their eyes, activities involved in managing client information, including the process of logging new clients, updating client details, and tracking policy renewals and claims, watching how insurance agents and support staff interacted with the current system to record, retrieve, and process client information , then used pen and paper to note down what they had observed.

### **3.2.3 Reviewing existing documents**

Researchers carried out research to find out more information about Co-operative Insurance Company through checking their various sites/websites which provided some of the necessary information we required. Finally, we carried out literature review which provided us with the necessary information that we required.

### **3.2.4 Questionnaires**

The technique of using questionnaires was also used by the researcher to get information from the users of the system at Co-operative Insurance Company. The questionnaires were submitted to some users of the system in order to gain statistical information. The researchers were able to know the problem significant number of questionnaires were not returned, leading to a lower-than-expected response rate, respondents particularly busy professionals like insurance agents and administrative staff, found it challenging to allocate time to complete the questionnaire thoroughly. Therefore, the researchers were able to know that the system to be developed had to cater for efficiency and effectiveness. The questionnaire that was used is attached to appendix II.

## ***3.3 Data Analysis Methods***

The researcher used data analysis application software which included Microsoft excel spread sheet that was used to capture (record) some of the data from their observations like taking note of insurance applications, handling claims, and managing policy renewals was closely observed, updating client's records. Researcher noted each step taken from the initial client interaction to the final processing of documents.

## ***3.4 System Analysis and Design***

The analysis and design of the system was done by clearly identifying the inputs, the processes that transform the inputs into outputs while satisfying the system constraints. Data flow diagrams and entity relationship diagrams were used to clearly demonstrate the processes of data transfer in the system as well as the relationship among entities in the system respectively.

### **3.4.1 System Analysis**

Systems analysis is the process of identifying and summarizing data with the intent to extract useful information and develop conclusions. In system analysis requirements were determined. The requirements included functional and non-functional base on the system study.

### 3.4.1.1 Functional Requirements

#### ✚ User Management:

- Admin users should be able to create, update, delete, and manage user accounts.
- Clients should be able to register, log in, and manage their profiles.

#### ✚ Client Information Management:

- The system should allow for the input, update, and deletion of client information.
- Client information should include personal details, policy details, and contact information.

#### ✚ Policy Management:

- The system should support the creation, update, and deletion of insurance policies.
- Policies should include details such as policy type, coverage, premium amount, and policy duration. ○ Clients should be able to view their active and past policies.

#### ✚ Claims Processing:

- Clients should be able to submit insurance claims through the system.
- Admin users should be able to review, approve, or reject claims. ○ The system should track the status of claims and notify clients of updates.

#### ✚ Payment Management:

- Clients should be able to view their payment history and upcoming payments.
  - The system should support online payment processing for premium payments.
  - Admin users should be able to track and manage payment transactions.

#### ✚ Communication and Notifications:

- The system should send automated reminders to clients for policy renewals and upcoming payments. ○ Admin users should be able to send messages and notifications to clients.

#### ✚ Reporting:

- The system should generate reports on client details, policies, claims, and payments.
- Admin users should be able to customize and export reports.

#### ‡ **Security and Authentication:**

- The system should require user authentication for access.
- Different user roles (admin, client) should have different access levels and permissions.

### **3.4.1.2 Non-Functional Requirements**

#### ‡ **Performance:**

- The system should handle concurrent users efficiently without performance degradation.
- Response time for user actions should be less than 2 seconds.

#### ‡ **Scalability:**

- The system should be scalable to handle an increasing number of clients and policies.
- It should support scaling up in terms of both data storage and processing power.

#### ‡ **Reliability and Availability:**

- The system should have an uptime of 99.9%.
- Regular backups should be performed to prevent data loss.

#### ‡ **Security:**

- The system should use encryption (e.g., SSL/TLS) for data transmission.
- It should comply with relevant data protection regulations (e.g., GDPR).
- User data should be protected against unauthorized access and breaches.

#### ‡ **Usability:**

- The user interface should be intuitive and user-friendly.
- The system should provide help documentation and support.

#### ‡ **Compatibility:**

- The system should be compatible with major web browsers (e.g., Chrome, Firefox, Safari, Edge).
- It should be accessible on various devices, including desktops, tablets, and smartphones.

#### ‡ **Maintainability:**

- The system should be designed with modular architecture to facilitate easy maintenance and updates.
- Code should be well-documented and follow best practices for readability and maintainability.

#### ‡ **Data Integrity:**

- The system should ensure data accuracy and consistency.
- Transactions should be atomic, ensuring that partial updates do not leave the database in an inconsistent state.

#### ‡ **Auditability:**

- The system should maintain logs of all user actions for audit purposes.
- Admin users should be able to view and export these logs as needed

## **3.5 System Implementation**

This is whereby the physical realization of the database and the application design was done. This involved the implementation of both the database and the application programs. It was achieved using the Data Definition Language (DDL) of the selected Database Management System (DBMS).

### **3.5.1 Implementation Tools**

In the implementation stage, the following tools were used; WAMP/Apache server, MySQL, PHP, JavaScript, Notepad++, Windows operating system. (As the development environment).

#### **3.5.1.1 WampServer**

WampServer is a free server bundle that uses Apache server. When installed on the system, it includes Apache, MySQL, and PHP. Apache is a popular web server that many ISPs and individuals use to host web pages. We installed Apache on our system as a web server. Pages were stored in the system's special folder which was accessible on the network via the machine's IP address. In order for pages to be viewed on the Internet, the files were stored in the www directory.

### **3.5.1.2 PHP**

Hypertext Preprocessor is an open source server-side programming language extensively used for web scripts. It is a popular server-side scripting language designed specifically for integration with HTML, and is used (often in conjunction with MySQL) in Content Management Systems and other web applications. It is available on many platforms, including Windows, Unix/Linux and Mac OS X, and any open source software. We built our content management system using this tool.

### **3.5.1.3 MySQL**

MySQL is an open source Relational Database Management System (RDBMS) that uses Structured Query Language (SQL), the most popular language for adding, accessing, and processing data in a database. Because it is open source, anyone can download MySQL and tailor it to their needs in accordance with general public license. MySQL is noted mainly for its speed, reliability, and flexibility. We used MySQL because it is designed as a multitasking/multi-user database, which is one of the main requirements for a database.

### **3.5.1.4 HTML**

HTML, referring to Hypertext Markup Language, is the predominant markup language for web pages. It provides a means to describe the structure of text-based information in a document by denoting certain text as links, headings, paragraphs, and lists, among others and to supplement that text with interactive forms, embedded images and other objects. HTML is written in the form of tags, surrounded by angle brackets. HTML can also describe, to some degree, the appearance and semantics of a document, and include embedded scripting language code which can affect the behavior of Web browsers and other HTML processor. We used Notepad++ environment to construct both HTML and PHP pages that served on the content management system.

### **3.5.1.5 CSS**

**CSS (Cascading Style Sheets)** is a stylesheet language used to describe the presentation of a document written in HTML or XML. CSS defines how HTML

elements should be displayed, allowing for separation of content and design, which enhances accessibility, flexibility, and control over the layout. In the Insurance Client Tracking System, CSS is used to enhance the user interface by providing a visually appealing, consistent, and user-friendly design. Below are the main areas where CSS is applied for example Layout and Structure for web pages like headers and navigation, content and footer section and many others like styling elements.

### 3.4.2 System Design

The system design for the Insurance Client Tracking System involves defining the architecture, components, modules, interfaces, and data to satisfy specified requirements. The design can be broken down into several key areas:

### 3.4.3 Architecture Overview

The system will follow a multi-tier architecture, consisting of the following layers:

- **Presentation Layer:** Handles the user interface and user interactions.
- **Business Logic Layer:** Implements the core functionality and business rules.
- **Data Access Layer:** Manages data storage and retrieval operations.
- **Database Layer:** Stores all data related to clients, policies, claims, and payments.
- **Data Flow Diagrams (DFDs)**

#### Level 0 DFD (Context Diagram)

**Purpose:** Provides an overview of the entire system and its interaction with external entities.

#### Entities:

- **Clients:** Individuals or organizations using the insurance services.
- **Admins:** Staff members managing the insurance system.
- **Payment Gateway:** External system for processing payments.
- **Insurance Database:** Data storage system for insurance records.

#### Process:

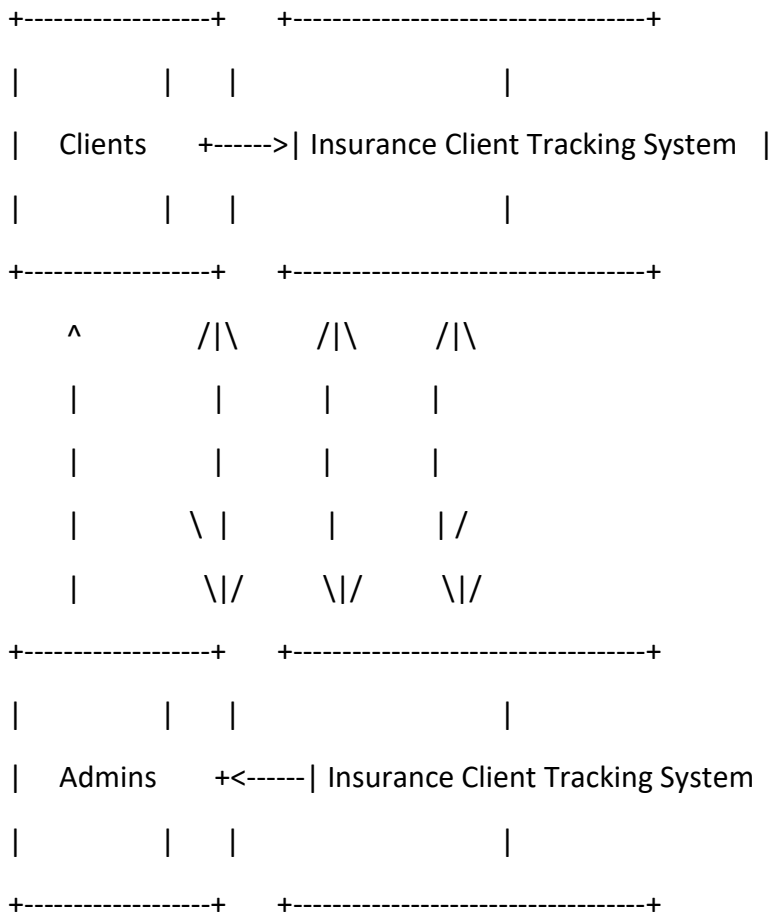
- **Insurance Client Tracking System:** Central process that manages all interactions and data flows.

#### Data Flows:

- **From Clients to System:** Requests for registration, login, policy information, claims, and payments.

- **From System to Clients:** Responses with confirmation messages, policy details, claim statuses, and payment statuses.
- **From Admins to System:** Management tasks for client information, policies, claims, and payments.
- **From System to Admins:** Reports on system performance, client details, and policy statuses.
- **From System to Payment Gateway:** Payment details for processing.
- **From Payment Gateway to System:** Payment confirmations.

**Illustration of data flow diagram level 0**



**Level 1 DFD**

**Purpose:** Provides a detailed view of the main processes within the system.

**Processes:**

- I. **User Management:** Handles client registration and login.
- II. **Policy Management:** Manages creation, updating, and inquiry of insurance policies.

- III. **Claim Processing:** Manages submission and processing of insurance claims.
- IV. **Payment Management:** Handles processing and inquiry of payments.
- V. **Reporting and Notifications:** Generates reports and sends notifications to users.

**Data Stores:**

- **D1: User Data:** Stores information about users.
- **D2:1 Policy Data:** Stores information about policies.
- **D3: Claim Data:** Stores information about claims.
- **D4: Payment Data:** Stores information about payments.

**Detailed Processes:**

**1. User Management**

- **Registration/Login:**
  - **Clients** submit their details for registration or login. ○ The **System** validates and processes these details. ○ **User Data (D1)** is updated with new or modified user information. ○ Confirmation messages and user profile details are sent back to clients.

**2. Policy Management**

- **Policy Creation/Update:**
  - **Admins** enter policy details for creation or update. ○ The **System** validates and processes these details.
  - **Policy Data (D2)** is updated with new or modified policy information.
  - Updated policy information is sent back to admins.
- **Policy Inquiry:**
  - **Clients** or **Admins** request policy details. ○ The **System** retrieves policy information from **Policy Data (D2)**. ○ Policy details are sent back to the requesting party.

**3. Claim Processing**

- **Submit Claim:**
  - **Clients** submit claim details. ○ The **System** validates and processes these details. ○ **Claim Data (D3)** is updated with new claim information.
  - Claim status is sent back to clients.
- **Process Claim:**

- **Admins** review and process claims. ○ The **System** updates
- the claim status in **Claim Data (D3)**. ○ Claim decision is sent
- back to admins and clients.

#### 4. Payment Management

##### IX. Process Payment:

- a. **Clients** submit payment details.
- b. The **System** processes the payment through the **Payment Gateway**.
- c. **Payment Data (D4)** is updated with new payment information.
- d. Payment confirmation is sent back to clients. X. **Payment**

##### Inquiry:

- a. **Clients** or **Admins** request payment status.
- b. The **System** retrieves payment information from **Payment Data (D4)**.
- c. Payment status is sent back to the requesting party.

#### 5. Reporting and Notifications

- **Generate Reports:**
  - **Admins** request reports. ○ The **System** compiles and generates report data from various data stores.
  - Reports are sent back to admins.
- **Send Notifications:**
  - The **System** sends notifications to clients and admins based on certain events or conditions. ○ Notification messages are delivered to the intended recipients.

#### Entity-Relationship Diagram (ERD)

The ERD outlines the data entities, their attributes, and relationships between them.

##### Entities:

- **User:** user\_id (PK), username, password, role, email
- **Client:** client\_id (PK), user\_id (FK), name, address, phone, email
- **Policy:** policy\_id (PK), client\_id (FK), policy\_type, coverage\_amount, premium\_amount, start\_date, end\_date • **Claim:** claim\_id (PK), policy\_id (FK), claim\_date, amount\_claimed, status
- **Payment:** payment\_id (PK), policy\_id (FK), payment\_date, amount\_paid

##### Relationships:

- User has a one-to-one relationship with Client.
- Client has a one-to-many relationship with Policy.
- Policy has a one-to-many relationship with Claim.
- Policy has a one-to-many relationship with Payment.

## Class Diagram

Defines the classes, attributes, methods, and relationships used in the object-oriented design.

### Classes:

- VIII. **User:** Attributes (user\_id, username, password, role, email); Methods (login, logout, manageProfile)
- IX. **Client:** Attributes (client\_id, name, address, phone, email); Methods (viewProfile, updateProfile)
- X. **Policy:** Attributes (policy\_id, policy\_type, coverage\_amount, premium\_amount, start\_date, end\_date); Methods (createPolicy, updatePolicy, deletePolicy)
- XI. **Claim:** Attributes (claim\_id, claim\_date, amount\_claimed, status); Methods (submitClaim, updateClaimStatus)
- XII. **Payment:** Attributes (payment\_id, payment\_date, amount\_paid); Methods (makePayment, viewPaymentHistory)

### Relationships:

- User to Client: 1 to 1
  - Client to Policy: 1 to many
  - Policy to Claim: 1 to many
  - Policy to Payment: 1 to many
- User Interface Design Admin Dashboard:**
- Manage Clients
  - Manage Policies
  - Process Claims
  - Manage Payments
  - Generate Reports

### Client Dashboard:

- View Policies
- Submit Claims
- Make Payments
- Update Profile
- View Notifications

### Tables:

**Users Table:**

- user\_id (Primary Key)
- username
- password
- role
- email

**Clients Table:**

- client\_id (Primary Key)
- user\_id (Foreign Key)
- name
- address
- phone
- email

**Policies Table:**

- policy\_id (Primary Key)
- client\_id (Foreign Key)
- policy\_type
- coverage\_amount
- premium\_amount
- start\_date
- end\_date

**Claims Table:**

- claim\_id (Primary Key)
- policy\_id (Foreign Key)
- claim\_date
- amount\_claimed
- status

**Payments Table:**

- payment\_id (Primary Key)
- policy\_id (Foreign Key)
- payment\_date
- amount\_paid

Security Design

**Authentication and Authorization:**

- Role-based access control (Admin, Client)
- Password encryption using bcrypt or similar hashing algorithms
- Multi-factor authentication (optional) **Data Protection:**
- SSL/TLS encryption for data in transit
- Regular data backups
- Access control to database

## 3.6 System Testing and Validation

System testing and validation are critical phases in the development lifecycle of the Insurance Client Tracking System. These phases ensure that the system meets the specified requirements and functions correctly in all scenarios.

### 3.6.1 System Testing

System testing involves executing the system with the intent of finding defects and verifying that the system behaves as expected. Various types of tests will be conducted to ensure comprehensive coverage.

#### 3.6.1.1 Types of Testing

- **Unit Testing:**

- Focuses on individual components or modules.
- Ensures each unit functions correctly in isolation.
- Example: Testing individual functions for user registration, policy creation, etc.

- **Integration Testing:**

- Verifies the interaction between integrated units/modules.
- Ensures that modules work together as expected.
- Example: Testing the integration of the client management module with the policy management module.

- **System Testing:**

- Validates the complete and integrated software.
- Ensures the system meets the functional requirements.
- Example: Testing the entire process of client registration, policy purchase, and claim submission.

- **Acceptance Testing:**

- Conducted with the end-users to validate the system against their requirements.
- Example: User acceptance testing (UAT) with insurance agents and clients to ensure usability and functionality.

- **Performance Testing:**

- Assesses the system's performance under various conditions. ○ Example: Load testing to ensure the system can handle multiple concurrent users without degradation.

- **Security Testing:**

- Identifies vulnerabilities and ensures data protection. ○ Example: Penetration testing to check for potential security breaches.

- **Usability Testing:**

- Evaluates the user interface and overall user experience.
- Example: Testing the ease of navigation and clarity of information for both admin and client interfaces.

### ***3.6.1.2 Testing Procedures***

- **Test Planning:**

- Define the scope, objectives, and resources for testing. ○ Develop test cases and test scripts based on functional and non-functional requirements.

- **Test Execution:**

- Execute test cases and document the results. ○ Use automated testing tools where applicable for efficiency.

- **Defect Tracking:**

- Record and track identified defects. ○ Categorize defects based on severity and priority. ○ Ensure defects are addressed and retested.

- **Regression Testing:**

- Re-test the system after fixes or updates to ensure no new defects are introduced.

- Verify that existing functionality is not affected.

### **3.6.2 System Validation**

System validation ensures that the developed system meets the business needs and user expectations.

#### **3.6.2.1 Validation Techniques**

- **Requirements Validation:**

- a. Ensure all functional and non-functional requirements are addressed.
- b. Example: Cross-referencing implemented features with

requirement specifications. • **Data Validation:**

- c. Ensure data accuracy, integrity, and consistency.
- d. Example: Validating data entered by users and verifying database operations.

- **User Validation:**

- e. Conduct validation sessions with end-users.
- f. Example: Allowing insurance agents and clients to perform tasks and gather feedback on the system's effectiveness.

#### **3.6.2.2 Validation Procedures**

- **Validation Planning:**

- Define validation criteria and objectives.
- Develop validation plans and scenarios based on real-world use cases.

- **Validation Execution:**

- Perform validation activities according to the plan.
- Collect feedback from users and stakeholders.

- **Validation Review:**

- Review validation results and feedback.
- Identify gaps or issues and address them promptly.

- **Sign-off:**

- Obtain formal sign-off from stakeholders and end-users once the system meets all validation criteria.

### **3.6.3 CONCLUSION ON SYSTEM TESTING AND VALIDATION**

The comprehensive testing and validation approach ensure that the Insurance Client Tracking System is reliable, secure, and user-friendly. By systematically identifying and addressing defects and validating the system against user requirements, the final product will be robust and meet the needs of both the insurance company and its clients.

### **3.6.4 Conclusion**

In summary, this chapter described the methodologies that were used for the different patterns of research, approaches to data collection, techniques for analysis and tools that were used for designing and implementation of the system

## Chapter Four:

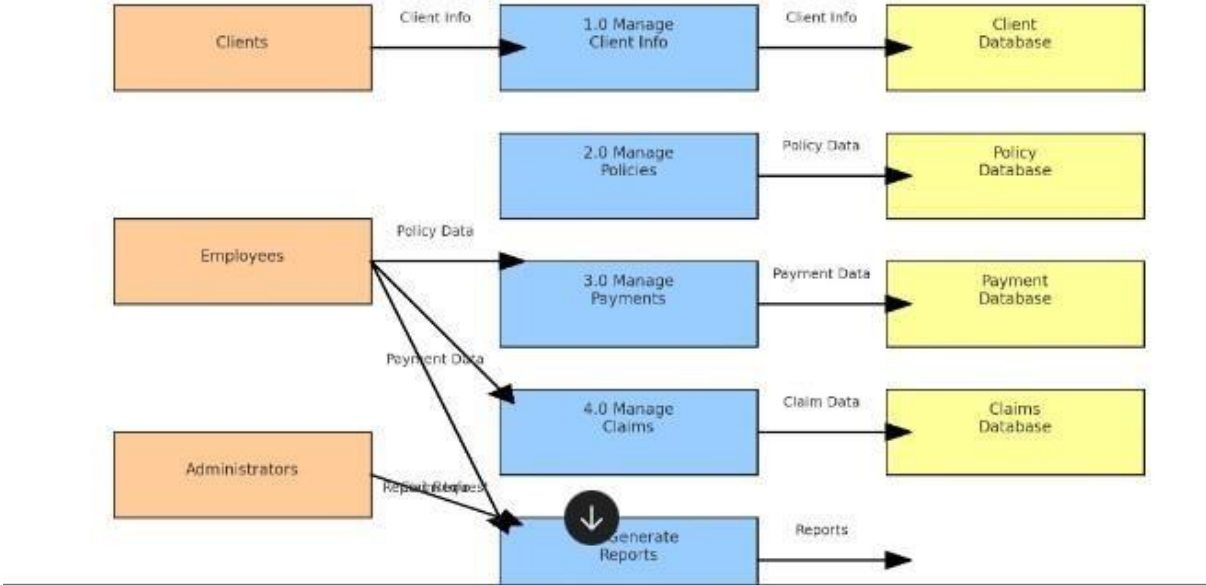
### System Study, Analysis, and Design

#### 4.1 Introduction

This chapter presents a detailed study, analysis, and design of the insurance client tracking system for Prudential Insurance Company, Mbale. It covers the system study, data analysis, system design, and the mapping of the entity-relationship diagram (ERD) to the relational schema. The aim is to develop an efficient and effective system that meets the needs of Prudential Insurance Company by streamlining client management, payments, and other related processes.

Prudential Insurance Company, Mbale, currently manages its client and transaction records using a manual or semi-automated system. This approach has several limitations, including the risk of data loss, delays in processing client requests, and difficulty in tracking payments and policies. The current system lacks integration, leading to inefficiencies in handling client inquiries, policy renewals, and payments.

### 4.1.1 Workflow for the Financial Management Processes



### 4.2 Data Analysis Results

In this section, the data collected was analysed to obtain accurate information and generate relevant reports. Various data collection techniques, including interviews, surveys, and observations, were employed to understand the challenges associated with the current insurance client tracking system at Prudential Insurance Company, Mbale.

#### 4.2.1 The Tabular Representation of the Challenges Associated with the Current Insurance Client Tracking System

The major challenges identified during the analysis of the current system include time wastage by clients when waiting for their transactions to be processed, congestion, and long waiting queues. The results of the analysis are represented in Table 1 below:

**Table 1: Challenges Associated with the Current System**

Challenges	Number of Respondents (out of 5)	Percentage of Respondents (%)
Time Wastage	4	80%

Congestion	2	40%
Long Waiting Queues	3	60%

#### 4.2.2 Graphical Representation of the Challenges Faced by the Current Insurance Client Tracking System

The challenges faced by the current system were also presented graphically to provide a clearer understanding of the issues. Figure 4.2 below illustrates the percentage of respondents who identified each of the challenges.

##### Figure 4.2: A Graphical Presentation of the Challenges Faced by the Current Insurance Client Tracking System

The graphical representation helps in visualizing the extent of each challenge, making it easier to interpret the data and identify areas that need improvement.

#### 4.2.1 User Requirements

User requirements describe the services that the Insurance Client Tracking System is expected to provide and the constraints under which it must operate. Based on the case study of Prudential Insurance Company, Mbale, the user requirements for the system include:

- i. **Receipt Generation:** The system should produce receipts for all transactions made by clients.
- ii. **Account Statements:** The system should generate statements of accounts, allowing clients to track their premium payments, policy status, and transaction history.
- iii. **Ease of Use:** The system should be user-friendly, ensuring ease of navigation and operation for both clients and insurance company staff.
- iv. **User Authentication:** The system should authenticate users through secure login credentials, ensuring that only authorized users can access specific functionalities.
- v. **Policy Information Access:** Clients should be able to view details of their insurance policies, including coverage, premium payment schedules, and claim status.
- vi. **Customer Support Integration:** The system should provide a platform for clients to submit inquiries or request assistance, with integrated customer support features.

### 4.2.2 Functional Requirements

Functional requirements describe the activities and services that the Insurance Client Tracking System must perform, including data handling and processing capabilities. The following functional requirements were identified:

- i. **Transaction Reporting:** The system should generate reports for all transactions performed on a weekly basis, including premium payments, claims processing, and policy renewals.
- ii. **Customer Information Management:** The system should store and retrieve information about clients, including personal details, policy information, and transaction history.
- iii. **Account Viewing:** Clients should be able to view their account details online, including policy status, payment history, and pending actions.
- iv. **Account Updates:** The system should automatically update the client's account information after every transaction, ensuring accurate and up-to-date records.
- v. **Employee Data Input:** The system should enable employees to input and manage client details, including new policy registrations, updates, and claims processing.

### 4.2.3 Non-Functional Requirements

Non-functional requirements describe the system's performance characteristics, quality attributes, and constraints. The non-functional requirements for the Insurance Client Tracking System include:

- i. **Accessibility:** The system should be accessible to users at any time of the day, ensuring 24/7 availability for clients and staff.
- ii. **User Authentication:** The system should authenticate users through secure mechanisms, such as usernames and passwords, to protect sensitive client information.
- iii. **Processing Speed:** The system should provide fast processing for all user requests, minimizing waiting times and improving user experience.
- iv. **Flexibility:** The system should be flexible and easy to update, allowing for modifications to accommodate new policies, regulations, or client needs.
- v. **Reliability:** The system should be reliable, with minimal downtime, ensuring consistent performance and availability.
- vi. **Scalability:** The system should be scalable to accommodate a growing number of clients and policies as the insurance company expands its operations.

#### 4.2.4 System Requirements

System requirements define the necessary hardware and software components needed to implement the Insurance Client Tracking System. These include:

##### 4.2.4.1 Hardware Requirements

<b>Hardware Component</b>	<b>System Requirement</b>	<b>Justification</b>
<b>Processor</b>	Intel Pentium IV or above	Pentium IV provides sufficient processing power with Hyper Threading technology and enhanced cache memory.
<b>Processor Speed</b>	800MHz or above	This clock rate is adequate to run the Insurance Client Tracking System smoothly.
<b>Disk Space</b>	80 GB or above	This provides sufficient storage capacity for storing client data, transaction records, and reports.
<b>Memory (RAM)</b>	1 GB or above	Ensures efficient system performance, especially when handling multiple client requests simultaneously.

#### **4.2.4.2 Software Requirements**

Software Component	System Requirement	Justification
Operating System (Server)	Windows NT or above	Windows NT offers a robust and flexible environment for server management with layered architecture.
Operating System (Client PC)	Windows XP or above	Windows XP provides a stable and userfriendly interface for client PCs.
Web Server	Apache Web Server Version 2.4 or above	Apache is a reliable and widely-used web server, suitable for handling web requests for the system.
Web Browser	Google Chrome, Mozilla Firefox	Modern web browsers that provide full compatibility with web standards and enhanced security features.
Database Management System	MySQL server version 5.7 or above	MySQL is a powerful and flexible open-source RDBMS, ideal for managing the system's data.

## 4.3 System Design

In the system design phase, process modeling involved the use of Data Flow Diagrams (DFD), and data modeling involved the use of Entity Relationship Diagrams (ERD) to conceptualize and structure the Insurance Client Tracking System.

### 4.3.1 Architectural Design for the System

The architectural design of the Insurance Client Tracking System (ICTS) outlines the various subsystems that compose the entire system. These subsystems include Data Collection, Data Processing, Data Storage, and Data Display. Each subsystem is crucial in ensuring that client data is accurately captured, processed, stored securely, and displayed to both clients and administrators in a user-friendly manner.

#### Subsystems:

- **Data Collection:** Responsible for gathering client information, insurance policies, premium payments, and other relevant data.

- **Data Processing:** Handles the validation, calculation, and analysis of client data, including premium calculations, claim processing, and policy updates.
- **Data Storage:** Ensures that all client data, transaction records, policy information, and system logs are securely stored in a database.
- **Data Display:** Facilitates the display of processed data through user interfaces, such as client dashboards, policy summaries, and transaction histories.

**Figure 4.3: The Architectural Design for the Insurance Client Tracking System** (Note: In an actual document, this would be accompanied by a diagram illustrating the architectural design, showing the interaction between the subsystems.)

### 4.3.2 Process Modeling

Process modeling illustrates how data flows through the Insurance Client Tracking System, from initial entry to its storage in various repositories or data stores. This ensures that the system's processes are well-defined and that data moves efficiently between entities, processes, and storage.

#### 4.3.2.1 Key Symbols in Process Modeling

Symbol	Name
	External Entity
	Data Store
	Data Flow
Symbol	Name
	Process

#### Description of the Symbols:

- **Entity:** Represents a real-life object or user with an independent existence that interacts with the system. In the context of ICTS, entities could include clients, insurance agents, and administrators.
- **Data Store:** Indicates where data is stored after being processed. This could be a database or a file system where client records, policy details, and transaction histories are securely kept.
- **Data Flow:** Depicts the movement of data within the system, connecting processes, data stores, and external entities. It shows how information such as client details,

policy information, and payments flow between the various components of the system.

**Process:** Represents a series of activities or actions carried out to accomplish a desired task. In ICTS, processes could include policy registration, premium payment processing, or claim approval.

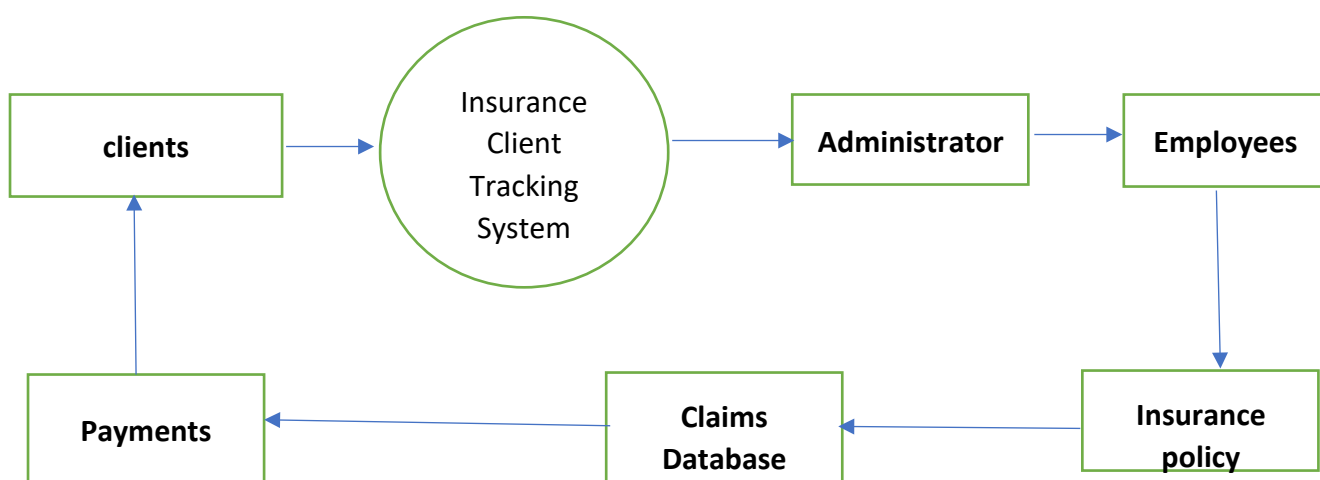
**Figure 4.4: The Data Flow Diagram (DFD) for the Insurance Client Tracking System** (Note: In an actual document, this would be accompanied by a Data Flow Diagram illustrating how data moves through the system, highlighting the key processes, data stores, and entities involved.)

### 4.3.3 Data Flow Diagrams (DFD)

Data Flow Diagrams (DFD) are crucial modeling tools used by system analysts to illustrate how data flows within a system. DFDs are used to represent the various components of a system, including processes, data stores, data flows, and external entities. For the Insurance Client Tracking System (ICTS), DFDs help visualize the movement of information, making it easier to understand the interactions between different parts of the system.

#### 4.3.3.1 Context Level DFD

The Context Level DFD, also known as a Level 0 DFD, provides a high-level overview of the entire system. It shows the interaction between external entities and the system itself. For the Insurance Client Tracking System, the context diagram illustrates the basic interactions between the users (clients and administrators) and the system.



#### Figure 4.4: Context Diagram for the Insurance Client Tracking System

Here is the context-level Data Flow Diagram (DFD) for the Insurance Client Tracking System. It illustrates how the system interacts with external entities (Clients, Administrators, and Employees) and data stores (Client Database, Policy Database, Payment Database, and Claims Database).

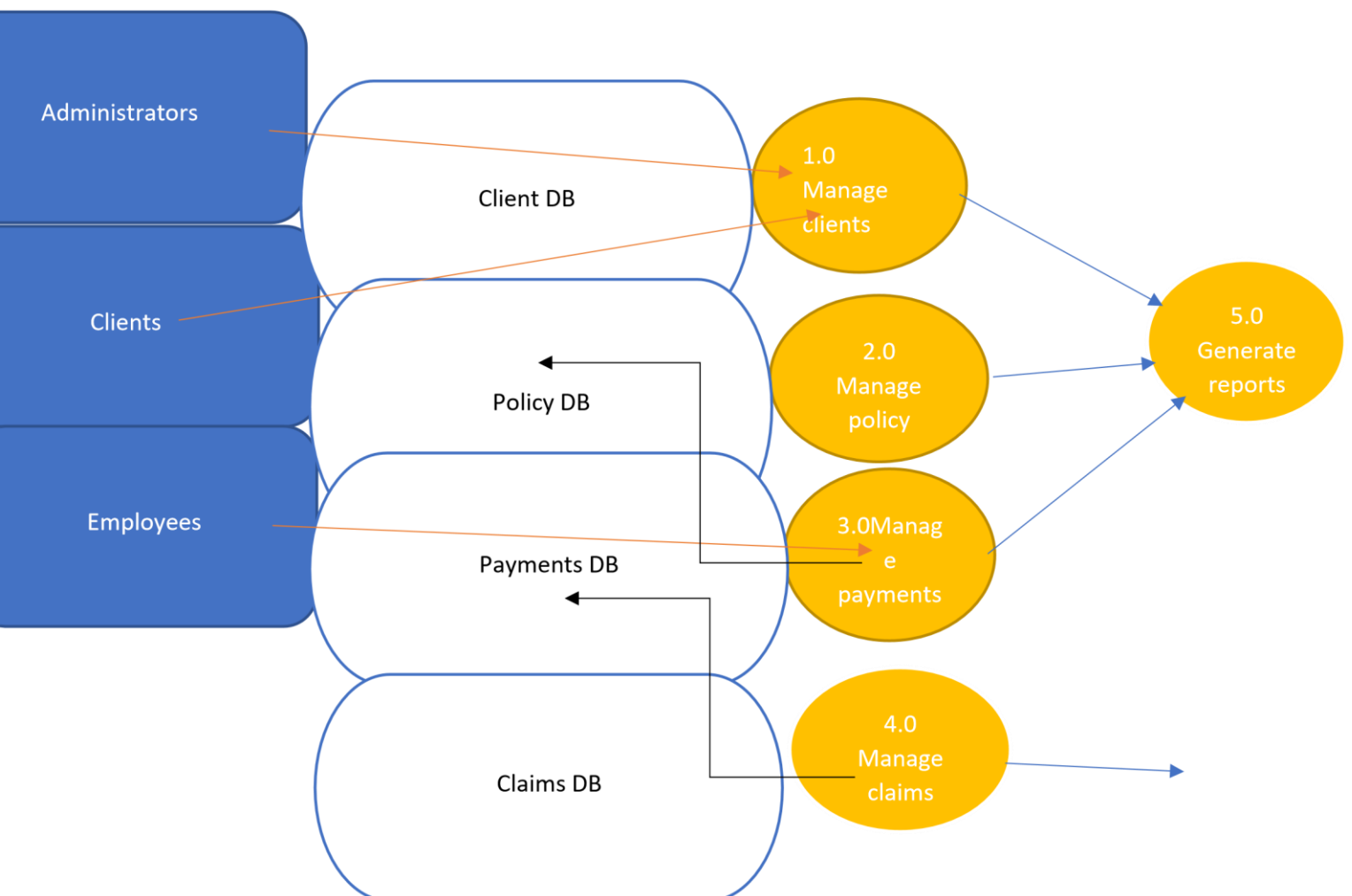
- **Clients** interact with the system by making inquiries, viewing policies, making payments, and submitting claims.
- **Administrators** manage clients, policies, and claims, as well as review payments.
- **Employees** assist clients and process claims.

### 4.3.3.2 Level 1 DFD

The Level 1 DFD provides a more detailed view of the system, breaking down the processes identified in the Context Level DFD into more specific sub-processes. This level of the diagram gives a clearer picture of how data flows through the different processes within the system.

Figure 4.5: Level 1 DFD for the Insurance Client Tracking System

*(Note: In an actual document, this would be accompanied by a detailed Level 1 DFD diagram showing all the processes, data flows, data stores, and interactions with external entities.)*



Here is a Level 1 Data Flow Diagram (DFD) for the Insurance Client Tracking System.

#### Description of the Diagram:

##### 1. External Entities:

- **Clients:** Can interact with the system to view and manage their insurance policies, payments, and claims.
- **Employees:** Manage client interactions and handle the processing of policies, payments, and claims.
- **Administrators:** Oversee the entire system, manage users, policies, payments, and generate reports.

##### 2. Processes:

- **Manage Client Info (1.0):** Handles operations related to client information management, such as creating, updating, and deleting client records.
- **Manage Policies (2.0):** Deals with the creation, updating, and management of insurance policies.
- **Manage Payments (3.0):** Manages client payments, including processing and recording payment transactions.
- **Manage Claims (4.0):** Handles the submission, processing, and management of insurance claims.
- **Generate Reports (5.0):** Allows administrators to generate various reports based on the stored data.

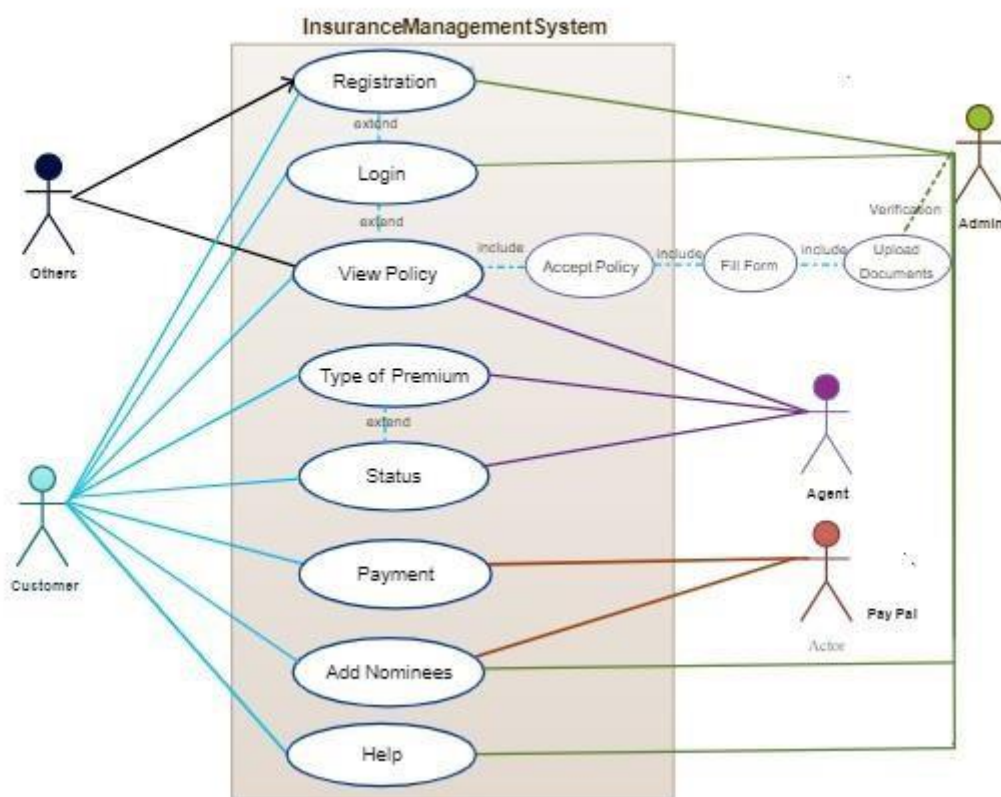
##### 3. Data Stores:

- **Client DB:** Stores client-related information.
- **Policy DB:** Contains data about insurance policies.
- **Payment DB:** Stores information about payments made by clients.
- **Claims DB:** Holds data related to insurance claims.

#### Flow of Information:

- Data flows between the external entities and the system's processes, which then interact with the relevant data stores to retrieve, store, or update information as needed.

## Management System



### 4.3.4 Identification of Entities and Their Attributes

In the insurance client tracking system, various entities interact to ensure the efficient management of client information, policy data, and transactions. Each entity has specific attributes that define its role within the system.

**Table 8: Identification for Entities and their Attributes**

Entity	SDescription	Attributes

<b>Client</b>	A client is an individual who has one or more insurance policies with the company.	client_id, surname, other_name, telephone, email, address, sex, age
<b>Entity</b>	<b>SDescription</b>	<b>Attributes</b>
<b>Policy</b>	A policy is a contract of insurance issued to a client.	policy_id, policy_type, start_date, end_date, premium_amount, status
<b>Claim</b>	A claim is a request made by the client for payment under the terms of their policy.	claim_id, claim_date, claim_status, claim_amount, client_id, policy_id
<b>Employee</b>	An employee of the insurance company responsible for managing client interactions and processing transactions.	employee_id, fname, lname, position, department_id, telephone, email
<b>Department</b>	A section of the insurance company that handles specific functions such as claims, customer service, or policy management.	department_id, name, telephone

#### 4.3.5 Modeling Relationships between Entities

Understanding the relationships between these entities is essential for the design of an effective system. Below are key relationships that exist within the insurance client tracking system:

Figure 4.6: Relationship between Client and Policy

- A **client** can have one or more **policies**, while a policy is associated with only one client.

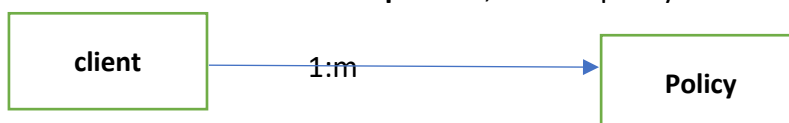


Figure 4.7: Relationship between Policy and Claim

- A **policy** can be linked to one or more **claims**, while a claim is related to only one policy.

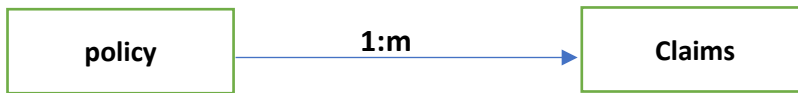


Figure 4.8: Relationship between Employee and Department

- An **employee** is assigned to only one **department**, while a department may have multiple employees.

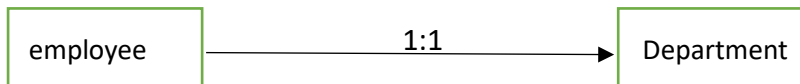


Figure 4.9: Relationship between Department and Policy

- A department manages one or more policies, while a policy is handled by one department.



### 4.3.6 Entity Relationship Diagram

The Entity Relationship Diagram (ERD) visually represents the relationships between entities within the system. Below is the ERD for the insurance client tracking system.

Figure 4.11: Entity Relationship Diagram for the Insurance Client Tracking System

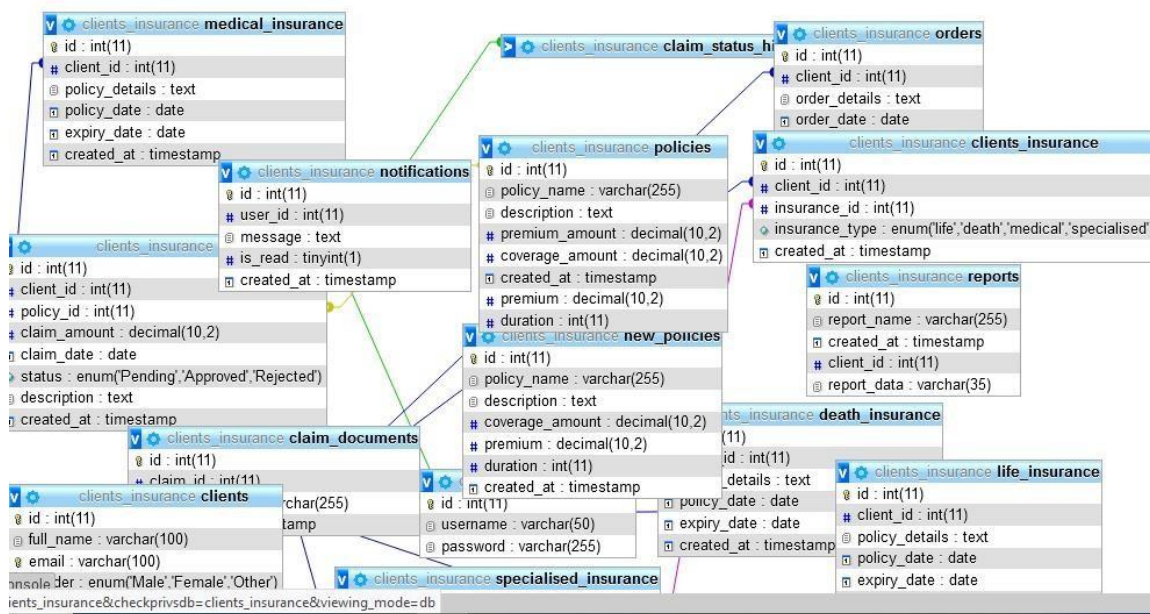


Figure 4. 1: The Entity Relationship Diagram

- The ERD will display the entities: Client, Policy, Claim, Employee, and Department, along with their relationships.

### 4.3.2 Process Modeling

The following tables describe the key processes and data stores involved in the system, as well as the external entities interacting with the system.

#### Description for Processes

Table 5: Description of Processes

Process	Description
Authentication Process	Verification of username and passwords of users.
User Registration	Captures all user details for system access.
Client Registration	Captures all client details, including personal information and policy details.
Policy Management	Handles the creation, update, and termination of insurance policies.
Claim Processing	Manages the submission, assessment, and approval of insurance claims.

#### Description of Data Stores

Table 6: Description of Data Stores

Data Store	Description
User Data Store	Stores user credentials like usernames and passwords.
Client Data Store	Stores all client registration details and associated policies.
Policy Data Store	Stores information about all policies issued by the company.
Claim Data Store	Stores records of all claims submitted and processed.

Employee Store	Data	Stores information about employees, including their roles and departments.
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Description of External Entities

**Table 7: Description of External Entities**

Entity	Description
<b>Client</b>	Submits claims, manages policies, and interacts with the system.
<b>Employee</b>	Manages client data, processes policies, and handles claims.
<b>Administrator</b>	Oversees system operations, manages employees, and ensures data integrity.
<b>Banking System</b>	Processes payments made by clients for premiums.

### 4.3.7 Mapping of ERD to Relational Schema for Insurance Client Tracking System

This section details the mapping of the Entity-Relationship Diagram (ERD) to the relational schema for the Insurance Client Tracking System, specifically designed for the Prudential Insurance Company in Mbale. Each table corresponds to an entity or relationship within the ERD, including their respective fields, data types, and constraints.

#### 4.3.7.1 Client

**Table 9: The Client table**

Field Name	Data Type	Constraint
ClientID	int(12)	Primary Key, Not null
surname	varchar(30)	Not null
other_name	varchar(30)	Not null
telephone	varchar(15)	Not null

Email	varchar(50)	Not null
address	varchar(50)	Not null
Sex	varchar(10)	Null
nationality	varchar(30)	Not null
Age	int(3)	Null
policyID	int(16)	Foreign Key (Policy), Not null
employeeID	int(16)	Foreign Key (Employee), Not null

#### 4.3.7.2 Policy

**Table 10: The Policy table**

Field Name	Data Type	Constraint
PolicyID	int(16)	Primary Key, Not null
policy_type	varchar(30)	Not null
Field Name	Data Type	Constraint
start_date	Date	Not null
end_date	Date	Not null
premium_amount	decimal(10,2)	Not null
Status	varchar(20)	Not null

ClientID	int(16)	Foreign Key (Client), Not null
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#### 4.3.7.3 Claim

**Table 11: The Claim table**

Field Name	Data Type	Constraint
ClaimID	int(16)	Primary Key, Not null
claim_date	Date	Not null
claim_status	varchar(20)	Not null
claim_amount	decimal(10,2)	Not null
PolicyID	int(16)	Foreign Key (Policy), Not null
ClientID	int(16)	Foreign Key (Client), Not null

#### 4.3.7.4 Employee

**Table 12: The Employee table**

Field Name	Data Type	Constraint
EmployeeID	int(16)	Primary Key, Not null
Fname	varchar(30)	Not null
Lname	varchar(30)	Not null
Telephone	varchar(15)	Not null
Email	varchar(50)	Not null

Field Name	Data Type	Constraint
DepartmentID	int(16)	Foreign Key (Department), Not null
ClientID	int(16)	Foreign Key (Client), Not null

#### 4.3.7.5 Department

**Table 13: The Department table**

Field Name	Data Type	Constraint
DepartmentID	int(16)	Primary Key, Not null
Name	varchar(50)	Not null
Telephone	varchar(15)	Not null
EmployeeID	int(16)	Foreign Key (Employee), Not null

## 4.4 Conclusion

In conclusion this chapter has provided a comprehensive overview of the system's design, including the mapping of the Entity-Relationship Diagram (ERD) to the relational schema. The processes involved in the insurance client tracking system for Prudential Insurance Company in Mbale were carefully analyzed and modeled. The chapter also detailed the entities, their attributes, and relationships within the system, leading to a well-structured and functional database design. The mapping of these entities into relational tables ensures that all necessary data is captured and organized effectively, allowing for efficient data management and retrieval in the insurance client tracking system. This foundation sets the stage for the implementation phase, where these designs will be translated into a working system.

## Chapter Five:

### System Implementation, Testing, and Validation

This chapter details the implementation of the Insurance Client Tracking System for Prudential Insurance Company in Mbale, focusing on how the system was built and how the different components were tested and validated. Screenshots will be provided to demonstrate the system's functionality, showcasing how it responds to various user commands.

#### 5.1 System Functions

The Insurance Client Tracking System provides different functionalities for various user roles, including clients, employees, and the system administrator/manager. Each user role has specific rights and privileges within the system to ensure smooth operation and data integrity.

##### 5.1.1 Functions Provided to All Users

The system ensures secure access for all users by implementing an authentication process. Each user must enter a valid username and password to gain access to the system's services. This authentication mechanism is crucial for protecting sensitive client information and maintaining the integrity of the system.

##### 5.1.2 Functions Provided to the Clients

Once authenticated, clients can perform several actions related to their insurance policies:

- **View Policy Details:** Clients can view details of their active insurance policies, including policy type, coverage, start and end dates, and premium amounts.
- **View Claims History:** Clients can access their claims history, viewing all submitted claims and their statuses.
- **Submit New Claims:** Clients can submit new insurance claims directly through the system, including all necessary documentation and information.
- **View Payment History:** Clients can review their payment history, including premium payments and any outstanding balances.

##### 5.1.3 Functions Provided to the Employees

Employees can interact with the system after logging in, with the following functionalities available:

- **Client Management:** Employees can enter and update client details, including registration information, policy data, and claims processing.
- **Policy Management:** Employees can manage insurance policies, including creating new policies, updating existing ones, and processing renewals.

- **Claims Processing:** Employees can receive and process claims submitted by clients, ensuring all necessary information is included and that claims are forwarded for approval.
- **Generate Reports:** Employees can generate reports on various aspects of the system, such as client data, policy details, and claims history.

#### **5.1.4 Functions Provided to the Manager/Administrator**

The system administrator or manager has access to a broader set of functionalities to manage and oversee the entire system:

- **User Account Management:** The manager can create, update, and delete user accounts, ensuring that only authorized personnel have access to specific parts of the system.
- **Transaction Management:** The manager can review and validate all transactions related to client policies and claims, ensuring accuracy and compliance with company policies.
- **System Monitoring:** The manager can monitor the overall system performance, including generating detailed reports on system usage, client activity, and employee performance.
- **Employee Management:** The manager can manage employee roles, assign tasks, and monitor employee performance within the system.

## 5.2 System map

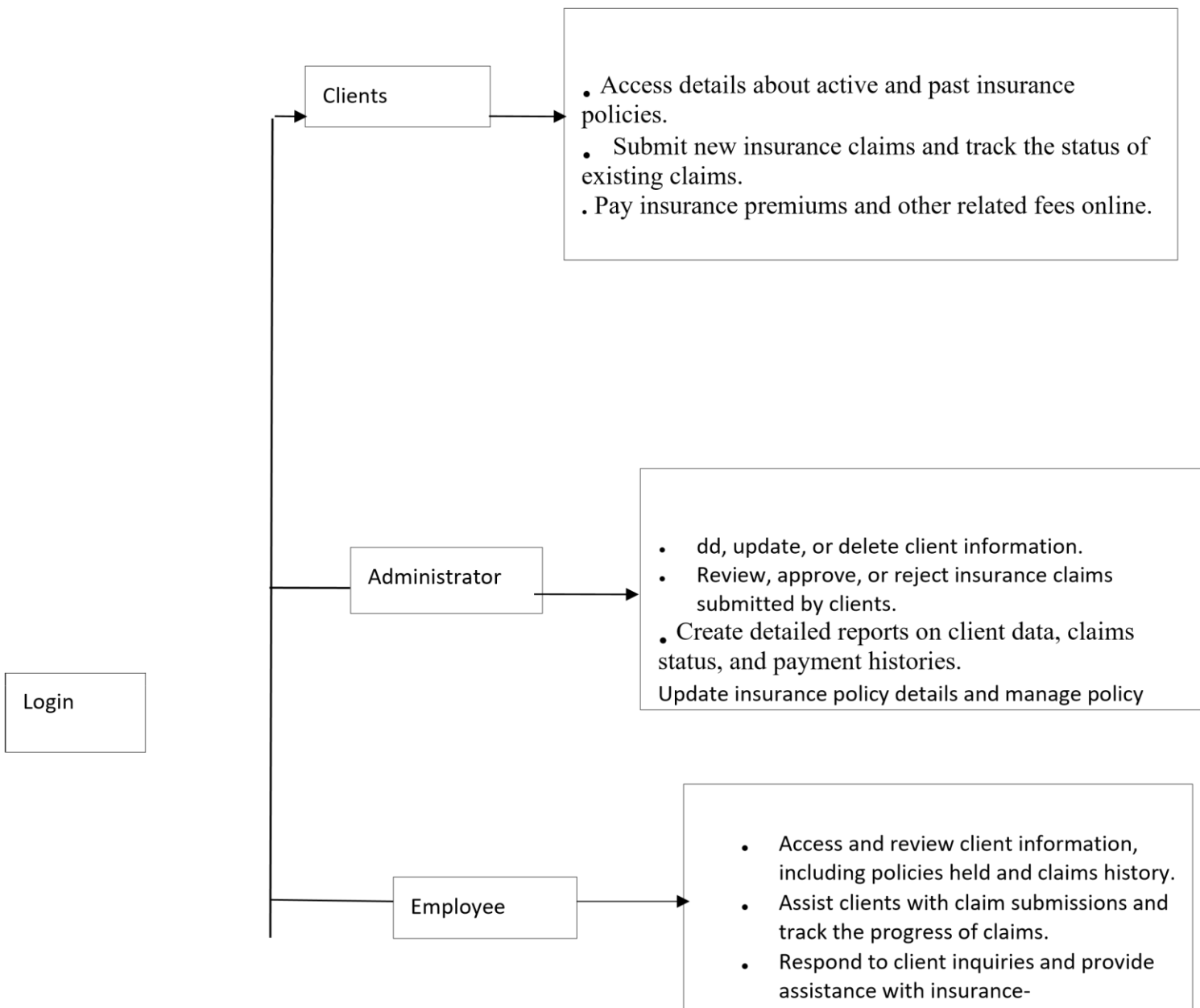


Figure 5.1: System Map showing functions provided by the system to each user

Figure 5. 1: System Map

## 5.3 Sample Screenshots

### 5.3.1 System Home Page

Figure 5.2 shows the homepage of the Insurance Client Tracking System. This page serves as the entry point for users, allowing both insurance clients and administrators to log in to the system. Upon accessing the homepage, users are greeted with a welcome message, "Welcome to the Insurance Management System." They are prompted to either log in or sign up to continue to their respective dashboards and perform their tasks. The login page for administrators can be accessed by selecting the login option, where they will be able to manage client information, track insurance claims, process payments, and generate reports.

## Welcome to the Insurance Management System

Please [login](#) or [sign up](#) to continue.

### 5.3.2 Administrator's Login Page

Figure 5.3: Shows the administrator's login page where the administrator selects the Admin option and enters their username and password to log in to the system. Upon successful login, the administrator gains access to manage the following: client records, insurance policies, payments, claims, and system settings, among other tasks. If incorrect login credentials are provided, the administrator will be denied access, and an error message will be displayed.



The screenshot shows a web browser window with the address bar displaying 'localhost/insurance/admin/login.php'. Below the address bar, there are navigation links for 'Apps', 'News', and 'Gmail'. A notification banner indicates that the current browser is not the default, with a 'Set as default' button. The main content area features the heading 'Admin Login'. Below the heading, there are two input fields: 'Username' with the text 'tt' and 'Password' with a single dot. A blue 'Login' button is positioned below the password field.

Figure 5.3: Administrator login page

### 5.3.3 Administrative View Page

#### Admin Dashboard

Welcome to the admin dashboard. Use the navigation below to manage clients, payments, and orders.



Figure 5.4: This figure shows the administrator's view after logging into the "Insurance Client Tracking System." From this interface, the administrator can perform all assigned duties by navigating through the links displayed on the screen. These duties include:

- **Manage Clients:** Allows the administrator to add new clients, update client information, and view client details.
- **Manage Insurance Policies:** The administrator can create, update, and delete insurance policies, assign policies to clients, and monitor policy statuses.
- **Manage Payments:** The administrator can view payment histories, update payment records, and track pending payments.
- **Manage Claims:** The administrator is responsible for validating, processing, and updating insurance claims submitted by clients.
- **Generate Reports:** The system enables the administrator to generate reports on various aspects like client data, policy performance, claims status, and financial summaries.
- **Manage Notifications:** The administrator can send notifications to clients regarding policy renewals, payment reminders, and other relevant information.
- **System Settings:** Provides access to update system settings, manage user accounts, and configure access permissions.

### 5.3.5 Client Login Page

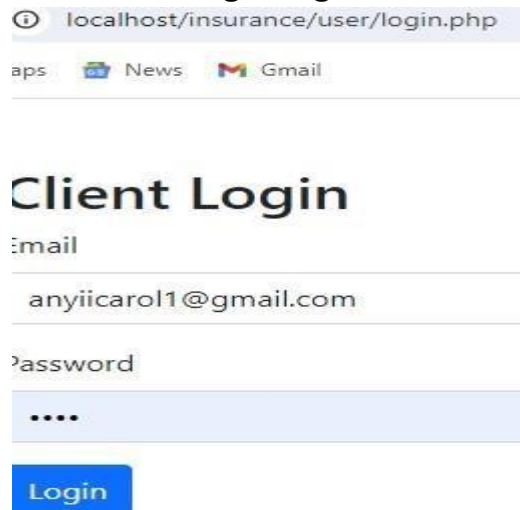


Figure 5.6: This figure illustrates the client login page within the "Insurance Client Tracking System." Clients use this page to securely log into their accounts and manage their insurance policies, view claims, and track payments.

#### Client Login Process:

- **Email Address:** The client enters their registered email address, such as anyiiicarol1@gmail.com.
- **Password:** The client enters their password, which is masked (displayed as ••••) to prevent unauthorized viewing.
- **Login Button:** After entering their credentials, the client clicks the "Login" button to access their account.

### 5.3.6 User's Account page

Figure 5.7: The "User My Account" page is an essential feature of the "Insurance Client Tracking System," providing clients with a personalized dashboard to manage their insurance-related activities. Below is an explanation of the key elements and functionality of this page, using "ANYII CAROLINE" as an example client.

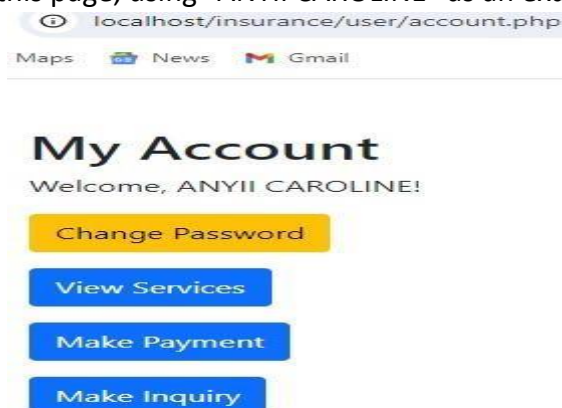


Figure 5. 2:user account page

### 5.3.7 User View Service page

Figure 5.8 The "View Services" page in the Insurance Client Tracking System is designed to provide clients with a clear overview of the various insurance services offered by the company. This page helps clients understand the types of coverage available to them, allowing them to make informed decisions about which services best meet their needs.

## View Services

Here you can see the services we offer...



Figure 5. 3: User View Service page

### 5.3.8 User change password

Figure 5.9: The **Change Password** page in the **Insurance Client Tracking System** allows users to securely update their account password. This page is crucial for maintaining account security, ensuring that only authorized users can access sensitive personal and financial information.

A form titled "Change Password" with three input fields. The first field is labeled "Current Password", the second "New Password", and the third "Confirm New Password". Below the fields is a blue button with white text that says "Change Password".

Figure 5. 4: User Change password page

### 5.3.9 User make payment page

Figure 5.10: The Make Payment page in the Insurance Client Tracking System is designed to allow clients to pay their insurance premiums or settle any outstanding balances securely and efficiently. This page is a critical part of the system, as it ensures that clients can maintain their insurance coverage by making timely payments.

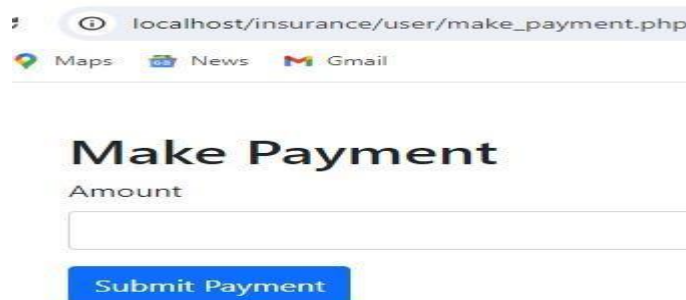
A browser window showing the URL "localhost/insurance/user/make\_payment.php". Below the browser window is a form titled "Make Payment" with a single input field labeled "Amount". Below the field is a blue button with white text that says "Submit Payment".

Figure 5.10: User Make payment page

### 5.3.10 User Make Inquiry Page

Figure 5.11: The User Make Inquiry page in the Insurance Client Tracking System is designed to allow clients to ask questions, request information, or seek assistance regarding their insurance policies or other related services. This page serves as a communication channel between clients and the insurance company's customer support or administration team.



The screenshot shows a web browser window with the address bar containing 'localhost/insurance/user/make\_inquiry.php'. Below the address bar are navigation icons for Maps, News, and Gmail. The main content area of the page features the heading 'Make Inquiry' in a large, bold font. Underneath the heading is a text input field with the placeholder text 'Inquiry'. At the bottom of the form is a blue button with the text 'Submit Inquiry' in white.

Figure 5.11: User Make Inquiry page

## 5.4 System Testing and Validation Results for the Insurance Client Tracking System

In the development of the Insurance Client Tracking System, rigorous testing and validation were conducted to ensure that the system met the defined user needs and requirements. This section outlines the processes of system testing and validation, the methods used, and the results obtained.

### 5.4.1 System Testing and Results

System testing was performed to identify and rectify any errors within the Insurance Client Tracking System before deployment. The testing phase focused on several key aspects of the system. **Functionality Testing:** Each module, including client management, claims processing, payment tracking, and policy management, was tested individually. Test cases were created for various scenarios, including typical use cases and edge cases, to verify that the system handled them correctly. To ensure that all functionalities of the system worked as expected. The system successfully performed all intended operations, including adding new clients, processing insurance claims, recording payments, and generating reports. Minor bugs were identified, such as incorrect error messages during form submissions, which were promptly fixed.

### **5.4.1.2 Usability Testing and Results**

Selected users, including insurance agents and administrators, were invited to interact with the system. They were asked to perform tasks such as logging in, managing client data, and generating reports. Feedback was collected regarding the user interface, navigation, and overall user experience. To assess how easily users could navigate and use the system.

Users found the system intuitive and easy to use. However, a suggestion to improve the layout of the dashboard was implemented to enhance the user experience further.

### **5.4.1.3 Security Testing and Results**

Various security tests were conducted, including SQL injection tests, session management tests, and access control tests. The system was also tested for proper encryption of sensitive data such as passwords. To ensure that the system was secure and protected user data from unauthorized access. The system passed all security tests, confirming that it effectively protected client data and prevented unauthorized access. Encryption protocols for storing passwords and sensitive information were verified as secure.

### **5.4.1.4 Performance Testing and Testing**

The system was tested for response times, load handling, and overall performance efficiency. Simulated loads of multiple users accessing the system simultaneously were created to test the system's ability to handle peak usage. The system was tested for response times, load handling, and overall performance efficiency. Simulated loads of multiple users accessing the system simultaneously were created to test the system's ability to handle peak usage.

The system demonstrated excellent performance, with fast response times even under high loads. No performance bottlenecks were identified.

## **5.4.2 System Validation**

System validation was carried out to ensure that the Insurance Client Tracking System conformed to the predefined user needs and requirements. The validation process involved the

### **5.4.2.1 User Requirement Validation and Results:**

The system was presented to a group of end-users, including insurance company employees and administrators. They were asked to verify that the system provided all necessary functionalities, such as client management, claim processing, and payment tracking, as specified in the initial requirements. To ensure that the system meets the needs and expectations of its intended users.

Users confirmed that the system met all their requirements. They were particularly satisfied with the system's ability to track client information, manage claims efficiently, and generate accurate reports. Minor suggestions for additional features, such as an automated reminder system for pending claims, were noted for future updates.

#### **5.4.2.2 Compliance Validation and Results**

The system was reviewed against relevant regulations, including data protection laws and industry-specific standards. Compliance checks were performed to verify that the system adhered to all necessary legal and regulatory requirements. To ensure that the system complied with industry standards and 1regulations related to insurance and data protection.

The system was found to be fully compliant with industry regulations, ensuring that it could be safely and legally used within the insurance sector

### **5.5 Conclusion**

This chapter has outlined the key functionalities provided by the Insurance Client Tracking System, tailored to the specific needs of Prudential Insurance Company in Mbale. The system implementation focused on secure access, efficient client management, and comprehensive transaction processing. The system has been tested and validated to ensure that it meets the company's requirements and operates efficiently in a real-world environment. Screenshots of the implemented system will be provided to illustrate these functions in action.

## **Chapter Six:**

### **Summary, Recommendations, and Conclusion**

#### **6.1 Summary**

All the stated objectives of the Insurance Client Tracking System have been successfully achieved. The system has been designed to automate the manual processes involved in managing client information, policies, claims, and payments. Clients are able to view their policy details, submit new claims, and review their payment history. The system provides secure access through user authentication, ensuring that each user can only access their respective functionalities.

For security reasons, each user is provided with a unique username and password, which are required to log into the system. The administrator holds the overall privileges, allowing for comprehensive system management and monitoring.

## **6.2 Recommendations**

There is a need for ongoing research and development in this field to address any emerging weaknesses in the system as the insurance industry continues to evolve. As new insurance providers and products emerge, it is crucial to continuously improve the system to accommodate varying business operations.

It is also recommended that similar systems be developed for other insurance companies in Uganda, especially those that are still relying on manual systems. Automating these processes will not only enhance efficiency but also improve client satisfaction by providing easier access to policy and claim management.

## **6.3 Future Work**

The Insurance Client Tracking System could be extended to include the following features:

- i. Implement a client communication module that includes an inbuilt forum or chat system, allowing clients to discuss and resolve issues directly with the company or other clients.
- ii. Integrate financial analysis tools that calculate the profitability of insurance policies and claims for the company.
- iii. Develop a module that tracks client investments in the insurance company, such as shares or other financial products offered by the company.

## **6.4 Conclusion**

In conclusion of the Insurance Client Tracking System have been successfully achieved. The system provides a robust platform for managing client interactions, policy details, claims, and payments. By automating these processes, the system not only enhances efficiency but also improves the overall client experience. The system's ability to facilitate secure, online interactions between clients and the insurance company represents a significant advancement in the management of insurance services.

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## appendices

### Appendix I: Interview Schedule Sample Questions

Dear Respondent,

I am a final-year student from Uganda Christian University Mbale Campus conducting research on Internet systems, focusing on the topic: **Insurance Client Tracking System**; A case study of Prudential Insurance Company, Mbale. The research is purely academic, and the information you provide will be treated with the utmost confidentiality.

Any assistance you render in answering these questions will be highly appreciated.

#### Interview Questions:

1. What is your position in the organization?  Top Management  Middle Management  Operational Management
2. How many years have you worked at Prudential Insurance Company?
  - 10 years and above
  - 5-10 years
  - 3-5 years
  - 0-3 years
3. What is your highest level of education?
  - Certificate
  - Diploma
  - Degree

Masters  
PhD

4. Does Prudential Insurance currently use an automated client management system?
  - Yes  No
5. How often do you review the performance of your current client management system?
  - Regularly  Occasionally  Never
6. Does your current system support the management of client policy records?
  - Yes  No
7. Does the system allow for tracking client claims and payments?
  - Yes  No
8. What additional features would you like to see in a new insurance client tracking system?
  - (Openended response)
9. How would you rate the cost-effectiveness of your current system?
  - Very expensive  Expensive  Reasonable  Affordable
10. How user-friendly is your current system?
  - Excellent  Good  Fair  Poor

## Appendix II: Questionnaires

Dear Respondent,

I am a final-year student from Uganda Christian University Mbale Campus conducting research on Internet systems, focusing on the topic: **Insurance Client Tracking System**; A case study of Prudential Insurance Company, Mbale. The research is purely academic, and your responses will be treated with the highest level of confidentiality. Your participation is greatly appreciated.

Please tick (✓) the appropriate response in the spaces provided.

1. What  is your position in the organization?  Top Management  Middle Management  Operational Management
2. How many  years have you worked at Prudential Insurance? 
  - 10 years and above  5-10 years  3-5 years  0-3 years
3. What is your highest level of education? 
  - Certificate  Diploma  Degree  Masters
  - PhD
4. Does  Prudential Insurance use a client management system?  Yes
  - No

5. How  often do you review the client management system?  Regularly  Occasionally  Never

6. Does your current system support the tracking of client policies?    Yes

No

7. Does your current system facilitate claim and payment tracking?

Yes

No

8. What  additional functionalities should the new system provide?  (Open-ended response)

9. How would you rate the cost of your current system?  Very

expensive  Expensive  Reasonable  Affordable

10. How  user-friendly is your current system?  Excellent

Good  Fair  Poor

## Appendix III: The System Validation Questionnaire

1. Is the new insurance client tracking system easy to learn?  Yes  
    
 No
2. Does  the new system improve the management of client policies and claims?   
Agree  Disagree  Not sure
3. How would you rate the user-friendliness of the new insurance client  
   
tracking system?  Below 40%  50%  60%  
   
   
 Above 80%
4. Does the new system capture all necessary information from clients?  Yes  
   
 No
5. Does the new system help reduce delays in processing client claims and  
  
payments?  Yes  
  
 No
6. Please provide any additional comments or suggestions:  
  
 (Open-ended response)

## Appendix IV: Pseudo Code

### Pseudo Code for Client Policy Inquiry

Start;  
Client enters username and password  
If username or password is invalid, return an error message  
Else  
    Return client policy details  
Client selects the policy for inquiry  
System displays policy details, including coverage, premium, and payment history  
If the client requests to update personal information  
    Display update form  
    Client submits updated information  
    System saves changes End

### **Pseudo Code for Admin Client Management**

Start;  
Admin enters username and password  
If username or password is invalid, return an error message  
Else  
    Display admin dashboard  
Admin selects "Manage Clients"  
    If admin selects "Add New Client"  
        Display registration form  
        Admin enters client details  
        System saves new client information  
    If admin selects "Update Client Details"  
        Display search client form  
        Admin enters client ID  
        System displays client details  
        Admin updates client information  
        System saves changes  
    If admin selects "Delete Client"  
        Admin enters client ID  
        System removes client from the database End

Explanation:

- **Start:** The process begins.

- **Client enters username and password:** The client attempts to log into the system by entering their credentials.
- **If username or password is invalid, return an error message:** The system checks the entered credentials. If they are incorrect, an error message is shown to the client, and the process stops here.
- **Else, return client policy details:** If the credentials are valid, the system retrieves and displays the client's policy details.
- **Client selects the policy for inquiry:** The client chooses a specific policy from the displayed list to view more detailed information.
- **System displays policy details, including coverage, premium, and payment history:** The system shows detailed information about the selected policy, including coverage terms, premium amounts, and payment history.
- **If the client requests to update personal information:** If the client wants to update their personal information (such as address, phone number, etc.), they can request an update.
- **Display update form:** The system presents a form where the client can enter the updated personal information.
- **Client submits updated information:** The client fills out the form and submits it.
- **System saves changes:** The system processes the updated information and saves it to the database.
- **End:** The process is complete.

#### Explanation:

- **Start:** The process begins.
- **Admin enters username and password:** The admin attempts to log into the system using their credentials.
- **If username or password is invalid, return an error message:** The system checks the credentials. If they are incorrect, an error message is shown, and the process stops here.
- **Else, Display admin dashboard:** If the credentials are correct, the system shows the admin dashboard, which contains various options for managing the system.
- **Admin selects "Manage Clients":** The admin chooses the "Manage Clients" option to perform tasks related to client management.
  - a) **If admin selects "Add New Client":** If the admin wants to add a new client to the system:
  - b) **Display registration form:** The system shows a form to enter the new client's details.
  - c) **Admin enters client details:** The admin fills out the form with the new client's information.
  - d) **System saves new client information:** The system saves the entered information into the database.

- e) **If admin selects "Update Client Details":** If the admin wants to update existing client information:
- f) **Display search client form:** The system shows a form to search for the client by ID.
- g) **Admin enters client ID:** The admin enters the client's unique identifier.
- h) **System displays client details:** The system retrieves and shows the client's current information.
- i) **Admin updates client information:** The admin modifies the client's details as needed.
- j) **System saves changes:** The system saves the updated information.

**If admin selects "Delete Client":** If the admin wants to remove a client from the system:

- ✦ **Admin enters client ID:** The admin enters the client's ID.
  - ✦ **System removes client from the database:** The system deletes the client's information from the database.
- **End:** The process is complete.