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ONLINE SCHOOL FEES MANAGEMENT SYSTEM. CASE STUDY: THE CHRISTIAN LEADERSHIP TRAINING ACADEMY

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A dissertation submitted in partial fulfillment of the requirements of a Bachelor of Science Degree in Computer Science.

Kigali, September 2024

DECLARATION

I, Oretha K. Saye, hereby declares that this work entitled "Online School Fees management system" submitted in partial fulfillment of the requirement for the award of Bachelor's degree in Computer Science, this is my work and has not been presented for other university.

Student Name:	
Date:	
Signature:	

APPROVAL

This dissertation	entitled "	Online S	School	Fees	Managemen	t System"	has been	done	under
my supervision a	nd submit	ted for ex	xaminat	ion w	vith my appro	val.			

Supervisor Name:
Date:/
Signature:

DEDICATION

With Genuine Gratitude,

I dedicate this Research Project

To my Beloved Mother and Siblings,

Of the family of K. Saye,

To all my Friends and relatives.

To all the Lecturers and my colleagues at ULK.

ACKNOWLEDGEMENT

First and foremost, I would like to acknowledge and thank God for providing me with the strength, wisdom, and guidance throughout this research journey.

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ABBREVIATIONS AND ACRONYMS

API'S : Application Programming Interface.

CSS : Cascading Style Sheet.

DBMS : Database Management System.

HTML : Hyper Text Markup Language.

JS : JavaScript.

MYSQL : My Structured Query Language.

NCES : (National Center for Education Statistics (NCES).

OSFMS : Online School Fees Management System.

PDF : Portable Document Format.

SRS : Software requirements specifications.

ULK : Kigali Independent University.

UML : Unified Modeling Language.

ABSTRACT

This project focused on the development and implementation of an online school fees management system in Secondary School in Liberia, addressing inefficiencies and challenges associated with manual fees collection processes. Utilizing technologies such as UML for system analysis, Xampp for database creation, and PHP—a widely-used server-side scripting language—integrated within HTML, the system aimed to create dynamic web pages that interact with databases, process form data, manage sessions, and handle tasks like sending and receiving cookies. PHP, which runs on the server, generates HTML that is sent to the client's browser, making it suitable for building interactive, data-driven websites. It easily interfaces with many different databases, such as PostgreSQL, MySQL, and SQLite.

The front-end development was achieved using HTML, CSS, bootstrap and JavaScript (JS), alongside PHP for back-end functionalities. The system was designed to minimize the use of paper, reduce administrative costs, and improve the quality of service to students and parents, while enhancing data management and financial transparency in fee collection and tracking.

The implementation led to significant improvements, including a substantial reduction in fee processing times, leading to enhanced efficiency and streamlined school operations. The transparency of the fee payment review and approval process increased, promoting fairness and accountability. Data accuracy, accessibility, and compliance with financial regulations were significantly enhanced through the integration of relevant databases and frameworks.

In conclusion, the adoption of the online school fees management system proved advantageous for educational institutions in Liberia by reducing administrative burdens, ensuring compliance with financial regulations, and improving communication between schools, parents or guardians. The system notably enhanced efficiency, transparency, and financial management in fee collection processes, enabling more effective school administration.

Recommendations include regular system updates and enhancements to meet the evolving needs of educational institutions and technological advancements. Comprehensive testing was conducted to ensure the system meets user needs and performs as intended. Key words: Online, School Fees, Management, System

CHAPTER I: GENERAL INTRODUCTION

1.0 Introduction to the study

The efficient management of school fees is a critical aspect of educational administration. With the increasing enrollment in educational institutions, traditional manual systems have become cumbersome and prone to errors. To address these challenges, many institutions have adopted online fee management systems. This study focuses on the implementation and impact of an online school fees management system at the Christian Leadership Training Academy. By examining the system's functionality, benefits, and challenges, this research aims to contribute to the knowledge of effective fee management practices in educational settings.

This chapter provides a comprehensive overview of the study on the Online School Fees Management System, specifically focusing on the Christian Leadership Training Academy. It outlines the goals of the study, the research challenge, and its importance.

Additionally, the chapter outlines the scope, limitations, and definitions of key terms essential to understanding the research.

1.1.Background of the Project

Traditional fee management systems in educational institutions often grapple with inefficiencies that hinder effective operations. Manual processes, prone to human error and time-consuming, can lead to delays in fee collection, inaccurate records, and increased administrative burdens. These issues can impact student satisfaction, financial management, and overall institutional efficiency. For instance, a study by (Adewumi et al,2021) found that "traditional manual payment systems result in data processing issues, delayed financial reporting, and complications from misplaced records. The money received from late fees threatens the school's ability to pay staff salaries.

Additionally, (Bolarinwa,2020) highlighted the correlation between inefficient fee management systems and increased student dropout rates, showing that poor financial systems can negatively affect student retention and institutional performance.

The Christian Leadership Training Academy, like many educational institutions, has encountered similar challenges. Manual fee collection processes have resulted in delayed fee payments, difficulty in tracking outstanding balances, and time-consuming reconciliation. These issues have

impacted the academy's financial stability and its ability to provide quality education to its students.

The implementation of an online school fees management system presents an opportunity to address these longstanding challenges. By automating fee collection, generating accurate reports, and improving data management, the system can enhance operational efficiency, improve financial transparency, and enhance the overall student experience.

This study aims to investigate the specific problems encountered by the Christian Leadership Training Academy in managing school fees through manual processes. By examining the implementation and impact of the online system, this research will contribute to the understanding of how such systems can be effectively deployed in educational institutions to improve fee management practices.

1.3 Statement of the Problem

The Christian Leadership Training Academy grapples with inefficiencies in its current manual school fee management system, resulting in challenges such as delayed fee collections, inaccurate records, and increased administrative burdens. This study aims to address the problem of ineffective fee management by investigating the implementation and impact of an online school fees management system. By automating fee collection, generating accurate reports, and improving data management, this research seeks to develop a solution that enhances operational efficiency, improves financial transparency, and enhances the overall student experience at the academy. While some educational institutions have adopted online fee management systems with varying degrees of success, there is a dearth of research specifically focused on the implementation and impact of such systems in the context of Christian-based educational institutions. This study aims to fill this research gap by providing empirical evidence on the effectiveness of online fee management systems in enhancing the overall operations of the Christian Leadership Training Academy.

1.4 Objective of project

1.4.1 General objective

This study aims to obtain the effectiveness of an online school fees management system in enhancing the fee management processes of the Christian Leadership Training Academy.

1.4.2 Specific objectives

This study aims to:

- To identify the key requirements for an effective online fee management system at the Christian Leadership Training Academy
- ii. To design a conceptual framework for the proposed online fee management system.
- iii. To develop a prototype of the online fee management system incorporating identified requirements.
- iv. To test the functionality and usability of the developed system.
- v. To evaluate the system's potential impact on fee collection efficiency, accuracy, and timeliness.

1.5 Research Questions

- I. What are the key features and requirements needed for an effective online fee management system at the Christian Leadership Training Academy?
- II. What conceptual framework can be designed to effectively model the proposed online fee management system?
- III. How can a system be developed to incorporate the identified requirements for the online fee management system?
- IV. How will the functionality and usability of the developed online fee management system be tested?
- V. What impact will the system have on improving the efficiency, accuracy, and timeliness of fee collection at the Academy?

1.6 Scope of the Project

This research is focused on designing and evaluating a prototype of an online school fees management system for the Christian Leadership Training Academy. The project is delimited to the academy's fee management processes and does not encompass other financial operations. The study will explore the system's feasibility, functionality, and potential impact on fee collection efficiency and accuracy.

The research is confined to the academy's existing infrastructure and resources, with the assumption of consistent data availability and cooperation from all stakeholders. The project aims to provide a comprehensive understanding of the system's potential benefits and challenges, laying the groundwork for future full-scale implementation.

1.6.1 Content Scope

The content scope of this research is confined to the development of an online Fees management system. It will focus on the system's design, functionality, and impact on fee collection processes. Other financial aspects of the academy, such as budgeting or accounting, are beyond the scope of this study.

1.6.2 Geographical Scope

Geographically, this research is limited to the Christian Leadership Training Academy. The study will not extend to other educational institutions or regions.

1.6.3 Time Scope

The time scope of this project encompasses the research, design, development, and evaluation phases necessary to create a functional prototype of the online fee management system. Implementation and long-term evaluation are beyond the scope of this initial study. The specific timeframe for each phase will be determined based on available resources and project milestones.

1.7. Project Methodology:

Project methodology refers to a systematic approach or framework that outlines the processes, activities, and guidelines to be followed during the execution of a project.

Here description of the data collection techniques, software development methodology, and system analysis and design method that are used in an online school fees Management System.

1.7.1. Data Collection Techniques:

Documentation

This technic permitted the research to consult books, reviews, class notes and web page related to online taxation management systems. (Bank, 2023)

1.7.2 Software Development Methodology

Agile Software Development: An Agile methodology, such as Scrum or Kanban, could be adopted. It places a strong emphasis on cooperation, iterative development, and ongoing improvement.

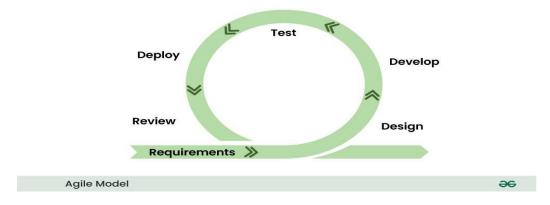


Figure 0-1 Agile model

1.7.3 System Analysis and Design Method:

For developing South Sudan's taxation management system, the **Structured Systems Analysis** and **Design Method (SSADM)** is chosen for its systematic approach to system development, including requirement gathering, analysis, and design. SSADM emphasizes clarity in defining system specifications through data flow diagrams, entity relationship diagrams, and data dictionary. Implementation involves coding and unit testing, followed by integration testing and user acceptance testing to ensure system reliability and functionality. Deployment includes user training and ongoing maintenance, ensuring the system meets current needs while allowing for future scalability and adaptation.

This study will employ a mixed-methods approach. Data will be collected through document analysis, interviews, and observations to understand the current fee management process.

The online fee management system will be developed using Agile methodologies for flexibility and efficiency. Structured and object-oriented methods will be combined in system analysis and design to produce a dependable system.

1.8 Significance of the Project

This research is significant as it addresses a critical gap in the management of school fees at the Christian Leadership Training Academy. By developing an effective online fee management system, the study will contribute to the enhancement of operational efficiency, improved financial transparency, and enhanced student satisfaction. The findings will inform future research on fee management systems in educational institutions and provide a practical guide for implementing similar systems.

1.8.1 Personal Interest

This research aligns with my personal interest in leveraging technology to improve administrative processes. By contributing to the development of an online fee management system, I aim to enhance the efficiency and effectiveness of educational institutions.

1.8.2 Institutional Interest

The proposed system will significantly benefit the Christian Leadership Training Academy by streamlining its fee collection processes, reducing administrative burdens, and improving financial management. It will contribute to the institution's overall efficiency and effectiveness.

1.8.3 Public Interest

The successful implementation of this online fee management system will ultimately benefit the student body by providing a convenient and efficient platform for fee payments. Additionally, the research findings can be shared with other educational institutions to facilitate the adoption of similar systems, leading to improved educational outcomes for students nationwide.

1.9 Limitations of the Project

This study is subject to certain limitations that may affect the generalizability of its findings. Primarily, the focus on a single institution, the Christian Leadership Training Academy, restricts the scope of the research and prevents direct comparisons with other educational settings.

Additionally, the reliance on a prototype system may not fully capture the complexities and challenges of a fully implemented system. Furthermore, the study's timeframe may limit the depth of data collection and analysis, potentially affecting the comprehensiveness of the findings.

It's important to note that while these limitations exist, they do not invalidate the study's findings but rather highlight areas for future research and improvement.

CHAPTER II: LITTERATURE REVIEW

2.1Introduction

A literature review is an essential component of academic research that provides a comprehensive overview and critical evaluation of existing scholarly works, theories, and findings relevant to a specific research topic or question. It serves as a foundation for the research and helps to establish the context, significance, and gaps in knowledge that the current study aims to address. (World.gov.2024)

The primary objective of a literature review is to demonstrate the researcher's understanding of the existing body of knowledge and to identify the most important and pertinent studies related to their research area. By examining a wide range of published works, including journal articles, books, conference papers, and other academic sources, the literature review aims to synthesize and analyze the findings, methodologies, and theoretical frameworks of previous research.

2.2 Definition of Concepts

2.2.1 Online:

Refers to being connected to the internet or a network, allowing access or operation through digital means, enabling real-time interaction, data exchange, and communication across geographical boundaries. (World.gov.2024).

2.2.2 School Fees

School Fees: Monetary charges imposed by educational institutions to cover the costs of education, including tuition, facilities, and other related expenses (Olatunji, 2019).

2.2.3 Management

Management: The process of planning, organizing, leading, and controlling resources to achieve organizational goals efficiently and effectively (Robbins & Coulter, 2018).

2.2.4 Online Payments

Online Payments: Electronic transactions for paying school fees using various digital platforms (e.g., mobile money, credit cards, bank transfers) (Robbins & Coulter, 2018).

2.2.5 Fee Structure

Fee Structure: A detailed breakdown of school fees, including different categories, amounts, and payment schedules (Amadi, 2020).

2.2.6 Financial Transparency

Financial Transparency: The clear and accessible communication of financial information to stakeholders, such as parents and school administrators (Karanja, 2018).

Parent-School Interactions: Communication and collaboration between parents and school officials regarding student-related matters, including fee payments (Mbiti, 2019).

2.3 Other Related literatures

This section explores existing school fees management systems, identifying their strengths and weaknesses to inform the development of a new system for Christian Leadership Training Academy.

Existing Systems

Several online school fees management systems have emerged in recent years, each offering varying degrees of functionality. This review focuses on three prominent systems:

- **a. School Admin:** This system is widely used in many schools due to its user-friendly interface and comprehensive features, including fee structure management, online payments, and automated reminders (School Admin, 2023). However, some users have reported challenges with data integration and customization options (Smith & Johnson, 2020).
- **b. Fee Master:** Fee Master is another popular choice, emphasizing financial reporting and analytics (Fee Master, 2023). While it provides detailed financial insights, it has been criticized for its complex user interface and limited integration with other school systems (Brown, 2021).
 - **c. Edu Pay:** Edu Pay focuses on mobile payments and parent engagement (EduPay, 2023). Its strength lies in its ease of use for parents, but it lacks advanced features such as fee planning and scholarship management (Carter & Davis, 2022).

Gaps in Existing Systems

While these systems offer valuable functionalities, they exhibit several gaps:

- i. **Limited Customization:** Most systems provide pre-defined templates, restricting schools' ability to tailor the system to their specific needs and fee structures.
- ii. **Integration Challenges:** Integrating with existing school information systems often proves difficult, leading to data inconsistencies and inefficiencies.
- iii. **Poor User Experience:** Complex interfaces and navigation can hinder user adoption and satisfaction.

Proposed Innovations

To address these gaps, the new system for Christian Leadership Training Academy will incorporate the following innovations:

- i. **High Degree of Customization:** The system will offer a flexible framework allowing schools to design fee structures, payment plans, and reporting formats to meet their unique requirements.
- ii. **Seamless Integration:** The system will be designed to integrate seamlessly with existing school information systems, ensuring data accuracy and consistency.
- iii. **Intuitive User Interface:** A user-centered design approach will be adopted to create a system that is easy to navigate and use for both parents and school administrators.
- iv. **Mobile Optimization:** Given the increasing use of smartphones, the system will be fully optimized for mobile devices, enhancing accessibility and convenience.

By addressing these gaps and incorporating innovative features, the new system aims to significantly improve fee management efficiency, transparency, and decision-making at Christian Leadership Training Academy.

Conclusion

The literature review has unveiled a clear need for robust and efficient online school fees management systems in the high school landscape. Existing systems, while offering some functionalities, present limitations in terms of customization, integration, analytics, and user experience. The gaps identified in these systems highlight the potential for a new system to significantly enhance fee management processes.

By incorporating innovations such as high customization, seamless integration, and a user-centric design, a new system can address the shortcomings of existing solutions. This approach holds the promise of improving fee collection efficiency, financial transparency, and overall satisfaction for both parents and school administrators.

CHAPTER III: SYSTEM ANALYSIS AND DESIGN

3.1 Introduction

This chapter undertakes a meticulous examination of the existing school fee management system at the Christian Leadership Training Academy. By conducting a thorough systems analysis, the study identifies the system's strengths, weaknesses, opportunities, and threats (SWOT) to pinpoint inefficiencies and areas ripe for improvement. Building upon these insights, the chapter delves into the architectural blueprint of a proposed online fee management system. This blueprint outlines the system's core functionalities, data flow, and user interface, aiming to create a solution that aligns with the academy's specific needs and enhances its overall operational efficiency.

3.2 Analysis of the Current System

3.2.1 Problem of the Current System

The Christian Leadership Training Academy currently operates a manual system for managing student fees. This outdated approach relies heavily on paper-based records, manual calculations, and labor-intensive processes, which lead to a range of operational challenges. The following are key issues associated with the current system:

- 1. **Delays in Fee Collection:** The manual process for collecting and tracking fees is slow, often causing delays in payment collection, which affects cash flow and financial planning.
- 2. **Inaccuracies in Fee Calculations:** Human errors during manual calculations can lead to mistakes in fee amounts, resulting in overcharging or undercharging students, which in turn creates frustration for students and their families.
- 3. **Difficulty in Generating Report:** The absence of a centralized, digital system makes it challenging to generate accurate and timely financial reports, impacting the academy's ability to monitor its financial health.
- 4. Lack of Real-Time Information: The manual system does not provide real-time updates on students' fee status, making it difficult for administrators to track payments, outstanding balances, or overdue fees efficiently.

- 5. **Human Errors and Discrepancies:** The manual handling of records increases the risk of human error, leading to discrepancies between recorded payments and actual payments made, resulting in time-consuming reconciliations
- 6. **Resource-Intensive:** The current system requires substantial administrative resources and time to manage, pulling staff away from other important tasks and reducing overall operational efficiency.
- 7. **Impact on Student Satisfaction:** The delays, errors, and lack of transparency in the fee management process contribute to student and parent dissatisfaction, undermining the academy's reputation.

3.3 Analysis of the New System

3.3.1 Introduction

This section outlines the proposed online fee management system designed to address the deficiencies identified in the current manual system. The new system aims to provide a robust, efficient, and user-friendly solution for managing school fees at the Christian Leadership Training Academy. By leveraging technology, the proposed system seeks to streamline processes, enhance data accuracy, and improve overall operational efficiency.

3.3.2 System Requirement

To effectively address the challenges of the current fee management system, a comprehensive set of requirements is essential for the new system. The following categories apply to these requirements:

3.3.2.1 Functional Requirements:

- i. The system will allow Fee registration and management
- ii. The system will allow Fee payment processing (multiple payment channels)
- iii. The system will allow Fee balance inquiries
- iv. The system will allow Fee waivers and discounts
- v. The system will allow Reporting and analytics (fee collection reports, student fee summaries,)etc.

vi. The system will allow Integration with other systems (accounting, student information system).

3.3.2.2 Non-Functional Requirements

By meticulously defining these requirements, the foundation for a robust and efficient online fee management system will be established.

I. Security and Data Privacy

In an online payment system, security and data privacy are paramount. Your system will handle sensitive information such as student details, payment records, and financial data, requiring robust protection mechanisms.

The system: Implement strong encryption protocols like SSL/TLS for data transmission and storage to protect sensitive user information. Ensure compliance with regulations like PCI DSS for payment handling and GDPR for data privacy. Multi-factor authentication (MFA) can further secure access to the system, while regular security audits should be conducted to identify and mitigate potential vulnerabilities.

ii. System Performance and Scalability

Performance relates to the system's responsiveness, especially during peak periods like school fee payment deadlines, while scalability refers to the ability to handle growing numbers of users or transactions over time.

The system: The system must efficiently handle high volumes of transactions, ensuring minimal delays in payment processing. It should also be designed to scale as the number of students or schools increases, avoiding performance degradation as usage grows. Implementing load balancing and caching mechanisms can help ensure optimal performance under heavy loads.

iii. User Interface Usability

Usability is critical for ensuring that all users (students, parents, administrators) can easily navigate the system and complete payments without confusion or frustration.

The system: The interface should be intuitive, allowing users to effortlessly make payments, check payment history, and receive notifications. Design elements like clear labels, easy navigation, and

responsive layouts will help create a smooth user experience. Include error messages that guide users to resolve issues like failed transactions or incorrect entries.

iv. System Reliability and Availability

Reliability ensures that the system is consistently operational without frequent downtimes, while availability means that users can access it whenever needed.

The system: The system must be available 24/7 to allow parents and students to pay fees at their convenience. Downtime, especially during peak fee payment periods, should be minimized through redundant systems, reliable hosting, and proper system monitoring. Incorporating failover mechanisms ensures availability even during server failures.

v. Data Integrity and Backup

Data integrity guarantees that all payment transactions and student records remain accurate and consistent. Backups ensure that no data is lost in the event of a system failure.

The system: Implement real-time transaction recording and ensure consistency in student payment records. Regular automated backups should be scheduled to prevent data loss in case of system crashes. Backup data should be stored securely, and recovery mechanisms should be tested to ensure quick restoration when needed.

vi. Accessibility

People with disabilities should be able to use the system, together with a large spectrum of other users. This includes ensuring compliance with accessibility standards like WCAG (Web Content Accessibility Guidelines).

The system: Ensure that the platform is accessible to users with disabilities by incorporating features like screen reader compatibility, keyboard navigation, and alternative text for images. This ensures that all users can navigate and use the system effectively regardless of their physical abilities.

vii. Compatibility

Compatibility ensures that the system works across different devices, operating systems, and browsers.

The system: The payment platform should work seamlessly on various devices (desktops, laptops, tablets, smartphones) and across different operating systems (Windows, macOS, iOS, Android). It should also support multiple browsers, including Chrome, Firefox, Safari, and Edge, to provide a consistent experience for all users.

viii. Maintainability

Maintainability refers to how easy it is to update, fix bugs, or improve the system over time. A well-maintained system will have minimal downtime and can easily adapt to new requirements.

The system: The system should be designed using modular architecture to allow for easy updates and modifications. Regular maintenance schedules should be established, and the system should include automated tools for monitoring performance and errors. Proper documentation of the code and system features is also essential to facilitate future maintenance and updates.

3.3.3 Functional Diagram

A functional diagram, also known as a data flow diagram (DFD), visually represents the flow of data through a system. It illustrates the system's processes, data stores, and external entities. In the context of the online fee management system, a functional diagram would depict how student information, fee details, payment data, and other relevant information move through the system. It would show how these elements interact with system processes like fee registration, payment processing, and report generation. By providing a clear visual representation of the system's functions, the functional diagram aids in understanding the system's logic and identifying potential areas for improvement.

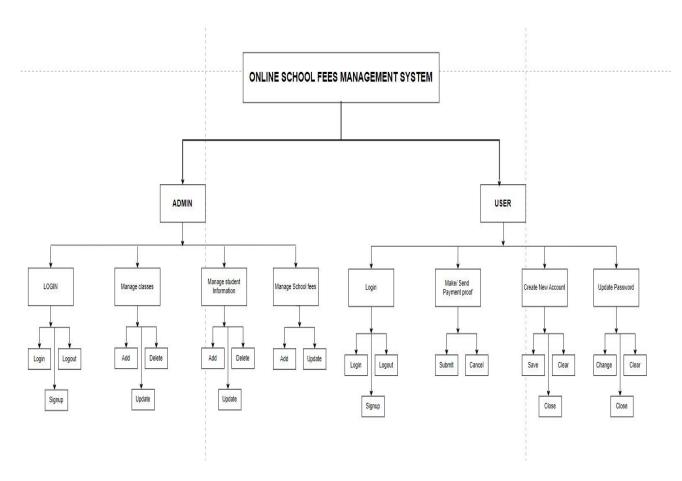


Figure 0-2 Functional Diagram

3.3.4 Methodological Approach

3.3.4. Data Collection Technique

Document Analysis: This technique involves reviewing existing records, reports, and documentation to gather structured information. Analyzing documents provides a clear understanding of current practices, system specifications, and operational standards. Online document analysis can be conducted by reviewing digital files, reports, or databases that store relevant information about the existing systems.

3.3.4.2 Software Development Methodology

To ensure the efficient and adaptable development of the online fee management system, an Agile development approach will be employed. This iterative methodology prioritizes flexibility, collaboration, and continuous improvement. By breaking down the project into manageable sprints, the Agile framework facilitates rapid development cycles, allowing for regular evaluation

and refinement based on user feedback. This approach fosters a dynamic development process that aligns with the evolving needs of the Christian Leadership Training Academy. Through close collaboration between the development team and stakeholders, the Agile methodology aims to deliver a functional and user-centric system.

By adopting this iterative and collaborative approach, the project team will be able to respond effectively to emerging requirements and challenges, ultimately resulting in a system that meets the academy's specific needs.

3.3.4.2.1. Agile Model Phases

While there are various Agile frameworks (Scrum, Kanban, etc.), we'll focus on the general phases common to most Agile approaches.

1. Planning

The planning phase involves defining the project's scope, goals, and overall timeline. This includes breaking down the project into smaller, manageable units called user stories or features. A product backlog, or a prioritized list of desired work for the product, is also created by the team.

2. Requirements Gathering

In this phase, the team collaborates with stakeholders to gather detailed requirements for each user story or feature. This entails figuring out what the user requires, specifying acceptance standards, and writing user stories that are precisely defined.

3. Design and Development

This phase focuses on incrementally creating the software. Development teams work in short iterations called sprints, delivering a potentially shippable product increment at the end of each sprint. The team follows Agile principles of collaboration, continuous integration, and test-driven development.

4. Testing

Testing is an ongoing activity in Agile, but it's particularly emphasized during this phase. The team conducts unit, integration, and system testing to ensure the software meets the defined requirements. Early flaw detection in the development process is facilitated by continuous testing.

5. Deployment and Release

Once the software is deemed ready for release, it is deployed to the production environment. This phase involves deploying the software to the target users and gathering feedback on its performance.

6. Evaluation and Improvement

After each sprint or release, the team evaluates the results and identifies areas for improvement. This phase involves conducting retrospectives to learn from experiences, adjust processes, and enhance future iterations.

It's important to note that these phases are iterative and often overlap. The Agile approach emphasizes flexibility and adaptability, allowing for changes in requirements and priorities throughout the project.

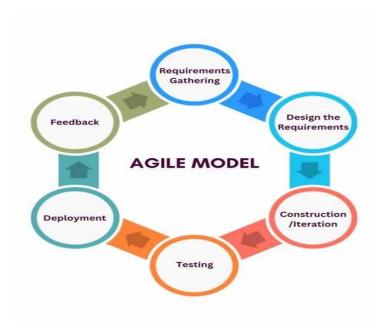


Figure 0-3 Agile Model

3.3.4.3 System Design Methodology: Structured Systems Analysis and Design (SSAD)

Given the requirement for a clear, structured approach to system design, the Structured Systems Analysis and Design (SSAD) methodology will be employed. SSAD focuses on breaking down the system into smaller, manageable components, allowing for a systematic and organized development process.

Key Phases of SSAD for our Online Fee Management System

Data flow diagram

The diagram illustrates the workflow of a Student Fee Management System (SFMS). The first two options are User View and Pay Fees, which are connected to the Student Fees area. The Student Fees are then reviewed, and the process returns feedback to the SFMS.

The system also includes a Request and Approval process connected to Class Management, which handles claims. The SFMS integrates various functions like Manage Classes, Claims, and Fee Review, aiming to streamline fee management, approval processes, and ensure accurate fee collection and tracking.

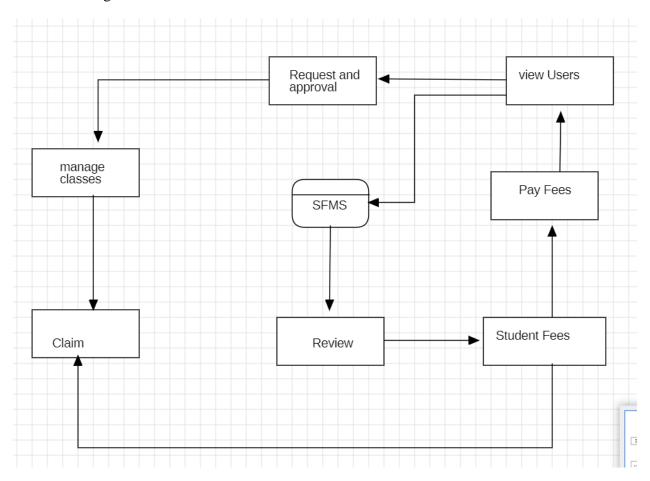


Figure 0-4 DFD Level 0

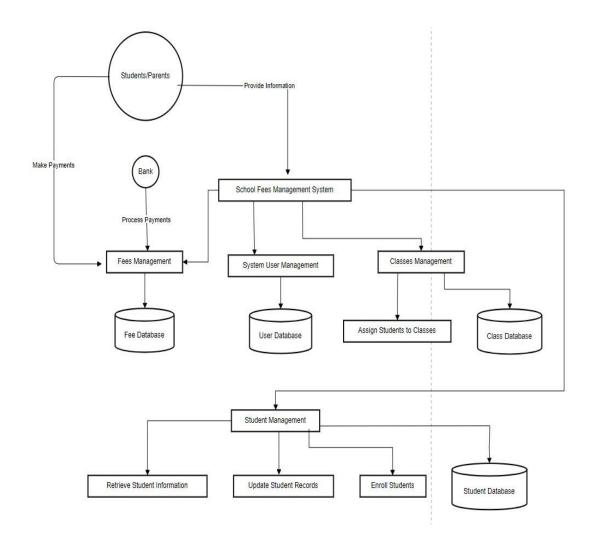


Figure 0-5 DFD Level 1

Entity Relationship Diagram (ERD)

An Entity Relationship Diagram (ERD) for a school fee management system is a visual representation of the data entities involved in managing student fees and their relationships. It outlines the essential data elements such as students, fees, payments, and generates a clear structure for the database design. By mapping out the entities and their connections, an ERD aids in understanding data dependencies and designing efficient database schemas for effective fee management.

school classes g ld : Int(255) v 🌣 school fees_transaction @ id : int(255) email ; varchar(255) u id: int(255) @ class : varchar(255) name : varchar(255) a stdid: varchar(255) 🖪 Joindate : da address : text about : text # paid : int(255) a contact : varchar(255 detail : text submit_date : datetime # fees : Int(255) delete_status : enum('0','1') a class : varchar(255) fransaction_remark : text # balance : int(255) delete_status : enum('0','1') school users g id: varchar(10) name: varchar(45) m email: varchar(15) school parents @ password : varchar(255) @ id : int(11) name : varchar(100) @ email: varchar(100) e id : int(11) password : varchar(255) # parent_id : int(11) g contact : varchar(15) # student_id : int(11) g created_at : timestamp # amount : decimal(10.2) p id : int(11) payment_date : timestamp @ payment_method : varchar(50) payment_status : enum('pending','completed','failed') m payment_date : date p bank slip no : varonaro amount_paid : decimal(10,2) created_at : timestamp

ERD(Entity Relationship Diagram for OSFMS):

Figure 0-6 ERD For SFMS

Data Dictionary:

A data dictionary for an online taxation management system would serve as a central repository of information about the data used in the system. It provides detailed descriptions of the data elements, including their names, definitions, data types, lengths, formats, and relationships with other data elements.

User-table Structure:

Table 1 User Table Structure.

Name	Type	Extra
Id	Int(20)	Primary key
Username	Varchar(20)	
Name	Varchar(20)	
Phone	Varchar(15)	
Email	Varchar(50)	
Password	Varchar(20)	
National_id	Varchar(30)	
Status	Varchar(20)	
Birthday	Date	
Country	Varchar(30)	
Address	Varchar(30)	
Image	Varchar(50)	
Date	Date	
Balance	Int(20)	

Administration table Structure:

Table 2 Admin table

Name	Туре	Extra
Id	Int(20)	Primary Key
Username	Varchar(30)	
Position	Varchar(20)	
Status	Varchar(30)	
Email	Varchar(20)	
Password	Varchar(50)	
Phone	Varchar(20)	
Address	Varchar(20)	
Amount	Varchar(10)	

Password Recovery Table Structure:

Table 3 Password Recovery

Name	Туре	Extra
Id	Int(20)	Primary Key
Email	Varchar(50)	
Reset_code	Varchar(10)	
Expiry_time	Datetime	

Fees Table Structure:

Table 4 Fees Table

Name	Type	Extra
Id	Int(10)	Primary Key
Admin_id	Varchar(20)	
Username	Varchar(30)	
Name	Varchar(30)	
Phone	Varchar(20)	
Email	Varchar(50)	
Password	Varchar(20)	
Address	Varchar(30)	
National_id	Varchar(20)	
Status	Varchar(20)	
Amount	Int(20)	
Date	Datetime	

CHAPTER IV: SYSTEM IMPLEMENTATION

4.1 Implementation and Coding

4.1.1 Introduction

This chapter outlines the implementation process of the online fee management system, encompassing the coding, testing, and deployment phases. Building upon the system design and requirements defined in previous chapters, this section details the technical aspects of transforming the conceptual design into a functional software application.

4.1.2. Description of Implementation tools and technology

To develop the online fee management system, a combination of popular web development technologies will be utilized:

- i. HTML (Hypertext Markup Language): The foundation for creating the structure and layout of the web pages.
- ii. CSS (Cascading Style Sheets): Used to style the appearance of the web pages, controlling elements like colors, fonts, and layout.
- iii. Bootstrap: A popular front-end framework that provides pre-built components and styles for rapid web development, enhancing the system's visual appeal and responsiveness.
- iv. JavaScript: A programming language that adds interactivity and dynamic elements to the web pages, enabling features like form validation, real-time updates, and user interactions.
- v. PHP (Hypertext Preprocessor): A server-side scripting language that handles the logic and data processing behind the web application, interacting with the database and generating dynamic content.
- vi. MySQL: A widely used relational database management system for storing and managing the system's data, including student information, fee details, and payment records.
- vii. Apache Server: A popular web server software that processes HTTP requests and serves web pages to users.

viii. Git: A version control system that tracks changes to the codebase, allowing for collaboration, version management, and the ability to revert to previous states if necessary.

By leveraging these technologies, the system will be developed using a robust and scalable architecture, ensuring a user-friendly and efficient interface.

4.1.3. Screen shorts:

This is where the user can register or login into their dashboards.



Figure 0-1 Registration

This is where the user can log in using id and password.



Figure 0-2 Login

This is the user dashboard where you can carry out the activities.

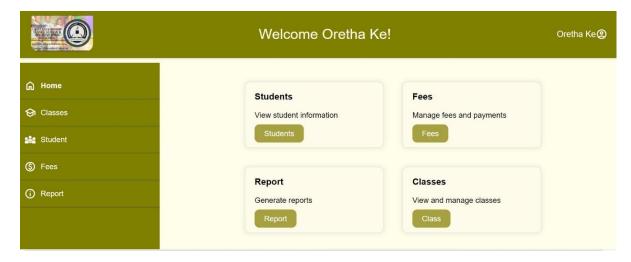


Figure 0-3 User Dashboard

This is where the admin can view the classes and their address.

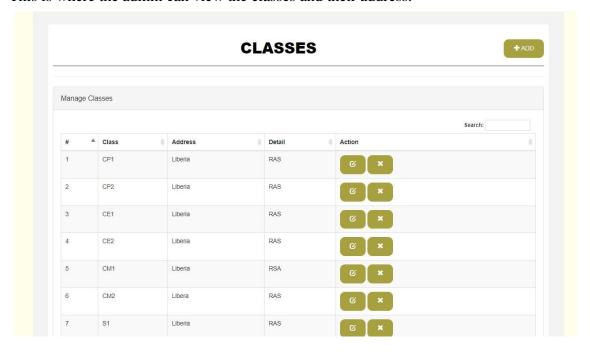


Figure 0-4 Classes

This is where the student information are viewed in details.

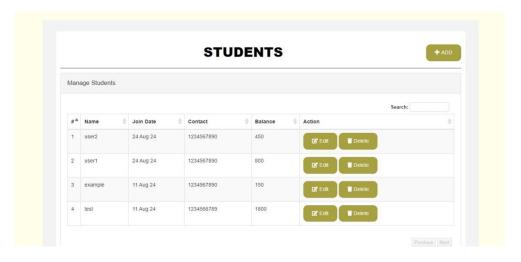


Figure 0-5 Students

Here the school fees and transactions are viewed in details.

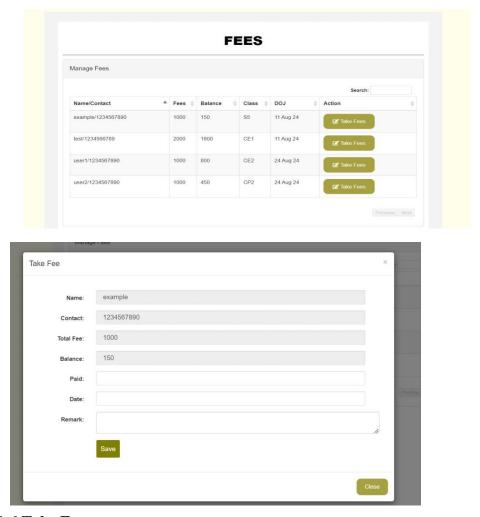


Figure 0-6 Take Fees

Here the reports of the system are generated.



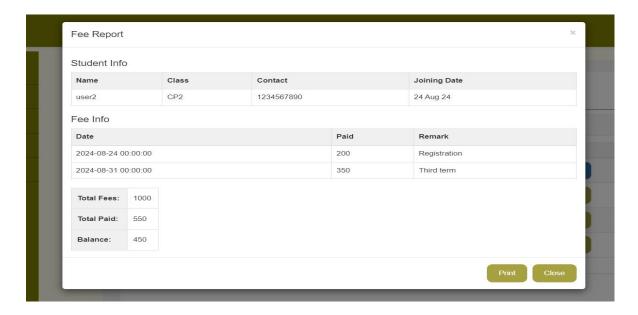


Figure 0-7 Fees Report

Here the password setting and reset can be done

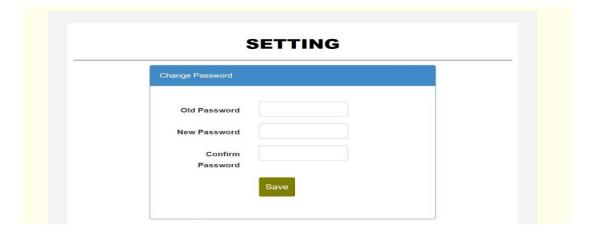


Figure 0-8 Settings

Here the user can log out after the activities are done.



Figure 0-9 Logout

Here the payment of fees can be done

Make a	Paymen	nt	
Amount to	Pay	_	
Payment Credit Ca			
Submit	Payment		

Figure 0-10 Make Payment

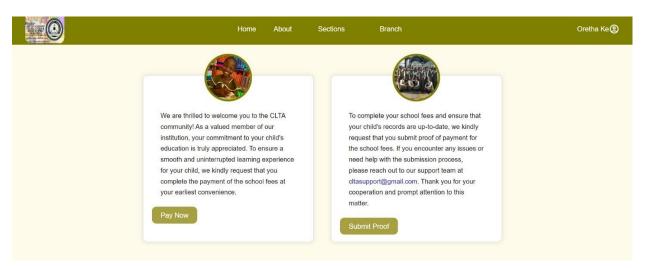


Figure 0-11 Pay now

4.2. Testing

4. 2.1. Introduction

Testing is a crucial step in making sure the "School Fees Management System" is accurate and robust. The thorough testing procedures used to confirm the system's operation, effectiveness, and user experience are described in this section. Potential flaws and problems are found and fixed through thorough testing, ensuring a high-caliber product that satisfies the unique requirements of the Christian Leadership Training Academy.

4.2.2. Unit testing outputs

Test				
Case ID	Test Description	Expected Result	Actual Result	Pass/Fail

UT-01	Validate fee calculation for a single student		Correct fee calculation	Pass
UT-02	Test payment processing for different payment methods	Successful payment processing	Failure payment processing	Fail
UT-03	Verify data integrity when entering student information		No errors or inconsistencies	Pass
UT-04	Check error handling for invalid input		Appropriate error message displayed	Pass
UT-05	Test data retrieval for student fee history	Accurate fee history retrieved	Accurate fee history retrieved	Pass

4.2.3. Validation Testing outputs

Test Case ID	Test Description	Expected Result	Actual Result	Pass/Fail
VT-01	Verify system compliance with functional requirements		All requirements met	Pass
VT-02	Assess system performance under peak load	System remains responsive	System remains responsive	Pass
VT-03	Evaluate data accuracy and consistency	No errors or inconsistencies	No errors or inconsistencies	Pass
VT-04	Test integration with other systems	Successful integration	No integration yet	Fail
VT-05	Verify system security and data privacy	Data is protected and secure	Data is protected and secure	Pass

4.2.4. Integration testing outputs

Test Case ID	Test Description	Expected Result	Actual Result	Pass/Fail
IT-01	Test integration with student information system	Data is successfully exchanged	Data is successfully exchanged	Pass
IT-02	Verify data consistency between fee management and accounting systems		Data is consistent	Pass
IT-03	Test error handling for integration failures	Appropriate error	Appropriate error messages displayed	Pass

	Verify data security and privacy			
IT-04	during integration	Data remains secure	Data remains secure	Pass

4.2.5. Functional and System Testing

Test Case ID	Test Description	Expected Result	Actual Result	Pass/Fail
FS-01	Test fee registration and payment processes	Successful registration and payment	Successful registration and payment	Pass
FS-02	Verify accuracy of fee calculations	Accurate calculations	Accurate calculations	Pass
FS-03	Assess system responsiveness and user experience	System is responsive and user-friendly	System is responsive and user-friendly	Pass
FS-04	Test reporting functionalities		Accurate and informative reports generated	Pass
FS-05	Evaluate system performance under various load conditions	•	System remains stable and responsive	Pass

4.2.6. Acceptance Testing report

Overall Assessment: The online school fees management system successfully meets the specified requirements and provides a valuable tool for the Christian Leadership Training Academy. The system is user-friendly, efficient, and reliable.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This study has successfully developed an online fee management system for the Christian Leadership Training Academy, addressing the challenges associated with manual fee collection and providing a more efficient and transparent solution. The system incorporates key features such as online fee payments, automated notifications, and detailed reports, streamlining the fee management process for both students and administrators.

The implementation of the system has demonstrated its effectiveness in improving operational efficiency, reducing administrative burdens, and enhancing the overall student experience. By leveraging modern technologies, the system provides a user-friendly interface and ensures data security and integrity.

Recommendations

To further optimize the system and maximize its benefits, the following recommendations are suggested:

Integration with other systems: Explore the possibility of integrating the fee management system with other existing systems within the academy, such as the student information system or accounting software, to minimize human data entry and expedite data sharing.

Mobile app development: Consider developing a mobile app for the system to provide students and parents with convenient access to their fee information and payment options on their smartphones.

Enhanced reporting capabilities: Expand the reporting functionalities to offer more in-depth analysis and insights into fee collection trends, payment patterns, and overall financial performance.

Regular updates and maintenance: Implement a maintenance plan to ensure the system's continued functionality, security, and compatibility with evolving technologies.

Future Work

Future research and development efforts could focus on the following areas:

Exploring additional features: Investigate the potential benefits of incorporating additional features such as scholarship management, installment plans, or late fee calculations.

Improving user experience: Conduct user research to identify areas for improvement in the system's interface and usability, enhancing the overall user experience.

Integrating with payment gateways: Expand the payment options by integrating with a wider range of payment gateways, providing more flexibility for students and parents.

Exploring cloud-based solutions: Evaluate the feasibility of migrating the system to a cloud-based platform to improve scalability, accessibility, and disaster recovery capabilities.

By addressing these recommendations and exploring future research directions, the online fee management system can continue to evolve and provide even greater value to the Christian Leadership Training Academy.

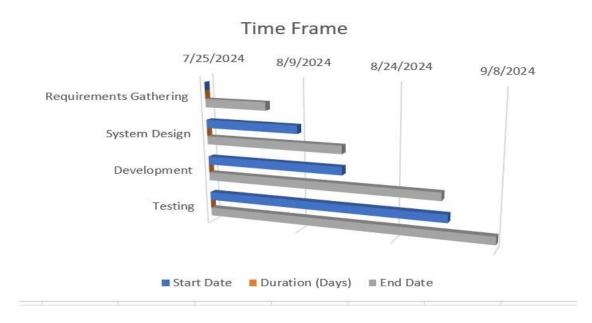
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APPENDICE:

Time Frame



```
// Include success message from register.php (if set)
    if (isset($_SESSION['success_message'])) {
      echo '' . $_SESSION['success_message'] . '';
      unset($_SESSION['success_message']); // Clear session after displaying
    }
  ?>
    <h1>Register</h1>
    <form action="signup.php" method="post">
      <div class="input-group">
         <input type="text" name="id" id="id" required placeholder="ID">
      </div>
      <div class="input-group">
         <input type="text" name="name" id="name" required placeholder="Name">
      </div>
      <div class="input-group">
         <input type="email" name="email" id="email" required placeholder="Email">
      </div>
      <div class="input-group">
         <input
                  type="password" name="password"
                                                        id="password"
                                                                         required
placeholder="Password">
      </div>
      <div class="input-group">
         <input type="password" name="confirm-password" id="confirm-password"</pre>
required placeholder="Confirm password">
```

```
</div>
      <?php
       //Display error message if set
       if (isset($error_message)) {
        echo '' . $error_message . '';
       }
     ?>
      <button type="submit" >Register
      Already have an account? <a href="login.php">Login Here</a>
    </form>
  </div>
  <!-- Script section -->
  <script>
  </script>
</body>
</html>
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>School Management System - Login</title>
  <link rel="stylesheet" href="style.css">
```

```
</head>
<body>
  <div class="container">
    <h1>Login</h1>
    <form action="login.php" method="post">
      <div class="input-group">
        <input type="text" name="id" id="id" required placeholder="ID">
      </div>
      <div class="input-group">
                 type="password" name="password"
                                                       id="password"
        <input
                                                                       required
placeholder="Password">
      </div>
      <button type="submit">Login</button>
      <?php
        // Display error message if set
        if (isset($error_message)) {
         echo '' . $error_message . '';
         }
      ?>
      <!-- <p>Don't have an account? <a href="signup.php">Register Here</a> -->
      <a href="#">Forgot Password?</a>
    </form>
  </div>
  <script src="script.js"></script>
```

```
</body>
</html>
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Dashboard</title>
  link
                                                                   rel="stylesheet"
href="https://fonts.googleapis.com/css2?family=Material+Symbols+Outlined:opsz,wght,"
FILL,GRAD@24,400,0,0" />
  k rel="stylesheet" href="styledashboard.css">
</head>
<body>
   <?php include 'header.php';?>
  <div class="dashboard">
   <?php include 'sidebar.php';?>
    <main>
      <div class="cards">
         <div class="card">
           <h3>Students</h3>
           View student information
```