

CHAPTER I

INTRODUCTION

1.1 Rationale

In today's rapidly evolving technological environment, advances in web based applications have drastically changed various industries, including education. Integrating technology into educational strategies provides innovative solutions for enrollment and mentorship processes. These enhancements provide effective communication, increase accessibility, and provide an efficient management system to meet user needs [1]. The music education sector has also benefited significantly from technological advancements. Web-based platforms and applications have revolutionized how music is taught, learned, and experienced. Students can now access music lessons and mentorship remotely, overcoming geographical barriers. Studies show that integrating technology into music education improves engagement, supports diverse learning styles, and enhances the overall learning experience [2]. Furthermore, e-learning environments provide flexibility in scheduling lessons and tracking progress, ensuring that students receive tailored guidance based on their unique needs and goals. As music schools worldwide embrace these advancements, the opportunity to connect aspiring musicians with experienced mentors has never been more accessible. By leveraging technology, music schools can create an inclusive environment where students from diverse backgrounds, including those in remote areas, can thrive.

Herliz Music Studio and Instruments has always been at the forefront of nurturing musical talent. To continue its legacy of excellence, integrating a web-based application to streamline enrollment and mentorship processes will ensure that the studio remains competitive while addressing the needs of its growing community of students and mentors.

Located at JA Clarin, Tagbilaran City, Bohol, Herliz Music Studio and Instruments has been a cornerstone of music education since its establishment in

1998 and has received prestigious awards such as “Best Music School in Bohol” (Year 2012), “Excellence in Music Education” (Year 2017) and “Music Studio of outstanding recognition (Year 2019).” Herliz has educated more than 3,000 students (Year 2000 to 2022), more than 1,000 of whom have successfully completed their musical education. Each year, Herliz Music Studio operates with two seasons (April to July and September to December), each lasting four months, and classes are held Monday to Friday from 8 a.m. to 12 a.m., which forms the core schedule around which the enrollment and mentorship processes are currently organized. The studio caters to a variety of music disciplines, including Violin, Piano, Acoustic Guitar, Electric Guitar, Drums, and Pop Singing. In 2019, the founder's daughter took over the leadership of Herliz. Under her leadership, the studio continues to maintain its tradition of excellence while also exploring modern methods to improve the enrollment and mentoring process check-in, which requires students or parents to physically visit the studio or check in via their Facebook page. Mentors at Herliz who are full- time employees are responsible

for providing structured, curriculum-based instruction, lessons, and sessions, as well as tracking student progress. In contrast, freelancers offer one-off, specialized sessions tailored to specific skills or genres, providing students with a broader range of learning opportunities. Mentoring sessions are managed manually with limited tools for streamlining planning, communication and monitoring progress. These traditional processes, while effective in the past, now present challenges in terms of availability, efficiency, and scalability, especially for students from remote areas or those with busy schedules. This project aims to solve these problems by developing a web-based system that integrates registration and mentoring functions. The system aims to simplify the registration process for new and returning students while providing mentors with a platform to schedule appointments, communicate with students and track their progress. Through technology, the studio can expand its reach and ensure a more efficient and accessible experience for all users.

Despite its success, as evidenced by awards and the significant number of students it has nurtured (over 3,000 enrolled and 1,000 graduates), Herliz Music Studio faces challenges in its current processes. The reliance on in-person registration requires students or parents to physically visit the studio, which limits accessibility for those who live in remote areas or have tight schedules. While the studio also accommodates inquiries through its Facebook page, there are occasional delays in responding due to the high volume of messages, which may cause inconvenience for potential students. For example, responses may take hours or even days during busy periods. While these methods have served their

purpose for years, they are no longer sufficient to meet the demands of an expanding student base and evolving customer expectations. Additionally, the process of finding qualified mentors and matching them with students involves several manual steps, such as assessing mentor qualifications and manually pairing them based on instrument specialization or other criteria. While it is essential to ensure that mentors are well-qualified, the current approach becomes time-consuming as the number of students increases. For instance, during peak enrollment periods, administrators often struggle to balance the need for personalized pairings with the growing demand for lessons. Mentorship at Herliz is conducted primarily through in-person lessons, which follow a synchronous learning model—mentors and students meet at scheduled times for one-on-one or group sessions. However, as the studio expands, there is a growing need for hybrid learning solutions to cater to diverse schedules and locations. The proposed system will support both synchronous and asynchronous (hybrid) lessons. Students can attend live online sessions with their mentors or access pre-recorded videos and exclusive learning materials created by the mentors of Herliz Music Studio. This hybrid approach allows flexibility while maintaining the studio's high standards for music education. To address these challenges, the proposed ConnectingNotes web application will integrate enrollment and mentorship functionalities into a single, accessible platform. The system will streamline enrollment by allowing students to register online, select their preferred mentors based on availability and specialization, and receive immediate confirmation. It will also provide tools for mentors to manage their schedules, communicate with

students, and upload exclusive video lessons and other learning materials. By automating these processes, the system ensures a more efficient and accessible experience for both students and mentors, ultimately enabling Herliz to cater to an even larger audience without compromising quality.

With the advancement of today's technology, the development of ConnectingNotes is proposed to address the challenges currently faced by Herliz in its enrollment and mentorship processes. The proposed system is a web-based application that provides innovative solutions. This platform will offer features such as online registration, mentor application, profile management, session booking, messaging systems, rating systems, hybrid lessons (combining synchronous and asynchronous learning), progress monitoring, and issuing achievements (badges) and certificates. The hybrid lesson model will provide flexibility for both mentors and students. Synchronous lessons will involve live, interactive sessions conducted via video conferencing tools, allowing real-time feedback and mentoring. Asynchronous lessons, on the other hand, will include pre-recorded video tutorials and instructional materials exclusively created and curated by Herliz Music Studio. These materials will be accessible through a secure, centralized repository within the system. Mentors will have the capability to upload these resources directly to the platform, ensuring that students have consistent access to quality, studio-approved learning materials. The inefficiency of the current manual processes is supported by historical data. Over the past five years, Herliz has experienced an increase in enrollment inquiries, particularly during peak periods such as summer and holiday seasons. The existing Facebook messaging

based system often results in delayed responses due to the high volume of inquiries, causing potential students to wait for hours or even days. Furthermore, matching students with mentors based on instrument specialization, schedule, and other criteria is a time-consuming task that relies on manual coordination by administrators. This issue has led to missed opportunities to accommodate more students effectively. By integrating features such as real-time session booking and automated mentor-student matching, the system will streamline these processes and reduce delays. The hybrid lesson model will further expand accessibility, enabling students from remote areas or with busy schedules to participate in

Herliz's music programs without the need for frequent physical attendance. Through these functionalities, ConnectingNotes aims to create a simple, centralized, and efficient system that enhances both enrollment and mentorship, aligning with the studio's vision of providing accessible, high-quality music education.

The proposed solution will not only simplify the enrollment process, but also improve mentor-student pairing, strengthen communication, and provide a structured learning path tailored to individual student needs. Over the years, Herliz has built a legacy of success, educating over 3,000 students since its inception in 1998, with over 1,000 students successfully completing their music training. This historical data supports the reputation of Herliz as the premier music studio in

Bohol. To ensure the development of a system that truly responds to the studio's needs, data were gathered through interviews and informal discussions with the current administrator, full-time mentors, secretaries, and selected students of

Herliz Music Studio. Prior to the data gathering, proper consent was requested verbally and via email to ensure ethical compliance. Furthermore, the system's development will prioritize the confidentiality and privacy of all user data. Sensitive information collected during registration, mentoring sessions, and communication logs will be securely stored and only accessible to authorized personnel. The platform will implement standard security practices such as encrypted data transmission, password-protected access, and role-based permissions to protect personal information and uphold data privacy. Mentor-student pairing in the proposed system will be automated using a matching algorithm that takes into account specific criteria such as instrument specialization, skill level, preferred schedule, and location (for hybrid settings). This ensures that students are matched with mentors who best match their educational goals and availability, simplifying what is currently a manual and time-consuming process. To improve communication, the system will integrate a built-in messaging feature to enable seamless and direct communication between students, mentors and

administrators. This feature eliminates dependency on external platforms such as Facebook Messenger and ensures timely and secure exchanges. Notifications and reminders of upcoming sessions, payments or notices will also be sent through the system to keep all users informed. The structured learning path offered by the platform is designed to adapt to student progress. The system will allow mentors to assess students' skills, monitor their achievements and recommend next steps on their educational journey.

This adaptive approach ensures personalized learning experiences, allowing students to progress at their own pace while meeting predefined milestones. The structured path will include predefined course modules, exclusive instructional videos created by Herliz, and tailored exercises that align with the student's current

level and goals. Ultimately, ConnectingNotes will help Herliz maintain its legacy of success by making music education more accessible, personalized, and efficient for all users, while continuing to nurture a new generation of musical talent.

1.2 Objectives of the Study

The primary goal of this study is to design and develop the ConnectingNotes web application to streamline and enhance the efficiency of the enrollment, mentorship, and learning processes at Herliz Music Studio and Instruments, facilitating a more accessible and effective experience for students, mentors, and administrators.

Specifically, the study aims to:

1. Design a user-friendly, web-based application that integrates the enrollment and mentorship processes, enabling online registration, mentor-student pairing, and session scheduling for students and mentors at Herliz Music Studio.
2. Develop a secure platform that facilitates both synchronous and asynchronous learning, enabling students to access live and prerecorded lessons from mentors, as well as track their progress and achievements.
3. Automate the mentor-student matching process using an algorithm that factors in criteria such as instrument specialization, skill level,

preferred schedules, and location to ensure optimal pairings and efficient scheduling.

4. Enhance communication and user experience by incorporating realtime messaging, notifications, and reminders for students, mentors, and administrators, ensuring seamless interactions and timely updates throughout the enrollment and learning processes.

1.3 Scope and Limitations of the Study

The proposed study focuses on enhancing the enrollment and mentorship processes at Herliz Music Studio and Instruments. The research will be localized to the operations of Herliz, situated in JA Clarin, Tagbilaran City, Bohol, and will encompass various stakeholders, including students, parents, mentors, the secretary, and administrators. This study aims to evaluate how the web-based system improves efficiency and accessibility. It will not replace the existing inperson registration process but will provide an online alternative for registration. Walk-in customers will still require some level of manual intervention by the secretary for specific in-person services or actions.

The study will also exclude certain operational activities that are outside the scope of the system itself. For instance, the organization of in-person events such as recitals and performances will not be considered within the study as they are

managed offline. Additionally, advertising activities conducted by Herliz to promote its services are not part of this study, as the focus is on optimizing the system for the enrollment and mentorship processes rather than marketing.

The scope of the study will be limited to verifying the functionality and usability of the proposed system, ensuring compatibility across different browsers, testing the security measures to protect user data, and assessing content accuracy. The study will not include 1-on-1 live sessions or manual feedback collection via face-to-face interactions, as these aspects fall outside the system's functionality.

Regarding data privacy and confidentiality, the study will adhere strictly to the Data Privacy Act of 2012. All personal data collected from students, parents, and mentors will be securely stored and will only be accessible to authorized personnel. Data will be handled with the utmost confidentiality, ensuring that no unauthorized party will have access to any sensitive information. Participants will be fully informed of their rights and the handling of their data through consent forms before participating in the system's usage.

To ensure that users' privacy is maintained throughout the study, the team will implement robust security measures such as encrypted data storage and secure access protocols. Additionally, any data breaches or unethical practices detected during the study will be addressed promptly to uphold the integrity and trust associated with Herliz Music Studio's operations.

Data for this study were gathered through interviews and consultations with key stakeholders at Herliz Music Studio, including the administrators, mentors, and students. These participants were selected for their direct involvement with the enrollment and mentorship processes. Additionally, feedback from parents was collected to understand their perspectives on the online registration system. Observations of current manual processes and their limitations were also made to inform system design.

Before conducting the data-gathering activities, informed consent was obtained from all participants to ensure compliance with privacy and ethical standards. The research team outlined interview questions and shared them in advance with participants to ensure transparency and consistency. The objective and benefits of the study were communicated clearly to all participants to ensure full understanding and voluntary participation.

The focus of the study will be to evaluate and test the features, usability, and effectiveness of the system in meeting Herliz's enrollment and mentorship needs, ensuring it aligns with the studio's current goals and technological capabilities.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter features both national and foreign literature. To ensure a more precise study, the researchers collected this literature from online journal sites. By reviewing this literature, the researchers gained a wider perspective and a deeper understanding of the gathered topics.

The study of Jamshidi and Marghitu is a web-based platform designed to facilitate remote music education by offering tools for music learning, sharing materials, and conducting virtual classes. Their platform emphasizes on making music teaching and learning more accessible, engaging, and fun for students through multimedia integration, providing an immersive audiovisual environment. [3]. The study of Jamshidi and Marghitu shows some notable features, such as score following, a technology that tracks a student's performance against a predefined score in real time, which is crucial for music accompaniment. A simplified score-following system can provide visual and auditory feedback to students during practice, enhancing their self-assessment. This feature is often paired with pitch tracking, which uses tools like the CREPE pitch detection algorithm to deliver precise real-time feedback. Their Music learning platform features different learning modes, such as Wait Mode, Slow Mode, and Loop Mode, on their virtual music sheets and videos. Allowing learners to adapt the lesson tempo, focus on difficult sections,

and practice iteratively. Such innovations can help students from ConnectingNotes refine their skills as they practice. However, their system does not have features like ConnectingNotes has to offer, such as a mentor management module that tracks student progress and allows personalized feedback. It also offers a session booking system that prevents scheduling conflicts, a messaging system for direct communication between students and mentors, and automated achievement issuance based on completed milestones. Additionally, it integrates a rating and review system to gather feedback on mentors and sessions, providing a more interactive and personalized learning experience. These features make ConnectingNotes a more robust and student-centered platform. Still, there are features from their study that can be utilized, integrating features like metronomes or interactive music sheets can enhance learning sessions. Adding such tools to ConnectingNotes would help students practice effectively between mentor sessions, boosting their progress.

Askeroth explored online learning innovations such as digital badges and Massive Open Online Courses (MOOCs). Integrating digital badges and MOOCs into educational platforms has revolutionized the learning landscape, offering scalable, accessible, and motivational frameworks for diverse learners [4]. Digital badges provide verifiable credentials for specific skills or achievements, incorporating gamification elements such as level progression, points, and leaderboards to track progress. MOOCs use asynchronous course delivery, combining video lessons, interactive discussions, and automated assessments for self-paced learning. These assessments utilize question banks, randomized quizzes, adaptive

assessments, and automated grading tools with natural language processing (NLP) and pattern recognition to evaluate performance and provide instant feedback. MOOCs typically rely on Learning Management Systems

(e.g., Moodle), cloud infrastructures for scalability, and content delivery networks (CDNs) for efficient video streaming. In ConnectingNotes, badges can be issued based on specific milestones like mastering a musical technique or completing mentorship hours. MOOC features that can also be implemented include video tutorials hosted on scalable cloud services like Amazon Web Services (AWS), adaptive streaming to adjust video quality based on network conditions, and peer reviews using assessment plugins. RESTful APIs would allow badge and course data integration with external platforms like LinkedIn. These features would enable an efficient, scalable, data-driven platform for tracking and validating student progress in ConnectingNotes.

Legaspi developed a web-based course scheduling system that uses the Greedy Algorithm to automate time-slot allocation, room assignments, and faculty scheduling [5]. The greedy Algorithm works by finding the earliest available time slot, assigning appropriate rooms, selecting qualified faculty, and ensuring a conflict-free schedule through iterative optimization. From this, the Greedy Algorithm can automate the allocation of mentorship sessions by assigning mentors to time slots based on immediate availability and predefined factors such as mentor workload, student preferences, and session duration. By implementing this algorithm, the system can automatically resolve conflicts, optimize session

utilization, and reduce manual scheduling errors, ensuring smooth and efficient operation. For example, when a student books a session, the system can automatically search for an available mentor within specified time constraints and assign the session to avoid conflicts. Their implementation of Manual and Override Scheduling allows flexibility when automated schedules are not feasible. In ConnectingNotes, this feature can empower administrators or mentors to manually adjust schedules if needed. Their Copy-Previous-Schedule functionality can simplify recurring mentorship sessions by replicating previous session structures, reducing repetitive scheduling tasks. By adopting these technical approaches and system features, ConnectingNotes can deliver an efficient scheduling system, optimizing mentorship session management while minimizing conflicts and manual interventions.

The study "College Vocal Music Teaching Design Based on Internet Platform" introduces a five-tier system architecture comprising an infrastructure layer, application interface layer, application layer, user layer, and a cloud curriculum platform [6]. The infrastructure layer uses a B/S (Browser/Server) model for backend processes, while the application interface layer supports dynamic web pages and database integration. The application layer handles system maintenance and user management, and the user layer offers

functionalities like information management and access control. Lastly, the cloud curriculum platform hosts courses and materials, modernizing vocal music education. Their system also employs technologies such as MySQL, Linux, Resin

servers, and dynamic query execution for efficient database operations, alongside advanced algorithms like entropy-based indexing for data search and learning activity management. To adopt these features in ConnectingNotes, the modular five-tier architecture can enhance scalability and clarity in managing components. For instance, using a B/S computing model can optimize backend processes in an online mentoring system by centralizing tasks like user authentication, session management, and data analysis on the server. This reduces client-side load, ensures scalability, and simplifies maintenance and updates. It also improves data security by keeping sensitive information on the server while employing a solid database that can support user registration, course management, and progress tracking. The application layer can integrate logic rules for data analysis to enhance student progress tracking, mentor matching, and learning activity management by utilizing Conditional rules that can automate actions like awarding certificates based on session completion and scores. Their use of Aggregation helps compile student progress data to identify performance trends, such as which courses have high completion rates or where students struggle the most. This helps administrators refine course structures. Their Anomaly detection logic rule Flags students who haven't logged in or submitted progress for a set period (e.g., 7 days). The Classification logic rule categorizes students and mentors for personalized recommendations and provides segmented access for students, mentors, and administrators, ensuring data privacy and smooth platform navigation.

Effective music pathways for instrumentalists at beginner, intermediate, and advanced levels involve tailored instructional methodologies, improvisation techniques, and composition opportunities. These pathways are designed to enhance musicianship and encourage creativity across levels [7]. The study of Douglas, T., Owens. Shows Effective Pathways for Instrumental Music Education across Proficiency Levels. For beginners, utilizing repetitive sequencing steps aids in mastering fundamental concepts such as chord arrangements and scales, particularly for string instruments like guitars. Listening to examples while learning jazz styles further supports the development of basic rhythmic and harmonic understanding. At the intermediate level, students benefit from improvisation and composition projects that encourage the exploration of melodic and rhythmic interpretations, thus enhancing their creative skills. Additionally, introducing expanded harmonic ideas, including modes and advanced chord progressions, allows students to delve deeper into musical exploration and comprehension. For advanced learners, exposure to diverse musical styles and contemporary techniques fosters experimentation and innovation in composition, enabling them to push creative boundaries. To integrate these instructional methodologies into ConnectingNotes, beginner pathways can feature step-by-step tutorials on foundational skills like scales and chords, supported by pre-recorded examples of styles such as jazz rhythms. A progress tracker can reward completed lessons with badges. Intermediate pathways can include improvisation exercises and lessons on modes and chord progressions, allowing students to apply these concepts in their compositions and share work with mentors or peers for feedback. Advanced

pathways can offer project-based learning, such as composing full pieces or exploring diverse musical styles through masterclasses. Additional flexible features can include customizable learning paths, mentor-guided adjustments, and adaptive assessments to recommend personalized next steps.

The study provided by Matevž, P., Franc K., Peter S., and Matija M., focused on the development and three-month assessment of the Troubadour Platform, an open-source music theory ear training tool [8]. Key features were identified through teacher interviews to improve the platform's functionality, leading to the implementation of interactive elements such as class management tools, recurring homework assignments, and challenges. Initial research demonstrated significant improvements in student performance with the platform, though the short-term nature of previous experiments raised concerns about potential novelty bias. To address this, a comprehensive three-month evaluation was conducted, gathering data through student questionnaires and platform analytics. Previous research indicated significant improvements in student performance while using the platform. Additionally, the study analyzed students' self-reported practice habits and compared these with the data collected from the platform. The results show the need for flexible and adaptable learning tools that can complement traditional in-class education, providing students with continuous learning opportunities regardless of the setting. By integrating the insights gained from this evaluation, the Troubadour platform can further refine its features to better support music education across multiple learning environments. Furthermore, these findings can be applied to other online music education platforms such as ConnectingNotes by

incorporating key features like personalized learning pathways, real-time feedback mechanisms, and a comprehensive evaluation framework. By leveraging the insights from this study, ConnectingNotes can create a versatile and effective learning environment that addresses current educational needs and continuously improves based on user feedback and data analysis.

The study of Yuna Chen and Abdul Rahman Safian has the changing context of online learning in vocal music education, giving particular emphasis to interventions that can be supported using multimedia resources to enhance access, flexibility, and engagement [9]. Traditional music educators have faced challenges adapting to digital platforms, emphasizing the need for digital literacy and appropriate infrastructures. The study suggests that while online learning offers significant advantages, integrating digital tools with traditional methods is essential. Future research should be directed towards the long-term impact of online learning on skill development and creative growth, as well as toward the optimized platforms for real-time musical collaboration, advocating for a harmonized approach that blends technology with foundational instructional practices. Such findings are highly pivotal for our study on ConnectingNotes. By making use of insights on accessibility and engagement, addressing potential challenges, taking up a balanced blend of digital and traditional methods, and exploring future research directions, ConnectingNotes can become a more robust and effective platform for online music education. By implementing these strategies, including multimedia resources for engaging content and a userfriendly interface to accommodate varied digital literacy levels, ConnectingNotes will be

sure to stand out as a comprehensive tool for educators and students alike. Additionally, tracking long-term student progress and collecting data on the effectiveness of the platform will help us refine and improve our tools continuously. Exploring real-time musical collaboration features such as synchronized practice sessions, virtual jam sessions, and seamless integration with existing music software will improve the interactive and community aspects of music learning on ConnectingNotes.

The Mentor Management System is an innovative Java-based Database Management System (DBMS) web application designed to enhance mentormentee interactions and administrative oversight in academic institutions [10]. Addressing the growing demand for efficient mentorship collaborations, the system aims to streamline connections between mentors and mentees while optimizing the overall mentorship process for students, mentors, and administrative personnel. The Mentor Management System integrates several technical features that can help enhance ConnectingNotes by improving automation, communication, and user management. A leave management system in MMS automates mentor absence tracking using relational databases and a dynamic calendar interface, where leave requests trigger status changes like mentor availability in ConnectingNotes and substitute mentor assignments through scheduling algorithms. Implementing this in ConnectingNotes would improve session continuity by updating mentor availability and notifying impacted users automatically. This feature is particularly useful when a mentor is unable to attend a scheduled in-person session. Their batch assignment functionality utilizes batch

processing and role-based access control (RBAC) to efficiently assign multiple students to mentors or groups, which can be adapted for managing ensemble classes or collaborative learning paths in ConnectingNotes. Lastly, MMS's realtime notifications are powered by event-driven messaging services and push notification APIs such as FCM or OneSignal, which could be directly relevant for ConnectingNotes to manage mentor reminders and student session alerts, ensuring timely reminders for sessions, progress updates, and deadlines. By integrating these technical elements, ConnectingNotes can enhance its mentorship framework with improved automation, efficient resource allocation, and proactive communication tools.

The study by Andrade presents a web platform designed to support the Mentoring Academy, leveraging technologies like ASP.NET Core for backend development, MySQL for database management, and Angular 6 for the front end [11]. The system implements Single Page Applications (SPAs) architecture, which provides dynamic content updates without refreshing the entire page. Key functionalities include manual and automatic mentor-mentee matching using rules like location and language, integration of graphs to visualize mentoring statistics, and automated email notifications for meeting scheduling and confirmations. Their study introduces features that can enhance ConnectingNotes, such as an automated mentor-mentee matching system using predefined rules based on skill level, subject focus, schedule compatibility, language preference, and student learning goals for optimized pairings. Implementing a similar algorithm that considers expertise, learning styles, and availability would improve efficiency.

Their system's dynamic data visualization offers insights into progress and engagement. A progress dashboard in ConnectingNotes would allow users to track milestones, session completion rates, and performance trends over time.

Additionally, automated email notifications for scheduling and reminders could be upgraded in ConnectingNotes with push notifications via APIs like Twilio or Firebase for real-time updates. Lastly, adopting Single Page Application (SPA) architecture with React.js or Angular would enhance user experience with faster, smoother interactions.

CHAPTER III

METHODOLOGY

3.1 Analysis

This section discusses how users interact with the ConnectingNotes system, presenting an overview of its functionalities and modules. The analysis is accomplished through the use case diagram and use case narrative. The use case diagram visually represents the relationships between actors and the system, identifying their respective actions that trigger system processes. The use case narrative provides a detailed explanation of these processes, ensuring clarity on system workflows.

This analysis is accomplished through the utilization of the system use case diagram and use case narrative. The use case diagram presents the relationship between the actors and the system, therefore, actors and their respective actions which trigger the processes of the system are identified. The system involves four (3) actors, the Administrator/Secretary, the Mentors, and the Students, and there are five (5) processes identified in the use case diagram (refer to figure

3.1.1): Manage User Accounts, Manage Mentors, Manage Mentoring Sessions, Manage Achievements, and Generate Reports.

The Manage User Account process involves all the actors on the said

platform. The Administrator, who is the owner of Herliz Music Studio, is allowed to create the Admin/Secretary's accounts, view and update their own account. The Admin/Secretary is allowed to create the walk in clients' accounts, view and update user account's registration status, including updating their own account details. The Students must create an account in order for them to register into Herliz Music Studio through the system and they are also allowed to view, update personal details, and password on their own account. The Mentors must create an account in order for them to apply in Herliz Music Studio through the system where they can apply as "Mentor" and they are also allowed to view, update personal details, and password on their own account.

The Manage Mentors involves the Administrator/ Secretary, and the Mentors. The Administrator/Secretary oversees the entire application process for mentors. This includes reviewing applications, setting a date for the interview by messaging each other through the platform, conducting interviews either online or onsite, depending on the applicant's accessibility, and making the final decision to approve or reject the applicant. Accepted applicants will be notified via email and will proceed with the onboarding process, where they will be granted system access and introduced to the studio's policies, teaching guidelines, and administrative procedures. Rejected applicants will also receive email notifications, and their accounts will remain as is. Throughout the process, the Administrator tracks the progress of applications and communicates with applicants via email/gmail. The Secretary assists the Administrator by verifying documents, tracking application progress, organizing communication, and setting an interview.

The Admin/Secretary is allowed to filter applications by status and date. The Mentors are responsible for providing structured, curriculum-based instructions, lessons, and sessions, while the freelancers conduct one-off sessions such as seminars or workshops. In order to apply a position in Herliz Music Studio, they must submit their application with the necessary documentation and portfolio details, through the system. They can track the status of their applications in real-time and receive notifications through their email about the updates of their application.

The Manage Mentoring Sessions involves all the actors on the said platform. The Admin/Secretary also has an overview of all sessions and access to session logs. The system provides the Secretary and Administrator with a dashboard that tracks registration statuses, payment confirmations, and document submissions. The Students can register through the system, with Mentors based on their availability, view session details, receive reminders, and provide feedback. If students miss a session, they must submit an excuse letter through the system although the students can catch up on lessons they missed since all lessons will be posted through the system. The system offers a guided registration interface with step-by-step instructions, update of successful registration, and integration with payment gateways such as Paymongo specifically Gcash suitable for local customers for processing fees. The Mentors manage their course offerings and availability for new student registrations since there are only 20 students max per session. They can view student registration for their sessions, ensuring they can manage their time effectively. The system provides mentors with a calendar view of their

sessions and students view to see who and how many students they have, allowing them to manage their schedule efficiently. The system supports hybrid learning, combining synchronous tools like video conferencing and asynchronous resources such as recorded lessons and sheet music. A communication feature includes in-system messaging, email notifications, and calendar integration for effective coordination among users. The mentoring sessions cater to a variety of music disciplines, including Violin, Piano, Acoustic Guitar, Electric Guitar, Drums, and Pop Singing, ensuring a comprehensive music education experience for students. Herliz Music Studio operates with two seasons from April to July and September to December, providing structured learning schedules within these periods.

Manage Achievements involves the Administrator, the Mentors, and the Students. The Administrator oversees the issuance of achievements and certificates, ensuring that the system supports the process effectively. While the Mentors are responsible for setting, creating, and managing the specific achievement types that students can earn, the Administrator will manage the technical aspects of the system, such as generating certificates and integrating digital signatures to maintain authenticity that will be given on the day of the recital. The Administrator ensures that achievements are awarded based on the criteria where they can view the achievements/badges set by mentors and what the students earned, providing transparency and a clear path for students to follow to earn additional recognition and motivation. The Mentors are responsible in issuing achievements to students based on their progress and performance. They can notify their students what they can accomplish through their progress and award badges and achievements for

specific accomplishments. The mentors can track student progress and generate digital certificates with digital signature, which will be stored in the student's dashboard. The Students can view their achievements through their personal dashboards, where they can also view their progress and any badges or certificates they have earned. In every achievement that the students can achieve on their progress, it will automatically update in their achievement records that will be displayed in the student's dashboard. Students can download their certificates directly from the platform.

Generate Reports involves the Secretary/Administrator. The Secretary/Administrator is responsible for generating reports per session classified to two seasons per year, four months per season, Monday to Friday classes from 8am to

11am, related to various aspects of the system such as registration statistics, earnings paid by clients, non-continuing students, and courses or services taken. The generated reports will be shown in a graph/chart. The Administrator is provided with a dashboard to view the reports that are generated by the Secretary, and the Administrator can select what he/she wants to view.

To summarize, in the proposed system, the Administrator/Secretary will have the capability to:

- Create (including the Secretary's account), view, delete, and update their own account.

- Validate, view, approve, or decline Mentors.
- Monitor session logs.
- Oversees the entirety of achievement issuance and generates certificates with digital signatures for authenticity.
- Track, and process registration payments
- Generate reports

The Mentors will have the capability to:

- Create, view, and update their own account
- Create mentors
- Manage their course offerings and availability for student registrations
- Manage their session schedules, conduct sessions, and provide feedback to students.
- Conduct and view one-off sessions, such as seminars or workshops.
- Award students with badges/achievements, track progress, and generate certificates.

The Students will have the capability to:

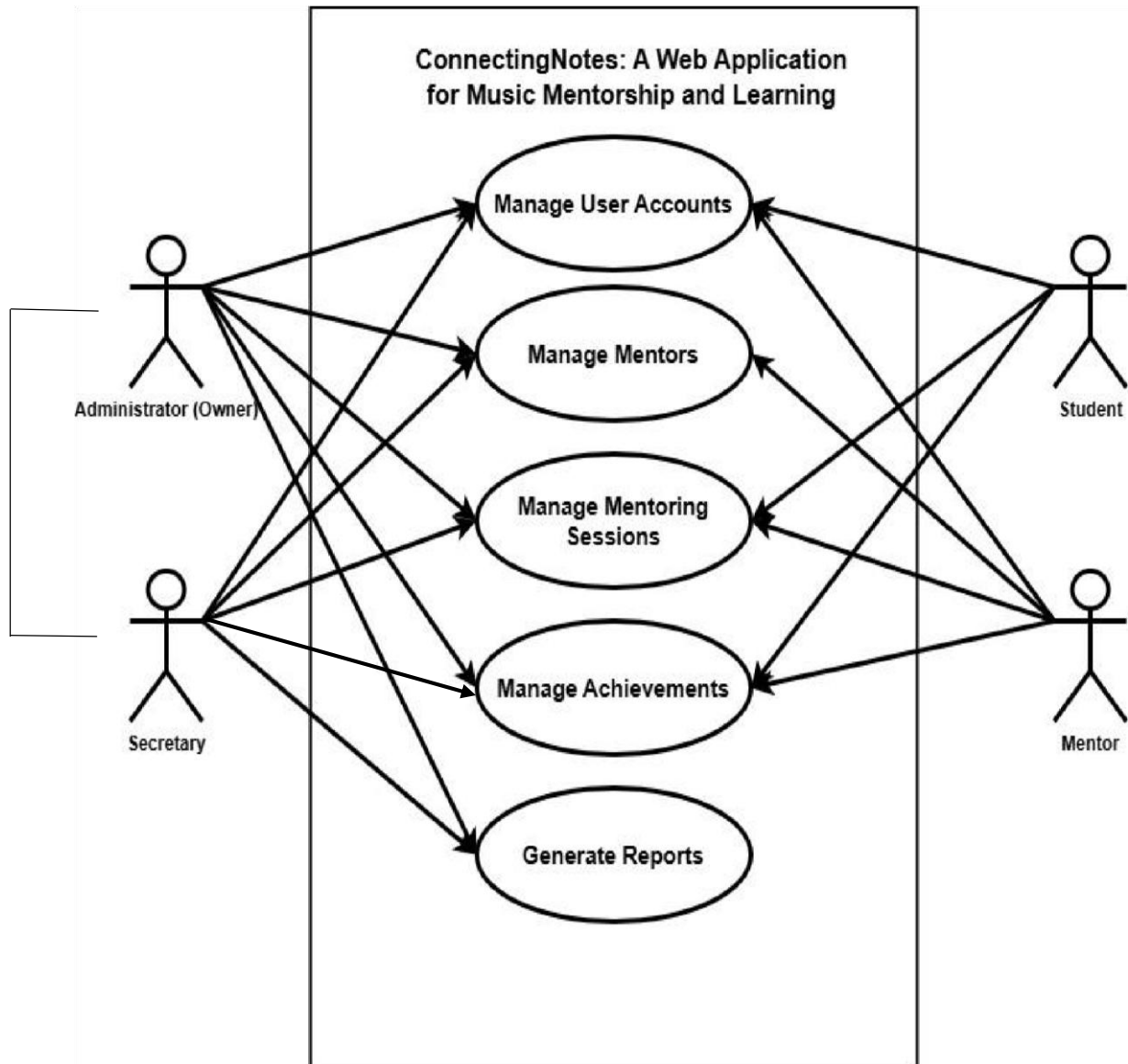
- Create, view, and update their own account
- Submit mentorship application to become a mentor
- Register for courses, select mentors, schedule sessions, and automates the payment through Gcash. .
- Book and manage session class. Also provide feedback

- View, download/share, and receive updates about their achievements

Overall Capabilities:

- Seamless account creation and verification.
- Comprehensive management of applications, registrations, mentoring sessions, achievements, and reports.
- Hybrid learning capabilities for flexibility and accessibility.
- Integrated communication features for streamlined collaboration among users.

3.1.1 Use Case Diagram



Use Case Diagram for ConnectingNotes: A Web Application for Music Mentorship and Learning

3.1.2 Use Case Narrative

3.1.2.1. Manage User Accounts (Admin/Secretary)

Use Case Name	Manage User Accounts
Actor	Administrator/Secretary
Pre-condition	User default account exists. User account records must exist in the database.
Description	Allows the administrator/Secretary to view users and create an account vice-versa. The administrator/secretary can also update their own account.
Typical Course of Event	
Actor Action	System response
Step 1: Click the "Manage Users" button.	Step 2: Displays dashboard for "All Users" including Admin/Secretary, Mentor, Student can filter users by their respective roles namely; Admin/Secretary, Mentor, Student.
Step 3: Click a button.	<p>Step 4.1: If the "Create User" button is clicked, displays a form containing information to create users. Go to Step 5.</p> <p>Step 4.2: If the "Manage Users" button is clicked, it displays lists "All", "Student", "Mentor", and "Admin/Secretary" buttons. Go to Step 7.</p> <p>Step 4.3: If the "Edit" button is clicked, extracts information from the database and displays profile information page with edit button. Go to Step 11.</p>

<p>Step 5: Fill out the form and click a button.</p>	<p>Step 6.1: If the “Submit” button is clicked, validates the form. If valid and complete, displays a message: “New Users Added Successfully.”</p> <p>End of Process.</p>
<p>Step 7: Click a button on the “User” dropdown.</p>	<p>Step 8.1: If the “All” button is clicked, Extract all users from the database and display the list of all users.</p> <p>Step 8.2: If the “Student” button is clicked, Extract all students from the database and display the list of all students.</p> <p>Step 8.3: If the “Mentor” button is clicked, Extract all mentors from the database and display the list of all mentors.</p> <p>Step 8.5: If the “Admin/Secretary” button is clicked, Extract all admins/secretaries from the database and display the list of all admins/secretaries.</p>
<p>Step 9: Click a button.</p>	<p>Step 10: If a user is clicked in a list on all Step 8, extract users profile and display profile information page. End of Process.</p>
<p>Step 11: Update data and click the “Submit” button.</p>	<p>Step 12: Validates the profile form. If valid and complete, displays a message: “User Profile has been updated!”. End of Process.</p>
<p>Alternative Paths:</p> <p>Alternative Path for Step 6.1</p> <ul style="list-style-type: none"> If the user did not fill up the form, it displays an error message “Please fill out this field.” Go back to Step 5. <p>Alternative Path for Step 12</p> <ul style="list-style-type: none"> If the user did not fill up the form, it displays an error message “Please fill out this field.” Go back to Step 11. 	

3.1.2.3. Manage User Accounts (Students)

Use Case Name	Manage User Accounts
Actor	Student
Pre-condition	The students must create an account through the system for them to login. User account records must exist in the database.
Description	Allows the students to view their account and create an account on their own. The students can also update their own account.
Typical Course of Event	
Actor Action	System response
Step 1: Click a button. ‘Sign Up’	Step 2: Displays registration form name, email, password for creating new account.
Step 3: Click a button. ‘Sign In’ Go to Step 6.	Step 4: If the “Sign Up” button is clicked Go to Step 2.
Step 5: Click a button. ‘Sign In’	Step 6: If the “Sign In” and “Already have an account” button is clicked, a login form will display.
Step 7: Fill up the login form.	Step 8: If the “Log In” button is clicked, the system validates and checks for student account from the database. Redirects to student dashboard. End of Process.
Step 9: Fill up the registration form.	Step 10: If the “Register” button is clicked, system validates and saves user information to the database Redirects to student dashboard. End of Process.

Alternative Paths:**Alternative Path for Step 8**

- If the user did not fill up the login form, it displays an error message “Please fill out this field.” **Go back to Step 7.**

Alternative Path for Step 10

- If the user did not fill up the registration form, it displays an error message “Please fill out this field.” **Go back to Step 9.**

3.1.2.4. Manage User Accounts (Mentors)

Use Case Name	Manage User Accounts
Actor	Mentors
Pre-condition	The mentors must create an account through the system for them to login. User account records must exist in the database.
Description	Allows the mentors to view their account and create an account on their own. The mentors can also update their own account.
Typical Course Event	of
Actor Action	System response
Step 1: Click a button. ‘Sign Up’ Go to step 3.1 Step 2: Click a button ‘Register’ Go to step 3.1	Step 3.1: Displays registration form name, email, password for creating new account.

<p>Step 4: Click a button. 'Sign In'</p> <p>Go to step 6.1</p> <p>Step 5: Click a button 'Already have an account?'</p> <p>Go to step 6.1</p>	<p>Step 6.1: Displays login form email, password.</p>
<p>Step 7: Fill up the registration form.</p>	<p>Step 8.1: If the "Register" button is clicked, system validates and saves user information to the database Redirects to student dashboard. Redirects to user dashboard. End of Process.</p>
<p>Step 9: Fill up the login form.</p>	<p>Step 10.1: If the "login" button is clicked, the system validates and extracts the student account from the database. Redirects to user dashboard. End of Process.</p>
<p>Alternative Paths:</p> <p>Alternative Path for Step 8.1</p> <ul style="list-style-type: none"> • If the user did not fill up the registration form, it displays an error message "Please fill out this field." Go back to Step 7. <p>Alternative Path for Step 10.1</p> <ul style="list-style-type: none"> • If the user did not fill up the login form, it displays an error message "Please fill out this field." Go back to Step 9. 	

3.1.2.5. Manage Mentors (Administrator/Secretary)

Use Case Name	Manage Mentors
Actor	Administrator
Pre-condition	Applications must exist in the database. User account records must exist in the database.
Description	The Administrator can review, approve, or reject applications.
Typical Course of Event	
Actor Action	System response
Step 1: Click the “Mentor Applications” button.	Step 2: Extracts all application data from the database, and displays a list of applicants and their status e.g. “Approved”, “Declined”.
Step 3: Displays	Step 4: Displays the information and documents of a specific applicant with an “Approve” button, and a “Decline” button. Go to step 5.
Step 5: Click a button.	Step 6.1: If the “Approve” button is clicked, Notifies the applicant of his/her approval through the applicant's email and the user is now a mentor. End of Process. Step 6.2: If the “Reject” button is clicked, Notifies the applicant of his/her rejection through the applicant's email. Go back to Step 1.
Alternative Paths: Alternative path for Step 6.1 <ul style="list-style-type: none"> If the applicant is already approved, display their status “Approved”. End of Process	

- If the applicant is already rejected, display their status “Declined”. **End of Process**

3.1.2.7. Manage Mentors (Mentors/Freelancers)

Use Case Name	Manage Mentors
Actor	Mentors/Freelancers
Pre-condition	"Applications" must exist in the database User account records must exist in the database.
Description	The mentors/freelancers can send applications and receive notifications through email.
Typical Course of Event	
Actor Action	System response
Step 1: Click a button.	Step 2: Manage application interface will be displayed with the “Become A Mentor” button
Step 3: Click the “Become A Mentor” button.	Step 4: Registration information form for mentorship program will be displayed.
Step 5: Displays mentorship information.	Step 6: A form will appear where they are required to submit their scanned Resume/Curriculum Vitae (CV) through the system.
Step 7: Displays mentorship information.	Step 8: A form will appear where they are required to submit their scanned Professional Regulation Commission (PRC) License (Government ID).

Step 9: Displays mentorship information.	Step 10: A form will appear where they are required to submit their Contract and Agreement from the system.
Step 11: Click the "Confirm" button.	Step 12: Displays the message "Application has been successfully submitted". Records the documents in the database. Updates the application status to "Under Review". Notifies the applicant via email that confirms the submission and outlines the next steps in the review process. End of Process.
Alternative Paths: Alternative path for Step 11 <ul style="list-style-type: none"> • If Status is 'Declined, notify the applicants through gmail "Sorry you have been rejected." End of Process. • If Status is 'Accepted, notify the applicants through gmail "Your application is being accepted." End of Process. 	

3.1.2.8. Manage Mentoring Sessions (Admin/Secretary)

Use Case Name	Manage Mentoring Sessions
Actor	Administrator
Pre-condition	User accounts must exist in the database.
Description	The administrator/secretary can manage sessions.
Typical Course of Event	
Actor Action	System response
Step 1: Click the "Manage Sessions" button.	Step 2: Dashboard displays all of the sessions created by the mentor

Step 3:	Click the "Delete" button.	Step 4.1: The system executes the command and deletes the session entirely and it also deletes all the session recorded from the database.
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3.1.2.10 Manage Mentoring Sessions (Students)

Use Case Name	Manage Mentoring Sessions
Actor	Students
Pre-condition	User accounts must exist in the database.
Description	The students can submit registration fees.
Typical Course of Event	
Actor Action	System response
Step 1: Click "Pay & Enroll" button	Step 2: Redirects to Gcash checkout page to pay the enrollment fees. And automatically be enrolled to the mentor session after completing the payment.
Step 3: Click the "Enter Class" button.	Step 4: Displays the session class enrolled with the mentor's name, total number of students, posted announcements, posted activities.
Step 5: Hover to the "Activity Section"	Step 6: Displays all of the activities posted by the mentor and student can view the attachment posted by clicking "View Attachment" and student can also submit and add their work by clicking the button "Turn In". End of Process
Step 7: Hover to the "Announcements Sections.	Step 8: Displays all of the announcements posted by the Mentor inside the session. Student can also respond to the announcement by clicking "Submit Response" button. End of Process.

3.1.2.11 Manage Mentoring Sessions (Mentors)

Use Case Name	Manage Sessions
Actor	Mentors
Pre-condition	The mentors must be an official mentor in Herliz Music Studio. User accounts must exist in the database
Description	The Mentors are responsible for managing their session schedules, including setting availability, conducting sessions, and providing feedback (comments and ratings).
Typical Course of Event	
Actor Action	System response
Step 1: Click “Manage Sessions” button.	Step 2: Displays all classes of the mentors and “Create class” button and displays classes form information.
Step 3: Click a specific class.	Step 4.1: If a specific class is clicked, display information about the class. Step 4.2: If the “Create class” button is clicked, display a form for the new session classroom. Step 4.3: If the “Edit” button is clicked, display a form for the updating classroom information.
Step 5: Click a button	Step 6.1: If the “View” button is clicked, redirected to the homepage of the classroom dashboard. End of Process. Step 6.2: If the “Attendance” button is clicked, display the attendance form with a checkbox: “Present”, “Absent”, “Excuse”, “Late” button. Go to Step 12. Step 6.3: If the “Activities” button is clicked, display the activity form.
Step 7: Write a post and click “Post” button.	Step 8.1: The system updates the dashboard and posts the new post. Display a message: “Your post is posted!”. End of Process.

Step 9: Write a comment and click “Send” button.	Step 10: The system updates the comments of a session materials/post and posts the new added comment. Display a message: “Your comment is added!”. End of Process.
Step 11: Check the lists and click “Done” button.	Step 12: Updates the attendance form and displays a message: “Attendance has been saved!”. End of Process.
Alternative Paths: Alternative Path for Step 2 <ul style="list-style-type: none"> • If empty, display a message: “Please fill up this field.” Alternative Path for Step 4.2 <ul style="list-style-type: none"> • If empty, display a message: “Please fill up this field.” Alternative Path for Step 4.3 <ul style="list-style-type: none"> • If empty, display a message: “Please fill up this field.” Alternative Path for Step 6.2 <ul style="list-style-type: none"> • If empty, display a message: “Please fill up this field.” Alternative Path for Step 6.3 <ul style="list-style-type: none"> • If empty, display a message: “Please fill up this field.” 	

3.1.2.12. Manage Achievements (Administrator)

Use Case Name	Manage Achievements Issuance
Actor	Administrator
Pre-condition	<p>Achievements records must exist.</p> <p>User accounts must exist.</p> <p>Extract all data achievement data from the database including Mentor, Student, and Requests of Certificates.</p>
Description	The Administrator oversees the issuance of achievements and certificates.

Typical Course of Event	
Actor Action	System response
Step 1: Click the “Manage Achievements” button.	Step 2: Displays list of issued certificate from all mentors including who issued and who received the achievement.
Step 3: Clicks a button	Step 4.1: If the “Delete” button is clicked, Deletes all of the achievements issued.

3.1.2.13. Manage Achievements (Mentors)

Use Case Name	Manage Achievements Issuance
Actor	Mentors
Pre-condition	Achievements records must exist. User accounts must exist.
Description	The mentors are responsible for setting, creating, and managing the specific achievement types that students can earn.
Typical Course of Event	
Actor Action	System response
Step 1: Click a button.	Step 2: Dashboard displays list of student who enrolled to the mentor session.
Step 3: Click a button.	Step 4.1: If the specific achievement button is clicked it will send an achievements to the student.

Step 5: Click a list.	Step 6: If a list is clicked, display student profile and achievements progress. End of Process.
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3.1.2.14. Manage Achievements (Students)

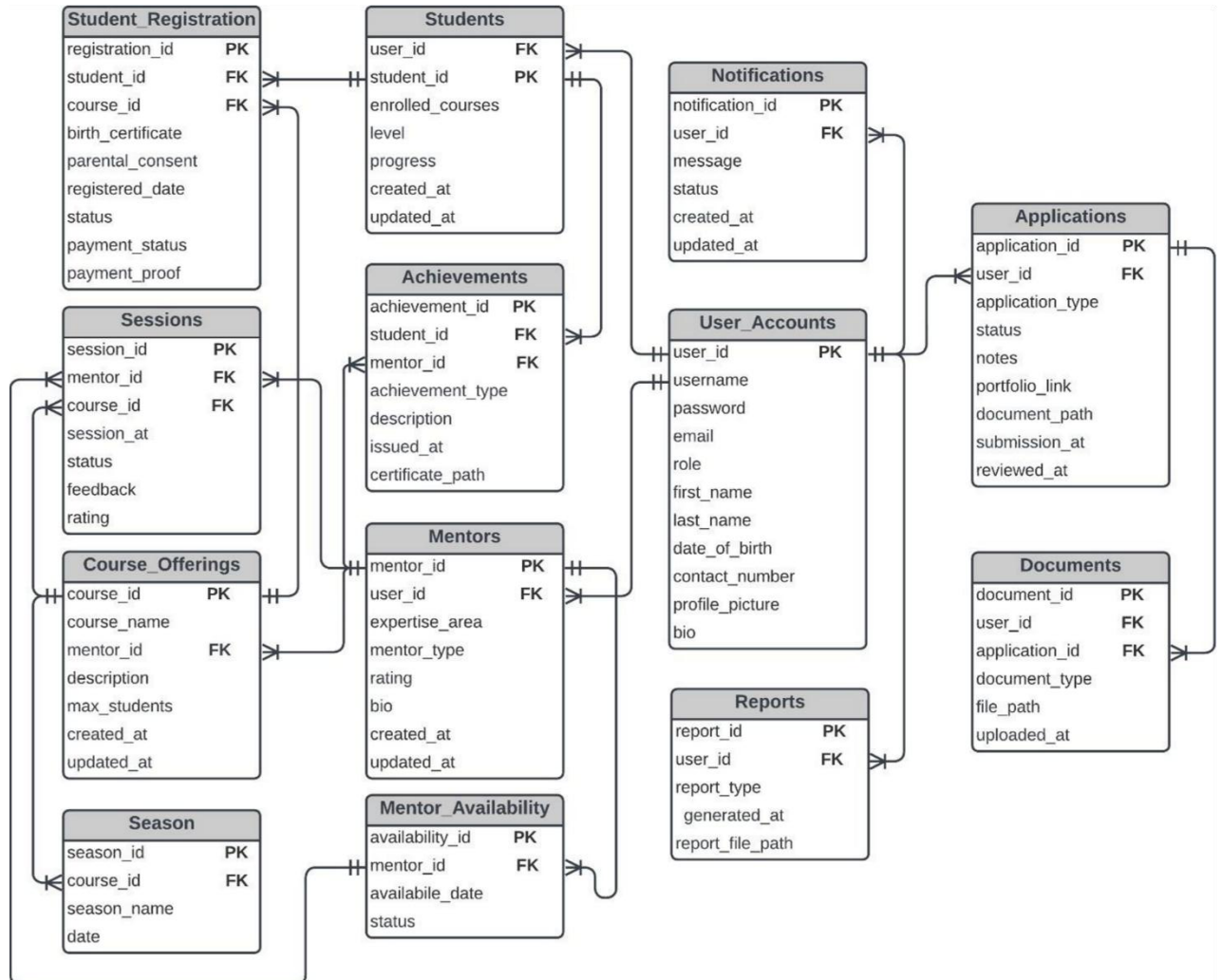
Use Case Name	Manage Achievements Issuance
Actor	Students
Pre-condition	Students must be enrolled in Herliz Music Studio "Achievements" records must exist User accounts must exist in the database
Description	The students can view their achievements through their personal dashboards, where they can also view their progress and any badges or certificates they have earned.
Typical Course of Event	
Actor Action	System response
Step 1: Click the "Achievements" button.	Step 2: Extract all achievements. Dashboard displays a list of "Achievements/Badge" buttons.
Alternative Paths: Alternative path for Step 2 <ul style="list-style-type: none"> • If data is not found, display the message " No records found." End of Process. 	

3.1.2.15. Generate Reports (Administrator)

Use Case Name	Generate Reports
Actor	Administrator
Pre-condition	Generate Reports window is opened. Registrations, payments/ earnings and course records must exist in the database.
Description	Allows the administrator to view generated by the system.
Typical Course of Event	
Actor Action	System response
Step 1: Click a Button "Dashboard"	Step 2: Displays custom selection for the following "Users", "Continuing", "Non-continuing", "Revenues", and buttons are displayed on the upper left. "Print" and "Date filter" buttons are displayed on the upper left.
Step 3: Click the "Download" button.	Step 4: Download all the system generated reports and displays total information.
Step 5: Click the "print" button inside the pdf file.	Step 6: Validates then sends the file and command to the hardware printer. Display a message: "Printing Report!". End of Process,
Step 7: Click "Date Filter" Button	Step 8: If the "date" button is clicked, display date entries with the "OK" button.
Step 9: Set a date and click the "Ok" button.	Step 10: Validates the date range. If valid and complete, display a message: "Done!" and display all data with the date range. End of Process.

3.2 Design

3.2.1. Relational Database



Relational Database for ConnectingNotes: A Web Application for Music Mentorship and Learning

3.2.2 File Structure

Table 1. Student_Registrations

This table handles student registration details.

Field Name	Data Type	Description
registration_id (PK)	INT (11)	Unique identifier for each registration
student_id (FK)	INT (11)	Foreign key linking to the student table
course_id (FK)	INT (11)	Foreign key linking to the Courses table
birth_certificate	VARCHAR(225)	File path to scanned birth certificate
parental_consent	VARCHAR(225)	File path to scanned parental consent form.
registration_date	DATE	Date when the registration was made
status	ENUM	Status of the registration ('Pending', 'Confirmed', 'Canceled')
payment_status	ENUM	Status of payment ('Unpaid', 'Paid')
payment_proof	VARCHAR (100)	Proof of payment or reference number for the payment

Table 2. Sessions

This table records session schedules between students and mentors/freelancers.

Field Name	Data Type	Description
session_id (PK)	INT (11)	Unique identifier for each session
course_id (FK)	INT (11)	Foreign key linking to the Courses table
mentor_id (FK)	INT (11)	Foreign key linking to the mentor table
session_at	DATETIME	Date and time of the session
status	ENUM	Status of the session ('Scheduled', 'Completed', 'Cancelled')
feedback	TEXT	Feedback provided by the mentor or student
rating	INT (2)	Rating given for the session

Table 3. Course Offerings

This table contains Courses.

Field Name	Data Type	Description
course_id (PK)	INT (11)	Unique identifier for each course
course_name	VARCHAR (100)	Name of the course
description	TEXT	Detailed description of the course
mentor_id (FK)	INT (11)	Foreign key linking to the mentor table

max_students	INT (3)	Maximum number of students per course
created_at	TIMESTAMP	Timestamp when the course was created
updated_at	TIMESTAMP	Timestamp when the course was last updated

Table 4. Season

This table contains Information of classes and sessions in each season.

Field Name	Data Type	Description
season_id (PK)	INT (11)	Unique identifier for each Season
course_id (FK)	INT (11)	Foreign key linking to the Course table
session_name	TEXT	Name of the Season
date	DATE	Date when the Season was created

Table 5. Students This table contains the Students.

Field Name	Data Type	Description
student_id (FK)	INT (11)	Unique identifier for each student
user_id (PK)	INT (11)	Foreign key linking to User_Accounts table

enrolled_courses	BLOB	Encrypted field storing courses enrolled by the student to protect sensitive information.
level	VARCHAR (50)	Level or grade of the student (e.g., beginner, advanced)
progress	TEXT	Text field to track student progress
created_at	TIMESTAMP	Timestamp when the student record was created
updated_at	TIMESTAMP	Timestamp when the student record was last updated

Table 6. Achievements

This table contains achievements obtained by students.

Field Name	Data Type	Description
achievement_id (PK)	INT (11)	Unique identifier for each achievement
student_id (FK)	INT (11)	Foreign key linking to the student table
mentor_id (FK)	INT (11)	Foreign key linking to the mentor table
achievement_type	VARCHAR (50)	Type of achievement earned
description	TEXT	Description of the achievement
issued_at	DATE	Date when the achievement was awarded

certificate_path	VARCHAR (255)	File path to the achievement certificate
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Table 7. Mentors

This table contains Mentors.

Field Name	Data Type	Description
mentor_id (PK)	INT (11)	Unique identifier for each mentor
user_id (FK)	INT (11)	Foreign key linking to User_Accounts table
expertise_area	VARCHAR (100)	The area of expertise of the mentor (e.g., piano, violin)
mentor_type	ENUM	Type may be 'Full-time Mentor' and 'Freelancer'
rating	FLOAT	Average rating of the mentor based on feedback
bio	TEXT	A short biography or profile of the mentor
created_at	TIMESTAMP	Timestamp when the mentor record was created
updated_at	TIMESTAMP	Timestamp when the mentor record was last updated

Table 8. Mentor_Availability This table tracks mentor availability for sessions.

Field Name	Data Type	Description
availability_id (PK)	INT (11)	Auto-incremented availability ID (Primary key)
mentor_id (FK)	INT (11)	Foreign key linking to the Mentor table
available_date	DATETIME	Date and time slot when the mentor is available
status	VARCHAR(50)	Availability status, (Available, Booked, Unavailable).

Table 9. Notifications

This table manages user system notifications regarding applications, session bookings, and achievements.

Field Name	Data Type	Description
notification_id (PK)	INT (11)	Unique identifier for each notification
user_id (FK)	INT (11)	Foreign key linking to the Users table
message	TEXT	Content of the notification
status	ENUM	Status of the notification ('Unread', 'Read')
created_at	TIMESTAMP	Timestamp when the notification was created
updated_at	TIMESTAMP	Timestamp when the notification was last updated

Table 10. User_Accounts

This table stores the general information of all users of the system.

Field Name	Data Type	Description
user_id (PK)	INT (11)	Unique identifier for each user
username	VARCHAR (50)	The username for user login must be unique
password	VARCHAR (255)	Encrypted password for user login
email	VARCHAR (100)	The user's email address must be unique
role	ENUM	Role of the user ('Administrator', 'Secretary', 'Mentor', 'Freelancer', 'Student')
first_name	VARCHAR (50)	User's first name
last_name	VARCHAR (50)	User's last name
date_of_birth	DATE	User's date of birth
contact_number	VARCHAR (15)	User's contact phone number
profile_picture	VARCHAR (255)	File path to the user's profile picture
bio	TEXT	Short biography of the user

Table 11. Reports

This table manages system notifications for administrators to track various metrics (e.g., use activity, session participation).

Field Name	Data Type	Description
report_id (PK)	INT (11)	Unique identifier for each report
user_id (FK)	INT (11)	Foreign key linking to the Users table
report_type	ENUM	Type of report ('Registration', 'Earnings', 'Course', 'Session')
generated_at	DATETIME	Date and time when the report was generated
report_file_path	VARCHAR (255)	File path to the generated report

Table 12. Applications

This table contains Applications Submitted by Mentors and Freelancers.

Field Name	Data Type	Description
application_id (PK)	INT (11)	Unique identifier for each application
user_id (FK)	INT (11)	Foreign key linking to the Users table
application_type	ENUM	Type of application ('Full-time Mentor', 'Freelancer')
status	ENUM	Status of the application ('Viewed', 'Not Viewed', 'Accepted', 'Rejected', 'Withdrawn')

submission_at	DATE	Date when the application was submitted
reviewed_at	INT (11)	Date when the application was reviewed
notes	TEXT	Review notes for the application
portfolio_link	VARCHAR (255)	URL link to the applicant's portfolio
document_path	VARCHAR (255)	File path to application documents

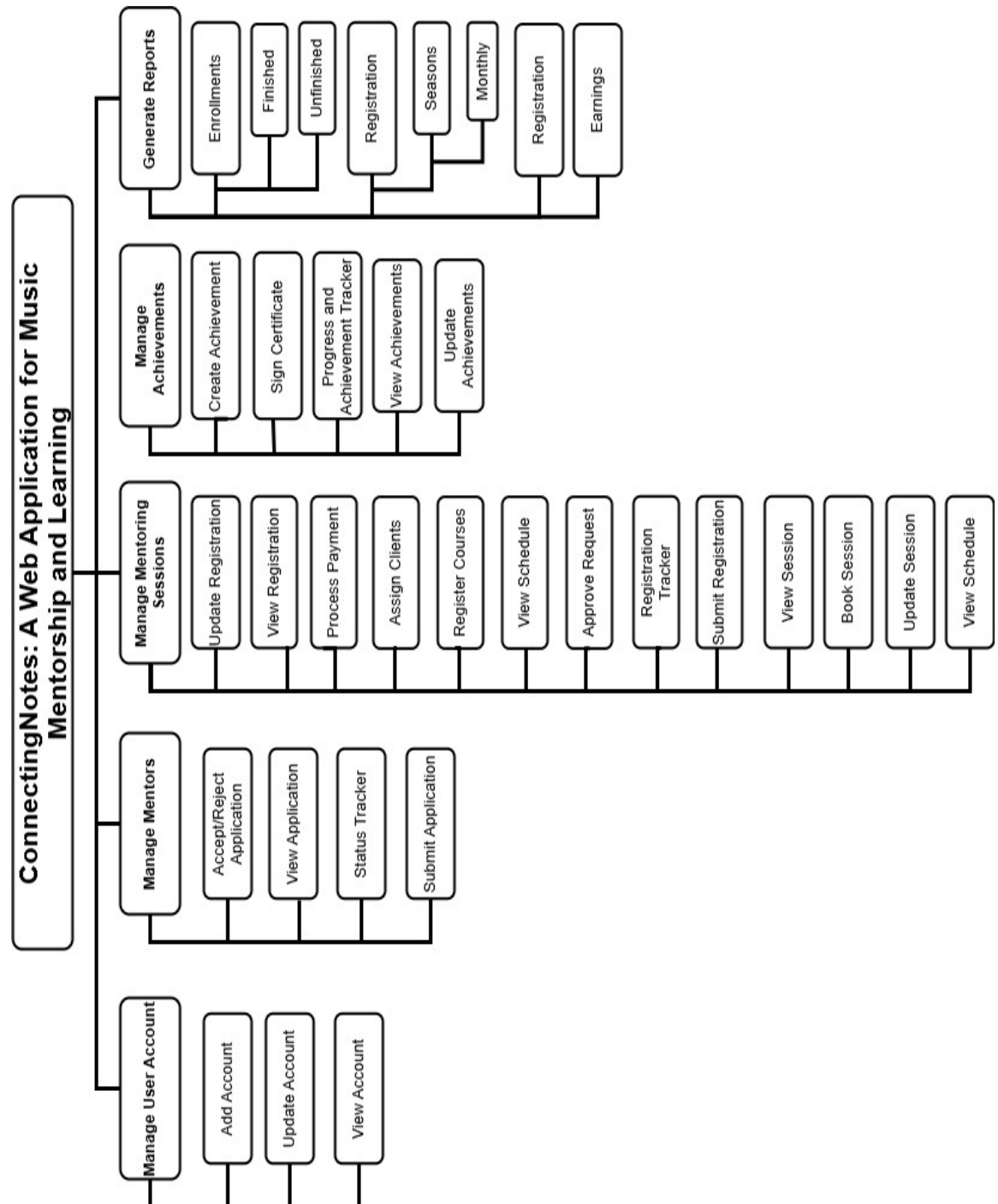
Table 13. Documents

This table contains documents submitted by applicants.

Field Name	Data Type	Description
document_id (PK)	INT (11)	Unique identifier for each document
application_id (FK)	INT (11)	Foreign key linking to the Applications table
document_type (FK)	ENUM	Type of document ('Resume', 'BIR Registration', 'NBI Clearance', etc.)
document_path	VARCHAR (255)	File path to the uploaded document
uploaded_at	TIMESTAMP	Timestamp when the document was uploaded

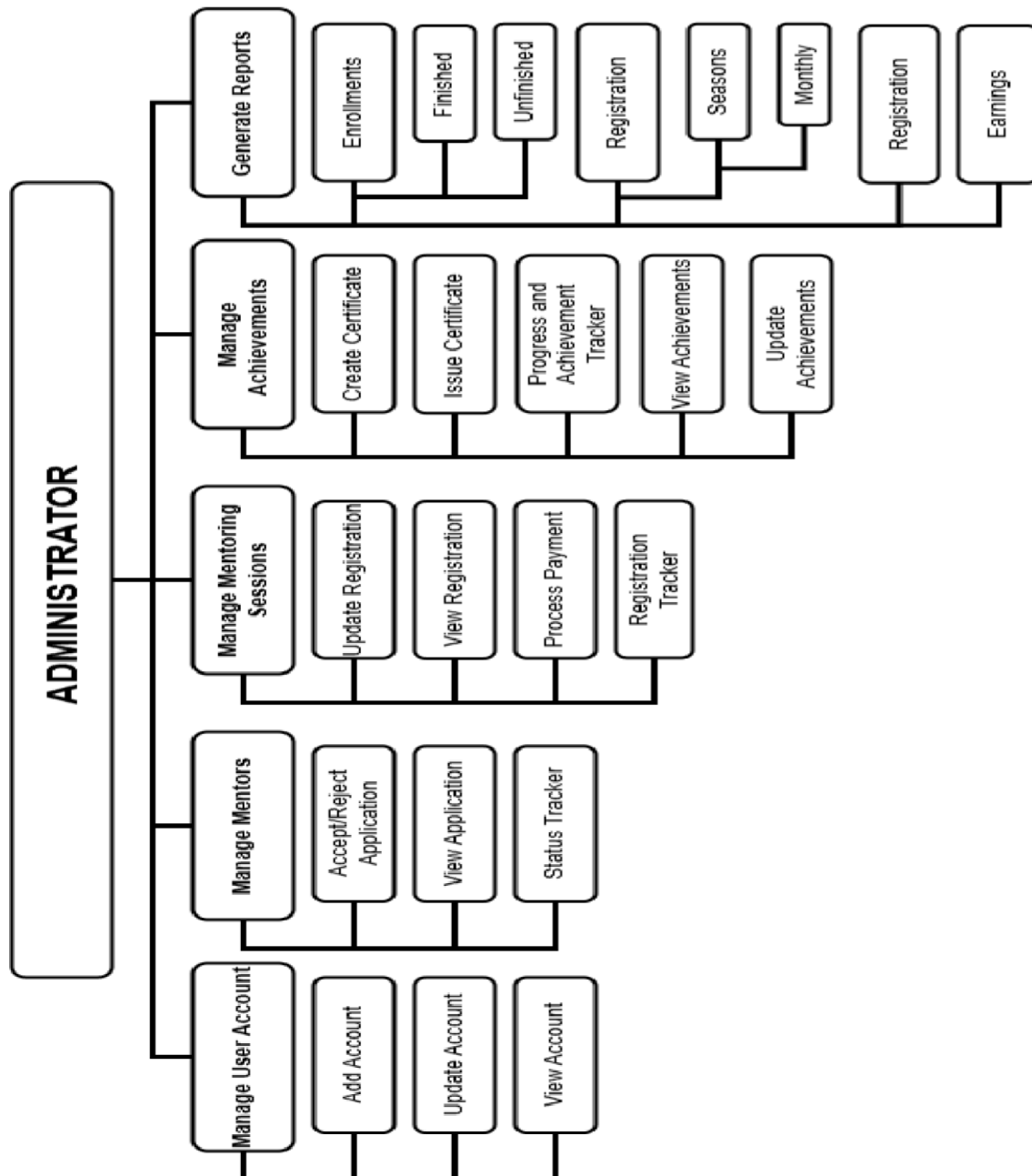
3.2.2 Program Hierarchy

3.2.2.1. Top Level



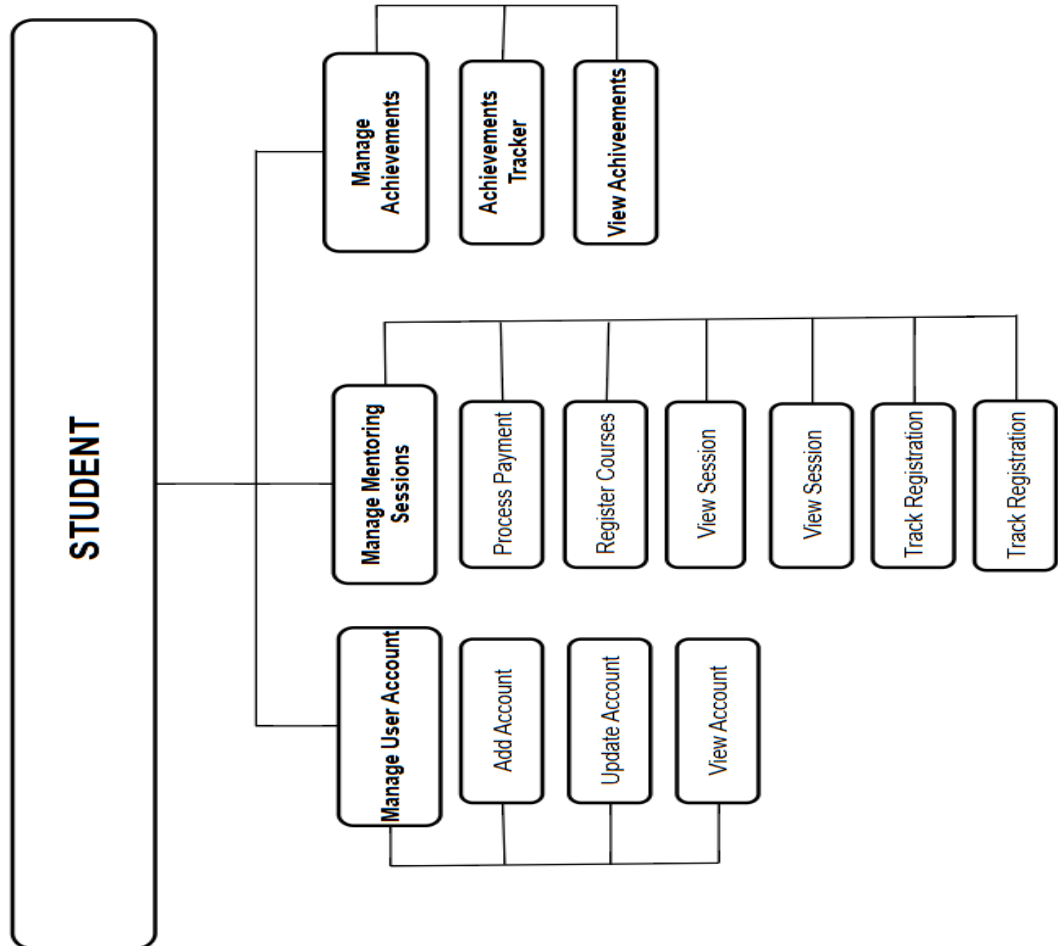
TOP LEVEL PROGRAM HIERARCHY

3.2.2.2. Administrator/ Secretary Level



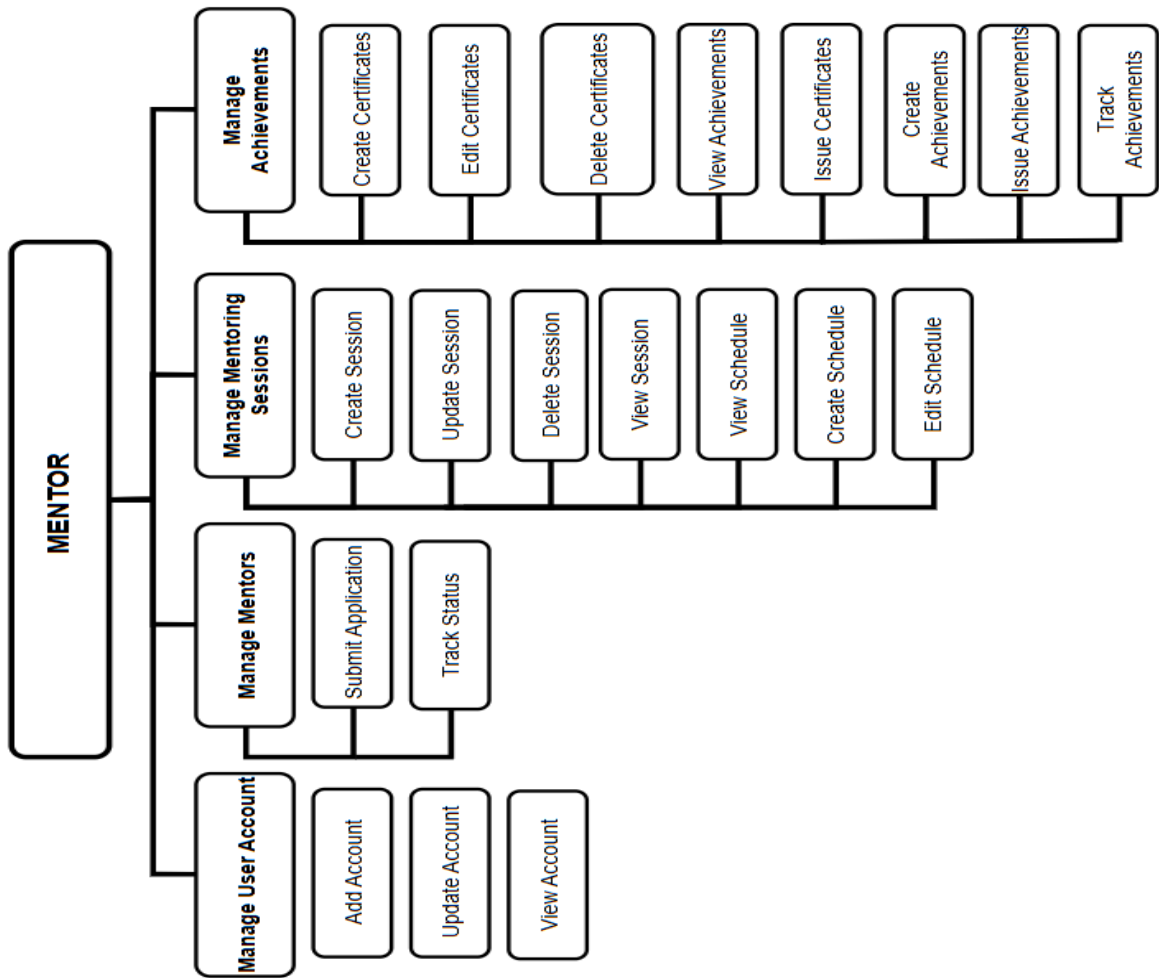
STUDENT LEVEL PROGRAM HIERARCHY

3.2.3.4 Student Level



MENTOR LEVEL PROGRAM HIERARCHY

3.2.3.5. Mentor Level



3.3 Development and Testing

This section discusses the hardware and software that will be used during the development and testing processes of the proposed system ConnectingNotes:

A Web Application for Music Mentorship and Learning.

3.3.1 Development

During the development, the researchers used a laptop with the following specifications: Intel(R) Celeron(R) N4020 CPU @ 1.10GHz 1.10 GHz as a processor, 4.00 GB Random Access Memory (RAM), and 230GB Solid State.

In developing the system, the researchers used a 64-bit Windows 11 Operating System together with the following softwares: Tailwind CSS version 3.4.3, a free front-end framework for responsive user interfaces, faster, and easier web development, allowing the researchers to create responsive designs for the system. HTML5 is a standard markup language for developing web pages. This was used to create the basic system design, which was compatible with all browsers and supported the web pages' interactive content. Google Chrome version 112.0.5615.49 is used to test the overall functionalities of the system. XAMPP version 8.1.12 is a simple, lightweight Apache distribution for creating a local web server for testing and deployment purposes, which contained PHP version 8.2.5, used as the back-end programming language.

The system integrates seven (7) Application Programming Interfaces (APIs) to enhance its functionality: Authentication and User Management API that handles

secure user registration, login authentication (via JWT or OAuth), and rolebased access control for students, mentors, secretaries/administrators. Document Upload and Verification API that manages the submission and verification of required mentor and freelancer documents, such as IDs, certifications, and contracts. Scheduling and Booking API that facilitates session scheduling by allowing students to book mentoring sessions, enabling mentors to manage availability, and providing automated reminders. Virtual Classroom API that supports learning management features, including assignment submissions, announcements, comments, and access to educational materials. Payment Gateway API that integrates payment processing services (such as Paymongo that supports GCash) to handle student payments for mentoring sessions and generate digital receipts. Achievement and Certification API that tracks student progress, updates achievements, and generates downloadable digital certificates for completed courses. Reporting and Analytics API that generates administrative reports on session completions, student and mentor activity, and financial transactions related to bookings and payments.

The backend of the system was developed using the Laravel framework, a PHP-based web development framework known for its elegant syntax and powerful built-in functionalities. Laravel was used to manage the application's business logic, routing, middleware, user authentication, and database interactions. The frontend of the system was built using HTML5, CSS3, and Vue.js to create a responsive and user-friendly interface suitable for both mentors and students. Tailwind CSS was integrated to enhance the visual design and layout consistency.

For data storage, the system used MySQL, a robust relational database system capable of managing complex relationships between entities such as users, mentors, learning materials, and mentorship sessions.

Version control was managed using Git in conjunction with GitHub, which enabled collaborative development, version tracking, and code review. The Visual Studio Code integrated development environment (IDE) was used to write and manage the application code, with support from Node.js and Composer to handle package dependencies and frontend tooling. For project management and task tracking, tools such as Trello or Notion were employed to organize development phases and monitor progress. The system also included email functionalities using Gmail's SMTP service, which enabled features such as sending user notifications, invitations.

3.3.2 Testing

Testing will be conducted to evaluate the system's functionalities and verify whether the expectations and requirements are met. The testing process will involve key users of the system, including the Admin, Secretary, Students, and Mentors. The target population for this phase will consist of approximately eight (8) participants. The proposed testers will include one (1) Admin, one (1) Secretary, two (2) Students, and four (4) Mentors/Freelancers. The Administrator and Secretary will be selected due to their roles in managing user accounts, session records, and achievement issuance. Students will be chosen based on their active enrollment status and willingness to participate. One student will be a beginner, and the other a returning student, ensuring perspectives from different levels of

experience. Mentors, both full-time and freelancers, will be included to provide diverse insights regarding teaching workloads and familiarity with digital tools. The researchers will employ purposive sampling, having already identified ideal participants who match the system's user roles.

Recruitment of participants will be conducted through personal visits to the Herliz Music Studio and Instruments office. The researcher will coordinate directly with the administrator and secretary to identify suitable participants who match the required system user roles. Once potential participants are identified, the researcher will personally invite them by visiting the studio, explaining the purpose of the testing, and providing printed copies of the consent forms. For students, especially minors, coordination will also be made with their parents or guardians to secure informed consent. Mentors, both full-time and freelancers, will be selected based on their current involvement in teaching at Herliz. During the visits, the researcher will ensure that each invited participant understands the nature of the testing, the voluntary nature of their involvement, their expected role in the process, and the data confidentiality and privacy handling protocols in place. This approach will foster trust and ensure that participants are fully informed and willing to contribute meaningfully to the evaluation process.

Participants will be selected based on predefined criteria to ensure that feedback is gathered from appropriate and relevant system users. Students must be currently enrolled in Herliz Music Studio, must have access to a device with internet connectivity. One beginner and one returning student will be selected to reflect varying levels of familiarity with music learning and digital platforms, and if the

student participant is a minor (under 18 years old), written consent from a parent or legal guardian will be required before participation. Mentors (Full-time and Freelancers) must be officially affiliated with Herliz Music Studio either as a full-time mentor or a registered freelancer, must have at least one active student assigned or in the process of accepting student bookings, and must be willing to participate in digital platform testing and provide constructive feedback. Secretary and Administrator must be currently assigned to their respective roles at Herliz Music Studio, and must be involved in daily administrative or operational tasks of the studio, including system-based transactions. Participants will receive a small token of appreciation, such as a certificate of participation or a gift item, in recognition of their time and contribution to the study.

Informed consent will be obtained from all participants before the start of the testing. The consent form will include a clear explanation of the testing's purpose, the tasks involved, the estimated duration, and assurances of voluntary participation and confidentiality. For minor participants, informed consent will be co-signed by a parent or legal guardian to ensure compliance with ethical standards concerning child involvement in research.

Participants will be excluded from the testing process based on the following criteria, which go beyond simply being the opposite of the inclusion factors. These criteria will ensure the quality and relevance of feedback. Individuals who do not perform any of the user roles defined within the system (e.g., students, mentors, secretary, administrator) will be excluded, as they would not be able to provide meaningful or practical feedback based on actual system use. Candidates who

express scheduling conflicts, limited availability, or an unwillingness to complete the tasks and usability assessment will be excluded to maintain consistency and fairness in the evaluation process. Individuals without access to a functional device or stable internet connection will be excluded to avoid external issues that might affect the accuracy of testing feedback. Individuals who demonstrate difficulty understanding or navigating basic system operations, not due to system usability but due to their unfamiliarity with digital tools, will be excluded. The goal will be to evaluate the system—not train users unfamiliar with technology. Individuals directly involved in the system's development (such as developers or researchers) will be excluded to prevent biased evaluations and ensure the integrity of the results.

Given that Herliz Music Studio and Instruments accepts students of varying age groups, the researcher anticipates the potential involvement of minors (students below 18 years old) in the usability testing process. Since minors are considered a vulnerable population in research ethics, appropriate measures will be put in place to protect their rights and ensure ethical compliance once ethical clearance is obtained. Specifically, the researcher plans to coordinate directly with the students' parents or legal guardians during the recruitment phase. Before involving any minor in the testing, the researcher will conduct a personal visit to the studio to explain the purpose of the study to both the student and their guardian. A formal informed consent form will be provided and signed by the parent or guardian. Additionally, assent will be obtained from minor participants aged 13 to 17. These minors will be given an age-appropriate explanation of the study and will be asked

to sign an assent form to confirm voluntary participation. The testing process for minors is planned to be conducted in a safe, non-intrusive environment, during appropriate hours, and under the supervision of the staff at Herliz Music Studio. At no point will minors be left unsupervised, and their privacy and comfort will be prioritized throughout the process. These safeguards are intended to ensure that vulnerable participants are respected, informed, and protected throughout their involvement in the research.

All participants will be properly oriented with the purpose of the system and guided on how to interact with its features. The Admin tester will be assigned to monitor system operations, check for conformity with organizational needs, and manage user roles and access levels. The Secretary tester will handle administrative tasks such as user applications, document verification, and session coordination to ensure a smooth workflow for both mentors and students. The Student testers, as the primary users of the system, will test the ease of booking sessions, accessing learning materials, and tracking progress through the achievement system. They will also test the responsiveness of virtual classroom functionalities, including assignment submission, announcement viewing, and mentor interaction. The Mentor/Freelancer testers will play a key role in testing features related to scheduling, student interaction, and achievement issuance.

They will evaluate the system's ability to manage availability, respond to student inquiries, and issue certificates for completed sessions. Additionally, they will provide feedback on how well the system supports mentorship engagement, lesson delivery, and feedback processes.

The researcher is a fourth-year Bachelor of Science in Information Technology (BSIT) student who has undergone formal training in systems analysis, software engineering, and user experience evaluation. As part of their academic curriculum, the researcher has completed case studies and software testing exercises under the guidance of experienced faculty. Furthermore, the researcher has been collaborating closely with Herliz Music Studio throughout the capstone project, gaining valuable insight into the operational workflow and user expectations of the system. These qualifications equip the researcher to conduct the testing procedures, participant interactions, and data analyses in a professional and ethical manner once ethical clearance is granted.

The study is planned to last seven (7) months, with testing expected to span two (2) weeks. Before testing begins—and only after ethical clearance is granted—the researchers will visit the participants' respective offices or locations to formally invite them and will provide Informed Consent Forms outlining the study's purpose, procedures, and their rights. The research will be localized to the operations defined within the study's scope before any final decisions are made. The researchers will offer comprehensive information, including details about the testing tools, which participants will have the opportunity to review and discuss. A team member will guide each participant through the provided information and will address any questions. Participants will be given sufficient time to decide whether they wish to participate. Participation in the testing process will be entirely voluntary. Those who agree will sign the consent form to confirm their willingness to take part. Each participant will have twenty (20) minutes to interact with the

system, followed by another twenty (20) minutes to complete functionality and usability test cases and provide feedback. If participants encounter technical issues during testing, researchers will be present to assist. Clear instructions, a stable testing environment, and backup plans will be put in place. If a participant withdraws, a replacement will be recruited. If the Administrator withdraws, special consideration will be given due to their critical role. To maintain confidentiality, all testing data will be anonymized during analysis and stored securely. Access to testing records will be restricted to the research team only. These measures are in place to ensure both system quality and participant protection.

To ensure confidentiality and privacy, all collected data will be treated as confidential and will be accessible only to authorized researchers. Participants may withdraw from testing at any time if they feel their privacy is compromised. Providing names in test cases will be optional and unnecessary. Researchers will implement strict data protection measures in compliance with the Data Privacy Act of 2012. All collected data will be anonymized to protect participants' identities. Upon completion of the study, all data will be securely disposed of or deleted to prevent unauthorized access.

Individuals who are not affiliated with Herliz Music Studio will be excluded from participation. Children under the age of 13 who do not have parental or guardian consent will also not be eligible. Additionally, participants who are unable to use a web-based platform due to technological limitations will not be included in the study.

Two (2) testing tools will be used to assess the overall functionality and usability of the system. Test cases will guide the users through the system's functionalities.

The **User Functionality Test** involves letting the testers use the system and evaluate each feature and capability. The testers are guided by test cases that they must follow. The researchers give predicted outcomes to aid in testing. A "PASS" remark indicates that the module test was successful, but a "FAIL" remark indicates that functionality failed and must be corrected for possible improvement, as well as that the result is unsatisfactory. Participants are free to remark and offer ways to improve the system. The test concludes with the tester's name and signature over the printed name.

The **User Usability Test** allows testers to use the system and assess the learnability and user-friendliness of the system's user interface for each target user. Users will be directed by a series of Likert scale items that they will follow. The webpage's style, color scheme, learnability, navigation, and general system friendliness are all examined. A Likert scale (5 for Excellent, 4 for Very Good, 3 for Average, 2 for Fair, and 1 for Poor) will be used to assess the tester's perceptions of the aforementioned criteria.

After completing the testing phase, the researchers will collect and analyze all the gathered data from the participants. The data collection period from the participants is expected to last for two (2) weeks. For the usability test, researchers will employ a Likert scale categorization, followed by statistical analysis using weighted mean and grand mean methodologies post-data collection. The weighted mean is particularly significant as it provides the summation of the averages of each criterion utilized in evaluating the system. To establish the range of the 5-point Likert-type scale, the difference between the maximum and minimum values ($5 - 1 = 4$) is divided by five ($4 \div 5 = 0.80$). Subsequently, the least value of the

scale (1) is added to identify the maximum value within this range. To ascertain the subsequent range, the last range is incremented by 0.8. The table below illustrates the interpreted results utilizing the aforementioned scale.

Value	Description	Range
5	Excellent	4.21 - 5.00
4	Very Good	3.41 - 4.20
3	Average	2.61 - 3.40
2	Fair	1.81 - 2.60
1	Poor	1.00 - 1.80

Table 14. Likert Scale

In the functionality tests, researchers will review the remarks provided by the participants. If the majority of the responses indicate "OK," it signifies that the functionality of each module meets the evaluator's standards. Conversely, if a respondent indicates "NOT OK," it indicates that the functionality falls short of the tester's expectations, signaling a need for improvement. The comments and suggestions provided by the participants will serve as guidance for researchers to enhance the system's functionalities. To analyze the results of the usability test, the following statistical method was used:

Weighted Mean Formula:

Table 17. Summary of Testers

Testers	Number of Participants
HMS Admin/Secretary	1
HMS Students	2
HMS Mentors	4
Total	8

The results of the user functionality and usability tests were favorable, and all the testers expressed their satisfaction with the system's performance in each test case; the functionality test received a positive remark, indicating that the functionalities met the specified requirements. The charts below show visual representations of the outcomes for each criterion on the usability test.

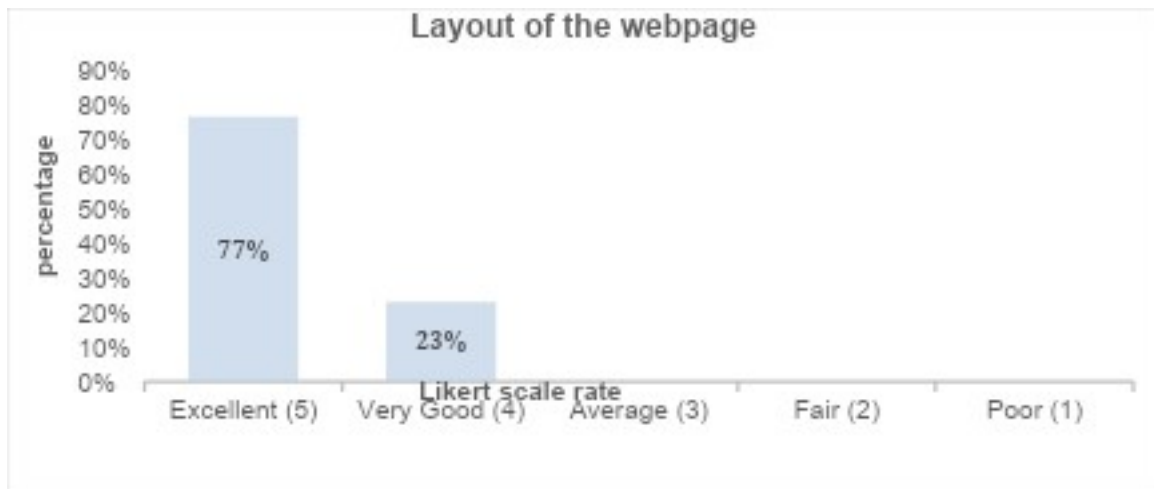


Figure 1. Testing Results for Criteria No. 1

For the first criterion (layout of the webpage), the bar graph shows that most of the respondents, 10 out of 13, gave an "Excellent" remark while the few other testers gave a "Very Good" Remark.

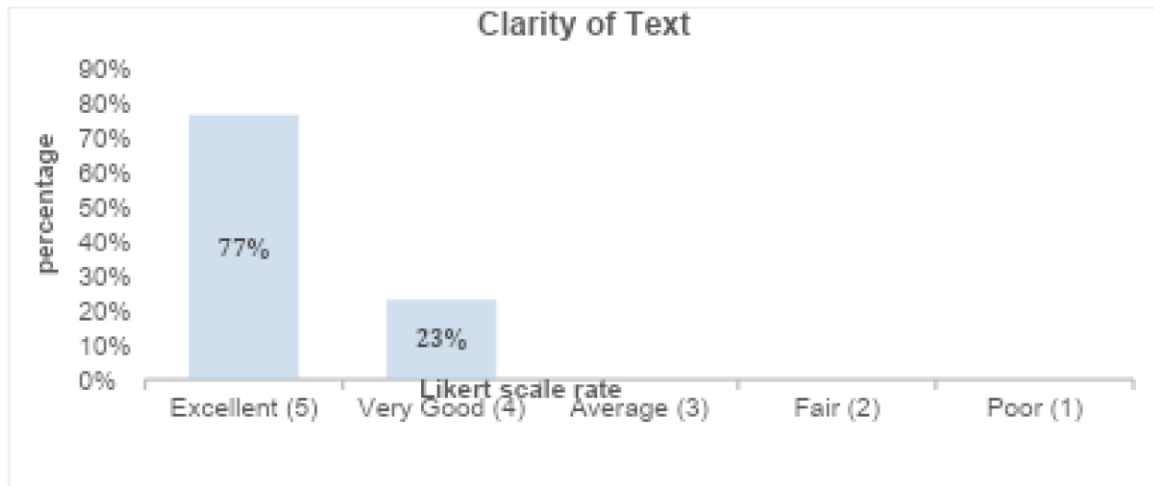


Figure 2. Testing Results for Criteria No. 2

For the second criterion (clarity of text), the bar graph shows that the majority gave an "Excellent" remark while the few other testers gave a "Very Good" rating.

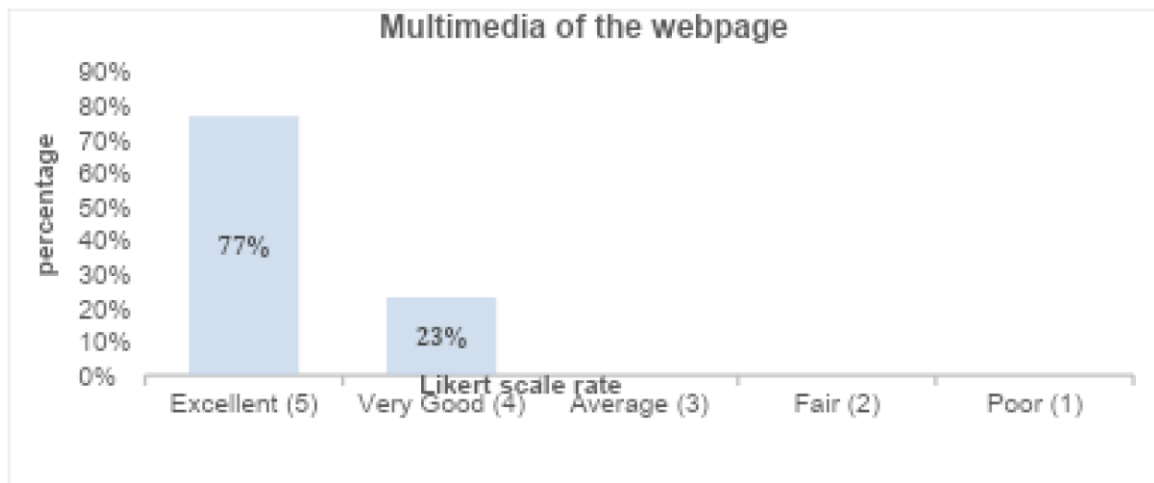


Figure 3. Testing Results for Criteria No. 3

For the third criterion (multimedia of the webpage), the bar graph shows that the majority gave an "Excellent" remark while the few other testers gave a "Very Good" rating.

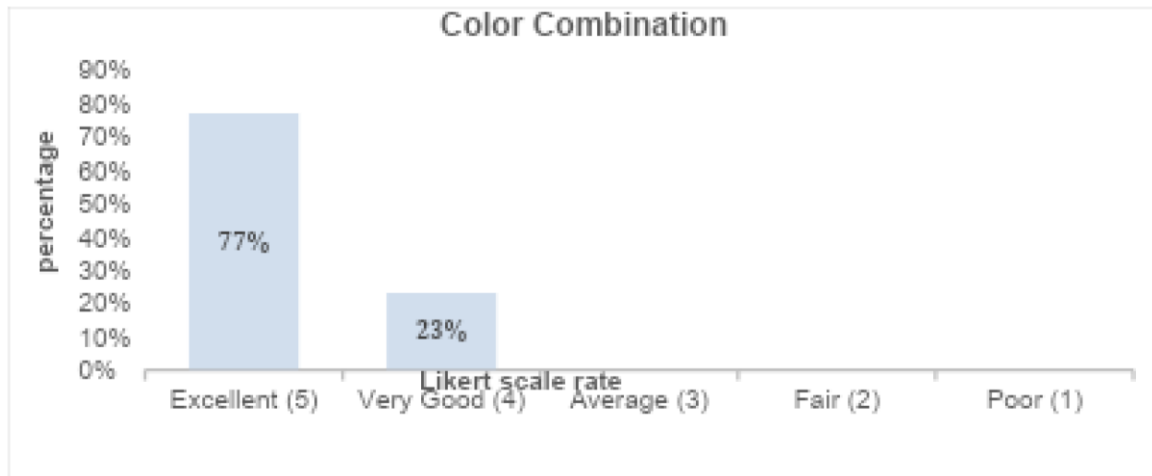


Figure 4. Testing Results for Criteria No. 4

For the fourth criterion (color combination), the bar graph shows that the majority gave an "Excellent" remark while the few other testers gave a "Very Good" rating.

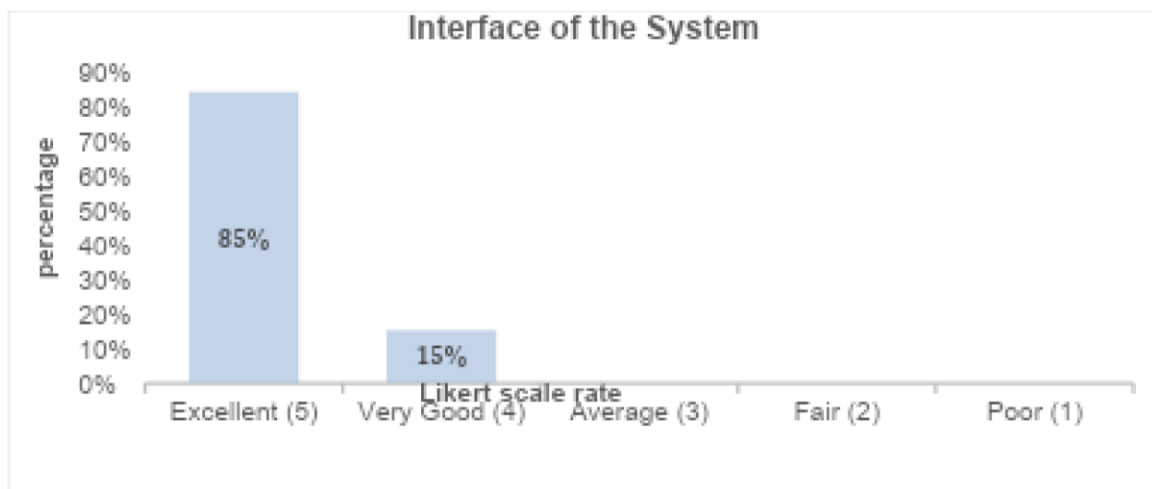


Figure 5. Testing Results for Criteria No. 5

For the fifth criterion (interface of the system), the bar graph shows that the majority gave an "Excellent" remark while the few other testers gave a "Very Good" rating.

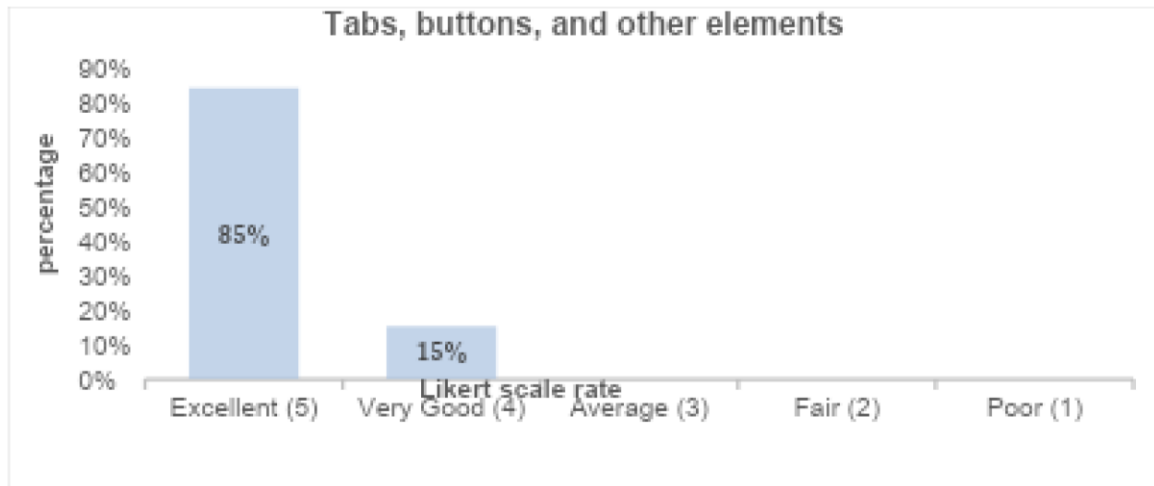


Figure 6. Testing Results for Criteria No. 6

For the sixth criterion (Tabs, buttons, and other elements used on the page are working correctly), the bar graph shows that the majority gave an "Excellent" remark. In contrast, the few other testers gave a "Very Good" rating.

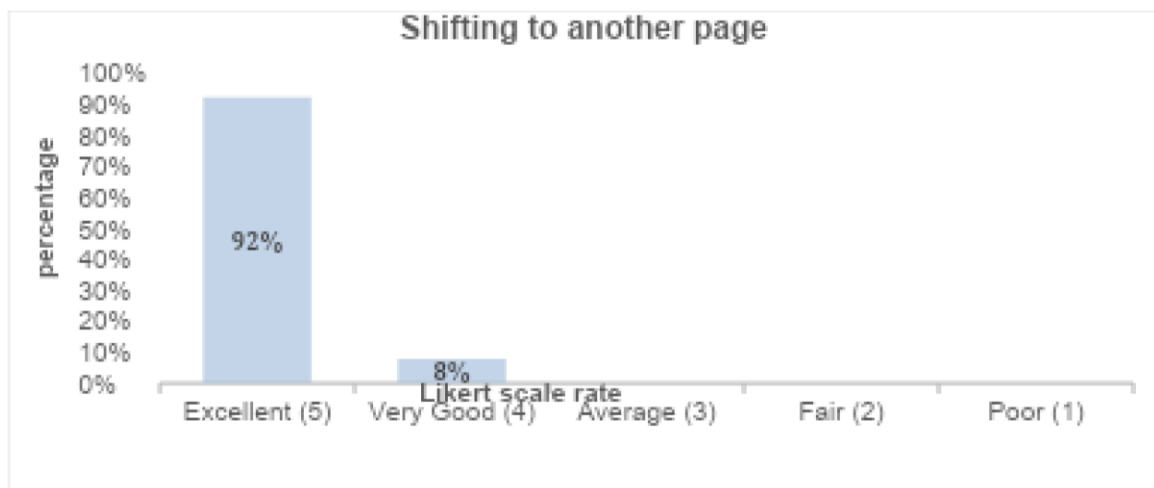


Figure 7. Testing Results for Criteria No. 7

For the seventh criterion (Shifting to another page), the bar graph shows that most of the testers gave an "Excellent" remark while only one tester gave a "Very Good" rating.

Therefore, the usability test results show that most testers think the system provides an excellent user experience. Some respondents gave suggestions and comments on how to enhance the system's overall design. The system's overall design is as follows: the font size and style should be improved. Another suggestion was about the color combination used; they suggested making the color combination lighter. One respondent made another suggestion to allow downloading multimedia images.

In conclusion, this study details the development and testing of the ConnectingNotes System, focusing on hardware and software specifications, participant recruitment, testing methods, and data analysis. By thoroughly testing the system and incorporating user feedback, the researchers aim to improve its effectiveness and usability for managing enrollment and mentorship in Herliz Music Studio, ultimately benefiting its users from the system's potential to make enrollment and mentorship more efficient and convenient, ultimately improving their overall experience within the music learning environment.

Usability Testing Tool

After navigating the application, please answer the following (Check (✓) the rating that fits with your response):

5 - Excellent 4 - Very Good 3 - Average 2 - Fair 1 - Poor

Name of Evaluator: _____

Role being evaluated: HMS Admin/Secretary

Criteria	Excellent (5)	Very Good (4)	Average (3)	Fair (2)	Poor (1)
Layout of the webpage					
Clarity of texts (labels, font size, and font styles of texts)					
Multimedia of the webpage (such as images)					
Color Combination					
The interface of the system is pleasant.					
Tabs, buttons, and other elements used on the page are working properly.					
Shifting to another page					

Signature over Printed Name of Evaluator

User Functionality Test

Name of Evaluator: _____

Role being evaluated: HMS Admin/Secretary

Module: Login/Logout

Test No.	Test Case	Expected Results	Remarks
1	Admin inputs a valid email and password to the login page.	Redirects to the dashboard with the respected type of user (HMS Admin).	
2	Admin inputs an invalid email and password.	Display an error message "Invalid email or password".	
3	Admin clicks the logout button.	Redirects to the login page/landing page.	

Module: Manage User Accounts

Test No.	Test Case	Expected Results	Remarks
1	Access the "Account" page	The system displays the dashboard with options: "Create User" button, "All", "Admin/Secretary", "Mentor", "Edit", "Delete" buttons. The system extracts all users and filter user-roles from the database and displays them.	
2	Fill out and submit the user registration form	If the form is valid and complete, the system displays the message: "New User Added Successfully." If the form is incomplete, the system displays an error message "Please fill out this field." and prevents	

		Submission until all required fields are completed.	
3	Click on a the sidebar button "Manage Users"	<p>Clicking "All" displays a list of all users.</p> <p>Clicking "Student" displays a list of students.</p> <p>Clicking "Mentor" displays a list of mentors.</p> <p>Clicking "Admin/Secretary" displays a list of secretaries and admin.</p> <p>Can edit and delete information.</p>	
4	Click on a "Edit" button	The system extracts the user's profile from the database and displays their profile information along with their role.	
5	Click the "Profile" button on personal.	The system extracts the administrator's profile from the database and displays their profile information page with an edit button.	
6	Modify and submit changes to the administrator profile	<p>If the form is valid and complete, the system displays the message: "User Profile has been updated!"</p> <p>If the form is incomplete, the system displays an error message "Please fill out this field." and prevents submission until all required fields are completed.</p>	

7	Leave required fields blank and submit the form	The system displays an error message: "Please fill out this field." and does not proceed with the submission.	
8	Leave required fields blank and submit the profile update form	The system displays an error message: "Please fill out this field." and does not proceed with the update.	

Module: Manage Mentors

Test No.	Test Case	Expected Results	Remarks
1	Click the "Mentor Applications" button	<p>The system extracts all application data from the database and displays a list of applicants with their status (Approved, Declined) with a default status "Pending".</p> <p>Each applicant in the list has a "View" information button.</p> <p>If no records exist, the system displays: "blank."</p>	
2	Click the "View Applicant" information button	<p>The system displays the applicant's information and submitted documents.</p> <p>The system provides options to Approve or Reject the applicant.</p>	
3	Click the "Approve Mentorship" button on an applicant's profile	The applicant receives an email notification about their approval.	

		<p>If the applicant is already approved, the system displays: "Applicant Already Approved/does not execute command" and does not proceed with approval.</p>	
4	Click the on "Reject" button applicant's an profile	<p>The applicant receives an email notification about their rejection.</p> <p>The rejected applicant's data is archived in the database.</p> <p>If the applicant is already rejected, the system displays: "Applicant Already Rejected/does not execute comand", then sends an email rejection.</p>	
6	Click the "Approve" button	<p>The system displays a message: "Account Confirmed".</p> <p>The applicant's account is successfully saved in the database.</p>	

Module: Manage Mentoring Sessions

Test No.	Test Case	Expected Results	Remarks
1	Click the "Manage Sessions" button	The Dashboard displayed the following sessions created by all mentors.	
2	Click the "Delete" button	Deletes all the sessions created by the mentor.	

Module: Manage Achievements

Test No.	Test Case	Expected Results	Remarks
1	Click the "Manage Achievements".	The system displays the dashboard containing the student and mentor's name, The system displays the list of students who received the achievements given by the mentor .	
2	Click the "Delete" button.	The system executes the command and deletes all the records from the database.	

Module: Manage Certificates

Test No.	Test Case	Expected Results	Remarks
1	Click the “Manage Certificates”.	The system displays the dashboard containing the student and instructor’s name, The system displays the list of students who received the certificates given by the mentor.	
2	Click the “View” button.	The system displays a page for viewing the specific certificate.	
3	Click the “Print Certificate” button.	The system will execute the command to print the certificate.	

Module: Generate Reports

Test No.	Test Case	Expected Results	Remarks
1	Click the "Dashboard" button (sidebar).	The system displays the report window with the "Total Enrolled student(continuing students)," "Total Users", "Total Revenue" and "Date Filter" buttons on the upper left.	
2	Click the "Download All Reports as PDF" button.	The system executes the command to download the reports based on the filtered date.	
3	Click the "Site Revenue" button (sidebar).	The system will generate revenues from the enrolment fees at Php 5,000 pesos. Filter is also available.	

 Signature over Printed Name

Usability Testing Tool

After navigating the application, please answer the following (Check (✓) the rating that fits with your response):

5 - Excellent 4 - Very Good 3 - Average 2 - Fair 1 - Poor

Name of Evaluator: _____

Role being evaluated: HMS Students

Criteria	Excellent (5)	Very Good (4)	Average (3)	Fair (2)	Poor (1)
Layout of the webpage					
Clarity of texts (labels, font size, and font styles of texts)					
Multimedia of the webpage (such as images)					
Color Combination					
The interface of the system is pleasant.					
Tabs, buttons, and other elements used on the page are working properly.					
Shifting to another page					

 Signature over Printed Name of Evaluator

User Functionality Test

Name of Evaluator: _____

 Role being evaluated: HMS Students

 Module: Login/Logout

Test No.	Test Case	Expected Results	Remarks
1	Student(s) inputs a valid email and password to the login page.	Redirects to the dashboard with the respected type of user (HMS Student).	
2	Student(s) inputs an invalid email and password.	Display an error message "Invalid email or password".	
3	Student(s) clicks the logout button.	Redirects to the login/ landing page.	

 Module: Registration

Test No.	Test Case	Expected Results	Remarks
1	Student clicks the "Sign Up Student" button.	The system displays a "Create New Account" form.	
2	Student fills out the sign-up form and clicks "Sign Up" button.	The system validates the form and displays saves the user information to the database.	

5	Student leaves any required field in the sign-up form blank.	The system displays an error message: "Please fill out this field." and does not proceed.	
7	Student enters valid credentials and clicks "Login."	The system validates credentials, extracts student data from the database, and displays the student's profile account.	
8	Student enters incorrect login credentials.	The system displays an error message indicating invalid credentials.	
10	Student updates profile details and clicks "Save."	The system validates the form and, if complete, updates the student profile, displaying "User Profile has been updated!"	
11	Student leaves a required field blank while updating the profile.	The system displays an error message: "Please fill out this field." and does not save changes.	

Module: Manage Mentoring Sessions

Test No.	Test Case	Expected Results	Remarks
1	Student clicks on the button "Mentors".	The system extracts all mentors from database and display it. Student can also pay and enroll to that session provided by the mentor.	
2	Student clicks on the "Select Courses" filter.	The system extracts and will look for courses associated by that mentor.	
3	Student clicks on the "Classes" button	The system will display all of the classes enrolled by that student.	

4	Student clicks on the "Enter Class"	The student will be redirected to the mentor's class and is now officially enrolled.	
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Module: Manage Achievements

Test No.	Test Case	Expected Results	Remarks
1	Click the "Manage Achievements" button	The system extracts all achievements associated by that student and displays on the dashboard with a progress	

Signature over Printed Name

Usability Testing Tool

After navigating the application, please answer the following (Check (✓) the rating that fits with your response):

5 - Excellent 4 - Very Good 3 - Average 2 - Fair 1 - Poor

Name of Evaluator: _____

Role being evaluated: HMS Mentors/Freelancers

Criteria	Excellent (5)	Very Good (4)	Average (3)	Fair (2)	Poor (1)
Layout of the webpage					
Clarity of texts (labels, font size, and font styles of texts)					
Multimedia of the webpage (such as images)					
Color Combination					
The interface of the system is pleasant.					
Tabs, buttons, and other elements used on the page are working properly.					
Shifting to another page					

Signature over Printed Name of Evaluator

User Functionality Test**Name of Evaluator:** _____**Role being evaluated:** HMS Mentors/Freelancers**Module:** Login/Logout

Test No.	Test Case	Expected Results	Remarks
1	Mentor clicks on the "Sign In" button.	The system will display the login form.	
2	Mentor(s)/Freelancer(s) inputs a valid email and password to the login page.	The system will validate and check if the there is a user existed on the database. If there is. Redirects to the user dashboard.	
2	Mentor(s)/Freelancer(s) inputs an invalid email and password.	Display an error message "Invalid email or password".	
3	Mentor(s)/Freelancer(s) clicks the logout button.	Redirects to the login page/landing page.	

Module: Manage User Accounts

Test No.	Test Case	Expected Results	Remarks
1	Mentor clicks the "Login Mentor" button	The system displays the login form.	
2	Input credentials and click the "Login" button	The system validates the credentials and extracts mentor account details from the database, and displays the mentor profile.	

3	Mentor clicks the "Profile" button on the mentor profile	The system extracts the mentor profile information and displays the form with a "Save" button.	
4	Fill up the form and click the submit button	The system validates the input. If valid and complete, it displays a message "User Profile has been updated!"	
5	Clicks the "Sign Up" button	The system displays sign up form	
6	Fill up the sign-up form and click the "Sign Up" button	The system validates the form. If valid and complete, it redirects to the user dashboard.	
7	Leave any required field blank in the login form	The system displays an error message: "Please fill out this field."	
8	Leave any required field blank in the edit profile form	The system displays an error message: "Please fill out this field."	
9	Leave any required field blank in the sign-up form	The system displays an error message: "Please fill out this field."	

Module: Manage Mentors

Test No.	Test Case	Expected Results	Remarks
1	Click the "Become A Mentor" button.	The system displays the application interface with a form information needed to apply as a mentor	

2	Clicks on the "Submit Application" button	The system submit the application to the admin for further tests and qualifications. And If the application form is accepted user will received email. If the application form is declined user will received an email.	
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Module: Manage Mentoring Sessions

Test No.	Test Case	Expected Results	Remarks
1	Mentor clicks "Add Mentor" button.	The system displays mentor information form.	
2	Mentor clicks "Create Mentor".	The information is saved to the database and displays a message "Mentor Created Successfully".	
3	Mentor clicks "Manage Mentors" button	The system displays all mentors created by the current mentor.	
3	Mentor clicks the "Add Course" button.	The system displays course information form. And saved the mentor information to the database.	
4	Mentor clicks "Manage Course" button.	The system displays all of the course created by the current mentor.	
5	Mentor clicks "View" button	The system displays the specific course information.	
6	Mentor clicks "Edit" button	The system displays the mentor information form that can be edited.	

7	Mentor clicks "Add Session" button.	The system displays information to create a new session tied to the course creation.	
8	Mentor clicks "Add Activity" inside "View" button.	The system displays an information form to create activity	
9	Mentor clicks "Add Announcements" button.	The system displays an information form to create an announcements.	
10	Mentor clicks "Mark Attendance"	The system displays all the students who enrolled on the current session and manually marking them as "Present", "Absent", "Late", "Excused".	
11	Mentor clicks "Attendance" and marks students.	The system updates attendance and displays the message: "Attendance has been saved!" If empty, an error message prompts: "Please fill up the remaining field."	
12	Mentor clicks "Student Works" button.	The system displays all of the submitted works of all students.	

Test No.	Test Case	Expected Results	Remarks
1	Mentor clicks "Issue Certificate" button.	System extracts all of the students who are enrolled to the mentor's session and issues a certificate. System also displays certificate information form needed to issue a certificate.	
2	Mentor clicks "Manage Certificate" button.	The system extracts all of the certificate issued. The mentor can view the specific certificate issued and mentor can also print it.	
3	Mentor clicks "Create Achievements" button.	The system displays information form needed to create an achievement. Can be done dynamically.	
4	Mentor clicks "Manage Achievement" button.	The system fetches all of the students enrolled to the mentor's session and the mentor can issue an achievement to the student.	

Signature over Printed Name

CHAPTER IV

RECOMMENDATIONS

After conducting the study, the researchers developed a web-based application aimed at addressing various management challenges experienced by Herliz Music Studio and Instruments. The researchers identified key challenges in managing enrolment and mentorship in Herliz Music Studio and Instruments, including manual enrollment processes, delayed communications between students and mentors, lack of centralized booking and session records, and the absence of systematic achievement tracking and issuance. These issues have led to inefficient enrollment records, miscommunication between students and mentors, and inefficient tracking of student progress and achievements.

The researchers addressed these challenges and limitations by developing an integrated, real-time system that allows users to register online, book and manage sessions, exchange messages instantly, and issue and track student achievements in a centralized platform. This approach significantly reduces administrative workload, enhances transparency, and improves the overall learning experience at Herliz Music Studio and Instruments. The researchers have taken into account the feedback from the client following the system testing and system checking process.

Based on the observed usage and evaluation results, the researchers came up with the following recommendations to further enhance the usability, accessibility, and scalability of the ConnectingNotes system:

1. Develop a dedicated mobile application version to accommodate users who frequently access the system using smartphones or tablets.
2. Implement SMS and push notification alerts to ensure timely updates regarding class bookings, cancellations, and announcements.
3. Enhance mentor profile features to showcase portfolios, credentials, or sample videos within their profiles.
4. Offer training and onboarding for first-time users to help new users (especially parents or less tech-savvy users) understand how to use the system effectively.

CHAPTER V

IMPLEMENTATION PLAN

This chapter presents the implementation plan of the ConnectingNotes: A Web Application for Music Mentorship and Learning, including the conversion plan, deployment, and policies of the said system.

ConnectingNotes works on any web browser supporting HTML 5 (Google Chrome, Firefox, Microsoft Edge, etc.). The minimum hardware requirements to run the system are any operating system but the Windows 10 operating system is recommended and the latest with an AMD Ryzen 3 or Intel Core i3 or higher processor, 4 GB random access memory (RAM), and an internet connection.

In deploying the system, the researcher selects a hosting provider that best suits the needs and budget. The system is uploaded to a web hosting service such as Digital Ocean and to ensure the website is accessible to users and is secure, the research buys a budget domain name system and updates the Domain Name

System (DNS) records to match the hosting server's IP address is necessary. After updating the DNS records, the website is launched and made available to users.

To transition from the existing manual processes to the digital platform, a pilot conversion method will be used. This approach begins by rolling out the system to a small, controlled group of users such as the administrator, a secretary, two mentors, and four

students to test core functionalities, gather feedback, and address any initial challenges. Once the pilot implementation has been evaluated and approved, the system will be fully deployed to all users within Herliz Music Studio.

The conversion plan will take three (3) months. It includes the following: preparation of hardware and software requirements, populating the database, user training, and pilot implementation.

Activity	Months											
	1				2				3			
	1	2	3	4	1	2	3	4	1	2	3	4
Preparation of Hardware and Software Requirements												
Populating Database												
User Training												
Pilot Implementation												

Figure 1. System Conversion Plan

Preparation of Hardware and Software Requirements

This phase focuses on establishing the necessary hardware and software for the system. Identifying and setting up a reliable web hosting provider is essential to ensure seamless operation upon deployment. This preparation phase will take two (2) weeks.

Populating the Database

In this phase, all data required for the database will be gathered, including valid records of stranded marine wildlife incidents and sighting data. Additionally, species information and guidelines will be included. This comprehensive data collection is crucial for the system's accuracy and readiness. This phase will also take two (2) weeks.

User Training

This phase involves creating a training module that covers the various functionalities of the system. The module will be implemented to orient users effectively. User feedback will be welcomed and utilized for future enhancements.

This training activity is expected to be completed in three (3) weeks.

Pilot Implementation

During this phase, the system will be introduced to a small group of users for testing and evaluation. Users will provide feedback and suggestions, and once the test group approves the system, it will be fully implemented across the 30 coastal areas in Bohol. The pilot implementation is expected to be completed in five (5) weeks and conclude after three (3) months when full system implementation will commence.

Policies of the System

For a successful implementation and utilization of the system, the following policies will be enforced:

1. Only the administrator or secretary can deactivate user accounts to ensure data accuracy and control access.
2. Mentors and students must upload valid and verifiable documents. Accuracy of their provided information is strictly adhered and false submissions may lead to account suspension or deletion.
3. Role-based access will be strictly implemented. For example, students cannot access mentor settings, and only administrators can generate official reports.
4. The administrator and secretary will conduct monthly database backups to ensure data security and integrity.
5. Data deletion is prohibited in the system; however, data can be archived.

Authorized users can retrieve inactive data and unarchive it if necessary.

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