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Enhancing Academic Efficiency: A Comprehensive Online Enrollment System for College Students in Asbury College Incorporated

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Abstract – In today's digital era, online enrollment systems play a crucial role in addressing inefficiencies associated with traditional manual enrollment processes, which are often hindered by long queues, repetitive procedures, and errors caused by illegible handwriting and manual data entry. This study focuses on designing and developing an Online Enrollment System tailored specifically for students and administrative staff at Asbury College Incorporated, with the goal of enhancing efficiency, accuracy, and user experience. By implementing an online platform, the system eliminates the need for physical forms, streamlines enrollment procedures, and provides users with a more convenient and accessible way to enroll for courses. The system was developed using the Agile methodology, which emphasizes flexibility, collaboration, and iterative improvement. Key features include student enrollment, course selection, schedule management, grade viewing, and subject management to ensure organized course offerings and curriculum structure. Surveys and interviews conducted with students, faculty, and administrative staff provided valuable insights that informed the system's design, while flowcharts and diagrams guided its development. The system's effectiveness was assessed based on the ISO-9126-1 software quality model, evaluating functionality, reliability, usability, efficiency, maintainability, and portability. Results showed that the system successfully minimized errors, reduced waiting times, and optimized administrative tasks, achieving an overall weighted mean score of 4.29, interpreted as "Excellent". Despite its success, the lack of an online payment feature was identified as a limitation, highlighting the need for future enhancements. The study concludes that the Online Enrollment System is a reliable, efficient, and user-friendly solution that significantly improves enrollment operations and user satisfaction. Recommendations for future development include integrating an online payment system, providing user training, and conducting further research to enhance system security and performance.

Keywords – Enrollment system, student information system, system automation, educational technology, agile methodology

I. Introduction

The initial step towards embarking on an academic journey, signifying the beginning of one's pursuit of knowledge and personal development is enrollment. It is a process of registering for a program or course of study at a school, college, or university. It also acts as a gateway to a world of educational opportunities, giving students a way to expand their knowledge in a specific field of study which also prepare them for their future [1]. By enrolling in a school or institution, students will become a part of a community of learners, fostering collaboration, and exchange of ideas. Thus, enrollment will serve as their starting point for acquiring the necessary skills, knowledge, and experiences that will shape their educational and career paths.

In today's digital era, online enrollment platforms have transformed how educational institutions handle student registration by eliminating physical forms and streamlining the process [2]. These platforms enable students to complete enrollment using computers, tablets, or smartphones, providing a convenient and accessible way to access a wide range of educational services and opportunities [3]. Traditionally, enrollment required physical visits and direct interactions with administrative staff. However, advancements in technology have paved the way for automated enrollment systems, making tasks such as filling out application forms, selecting courses, and submitting documents more efficient and convenient [4] [5].

In recent years, the Philippines has embraced online enrollment systems to simplify the process and provide a more efficient experience for students [6]. These systems allow students to complete enrollment remotely, reducing the need for physical visits to schools [7]. The shift to digital enrollment has significantly minimized waiting times and effort, allowing students to complete the process at their convenience without enduring long lines or returning the next day due to enrollment capacity limits [8]. Additionally, digital systems improve the accuracy of data collection, as students can directly input their information, minimizing errors caused by manual entry [9].

At Asbury College Incorporated, the traditional manual enrollment process presents several challenges, including long queues, errors in student data, and delays due to capacity constraints. Administrative staff also face inefficiencies such as slow processing, difficulty maintaining accurate records, and time-consuming review procedures. Implementing an online enrollment system is expected to address these concerns by improving efficiency and enhancing the overall experience for students and staff [10]. The motivation behind this study is to modernize the enrollment process and leverage technology to benefit all stakeholders.

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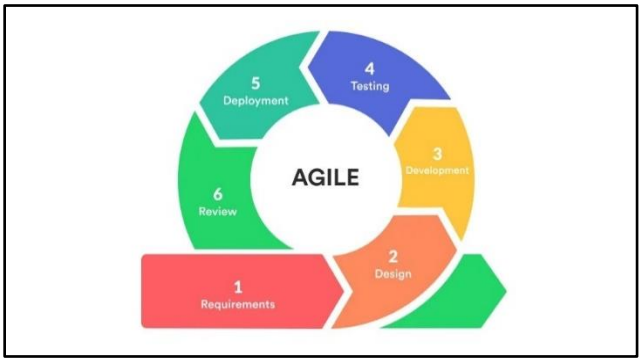
The implementation of an online enrollment system at Asbury College Incorporated has the potential to address challenges faced by students and administrative staff during the traditional pen-and-paper enrollment process. By simplifying enrollment, reducing waiting times, and minimizing errors, the system will enhance efficiency, accuracy, and user experience[11]. This study will explore the implementation of the online enrollment system, assess its impact, and provide insights for future improvements in the enrollment process. As technology continues to advance, adapting and utilizing it as a tool for educational enhancement is essential.

II. Methodology

The research design of the "Online Enrollment System for Asbury College Students" combined both descriptive and developmental approaches. Descriptive research techniques, including surveys and interviews, were employed to gather insights into the existing enrollment processes, user preferences, and pain points. Aligned with Software Development Life Cycle (SDLC) principles, the development process was guided by an adapted Agile model, which emphasized flexibility and iterative development to ensure continuous improvement and alignment with user requirements. This approach facilitated systematic planning, design, implementation, and testing, allowing for flexibility and responsiveness to evolving user needs. The development lifecycle comprised planning, requirements analysis, design, development, unit testing, and delivery, each phase contributing to the evolution of the enrollment system. The process began with planning, where a comprehensive project plan was created to define goals, scope, timeline, and resource allocation. Detailed requirements were then gathered from stakeholders, including students, faculty, and staff, and were mapped using a use case diagram. The system's architecture was designed based on these requirements, including detailed design documents. Development was conducted in iterative cycles, with continuous feedback and adjustments, followed by rigorous unit testing to ensure functionality. After successful development and testing, the system was prepared for deployment, including finalizing documentation and user training. The adapted Agile model used for the development process of the enrollment system is illustrated in Figure 1 below.

Figure 1. Agile Process



Source: https://medium.com/@chathmini96/agile-methodology-30ec4cdf3fc

Interviews, surveys, and observations were the primary tools for data collection to understand the current enrollment processes at Asbury College. Interviews with key personnel provided accurate insights into existing enrollment procedures, while surveys of college students highlighted their experiences and challenges with the manual process. By combining insights from observations, interviews, and surveys with both college administrators and students, we sought to gain a comprehensive understanding of the current enrollment system's strengths and weaknesses. This data informed the development of an efficient and user-friendly online enrollment system tailored to the specific needs of Asbury College Incorporated. Secondary data sources included internet research, blogs, and online journals and papers. Moreover, relevant printed and online sources, such as books, journal articles, unpublished theses, and other studies from the internet were examined.

The research study was conducted in the Asbury College Incorporated, Anda Pangasinan. The proponents identified key people that would give important participation in the study. Purposive sampling was utilized in identifying the respondents. These respondents include the ICT, Registrar, Assistant Registrar, Instructors, selected college students, and IT Experts as illustrated in Table 1 below.

Table I The distribution of respondents of the study, categorized by their roles

Respondents	Number of Respondents
ICT	1
Registrar	1
Assistant Registrar	1
Instructors	7

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College Students	70
IT Experts	2
Total Respondents	82

*The respondents were selected based on their participation in the study.

Statistical method was utilized to analyze the respondents' validation of the system during the usability test. This study employed a 5-point Likert Scale, where 5 indicated Excellent and 1 indicated Poor, as illustrated in Table 2. Responses were tabulated and analyzed using a weighted mean. This method ensured a thorough assessment of the system's usability and acceptance.

Table II The Scale of Measurement for Acceptability Test

Scale	Statistical Limits	Rating	Descriptive Interpretation
5	4.21 - 5.00	Excellent	Accepted
4	3.41 - 4.20	Very Good	Accepted
3	2.61 - 3.40	Good	Not Accepted
2	1.81 - 2.60	Fair	Not Accepted
1	1.00 - 1.80	Poor	Not Accepted

III. Results and Discussion

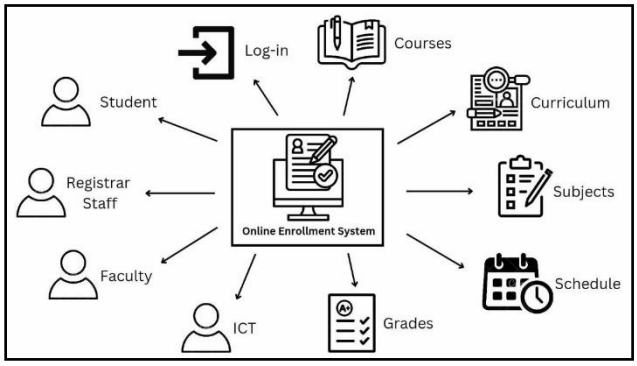
The Online Enrollment System for Asbury College Students simplifies the enrollment process for both students and administrators. The current manual enrollment system involves sequential steps such as clearance signing, class scheduling, and subject assignment, each of which is prone to inefficiencies like long queues, repeated visits due to cut-off times, document disorganization, and enrollment inaccuracies. These issues were identified through interviews and surveys involving students and staff.

To address these problems, an Online Enrollment System was developed, offering features such as a digital enrollment form, course guide, automated subject scheduling, and enhanced administrative controls. With this system, students can easily enroll in courses and track their enrollment status from home. Administrators benefit from a more efficient process, reducing the workload and minimizing errors. The system includes a detailed system framework, architecture designed, three tier architecture, and features to meet the specific needs of Asbury College.

An architectural framework was used to depicts the internal structure of the system. Figure 2 shows the Online Enrollment System Modules comprises the several distinct modules designed to streamline the enrollment process and enhance administrative efficiency.

Online Enrollment System Architectural Framework

Figure 2. Illustrating the Online Enrollment System Modules created by the authors



The system consisted of several modules designed to streamline the enrollment process and enhance administrative efficiency. The Student module served as the gateway for students to access the system, allowing them to log in, view academic records, register for courses, browse available courses, and manage personal information. The Registrar Staff module was reserved for authorized staff members, enabling them to verify student registrations, handle enrollment requests, update student records, and generate reports on enrollment trends. The ICT module was specifically designed for the super admin, granting ICT personnel the highest level of system control to manage accounts, assign roles, and oversee academic scheduling, including faculty assignments and room allocations. The Faculty module provided faculty members with a platform to manage teaching responsibilities, interact with students, submit grades, view class lists, and access academic resources. The Courses module acted as a comprehensive

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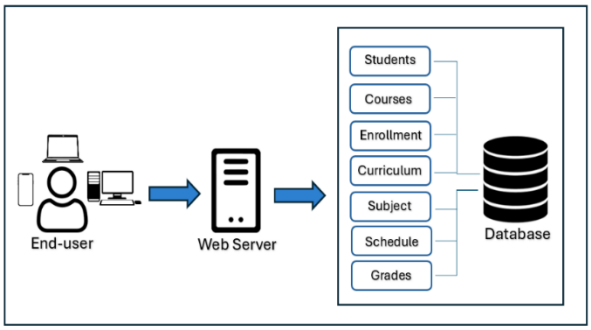
repository of all courses, detailing course codes, descriptions, credit hours, prerequisites, and instructors, allowing students to browse and select courses efficiently. The Curriculum and Subject modules complemented the Courses module by organizing courses into specific academic programs and disciplines, helping students explore their areas of interest and plan their academic paths. Lastly, the Schedule and Grades modules enabled students to view their course schedules, resolve conflicts, and access their grades and transcripts, providing insights into their academic progress and achievements.

Online Enrollment System Architecture

Figure 3. Illustrating the Online Enrollment System Three Tier Architecture created by the authors



The online enrollment system used a three-part design, as shown in Figure 3. This means the system is divided into three different parts: the user interface that students, registrar, ICT and instructors see the main application logic that runs the system, and the database that stores all the information. This architectural approach has benefits. It helps keep the different parts of the system separate and organized, making the overall system easier to work on and expand in the future. It also allows the team to choose the best technologies for each part, like the best software for the user interface, the application, and the database. Additionally, this architecture can improve the security of the system by creating secure connections between the user and the application.

Features of the Online Enrollment System

Figure 4. Digitalize Enrollment Form designed and created by the authors

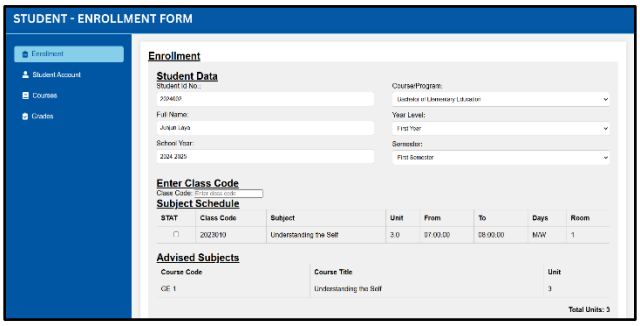


Figure 4. The key feature of the Online Enrollment System is the digitalized enrollment form, not just a simple enrollment form but, a way easier to fill out type of form. This form contains not just the 'Student Data' whereas it has also the form for 'Subject Schedule' and 'Advised Subjects' all in one page that allows them to view the schedule and subjects they are going to enroll. This also contains the basic information they will provide to successfully enroll.

Figure 5. Screenshot displaying the Student Evaluation feature within the system created by the authors

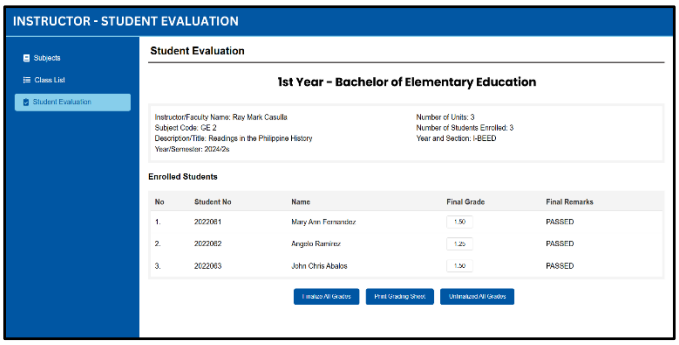


Figure 5. The instructor's 'Student Evaluation' page contains basic information about a student consisting of three important buttons that will allow them to finalize all grades, print the grading sheet as well as unfinalizing all grades. The access in student evaluation.

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Figure 6. Screenshot displaying the Manage Advised Subjects feature within the system created by the authors

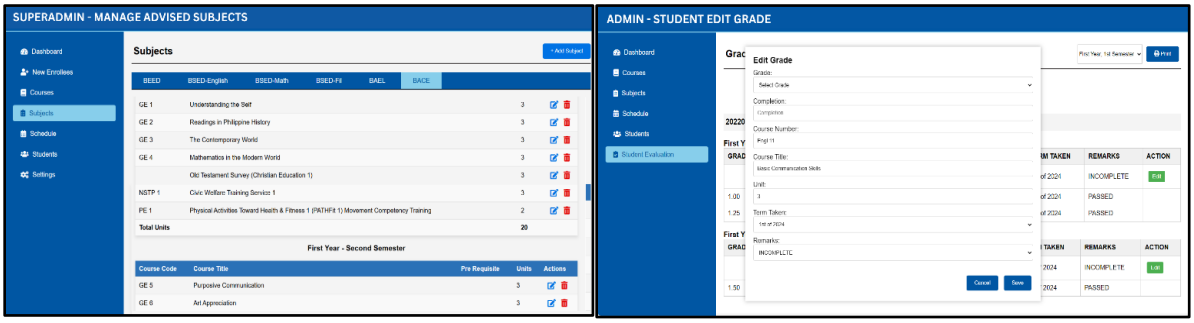
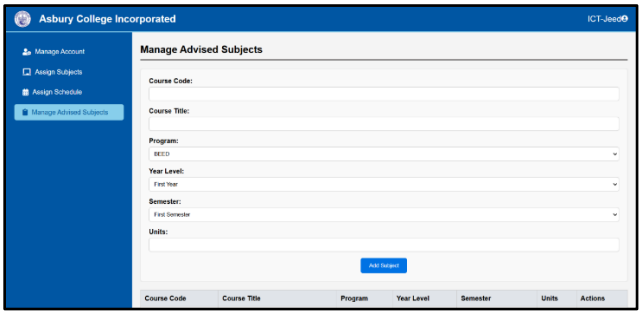


Figure 6. The ICT staff can manage advised subjects consisting of basic information with a special button where they can 'add subject'.

Figure 7. Screenshot of Manage Account feature created by the authors



In Figure 7, Managing accounts is one of the important functions that the ICT staff can work on using their role as super admin. It has the ability to do a batch upload and an auto-generated student number.

Figure 8. Screenshot displaying the Enrollment Confirmation feature within the system created by the authors

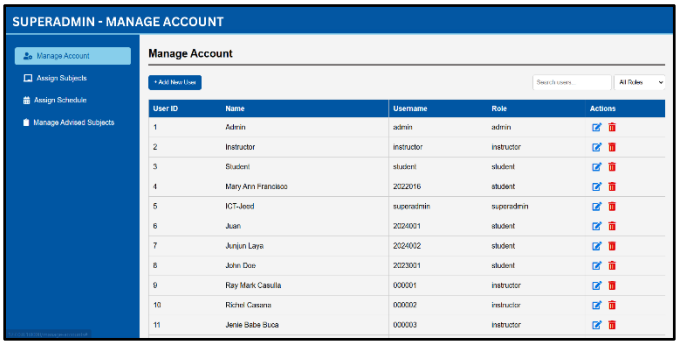


Figure 8. Confirmation of the enrollment form from students is one of the crucial feature that a registrar role can perform to successfully enroll a student using a 'finalize' button.

Figure 9. Screenshot displaying the Edit Grade feature within the system created by the authors

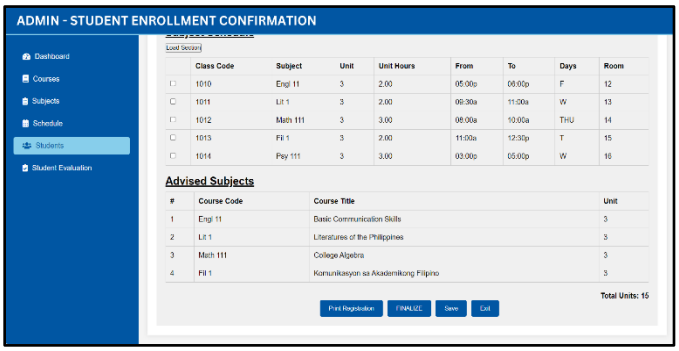


Figure 9. This feature allows the registrar to edit and student's grade within the student evaluation page. It has the necessary details needed to successfully edit their grade.

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Software Quality Assessment of Online Enrollment System Using the ISO-9126-1 by McCall (1997)

In completing the Online Enrollment System, the system assessed its functionality, reliability, usability, efficiency, maintainability, and portability by the college students, instructors, registrar, ICT staff of Asbury College Incorporated, and also IT experts.

Table 3 summarizes the computed mean of the software criteria and their level of acceptability. The system's overall mean score of 4.29 was interpreted as "Excellent," demonstrating its effectiveness in meeting user expectations. Among the six software quality criteria, Usability received the highest rating of 4.55, highlighting the system's ease of use, understandability, and learnability. This suggests that students, instructors, and administrative staff found the system intuitive and user-friendly.

Table III Summary of Results for the Online Enrollment System Acceptability Test based on the conducted survey on the Locale

Software Categories	Mean	Equivalent	Interpretation
1. Functionality. Suitability, accuracy, and security.	4.23	Excellent	Accepted
2. Reliability. Maturity, fault tolerance, and recoverability.	4.00	Very Good	Accepted
3. Usability. Understandability, learnability, and operability.	4.55	Excellent	Accepted
4. Efficiency. Time behavior, and resource behavior.	4.31	Excellent	Accepted
4. Maintainability. Analyzability, changeability, and stability.	4.30	Excellent	Accepted
5. Portability. Adaptability, and replaceability.	4.38	Excellent	Accepted
Overall Mean	4.29	Excellent	Accepted

Functionality, which includes suitability, accuracy, and security, achieved a computed mean of 4.23, indicating that the system effectively met the functional requirements of the enrollment process. Reliability received a mean score of 4.00, interpreted as "Very Good," reflecting the system's capability to perform consistently without failures. The Efficiency of the system, which measures time behavior and resource utilization, was rated 4.31, showing that it operates smoothly and processes transactions efficiently. Maintainability, with a mean score of 4.30, demonstrated that the system is stable and easy to modify when updates or improvements are necessary. Lastly, Portability received a total mean of 4.38, indicating that the system is adaptable and can function across different platforms or environments. Overall, the findings validate the system's acceptability and effectiveness in improving the enrollment experience for all stakeholders at Asbury College Incorporated.

IV. Conclusions

The Online Enrollment System for Asbury College Students has proven to be a significant enhancement over the previous manual process. This system simplifies the enrollment procedure, making it more efficient and user-friendly for students. The current system results in long queues, revisits to multiple offices, and issues with unorganized or missing documents, creating unnecessary inconvenience for both students and administrative staff. Furthermore, errors caused by unreadable text or complex steps that make these challenges worse emphasized the need for automation. The online enrollment system addresses these issues by incorporating features such as student enrollment, subject and schedule management, class list oversight, and an optimized evaluation and grading process. It aims to enhance efficiency, accuracy, and accessibility for all users, significantly improving the overall experience. Survey results indicated high ratings for the system in functionality, reliability, usability, efficiency, maintainability, and portability, with an overall weighted mean of 4.29. The system operates smoothly with minimal errors, features a user-friendly interface, and effectively optimizes the enrollment process. This study highlights the positive impact of technology on educational administration. Overall, the implementation of the Online Enrollment System is a step forward in modernizing Asbury College's enrollment process.

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First and foremost, the proponents extend their deepest gratitude to Almighty God, whose wisdom, guidance, and inspiration have been a source of strength throughout the completion of this study. His enduring support enabled the proponents to approach this work with clarity and determination.

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Special thanks are extended to the students and staff of Asbury College Incorporated for their participation in interviews and surveys. Their honest feedback and perspectives have provided valuable insights into the needs and challenges of the enrollment process, contributing greatly to the depth of this study.

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The Proponents

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