**AUTOMATED ENROLLMENT SYSTEM**

A Requirement In

Research Methods

Franco, Johannes Rodmar S.

Cabalse, Darlito Jr. D.

Soriano, Ervin Klein

2024

**CHAPTER I**

**THE PROBLEM AND ITS BACKGROUND**

**Introduction**

In our generation today where technology advances rapidly, using an automated system for managing, encoding, and organizing thousands of student information records is beneficial for a school because not only it reduces workload for school staff and personnel but offers a more efficient and time-saving process. Manual systems are a thing in the past, although some are still used today, often these are only for backup measures and record keeping.

According to (Chamilco, et al., 2023) the enrollment process of an educational institution becomes very complex when the waiting time is prolonged and crowds of people are created. This is the problem that the Nueva Vizcaya General Comprehensive High school (NVGCHS) encounters yearly. The number of enrollees in NVGCHS last year were over 6000 students and a manual process was used in catering them for that year. The manual system that the school use often results in a lengthy line of high school students waiting for their turn to pass their requirements in the enrollment area. Moreover, a manual system is known to be time-consuming and is prone to errors and a lot of manual labor is required for record keeping and oftentimes, duplication occurs as workers find it hard to keep track in the bundles of registers (Campos, 2019).

The enrollment process starts with the student falling in line to get their respective student IDs from the school librarian and afterwards are given an enrollment form that is filled up, the student will again fall in line to submit it to the registrar. The process of enrolling usually takes a student half or even the whole day because of the long queues. With a web-based application; the time-spent on the process of enrolling is reduced, thus students will no longer take a long period of time in doing so. Staff and personnel will have a more efficient way in organizing thousands of enrollees.

School staff and registrars will have the option to enroll a student whether old, new, or a transferee. General and school-related information gathered from the student are entered into the web-application. Students are enrolled and respective data are automatically saved in the database after the process is done.

The researchers proposed Automated Enrollment System (AES) for staff and personnel of NVGCHS to be used as a solution to replace their manual enrollment system and resolve their difficulties as mentioned above. Offer a functional, efficient, reliable, secured, and maintainable system to provide quality service. The system is equipped with a user-friendly interface that is easy to use and delivers the process that a school staff needs. Furthermore, the system’s capability to organize and backup numerous data will be beneficial by reducing errors, work, and even data loss.

**Conceptual Framework**

**Figure 1.0**

*Input Process Output (IPO)*

*A diagram of process and feedback

Description automatically generated*

Figure 1.0, shown above, is the Input Process Output Framework used for the system analysis. The researchers used questionnaire in as a data gathering tool and the Rapid Application Development (RAD) Model for the process to develop the Automated Enrollment System as the output.

In the input, the researchers used Unified Modeling Language (UML). It is a way to visually represent the architecture, design, and implementation of complex software systems by dividing the system into components and subcomponents. The developmental tools that will be used are; VS Code, React, and Bootstrap for the system’s front-end and user-interface, NodeJS or API JS, and XAMPP will be used for the back-end or server-side, MySQL for constructing the database via Navicat. For the researchers to know the system’s requirements and needs, they used questionnaires to list problems relating to the system. Feedback from administrative personnel, department heads, teachers, and students are taken into consideration. The researchers used ISO 25010 in assessing the gathered data in terms of functionality, efficiency, reliability, security, and maintainability.

Regarding the process, Rapid Application Development will be used. This model is an adaptive software development model based on prototyping and quick feedback with less emphasis on specific planning. In general, the RAD approach prioritizes development and building a prototype, rather than planning. With rapid application development, developers can quickly make multiple iterations and updates to the software without starting from scratch. This helps ensure that the final outcome is more quality-focused and aligns with the end users’ requirements.

**Statement of the Problem**

The need for an automated system to manage, encode, and organize student information is significant for educational institutions like Nueva Vizcaya General Comprehensive High School (NVGCHS). As mentioned above, manual processes result in long periods of waiting time, crowded enrollment areas, and additional workload to administrative staff. This manual system is not only time-consuming but also prone to errors and unintentional duplication of data records.

The manual system used by NVGCHS to enroll a student is slow because the enrollee must fill up an enrollment form, in the case of an old student that already has a record in the previous year will do the same except for the ID number. After filling up the form, the enrollee must queue in line to submit it to the registrar. These are the issues that the researchers discovered:

1. What are the requirements needed to develop the Automated Enrollment System to meet the desired software and hardware quality, administrative interaction, and organization of data and records?
2. How will the system ensure dependability across its functionality, efficiency, reliability, security, and maintainability?
3. What approach will be employed for the testing and implementation of the system?

**Objectives of the Study**

The purpose of this study is to develop an automated system for Nueva Vizcaya General Comprehensive High School regarding its enrollment, management, and organizing of student data and information. The system will provide a solution to offer a time-saving process for enrolling, reducing crowding in enrollment areas, and sorting thousands of enrollees and student records. The researchers found the necessary objectives below:

1. To identify the requirements of the administrative staff of NVGCHS in enrolling, sorting and filing of student data.
2. To develop a system according to the quality criteria of ISO 25010 regarding its Functionality, Efficiency, Reliability, Security, And Maintainability.
3. To deploy a working web-based system that aligns with the requirements to implement the Automated Enrollment System.

**Scope and Limitations**

The Automated Enrollment System will be deployed, tested, and implemented at Nueva Vizcaya General Comprehensive High School. The system will be used for enrollment and management of student and enrollee data.

The administrative staff of NVGCHS will use the web-based system in entering enrollee data for new students or entering a student ID number for old students. General information is gathered from incoming freshmen but for old students there is an option for the registrar to add subjects.

The system will be designed as a web-based application for the administrative staff. It will be supported by web browsers such as Google Chrome, Microsoft Edge, Brave, and Safari.

**Significance of the Study**

This study will be beneficial for the following:

1. **Administrative Staff/Registrar** – The staff/registrar will benefit from the system by reducing work load, unintentional duplication of records and mismanagement of student information data.
2. **Students** – The enrollees will benefit from this study by lessening their time-spent in queuing and eliminating crowded enrollment areas during the enrollment process.
3. **Department Heads/Teachers** – The school teachers will benefit from this study by the system’s capability to print master lists of officially enrolled students in their respective departments and or sections.

**Definition of Terms**

**React** – React is a free and open-source front-end JavaScript library for building user interfaces based on components. React can be used to develop single-page, mobile, or server-rendered applications with frameworks like NodeJS.

**NodeJS** - Node.js is a web framework used in data-intensive applications. It allows us to use JavaScript on the front-end, the middleware, and the back-end, on any browser, including MacOS, Linux, and Windows.

**Javascript** - JavaScript is a scripting or programming language that allows you to implement complex features on web pages and enables you to create dynamically updating content, control multimedia, and animate images.

**Navicat** - Navicat is a series of graphical database management and development software produced by CyberTech Ltd. for MySQL, MariaDB, MongoDB, Oracle, SQLite, PostgreSQL, and Microsoft SQL Server. It has an Explorer-like graphical user interface that supports multiple local and remote database connections.

**VSCode** - Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages and runtimes (such as C++, C#, Java, Python, PHP, Go, .NET).

**XAMPP** – XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.

**UML**– Unified Modeling Language (UML) is a standardized modeling language consisting of an integrated set of diagrams developed to help system and software developers specify, visualize, construct, and document the artifacts of software systems and for business modelling and other non-software systems.