



COLLEGE OF COMPUTER AND INFORMATION SCIENCE

Academic Year 2024 - 2025

IT PRACTICUM FINAL REPORT

DIMAANO, Jayron D.

Practicum Adviser: Adomar L. Ilao

Submitted to the Faculty of Mapúa Malayan Colleges Laguna
In Partial Fulfillment of the Requirements for the degree of

Bachelor of Science in Information Technology

Overview of the Company

The City Government of Biñan is the local governing body in charge of overseeing and improving the city of Biñan, Laguna. It manages multiple departments that deliver vital services, including healthcare, education, infrastructure, and public safety. Among these is the Information and Communications Technology Office (ICTO), which focuses on enhancing the city's digital infrastructure and spearheading its technology-related projects.

The ICTO develops and manages information systems for various city departments, offers technical support, and leads the shift from traditional methods to digital solutions. Its responsibilities include maintaining IT systems, managing networks and databases, enforcing cybersecurity protocols, and integrating modern technologies to improve both public services and internal workflows.

As On-the-Job Training (OJT) interns, we are collaborating with the ICTO to help build and implement systems across different city departments. Our tasks include assisting with system design, performing testing, and providing technical support, all while gaining valuable experience in real-world IT environments and public sector technology.

Vision

A modern and developed City where its responsible people are proud of their cultural, historical and artistic heritage; enjoy peace and security, economic stability, social justice, preserved environment, accessible quality education, responsive social services, well-planned infrastructure facilities all anchored on good governance thus making the City of Biñan as the Premiere Heritage and Trade Capital of the South, the best place to live, work and visit.

Mission

THE LEADERSHIP OF THE CITY OF BIÑAN IS COMMITED TO EXERCISE ITS MANDATE TO:

1. Promote social order and ensure public safety;
2. Enhance economic prosperity through job generation, manpower and skills development, encourage and support local industries and its expansion;
3. Guarantee social justice by way of ensuring basic services and equal opportunities;
4. Deliver accessible and quality healthcare services;
5. Protect and maximize the utilization of environment and natural resources towards the attainment of a disaster-resilient community;
6. Ensure access to free and quality education to prepare our youth to be globally competitive;
7. Support gender sensitivity, responsiveness and equality;
8. Provide modern and needed infrastructure facilities;
9. Preserve, conserve and nurture its cultural, historical and artistic heritage toward sustainable tourism; and
10. Increase collection efficiency through reasonable taxes, fees and charges, ensure sound fiscal management.

Company Background



Figure 1. Biñan City Hall – Housing Department- ICT office

Biñan City Hall serves as the main seat of government for the progressive and fast-growing city of Biñan in Laguna, Philippines. Located in Barangay Zapote, this modern facility was constructed following Biñan’s elevation to component city status in 2010. It symbolizes the city's transformation and its commitment to delivering efficient, people-centered public service.

The City Hall is more than just an administrative center—it reflects Biñan’s identity as the “City of Life,” where culture, development, and innovation thrive together. Surrounded by historic landmarks and cultural sites, it stands at the intersection of heritage and modernity, offering citizens a streamlined and accessible government experience.

Biñan is widely recognized for being highly competitive and forward-thinking, particularly in digital innovation. The local government actively pursues modernization across departments, aiming to provide faster, more transparent, and more responsive services. Its strategic approach to governance positions the city as a leader in adopting smart, technology-driven systems.

At the core of these advancements is the ***Information and Communications Technology Office (ICTO)***, which plays a key role in digitalizing city operations. ICTO is responsible for developing and maintaining systems that enhance internal workflows, improve data security, and enable digital access to services. Their work supports Biñan's vision of becoming a model for efficient and future-ready governance in the region.

Discussion of the Nature of Tasks

For this practicum engagement, I was part of a three-member development team assigned to digitalization of the **Census and Tagging System** in the **Housing Department**. The department previously relied on manual, paper-based processes that made it difficult to manage, retrieve, and generate reports efficiently. Our task was to develop a centralized, web-based solution that would streamline data management and improve workflow efficiency.

The system we developed featured **account management** with three user roles: **Administrator**, **Encoder**, and **Viewer**, each with specific access levels. I was primarily responsible for the **backend logic** and **user interface (UI) implementation**, which included tasks such as backend validation, input form processing, CRUD operations (Create, Read, Update, Delete), record archiving, search filters, and printable reports for both individual entries and

summaries. I ensured that all user inputs were validated and that the platform provided a clean, responsive, and user-friendly experience.

In addition to the **Census and Tagging** module, we also developed a **Beneficiary Records** module with similar features. A **System Logs** component was also implemented to allow administrators to monitor all user activities within the system, ensuring transparency, accountability, and easier system maintenance. These digital features collectively addressed the department's need for more efficient data handling and faster reporting.

The system was developed using **CodeIgniter 4** as the backend PHP framework and **MySQL** as the database management system. Development was done primarily using **Visual Studio Code**, and the system was tested and run on a **Lenovo laptop running Windows 11**. Through this experience, I gained practical knowledge in full-stack web development, database integration, system architecture, and government-focused digital transformation.

Software Development Outputs

Throughout the practicum, I contributed to the development of a web-based system aimed at digitalizing the Census, Tagging, and Beneficiary Records processes of the Housing Department. The project addressed the inefficiencies of their previous paper-based system by introducing a streamlined digital platform capable of storing, retrieving, and managing records with ease. The system was developed using **CodeIgniter 4** as the backend framework, **PHP 8** as the scripting language, and **MySQL** as the database management system. Development and local testing were carried out in a **XAMPP** environment, with **Visual Studio Code** as the primary code editor.

My primary contributions involved both backend logic and user interface implementation, focusing on data validation, secure form processing, and interface responsiveness. I worked on modules for managing census and tagging data, as well as beneficiary records. Each module supported complete CRUD (Create, Read, Update, Delete) operations, record archiving to preserve deleted entries, and search and filter functionalities to help users locate specific records efficiently.

One of the key features I developed was the **printing of records**, which included both individual entries and summary reports. This was particularly important to the department, as it replaced the time-consuming process of locating and manually compiling paper records. The system also featured **role-based access control**, allowing different levels of functionality for Administrators, Encoders, and Viewers, as well as a **System Logs** module that enabled administrators to monitor user activities and maintain operational transparency.

Overall, the software development outputs provided a more efficient, reliable, and accessible way of managing records for the department. This experience significantly enhanced my skills in full-stack web development and gave me practical insight into the application of technology in public service and administrative environments.

Scope of the Project

The scope of the project focused on the development and implementation of a web-based information system intended to digitalize the **Census, Tagging, and Beneficiary Records** processes of the **Housing Department**. The project aimed to replace the department's traditional paper-based workflow with a more efficient, secure, and user-friendly digital platform to improve data management and service delivery.

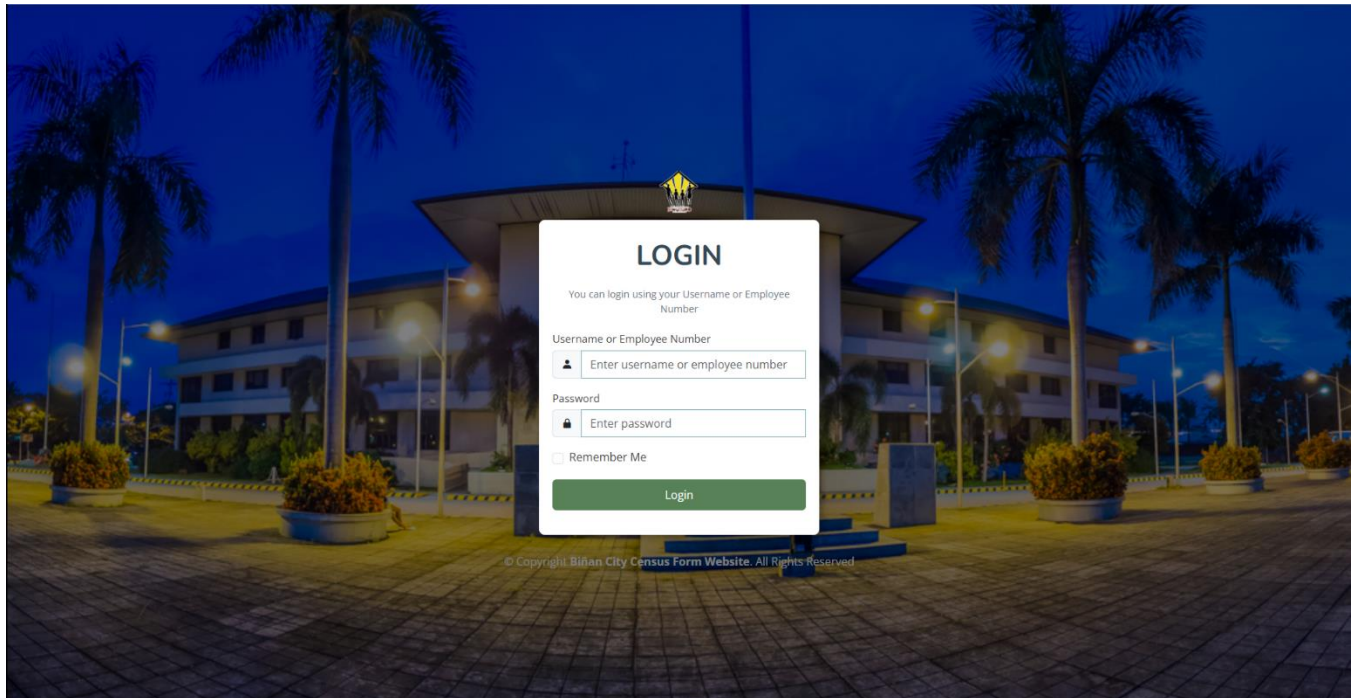
The system encompasses several core functionalities, including **account management**, **record management for census and beneficiary data**, **user role assignment**, **search and filter capabilities**, **archiving of deleted records**, **system activity logs**, and the **printing of both individual and summary reports**. It supports three user roles—**Administrator**, **Encoder**, and **Viewer**—each with distinct access levels and responsibilities to ensure structured and secure use of the system.

To enhance user experience and system responsiveness, **AJAX (Asynchronous JavaScript and XML)** was integrated into various components of the application. This enabled dynamic content updates without requiring full-page reloads, particularly in areas such as data filtering, form submissions, and record manipulation, resulting in a smoother and faster workflow for end-users.

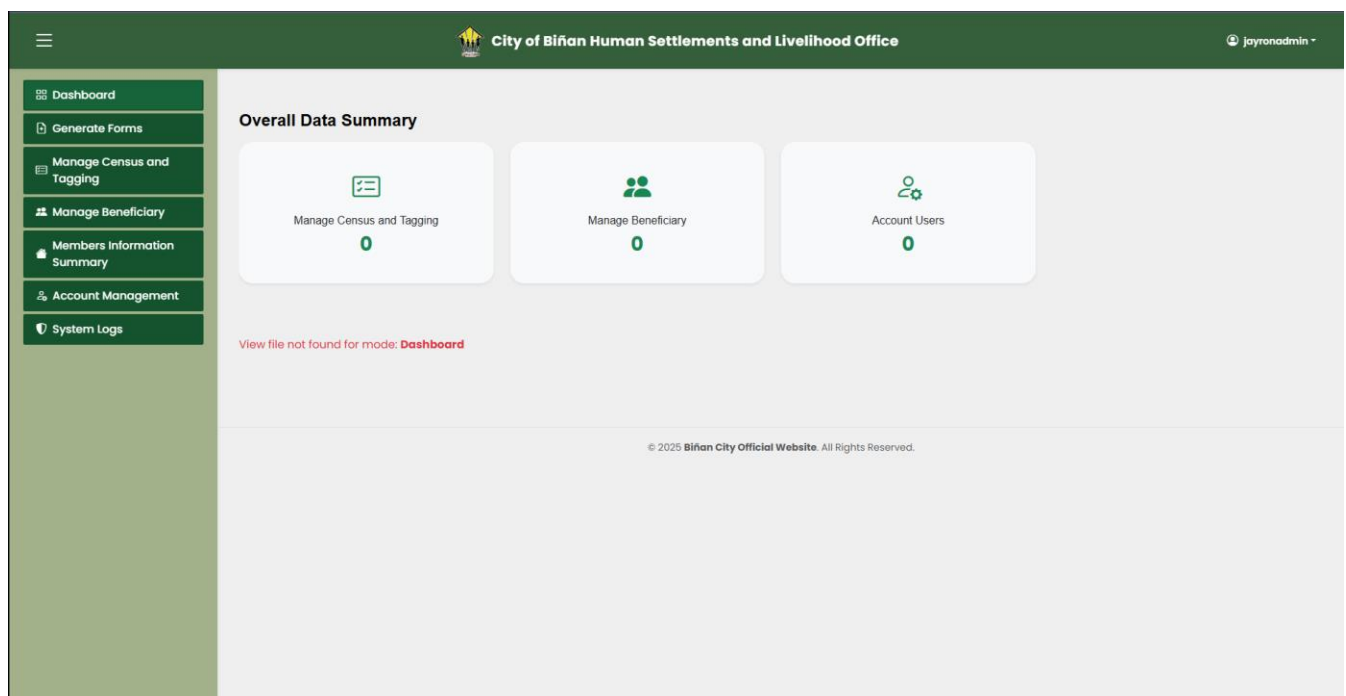
The system was developed using **CodeIgniter 4** as the backend framework, **PHP 8** as the primary scripting language, **MySQL** for database management, and **XAMPP** for the local development environment. The project is currently limited to internal operations of the Housing Department and does not include integration with other external government platforms. However, the system's modular design provides a strong foundation for future enhancements such as public access portals, automated notifications, or system-wide interconnectivity. The overall scope emphasizes internal efficiency, accuracy, and the adoption of modern web technologies to support digital transformation in local government operations.

Screenshot of the Features

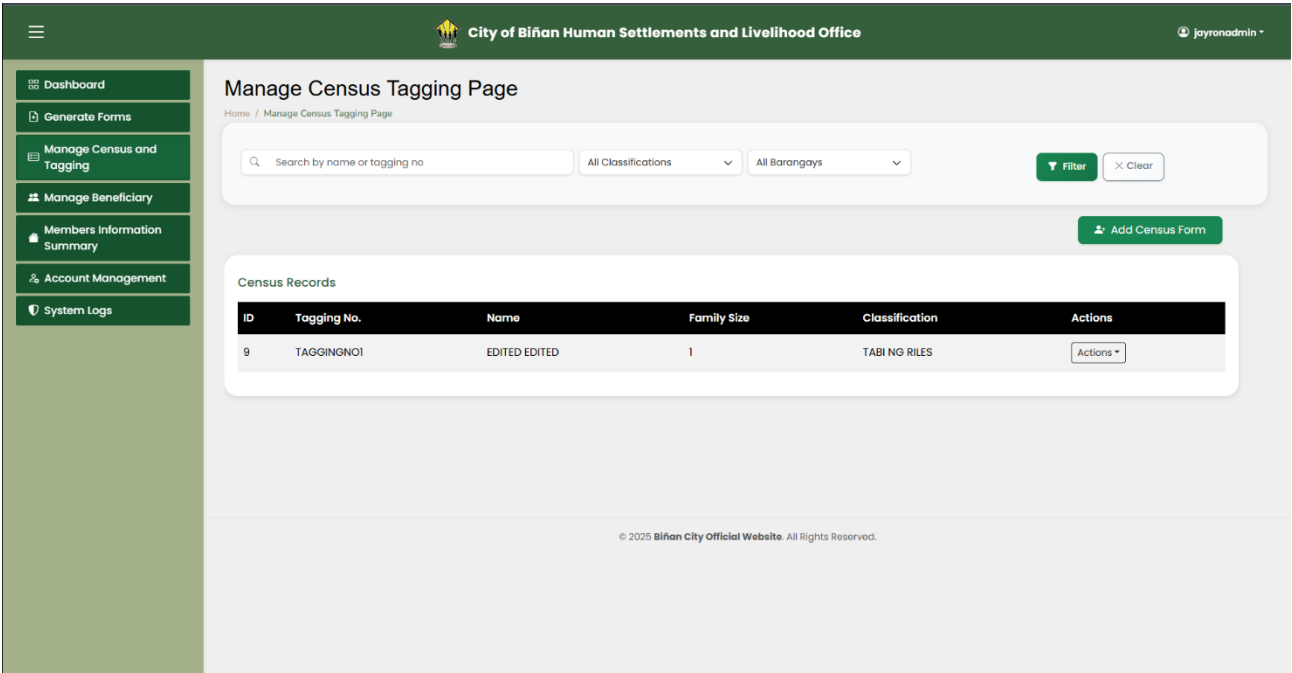
Login Page – (for admin, encoder and viewer)



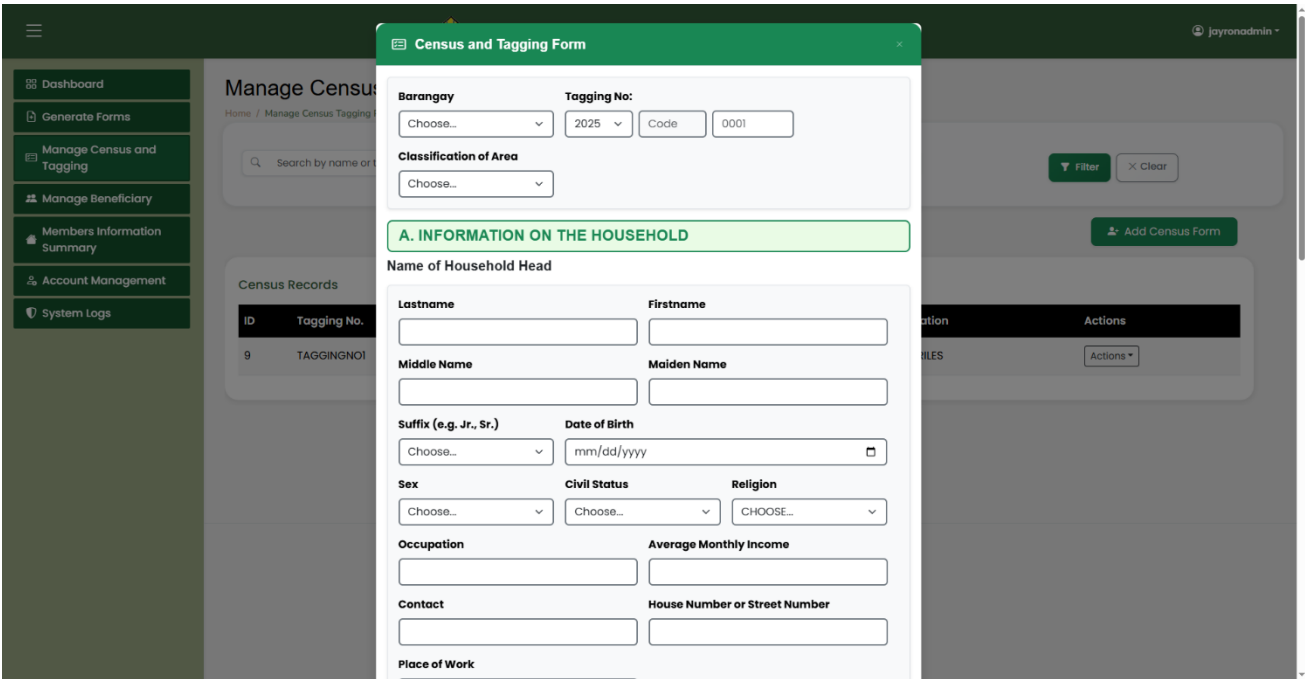
Dashboard page



Manage Census and Tagging Page – (CRUD, Search filters, Archive deletions)



Manage Census and Tagging Page – (main form)



Manage Beneficiary Page - (CRUD, Search filters, Archive deletions)

Dashboard

Generate Forms

Manage Census and Tagging

Manage Beneficiary

Members Information Summary

Account Management

System Logs

City of Biñan Human Settlements and Livelihood Office

Jayronadmin

Manage Beneficiary Page

Home / Manage Beneficiary Page

Search by name, tagging no, or disaster

All Disasters

All Damage

Filter

Clear

Add Beneficiary

Beneficiary Records

Export

ID	Tagging No.	Name	Disaster	Damage	Vulnerability	Date Added	Actions
1	TAGGINGNO1	EDITED EDITED BUNGAHAN	21312312	Partially Damaged	2 criteria Deaths, Senior-Headed	Jul 07, 2025	Actions

© 2025 Biñan City Official Website. All Rights Reserved.

Manage Beneficiary Page – (main form)

Dashboard

Generate Forms

Manage Census and Tagging

Manage Beneficiary

Members Information Summary

Account Management

System Logs

City of Biñan Human Settlements and Livelihood Office

Jayronadmin

Manage Beneficiary Page

Home / Manage Beneficiary Page

Search by name, tagging no, or disaster

All Disasters

All Damage

Filter

Clear

Add Beneficiary

Beneficiary Records

Export

ID	Tagging No.	Name	Disaster	Damage	Vulnerability	Date Added	Actions
1	TAGGINGNO1	EDITED EDITED BUNGAHAN	21312312	Partially Damaged	2 criteria Deaths, Senior-Headed	Jul 07, 2025	Actions

© 2025 Biñan City Official Website. All Rights Reserved.

Add Disaster Beneficiary

Name of Disaster

Choose...

Tagging Number

Enter tagging number

Search

Classification of Damage

Choose...

Remarks

Additional remarks about the damage

VULNERABILITY CRITERIA

☐ Household with deaths in the family or were incapacitated as a result of the disaster

☐ Household with children

☐ Household with seriously ill members, disabilities, or special needs

☐ Women-headed household at risk (e.g. single mothers, widows, older women, survivors of violence, pregnant/lactating women)

☐ Household headed by senior

PHOTOS OF DAMAGED HOUSE

Upload Photos

Choose Files

No file chosen

You can select multiple photos. Supported formats: JPG, PNG, GIF

Close

Save Beneficiary

Account Management Page – (CRUD, Search/filters, archive deletes, deactivation of accs)

Dashboard

Generate Forms

Manage Census and Tagging

Manage Beneficiary

Members Information Summary

Account Management

System Logs

City of Biñan Human Settlements and Livelihood Office

jayronadmin

Account Management

Home / Account Management

All RolesAll Status

FilterClear

Add User

Username	Employee Number	Firstname	Lastname	Email	Role	Status	Action
jayronadmin	141414	JAYRON	DIMAANO	jayrondimaano14@gmail.com	Admin	Active	Actions
ranieadmin	12512512512	ranie	santiago	ranie@gmail.com	Encoder	Inactive	Actions
emmanadmin	1251231	emman	banares	emman@gmail.com	Admin	Active	Actions
jayronencoder	1346134	jeron	pogi	jeron@gmail.com	Encoder	Active	Actions
carloencoder	1346134	carlos	pelino	carlos@gmail.com	Encoder	Active	Actions
dummylencoder	64136	dummy1	dumm1	dummy1@gmail.com	Encoder	Inactive	Actions
dummy2encoder	13461346	dummy2	dumm2	dummy2@gmail.com	Encoder	Inactive	Actions
johnencoder	6134613	John	Bravo	john@gmail.com	Encoder	Active	Actions
ggg	1939	GG	GG	g@gmail.com	Admin	Active	Actions
pogiadmin		POGIIII	AKOOOO	opog@gmail.com	Admin	Active	Actions

Account Management Page – (main form)

Dashboard

Generate Forms

Manage Census and Tagging

Manage Beneficiary

Members Information Summary

Account Management

System Logs

City of Biñan Human Settlements and Livelihood Office

jayronadmin

Account Management

Home / Account Management

All RolesAll Status

FilterClear

Add User

Username	Employee Number	Firstname	Lastname	Email	Role	Status	Action
jayronadmin					Admin	Active	Actions
ranieadmin					Encoder	Inactive	Actions
emmanadmin					Admin	Active	Actions
jayronencoder					Encoder	Active	Actions
carloencoder					Encoder	Active	Actions
dummylencoder					Encoder	Inactive	Actions
dummy2encoder	13461346	dummy2	dumm2	dummy2@gmail.com	Encoder	Inactive	Actions
johnencoder	6134613	John	Bravo	john@gmail.com	Encoder	Active	Actions
ggg	1939	GG	GG	g@gmail.com	Admin	Active	Actions
pogiadmin		POGIIII	AKOOOO	opog@gmail.com	Admin	Active	Actions

Create User Account

Employee Number

Firstname

Lastname

Email

Username

Password

Confirm Password

Account Level

Select Level

CloseSave

System Logs Page – (viewing of recent activities of users)

Dashboard

Generate Forms

Manage Census and Tagging

Manage Beneficiary

Members Information Summary

Account Management

System Logs

City of Biñan Human Settlements and Livelihood Office

jayronadmin

System Logs

Home / System Logs

Total Logs

93

Successful Logins

33

Failed Logins

3

Active Sessions

18

Search by username

All Actions

mm/dd/yyyy

mm/dd/yyyy

Filter

Clear

Date & Time	User	Action	IP Address	Details	User Agent
Jul 16, 2025 10:05 PM	jayronadmin	User Login	::1	User 'jayronadmin' logged in successfully	View
Jul 16, 2025 01:05 AM	jayronadmin	User Login	::1	User 'jayronadmin' logged in successfully	View
Jul 14, 2025 11:55 PM	jayronadmin	Delete Census	::1	Deleted census record with ID: 1	View
Jul 14, 2025 11:55 PM	jayronadmin	Delete Census	::1	Deleted census record with ID: 4	View
Jul 14, 2025 11:55 PM	jayronadmin	Delete Disaster Beneficiary	::1	Deleted disaster beneficiary ID: 3 - Tagging: TAGGINGNO12	View

Sytem Logs Page – (printing of activies of users)

City of Biñan Human Settlements and Livelihood Office

Jayronadmin

Jul 05, 2025 07:15 PM	emmanadmin	Add Census	::1	Added census record with tagging no: TAGGINGNO	View
Jul 05, 2025 07:03 PM	emmanadmin	Add Census	::1	Added census record with tagging no: ASDASKDJHA	View
Jul 05, 2025 07:01 PM	emmanadmin	Update User Status	::1	Changed status of user: jayronadmin (JAYRON DIMAANO) to: Active	View
Jul 05, 2025 07:01 PM	emmanadmin	User Login	::1	User 'emmanadmin' logged in successfully	View
Jul 05, 2025 07:01 PM	-	Failed Login	::1	Failed login attempt for username 'jayronadmin': Account deactivated	View
Jul 05, 2025 05:36 PM	jayronencoder	User Logout	::1	User 'jayronencoder' logged out	View

1

2

Next >

Export Logs

Export system logs for analysis and reporting purposes.

Export to CSV

Discussion

The practicum experience provided a valuable opportunity to apply theoretical knowledge in a real-world setting, particularly within the context of public service and digital transformation. Being part of a project that aimed to modernize the Census, Tagging, and Beneficiary Records of the Housing Department allowed me to gain firsthand experience in addressing real operational challenges through software development. It was a meaningful task, knowing that our work would directly improve the efficiency and accuracy of government services.

One of the key contributions I made was in the development of core system functionalities using **CodeIgniter 4**, **PHP 8**, and **MySQL**, supported by a local development setup using **XAMPP**. I was responsible for implementing backend validations, CRUD operations, and user interface improvements, ensuring that the system was both functionally reliable and user-friendly. I also integrated **AJAX** into the system to enhance responsiveness, particularly in modules that required real-time data filtering and form submissions without page reloads. The system's printing feature for individual and summary records proved especially useful to the department, as it replaced a tedious and time-consuming manual process.

Despite the technical progress, the project also presented a number of challenges. These included dealing with legacy workflows that had no existing digital reference, handling inconsistent or incomplete data from paper records, and ensuring data integrity across modules with multiple user roles. Working collaboratively within a small team required clear communication, version control discipline, and a mutual understanding of system logic and goals. Each challenge, however, offered a learning opportunity that helped improve both my problem-solving skills and adaptability.

Throughout the development process, I gained deeper insights into web application architecture, system security, and the importance of user experience in system design—especially in government environments where ease of use is essential. I also saw how crucial role-based access control and system activity logs are in maintaining accountability and protecting sensitive data. These practical insights went beyond classroom learning and gave me a more grounded perspective on how technology serves public administration.

In conclusion, the practicum allowed me to grow both technically and professionally. I was able to contribute to a project that had a direct impact on improving government workflows while strengthening my skills in backend development, UI design, and systems thinking. The experience affirmed my passion for software development and increased my confidence in building solutions that are both functional and socially meaningful. I look forward to applying these skills to future projects that aim to create efficiency and innovation in various fields.