



# APARTMENT

## MANAGEMENT



## **Apartment Utility Management System (AUMS)**

In Partial Fulfillment of the Requirements in  
CS 26L Software Development Fundamentals

**Solo solo ra**

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Submitted to

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## **Chapter 1**

### **Overview**

The Apartment Utility Management System is a modern system-based platform designed to streamline the management of water and electricity utilities in residential properties. This innovative solution connects landlords and tenants through an intuitive digital interface, replacing traditional paper-based methods with efficient online management.

The system features secure login and signup functionality, allowing both property managers and tenants to access their dedicated portals. Landlords can easily input utility readings, track consumption, and manage billing through their dashboard. Meanwhile, tenants can view their utility usage, access their account settings, and monitor their consumption patterns all in one place.

Security and user-friendliness are at the core of the system's design. With robust authentication measures in place, users can confidently manage their utility information while enjoying 24/7 access to their accounts. The platform automates calculations and record-keeping, significantly reducing the time and effort required for utility management while minimizing the risk of errors.

Through this streamlined approach, the system transforms utility management into a simple, transparent, and efficient process that benefits both property managers and residents alike.

### **Statement of the Problem**

Properties that still use manual methods or paper forms have encountered numerous challenges when tracking utility consumption. This results in various problems such as data loss or inaccurate records, difficulty monitoring utility usage, and issues in tracking payment schedules. This situation affects both landlords and tenants, causing delays and frustrating experiences for both groups.

1. Manual tracking of water and electricity consumption is time-consuming and prone to errors

2. Lack of a centralized system for recording and managing utility information
3. Inefficient communication between landlords and tenants regarding utility charges
4. Difficulty in maintaining accurate records of payment history
5. Limited accessibility to utility information for both parties

## **Objectives**

The primary objectives of this apartment utility management system are:

1. To develop a secure and user-friendly platform for managing water and electricity utilities
2. To streamline the process of recording and tracking utility consumption
3. To facilitate efficient communication between landlords and tenants
4. To provide a convenient method for accessing and updating utility information
5. To maintain accurate historical records of utility usage and payments

## **Project Description**

The Apartment Utility Management System (AUMS) provides landlords with the ability to effortlessly add, update, or delete utility readings from the system, thereby simplifying the management work. With an easy-to-use interface, property managers can maintain comprehensive records of all utility consumption, including water usage, electricity consumption, billing periods, and payment history. This ensures that the utility database is always accurate and reflects current consumption patterns. The system additionally allows the landlord to keep track of tenant information.

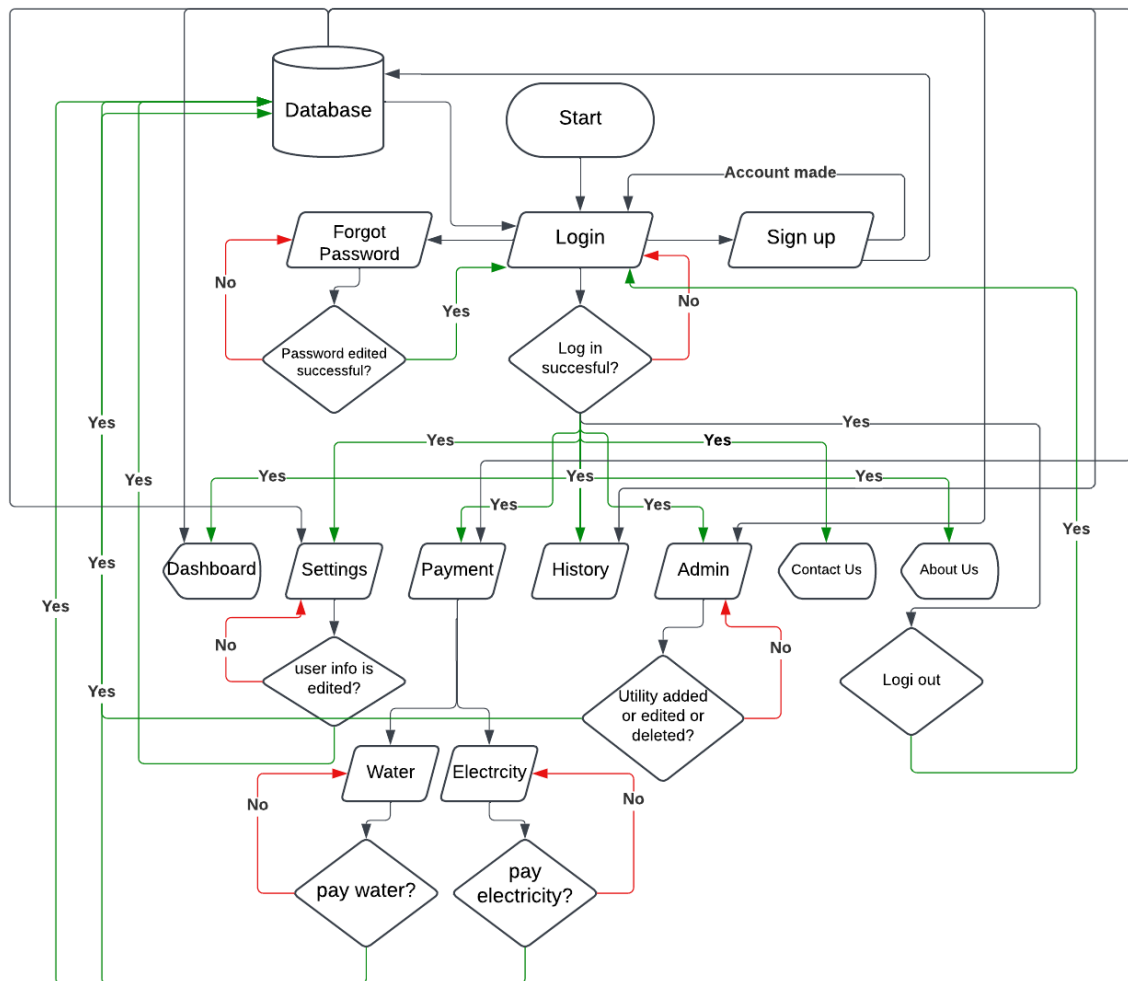
Managing utility bills for tenants is one of the AUMS's primary features. The system tracks every aspect of utility consumption, including meter readings, tenant data, billing dates, and payment deadlines. Tenants or landlords can easily retrieve this stored information. By eliminating the need for manual tracking, the AUMS significantly reduces errors and saves time.

## Users of the Application

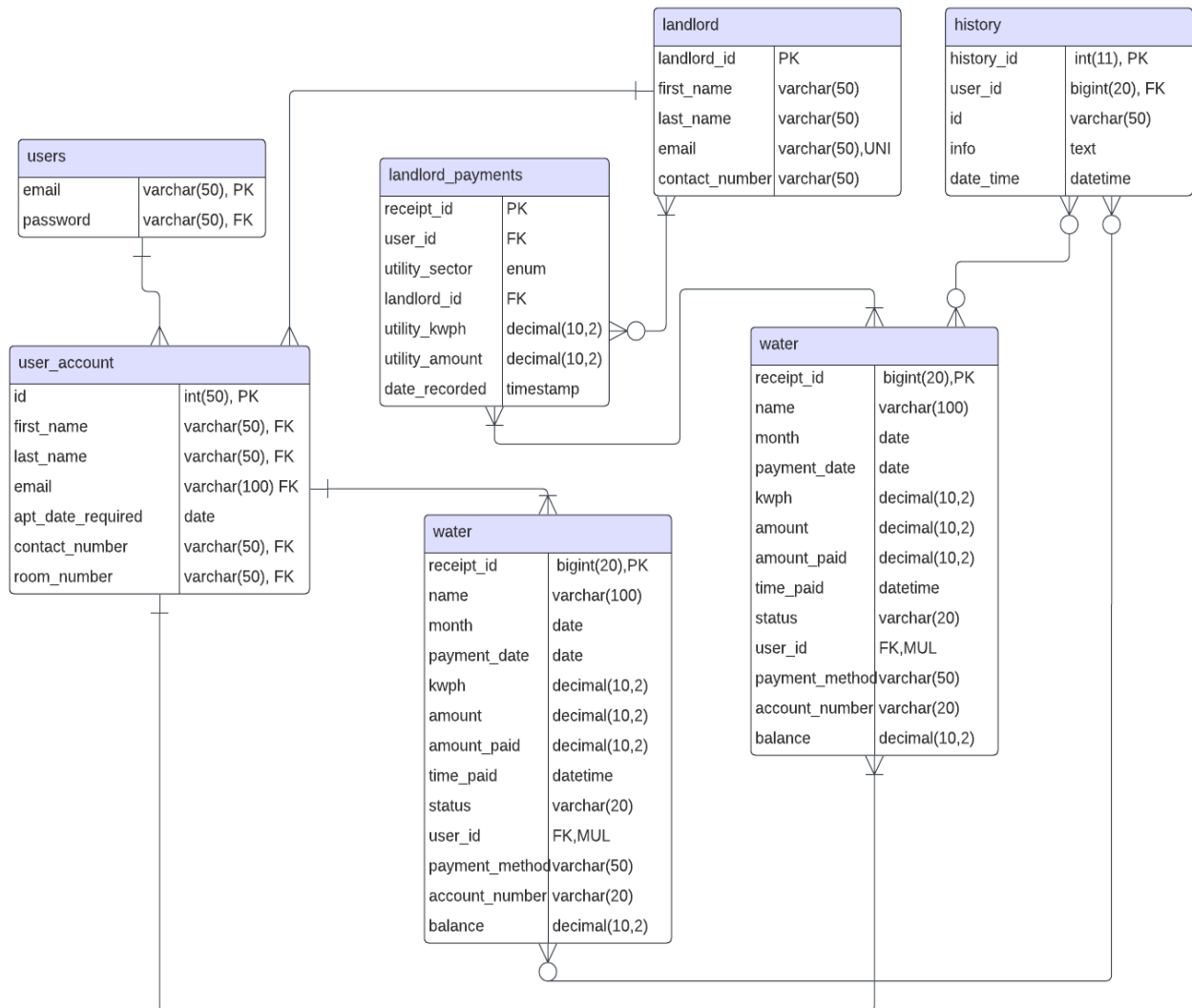
The Apartment Utility Management System is primarily designed for landlords and property managers. Through this system, they can manage utility readings, tenant records, billing, payments, and overdue amounts easily. However, tenants also benefit from its functionality. They can view their current utility consumption status and billing information (e.g., due dates and outstanding payments), though they cannot directly modify the core data.

## Chapter 2

### System Flowchart



## Database Table



## List of Transactions

1. *Login Button*
  - Authenticate user credentials to allow access to the system.
2. *Sign Up Button*
  - Create a new account for landlords or tenants with secure storage of user data.
3. *Forgot Password*
  - Allow users to reset their password securely via password or verification.

#### *4. Pay Water Button*

- Process payment for water utility bills using integrated payment options (e.g., GCash or credit card).
- Process payment for electricity utility bills with real-time updates to payment history.

#### *5. Pay Electricity Button*

- Process payment for electricity utility bills with real-time updates to payment history.
- Process payment for water utility bills using integrated payment options (e.g., GCash or credit card).

#### *6. Add Utility Info Button*

- Add new utility data (e.g., meter readings, billing periods) to the database.

#### *7. Delete Database Utility Row (Backspace)*

- Remove selected utility record(s) from the database.

#### *8. Edit Database Utility Row (Enter to Save)*

- Update utility information in the database and save changes.

#### *9. Generate Utility Report*

- Create a summary report of water and electricity consumption and payments.

#### *10. View Utility History*

- Display past utility bills, consumption data, activity, and payment records.

#### *11. Update User Info*

- Allow users to edit their personal information (e.g., email, contact number).



#### *12. View Dashboard*

- Display utility statistics (e.g., monthly usage, total outstanding payments).

#### *13. Update Tenant Info*

- Edit tenant records such as contact details or room number.

#### *14. Logout Button*

- End the current session and redirect to the login page.

#### *15. Change Password*

- Allow users to update their password securely.

#### *16. View Utility Breakdown*

- Show detailed calculations for water or electricity charges.

#### *17. System Admin Actions (Admin Panel)*

- Add, update, or delete utility data for all tenants.
- Generate detailed reports (e.g., overdue payments, consumption trends).

This list reflects a comprehensive set of transactions for AUMS and ensures usability and efficient utility management for both landlords and tenants.

### **Features and Specifications**

The Apartment Utility Management System (AUMS) has comprehensive features that help property managers track utility consumption, tenant information, and the entire process of billing and payment collection. Here are the key components of the system:

#### **1. Login Page:**

Provides secure access to the system through user authentication. Users can enter their credentials to access their respective accounts, ensuring that sensitive

information remains protected. Different access levels are maintained for landlords and tenants.

## **2. Sign Up Page:**

Allows new users to create their accounts by providing necessary information. The registration process includes validation of required fields and secure storage of user credentials. This feature enables tenants to join the system and start managing their utility information.

## **3. Dashboard:**

Displays important utility statistics and overview, such as month's consumption, total payments, history, and utility usage amounts. It helps users quickly assess their utility status and provides easy navigation to the main features of the system.

## **4. User Info Setting:**

This section enables users to manage their personal information and account preferences. Users can update their contact details, and account settings.

## **5. History:**

Provides a comprehensive record of past utility consumption and payments. Users can view their historical data, track usage patterns, and download past bills. This feature helps in understanding consumption trends and planning for better utility management.

## **6. Payment Section:**

- Water Utility:
  1. Interactive date selector for choosing specific billing months
  2. Displays kilowatt per hour (kWph) consumption for the selected period

3. Automatically calculates charges based on consumption
4. Shows detailed breakdown of water utility costs

- Electricity:

1. Month selection via date picker interface
2. Real-time display of kWph usage for chosen billing period
3. Automatic calculation of electricity charges
4. Clear presentation of total amount due

The system provides convenient payment processing for both utilities through integrated GCash and credit/debit card payment options. Users receive instant confirmation upon successful payment and can access their downloadable receipts at any time. The system maintains a comprehensive payment history, ensuring users can easily track their past transactions and monitor upcoming due dates for each billing period.

## **7. Contact Us:**

Offers a direct communication channel between users and system administrators. Users can submit inquiries, report issues, or request assistance through this feature. It includes a form for message submission and displays contact information for support.

## **8. About Us:**

Provides information about the utility management system, its purpose, and the organization behind it. This section helps users understand the system's capabilities and the benefits it offers to both property managers and tenants.

## **9. Admin Panel:**

A secure, password-protected area exclusively for property managers and administrators. This powerful feature includes:

- Utility Bill Management: Adding, editing, and deleting utility bills
- System Settings: Configuring system parameters and preferences
- Reports Generation: Creating various utility and payment reports

Through these features, the AUMS automates the manual tasks involved in utility management, which saves time and increases efficiency. The system ensures that all utility consumption is accurately tracked, tenants understand their payment obligations, and makes property utility management hassle-free.

The system's intuitive interface and organized structure make it easy for both landlords and tenants to navigate and utilize its features effectively. Regular updates and maintenance ensure that the system continues to meet the evolving needs of property utility management.

## **User Interface**

The Apartment Utility Management System (AUMS) is designed with an intuitive and user-friendly interface to ensure seamless interaction between users and the system. Each interface element has been tailored to meet the specific needs of landlords, tenants, and administrators, promoting efficiency and accessibility. Below are the core components of the system's interface:

**Log-in Page:** A secure portal that authenticates users by requiring valid credentials. This ensures that only authorized individuals can access their accounts, safeguarding sensitive information.

The screenshot shows a web browser window titled "Apartment Management - Login". The page has a dark teal background. On the left is the "APARTMENT MANAGEMENT" logo, which consists of a stylized house icon made of vertical lines above the text "APARTMENT" and "MANAGEMENT". On the right, the heading "Manage your Apartment's Data now!" is displayed in a light purple font. Below the heading are two white input fields for username and password, with a key icon in the password field. There is a "Remember me" checkbox and a "Forgot password?" link. A large purple "Log in" button is centered below the inputs. At the bottom, a link "Don't have an account yet? Register here" is shown.

Apartment Management - Login

## Manage your Apartment's Data now!

APARTMENT MANAGEMENT

☐ Remember me [Forgot password?](#)

Log in

Don't have an account yet? [Register here](#)

**Sign up Page:** An easy-to-use registration interface for new users to create accounts. It includes input validation to ensure the accuracy of submitted information and secure storage of user credentials.

The screenshot shows a web browser window titled "Sign Up". The page has a dark teal background. On the left is the "APARTMENT MANAGEMENT" logo. On the right, the heading "Manage your Apartment's Data now!" is displayed in a light purple font. Below the heading are several white input fields: a short text field, a "Room number" field with a building icon, "First name" and "Last name" fields with person icons, "Password" and "Confirm Password" fields with key icons, and a "Contact number" field with an envelope icon. A large purple "Sign up" button is centered below the inputs. At the bottom, a link "Already have an account? Login here" is shown.

Sign Up

## Manage your Apartment's Data now!

APARTMENT MANAGEMENT

Room number

First name  Last name

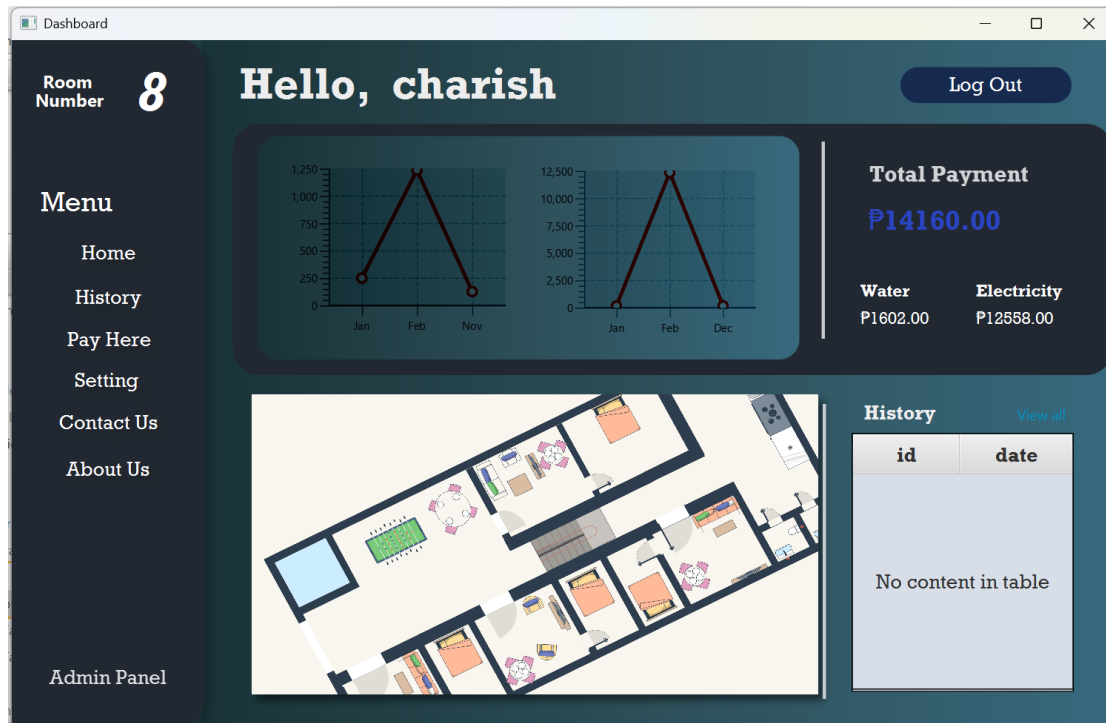
Confirm Password

Contact number

Sign up

Already have an account? [Login here](#)

**Dashboard page:** Provides users with an overview of their utility usage and payment details. This page includes visual charts for water and electricity consumption, offering a quick and clear representation of monthly totals and trends



**History Page:** Displays a comprehensive table containing online receipts, payment records, and user activities. This feature allows users to track past transactions and review account activity logs for transparency.

[illegible]

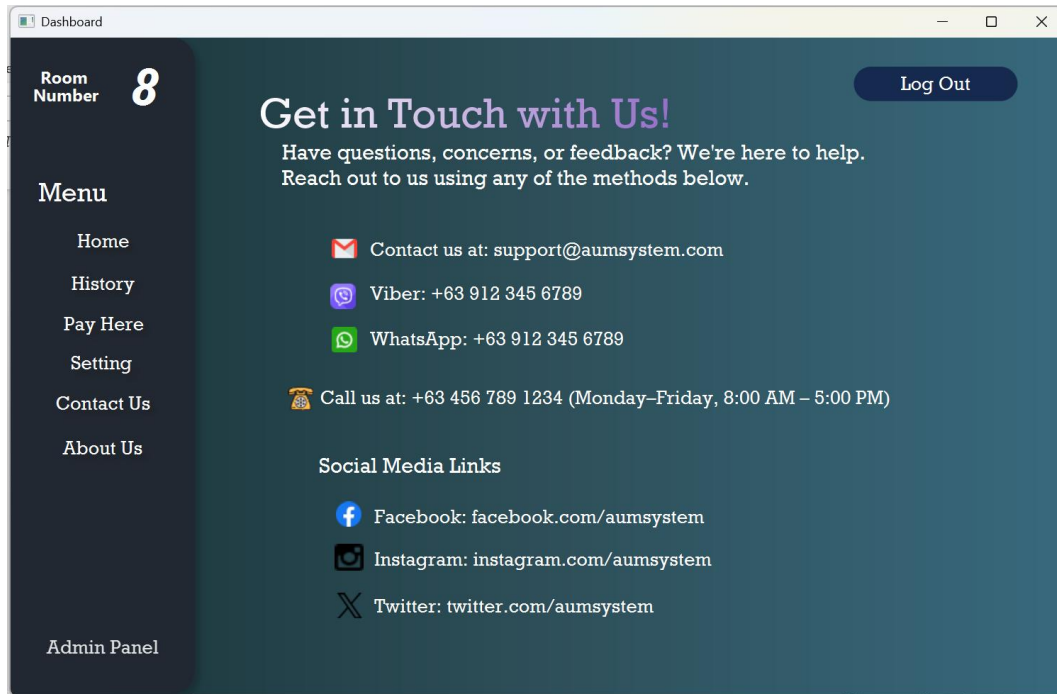
**Payment Page:** A dedicated page where users can process payments for water and electricity bills. It includes real-time calculations of charges and provides multiple payment options for convenience.

The screenshot displays a web application interface for payments. On the left is a dark sidebar with a 'Room Number 8' at the top, a 'Menu' with links to Home, History, Pay Here, Setting, Contact Us, and About Us, and an 'Admin Panel' link at the bottom. The main content area has a 'Log Out' button in the top right. It features two stacked payment sections: 'Water' and 'Electricity'. Each section contains input fields for 'Name' (with a user icon), 'KwPh', 'Amount', 'Month' (with a dropdown arrow), 'Ammount to pay:', and 'Choose date:' (with a date picker icon). A large 'Pay' button is positioned to the right of each set of inputs.

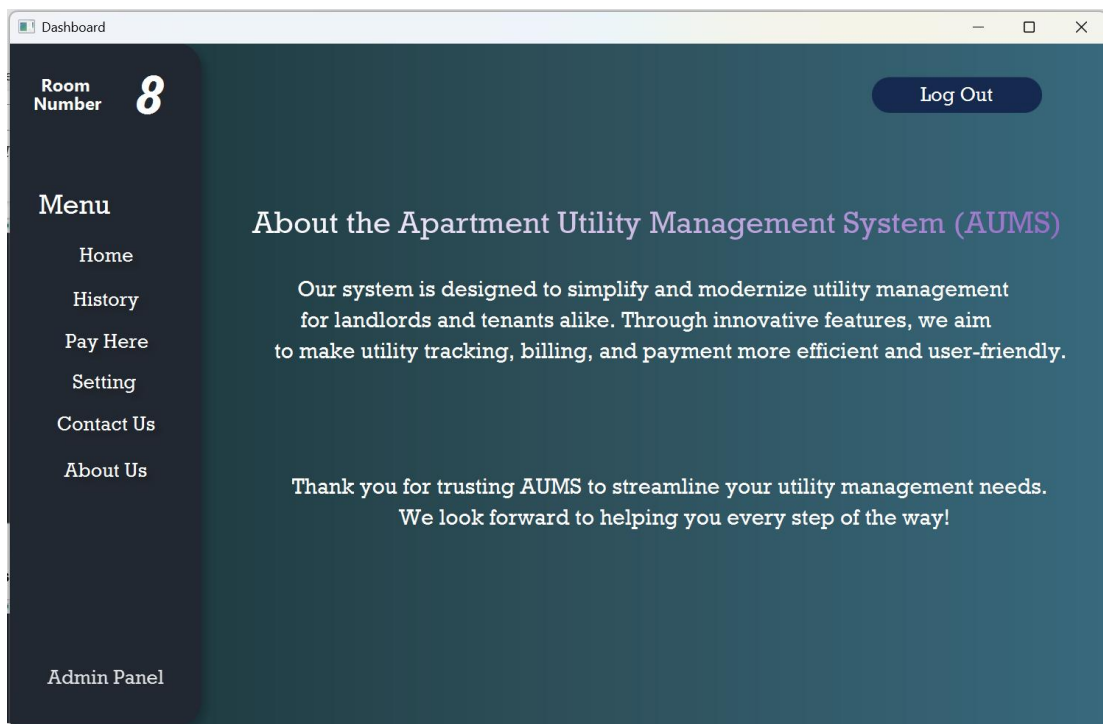
**Setting Panel:** Enables users to manage their account details and preferences. Users can update personal information, such as contact details, to ensure the system reflects the most accurate data.

The screenshot shows the 'Setting' page of the application. It features the same dark sidebar as the payment page. The main content area has a 'Log Out' button and a large form for updating user details. The form includes input fields for 'First name' (filled with 'charish'), 'Last name' (filled with 'pulido'), 'Email' (filled with '123@gmail.com'), 'Apartment date acquired' (filled with '2024-12-20'), 'Room number' (filled with '8'), and 'Contact number' (filled with '094759687444'). A yellow 'Save Changes' button is located at the bottom of the form.

**Contact us Panel:** Facilitates communication between users and the system's support team. Users can reach out via email, messaging apps, or social media, ensuring they receive timely assistance.



**About us Panel:** Presents an overview of the system's purpose, features, and benefits. This page also highlights the developers' mission to simplify and modernize utility management.





**Admin Panel:** A robust interface for system administrators to manage the utility database efficiently. Administrators can add, edit, and delete utility records, ensuring the database remains accurate and up-to-date.

**Room Number** 8

**Menu**

- Home
- History
- Pay Here
- Setting
- Contact Us
- About Us
- Admin Panel

**Log Out**

☐ water ☐ electricity

kwph

user id for water

amount

landlord id

DatePicker(get month only)

**Add**

receipt_id	name	month	payment_date	kwph	amount	amount_paid	time_paid	status	user_id	payment
7		2024-12-11	2024-12-19	9.0	122.0	122.0	2024-12-19 02:58:30.0	Paid	5	Card
11		2024-11-03	2024-12-20	20.0	123.0	22.22	2024-12-20 02:41:24.0	Partial	7	Card
12		2025-01-14		22.0	123.0	0.0			7	
13		2025-01-15		23.0	123.0	0.0			7	
14		2025-02-21		24.0	1233.0	0.0			7	
3		2024-11-07		10.0	123.0	0.0			5	
4		2024-09-16	2024-12-19	13.0	12.0	12.0	2024-12-19 23:22:14.0	Paid	1	GCash
5		2025-01-08	2024-12-19	14.0	123.0	123.0	2024-12-19 23:33:33.0	Paid	1	GCash
6		2025-02-19	2024-12-19	15.0	12.0	12.0	2024-12-19 23:47:51.0	Paid	1	GCash
7		2025-03-19	2024-12-19	16.0	123.0	77.0	2024-12-19 23:52:38.0	Partial	1	GCash
8		2025-04-17	2024-12-20	17.0	13.0	12.34	2024-12-20 02:30:21.0	Partial	1	GCash

## **Chapter 3**

### **Conclusion**

The Apartment Utility Management System (AUMS) offers an efficient solution to managing utility consumption and billing in residential properties. By replacing manual processes with a streamlined, secure platform, AUMS benefits both landlords and tenants. It simplifies utility tracking, automates billing, and ensures accuracy, reducing errors and inefficiencies.

Key features include real-time consumption tracking, payment processing, and historical data visualization, promoting transparency and accessibility. With secure authentication, user settings management, and an admin panel, the system meets diverse user needs while maintaining security.

AUMS modernizes utility management, improving communication, minimizing delays, and enhancing user satisfaction.

### **Jar File Link**

<https://github.com/chakjfo/AptManagementSystem.git>

## Curriculum Vitae

# Charish Pulido

2<sup>ND</sup> YEAR STUDENT



### Informations

Name: Charish Pulido  
Age: 20  
Course: Bachelor of Science in Computer Science  
Yr level: 2<sup>nd</sup> year

### Education

2010-2016	<b>Elementary</b> Don Juan Dela Cruz Central Elementary School
2016-2020	<b>Junior High School</b> St. Peter's College of Toril
2020-2022	<b>Senior High School</b> Davao Doctor's College Inc.;
2022-2025	<b>Undergrad College</b> Mapua Malayan Colleges Mindanao University of Mindanao