



INFORMATION TECHNOLOGY
UNIVERSITY

Project Report

SocietyHub - Housing Society Resident Management System

Submitted By:

Nimra Maqbool	BSECE21012
Zainab Bashir	BSECE21013
Saud Sohail	BSCE21022

Submitted To:

Course Instructor:	Prof. Hamza Shaukat
Lab Engineer:	Sir Asim Munir
Teaching Assistant:	Amna Iqbal

1. Introduction

1.1 Project Overview

The selection of the Housing Society Resident Management System was made based on the need for a comprehensive solution to streamline and enhance communication and management processes within housing societies.

SocietyHub is a sophisticated Housing Society Resident Management System designed for streamlined communication and operations. Catering to both residents and management, it features an announcement system, complaint management, event booking, water delivery service, and a resident directory. With an intuitive front-end, responsive design, and a robust back-end supported by a relational database, societyHub aims to enhance the overall living experience in housing societies through efficient communication and service delivery.

1.2 Project Objectives

The overarching goal of the societyHub project is to enhance operational efficiency and resident satisfaction within housing societies by implementing a robust Housing Society Resident Management System.

The primary objectives include:

I. Streamlining Interactions:

Enhance resident and management interactions for smoother communication and collaboration.

II. Efficient Management of Services:

Manage announcements, complaints, water delivery, and event bookings with a focus on efficiency.

III. User-Friendly Interface:

Provide an intuitive and user-friendly interface for both residents and management.

IV. Distinct User Roles and Features:

Implement specific user roles for residents and management, each equipped with tailored features.

V. Robust Announcement System:

Develop a robust system for seamless communication from management to residents.

VI. Efficient Complaint Management:

Create an efficient system for residents to file and track complaints, enabling timely resolution.

VII. User-Friendly Event Booking:

Implement a straightforward system for residents to book events and for management to oversee and manage bookings.

VIII. Facilitate Water Delivery Services:

Streamline the process of ordering water delivery services for residents, with effective tracking and management for the management.

IX. Comprehensive Directory and Profile Management:

Provide residents with a comprehensive directory for accessing contact information and managing profiles.

2. Database Design

2.1 Database Schema Design

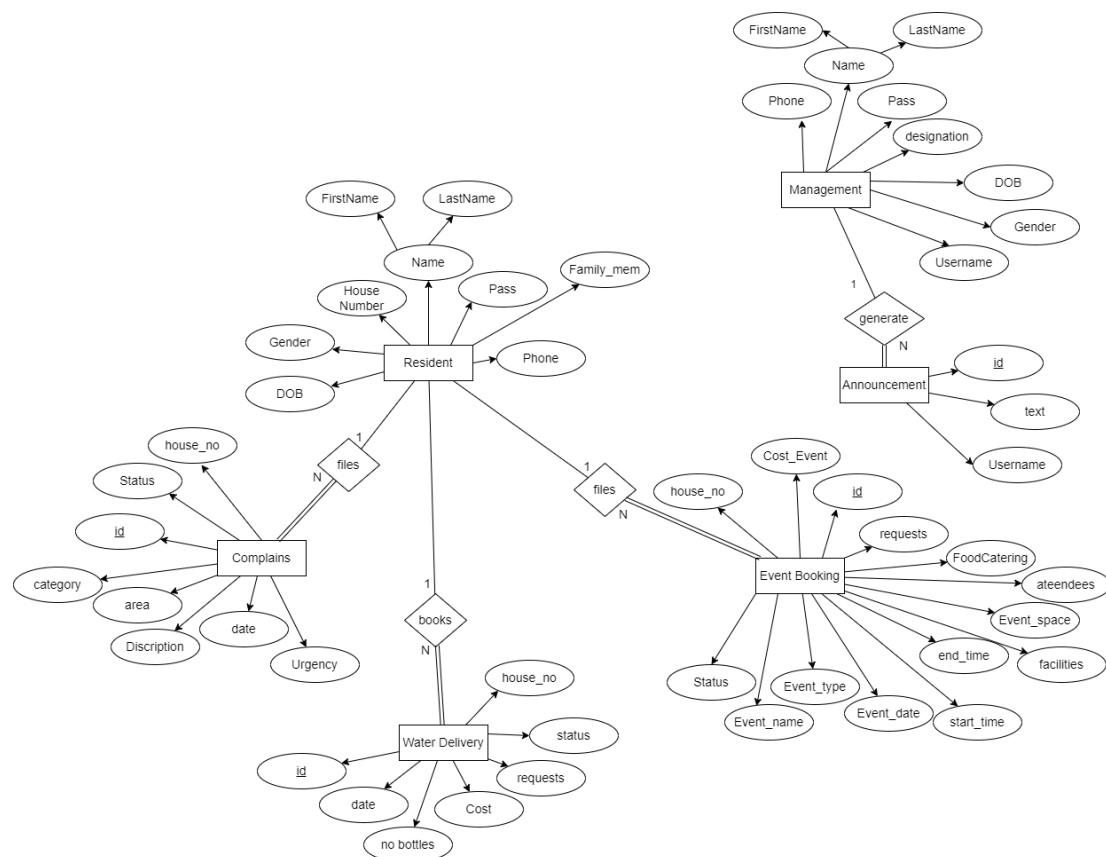
I. Tables and Relationships:

Defined tables, includes Resident, Management, Complains, WaterDelivery, EventBooking, and Announcements, in the SocietyHub database.

Key relationships involve Complains and WaterDelivery connecting to Resident, associating requests. EventBooking links to Resident for personalized event tracking. Announcements connect to Management, attributing each to specific personnel. These relationships streamline information retrieval and management across residents, complaints, water delivery, events, and announcements in the housing society system.

II. Entity-Relationship Diagram (ERD):

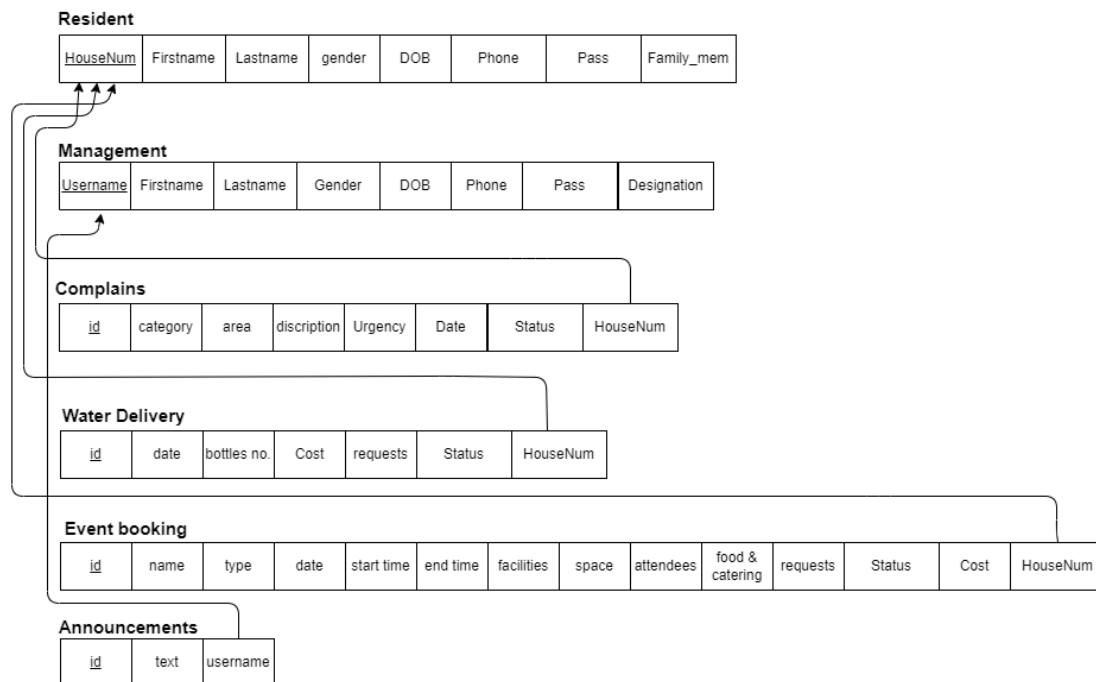
Developed an ERD to visually represent the relationships between different entities in the database.



III. Attributes and data types:

Resident Table: <ul style="list-style-type: none">• HouseNum (Primary Key): VARCHAR(50)• FirstName: VARCHAR(50)• LastName: VARCHAR(50)• Gender: CHAR(1)• DOB: DATE• family_mem: INT• Phone: NUMERIC(12,0)• Pass: VARCHAR(255)	Management Table: <ul style="list-style-type: none">• Username (Primary Key): VARCHAR(50)• FirstName: VARCHAR(50)• LastName: VARCHAR(50)• Gender: CHAR(1)• DOB: DATE• Phone: NUMERIC(11,0)• Pass: VARCHAR(255)• Designation: VARCHAR(50)
Complains Table: <ul style="list-style-type: none">• ID (Primary Key): INT (Auto-increment)• Category: VARCHAR(50)• Area: VARCHAR(50)• myTextArea: TEXT• Urgency: VARCHAR(20)• CD: DATE• status: CHAR(1) (Default: 'F')• house_no: VARCHAR(50) (Foreign Key: Resident)	WaterDelivery Table: <ul style="list-style-type: none">• ID (Primary Key): INT (Auto-increment)• CD: DATE• BottlesNo: INT• Requests: TEXT• cost: INT• status: CHAR(1) (Default: 'F')• house_no: VARCHAR(50) (Foreign Key: Resident)
EventBooking Table: <ul style="list-style-type: none">• ID (Primary Key): INT (Auto-increment)• Name_event: VARCHAR(100)• Type: VARCHAR(50)• StartTime: TIME• EndTime: TIME• Date_event: DATE• Facilities: VARCHAR(1000)• event_space: VARCHAR(50)• Attendees: INT• FoodCatering: VARCHAR(255)• Requests: TEXT• cost_event: INT• status: CHAR(1) (Default: 'F')• house_no: VARCHAR(50) (Foreign Key: Resident)	Announcements Table: <ul style="list-style-type: none">• ID (Primary Key): INT (Auto-increment)• announce_text: TEXT• Username: VARCHAR(50) (Foreign Key: Management)

IV. Schema:



3. Front-End Development

3.1 Web Pages Implementation

Implemented responsive web pages for various functionalities

- Separate login forms for residents and management.
- Account creation form for resident registration.
- Complaint form capturing details like category, location, and urgency.
- Intuitive event booking form for scheduling community events.
- Water delivery booking form with options for bottle quantity and preferences.
- Directory pages displaying resident and management contact information.
- Individual pages for residents to view and edit personal details.
- Management-specific pages for adding and deleting resident accounts.
- Pages for streamlined management of announcements and other functionalities
- Unified dashboard showcasing announcements, filed complaints, and booked events for both management and residents.

3.2 Responsive Design Principles

Implemented with a mobile-first approach, societyHub ensures responsive design across various devices. The dashboards, directories, and numerous other pages seamlessly adapt to different screen sizes, offering consistent functionality and visual appeal. Utilizing flexible layouts, fluid grids, and CSS media queries, the platform prioritizes user accessibility and enhances usability on devices ranging from desktops and laptops.

3.3 Client-Side Validation and Interactivity

In societyHub, JavaScript enhances the index page's user experience by providing real-time validation in the Index Page specially. It ensures completed username and password fields, alerting users if any are empty. This client-side validation extends across interactive elements, ensuring a seamless and responsive platform. JavaScript ensures data adherence and adds interactivity, creating an intuitive and engaging interface in line with societyHub's commitment to a user-friendly and dynamic platform.

4. Back-End Development and Database Integration

4.1 PHP Script Development

I. User Input Handling:

PHP scripts were created to capture and process user input from various forms and interfaces within the web application.

II. Form Data Processing:

Upon receiving user input, PHP scripts were responsible for validating, sanitizing, and processing the data before interacting with the database.

III. Database Interaction:

The PHP scripts establish a connection to the MySQL database using appropriate credentials and execute SQL queries to perform operations such as inserting, updating, or retrieving data.

4.2 CRUD Operations Implementation

I. Create (Insert):

PHP scripts were developed to insert new data into the database, such as adding new residents, announcements, complaints, or other relevant information.

II. Read (Select):

PHP scripts queried the database to retrieve information, enabling the display of announcements, resident details, and other data on user interfaces.

III. Update (Modify):

For tasks like editing user profiles, changing announcement content, or updating complaint statuses, PHP scripts executed MySQL UPDATE queries.

IV. Delete (Remove):

PHP scripts facilitated the removal of data from the database, ensuring efficient handling of tasks like deleting user accounts or announcements.

The PHP script development in societyHub ensures seamless server-side processing of user interactions, maintaining data integrity and enabling dynamic content management. The synergy of PHP and MySQL allows efficient data handling, enhancing the overall web application functionality.

4.3 Rigorous Reliability Testing

In societyHub, thorough testing involves multiple iterations of storing, updating, and deleting data to ensure the accuracy and integrity of CRUD operations. Rigorous security testing addresses potential vulnerabilities, fortifying the system against risks. The implementation of robust error-handling mechanisms, including input validation and user-friendly messages, enhances the application's resilience. This testing approach guarantees the reliability and security of societyHub, providing users with a robust and user-friendly experience.

4.4 Enhanced Security and Status Checks

SocietyHub introduces enhanced security measures during account creation for resident safety. Status checks are integrated for real-time updates on complaint resolutions, event booking payments, and water delivery transactions, ensuring transparency and a seamless user experience. These additions exemplify societyHub's dedication to user security and efficient processes.

5. User Manual

5.1 Getting Started

I. Initial Setup Instructions for Local Deployment

Before launching the platform on local hubs, follow these essential steps:

1. Run the 'table.sql' and 'views.sql' Files
2. Ensure proper setup of tables and views crucial for societyHub's functionality optimization.

II. Index Page: Selection of User Type

Upon accessing the SocietyHub website, users are presented with an index page where they must choose their user type: “Management” or “Resident”.

III. Management

I. Account Creation by Management:

1. To create a resident account, select the "Management" option.
2. Two choices are available: "Login" or "Create Account."

II. Create Account:

1. Click on "Create Account" to initiate the account creation process.
2. Enter the security key: "My SocietyHub" for authentication.
3. Fill in the required information to create account.

III. Login:

1. Choose "Login" to enter the username and password for management access.

IV. Resident

I. Resident Login:

1. Select the "Resident" option.
2. Residents do not have the privilege to create their own accounts for security reasons.
3. Instead, use the provided credentials (house number and password) to log in securely.

5.2 Resident Features

I. Announcements

I. Viewing Announcements:

1. Residents can access the "Announcements" section to stay updated on important information.
2. Announcements are displayed in chronological order, providing residents with the latest news and notices.

II. Filing Complaints:

1. Residents can initiate the complaint process within the dedicated "Complains" section.
2. Specify complaint details, including category, area, urgency, and provide a detailed description.
3. Residents have the ability to monitor the history of their filed complaints.

III. Booking Events:

I. Event:

1. Residents can explore upcoming events in the "Events" section and book their attendance.
2. The booking process involves selecting the event, specifying preferences, and confirming attendance.

II. Viewing Booked Events:

1. The "Events" section allows residents to view a list of events they have successfully booked.
2. Details such as event name, date, and time are displayed for easy reference.

IV. Water Delivery:

I. Placing Water Delivery Orders:

1. Residents can navigate to the "Water Delivery" section to request water delivery.
2. The ordering process includes specifying the quantity needed.

II. Viewing Delivery :

1. The "Water Delivery" section enables residents to access a comprehensive list of their successfully placed delivery orders.
2. Essential details, including order specifics such as delivery date, quantity, and status, are prominently displayed for residents' easy reference.

V. Directory

I. Accessing Resident Directory:

1. The "Directory" feature allows residents to access contact information of other residents within the housing society.
2. Residents can find phone numbers and house numbers for easy communication.

VI. Profile Management

I. Editing Profile Information:

1. Residents have control over their profile details in the "Profile Management" section.
2. They can edit information such as contact number, family members, and password to keep their profile updated.

5.3 Management Features

I. Announcements

I. Adding Announcements:

1. Management personnel can post announcements within the "Announcements" section.
2. This feature enables the dissemination of crucial information to all residents efficiently.

II. Deleting Announcements:

1. In the same "Announcements" section, management has the ability to remove outdated or irrelevant announcements.
2. Deleting announcements ensures that residents receive only relevant and up-to-date information.

II. User Management

I. Adding Residents:

1. The "Add new user " section empowers management to add new residents to the system.
2. This ensures controlled access and proper record-keeping for all residents within the housing society.

II. Deleting Resident Accounts:

1. Management can delete resident accounts in cases where residents leave the housing society.
2. This maintains an accurate database and ensures data integrity.

III. Complaint Management

I. Viewing Resident Complaints:

1. Management can access the "Pending Complains" section to view all complaints filed by residents.
2. This feature provides an overview of resident concerns and allows for efficient issue resolution.

II. Updating Complaint Status:

1. Within the same section, management can update the status of each complaint.
2. Updating complaint status ensures that residents are informed about the progress and resolution of their concerns.

IV. Event Management

I. Viewing Booked Events:

1. Management has access to the "Event Bookings" section to view a comprehensive list of booked events.
2. Details such as event name, date, and time are displayed, providing management with an overview of scheduled events.

II. Updating Event Payment Status:

1. Management can update the payment status of events within the same section.
2. This feature ensures accurate financial records and transparency in event management.

V. Water Delivery Management

I. Viewing Delivery Orders:

1. In the "Water Delivery Orders" section, management can view all water delivery orders placed by residents.
2. This provides an overview of water delivery requests and their status.

II. Updating Delivery Payment Status:

1. Management can update the payment status of water delivery orders.
2. This ensures accurate financial tracking and facilitates seamless water delivery management.

VI. Directory

I. Accessing Resident and Management Contacts:

1. The "Directory" feature allows management to access contact information for both residents and fellow management personnel.
2. This feature streamlines communication within the housing society.

VII. Profile Management

I. Editing Management Profile:

1. Management has the flexibility to edit their own profile details in the "Profile Management" section.
2. This includes updating contact information, ensuring accurate records for internal communication.

5.4 Common Issues and Solutions

This section is designed to assist users in resolving common problems they may encounter while using societyHub.

1. Before initiating the platform on local hubs, it is essential to run the provided SQL files, specifically the 'table.sql' and 'views.sql' files. These files ensure the proper setup of tables and views, optimizing the functionality of societyHub.
2. To create an account, if you are unsure of the security key, use "My SocietyHub".
3. When entering a phone number, exclude the leading zero.
4. When making event or delivery bookings, ensure the selected date is in the future, avoiding past or present dates.

6. Overcoming Challenges in Development

Throughout the development process, several challenges were encountered and effectively addressed. Designing a database schema involved iterative discussions to optimize relationships between tables. Maintaining data integrity during simultaneous operations was addressed. A user-friendly interface was achieved through iterative testing and refinement. Code efficiency and resource utilization were enhanced through regular reviews and optimizations. The collaborative approach to sharing and discussing these challenges resulted in a successful implementation of the societyHub project.

7. Conclusion

In conclusion, societyHub has successfully streamlined housing society management, providing a user-friendly platform for residents and management. Looking ahead, our future goals involve enhancing user experience with advanced features, including improved analytics, smart technology integration, and user-suggested functionalities. The commitment to ongoing refinement ensures societyHub continues to evolve as a comprehensive and cutting-edge solution for efficient housing society management.

Note:

Documentation for the code, including the complete folder containing the code, Entity-Relationship Diagram (EER), and schema, is being submitted .

