CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE · INDIA

COZYBOT – Your Home, Your Rules
Smart Home Automation System

By

Arjun Ajithan Nadukandiyil (2241119)
Sakshee Priya (2241154)
Aditya Makkar (2241168)

Under the supervision of
Dr Saravanakumar K

DBMS Project Report Submitted in partial fulfilment
of the requirements IV semester BCA, CHRIST (Deemed to be University)

April – 2024

CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE · INDIA

CERTIFICATE

This is to certify that the report titled CozyBot is a bona fide record of work done by ***Arjun Ajithan Nadukandiyil (2241119)****,* ***Sakshee Priya (2241154)*** *and* ***Aditya Makkar (2241168)*** *of CHRIST (Deemed to be University), Bangalore, in partial fulfillment of the requirements of IV Semester BCA during the year 2024.*

Head of the Department **Project Guide**

______________________ ______________________

Valued-by:

1. Name: Sakshee Priya

Register Number: 2241154

2. Examination Centre: CHRIST (Deemed to be University)

Date of Exam:

ACKNOWLEDGEMENTS

First of all, we thank God almighty for his immense grace and blessings showered on us at every stage of this work. We are grateful to our respectable Head, Department of Computer Science, CHRIST (Deemed to be University), **Dr Ashok Immanuel V**, for providing the opportunity to take up this project as part of my curriculum.

We also pay our gratitude to the Coordinator, Department of Computer Science, CHRIST (Deemed to be University) **Dr Beaulah Soundarabai P** for their support throughout.

We are grateful to our guide, Associate Professor, Department of Computer Science, CHRIST (Deemed to be University), **Dr Saravanakumar K**, whose insightful leadership and knowledge benefited us to complete this project successfully. Thank you so much for your continuous support and presence whenever needed.

We would also like to thank our Alumni evaluator whose knowledge and guidance benefited us in making the changes as per the industry requirement. Thank you so much for your support and presence.

We express our sincere thanks to all faculty members and staff of the Department of Computer Science, CHRIST (Deemed to be University), for their valuable suggestions during the course of this project. Their critical suggestions helped us to improve the project work.

Last but not the least, we would like to thank everyone who is involved in the project directly or indirectly.

ABSTRACT

CozyBot is an innovative Smart Home Automation System designed to elevate the way individuals interact with and experience their living spaces. This cutting-edge project seamlessly integrates a myriad of technologies to create an intelligent and user-centric home environment. With a focus on user convenience, security, and energy efficiency, CozyBot transforms houses into smart homes. The project encompasses a range of modules, including robust user authentication and authorization, personalized user profiles, efficient device management, real-time device control and monitoring, voice control integration, energy monitoring, and automated scheduling. CozyBot adapts intelligently to user preferences, weather conditions, and the time of day, offering a tailor-made living experience. Much like a trusted companion, CozyBot ensures security through surveillance features, instant notifications for significant events, and maintenance alerts. The system's intuitive dashboard and user interface provide a visually appealing and user-friendly experience, making it effortless for residents to manage and interact with their smart home. CozyBot aims to set the standard for the future of smart home technology, promising a comprehensive and seamless solution that enhances the quality of home living for its users.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

1.1 PROJECT DESCRIPTION

In the wake of global challenges such as climate change, CozyBot emerges as an essential solution for modern living. With an increased focus on home-centric lifestyles and sustainability, CozyBot not only provides unparalleled comfort and convenience but also contributes to a safer, healthier, and more eco-friendly living environment. CozyBot offers remote management capabilities that empower users to control their home environment from anywhere, ensuring optimal comfort and safety whether they're working from home or travelling. Furthermore, CozyBot's energy efficiency insights play a crucial role on promoting sustainability by empowering users to make informed decisions about their energy consumption habits. By optimizing heating, cooling, and lighting systems, CozyBot not only reduces utility costs but also minimizes carbon emission, making a positive impact on the environment. In essence, CozyBot transcends its role as a mere smart home automation system to become a vitality in adapting to the evolving challenges of the modern world, offering comfort, convenience, and sustainability in equal measure.

1.2 EXISTING SYSTEMS

The idea of a Smart Home Automation System is a well-known thing now especially with the advancement of technology. Our domain modules now center around the functionalities of smart home automation, catering primarily to existing homeowners.

The following are a few systems that the team has worked on improving.

1.2.1 Amazon Alexa

Amazon's voice-controlled assistant works with a variety of smart devices through skills and integrations, allowing users to control lights, thermostats, locks and more using voice commands. [1]

1.2.2 Google Home

Google Home functions similarly to Alexa, utilizing voice commands to interact with various smart home devices and providing control and automation capabilities. It integrates seamlessly with a wide range of smart home devices. [2]

1.2.3 Apple HomeKit

This system is designed to work seamlessly with Apple devices, enabling users to control HomeKit-enabled smart devices through Siri voice commands or the Apple Home app. [3]

1.2.4 Samsung SmartThings

SmartThings offers a hub that connects various smart devices, allowing users to create automation routines and control devices using a central app. [4]

1.3 OBJECTIVES

Our objective is to develop an advanced Smart Home Automation System that is aimed at enhancing residential living experiences by seamlessly integrating cutting-edge technologies to automate and control various aspects of home management, ensuring convenience, efficiency and sustainability for homeowners.

1.4 PURPOSE, SCOPE AND APPLICABILITY

1.4.1 Purpose

The purpose of the project is to revolutionize residential living by integrating state-of-the-art technology to automate and manage various aspects of home environments. This system aims to enhance convenience, efficiency and sustainability for homeowners by providing seamless control over lighting, climate control, security systems and other home appliances.

1.4.2 Scope

The project encompasses the development of an intuitive and user-friendly platform that enables homeowners to remotely monitor and control their home devices through a centralized interface. The system will support a wide range of smart devices and protocols, ensuring compatibility with existing and emerging technologies in the smart home ecosystem. Additionally, the platform will offer customisable automation routines, voice control capabilities, and real-time notifications to meet the diverse needs of homeowners.

1.4.3 Applicability

- The Project caters to homeowners seeking to modernize their living spaces and simplify daily routines through smart technology integration.
- Construction companies and real estate developers can incorporate smart home automation solutions into new residential projects to enhance property value and attract tech-savvy buyers.
- Companies managing rental property devices, improve energy efficiency and enhance security measures.
- Government agencies and energy providers can leverage the system to promote energy conservation initiatives, encourage smart energy consumption practices, and incentivize homeowners to adopt sustainable living habits.

1.5 OVERVIEW OF THE PROJECT

The Smart Home Automation Project aims to transform traditional residences into modern, interconnected living spaces by leveraging cutting-edge technology. By integrating smart devices, sensors and automation routines, the system enhances convenience, efficiency, and sustainability while offering customizable features tailored to individual preferences. Whether managing home security, optimizing energy usage, or enhancing entertainment experiences, the Smart Home Automation System empowers users to create personalized, intelligent living environments that adapt to their lifestyles seamlessly.

2. SYSTEM ANALYSIS AND REQUIREMENTS

2.1 PROBLEM DEFINITION

In the domain of smart home automation, existing solutions predominantly cater to users with technical expertise, leaving a gap in accessibility for newcomers. CozyBot addresses this challenge by providing a user-friendly platform that simplifies the onboarding process for individuals unfamiliar with smart home technology. Unlike current solutions, CozyBot prioritizes intuitiveness, making it easy for users with limited technical knowledge to set up and manage their smart devices effortlessly. The project also aims to democratize the benefits of home automation, fostering inclusivity and connecting a broader audience to the convenience and efficiency of smart living.

2.2 REQUIREMENT SPECIFICATION

2.2.1 Functional Requirements

- Users can choose and manage various smart home devices through a unified dashboard.
- New users can create accounts with personalized profiles and authentication credentials.
- Existing users can create new profiles for managing devices based on preferences.
- Users can view details of connected devices, including status, usage history and settings.
- Users can update restricted details and settings associated with their smart home devices.
- Users can deactivate or remove devices directly through the portal with necessary measures.

2.2.2 Technical Requirements

➢ Data Privacy

- CozyBot ensures that personal data is kept secure and not shared with any outside users without proper authentication.

➢ Performance

- Both user and the smart home devices must have a secure internet connection through which they can access the devices and manipulate the timings, and performance of the devices.
- The performance of the application depends on the system specifications of the user.

➢ Data Security

- The information stored by the security is stored in a secure manner such as account passwords.

➢ Reliability

- The CozyBot website is well designed with attractive colour palettes for a good user interface and experience.
- It is optimized for easy access and working of users so that anyone can easily setup/manage their smart home devices from anywhere.

2.3 SYSTEM REQUIREMENT

2.3.1 HARDWARE REQUIREMENTS

OS - Windows 10 or above

Processor - Core 2 Duo

Memory - 4GB RAM

Storage - 1GB Available Space

2.3.2 SOFTWARE REQUIREMENTS

Operating System - Windows / Mac OS

Front End - HTML / CSS / JavaScript / PHP

Back End - MySQL / PHP

2.3.3 NETWORK REQUIREMENTS

Network- Google Chrome / Microsoft Edge

Wi-Fi - Internet Required [12 Mbps Preferred Speed]

2.4 CONCEPTUAL MODEL

2.4.1 DATA FLOW DIAGRAM [DFD]

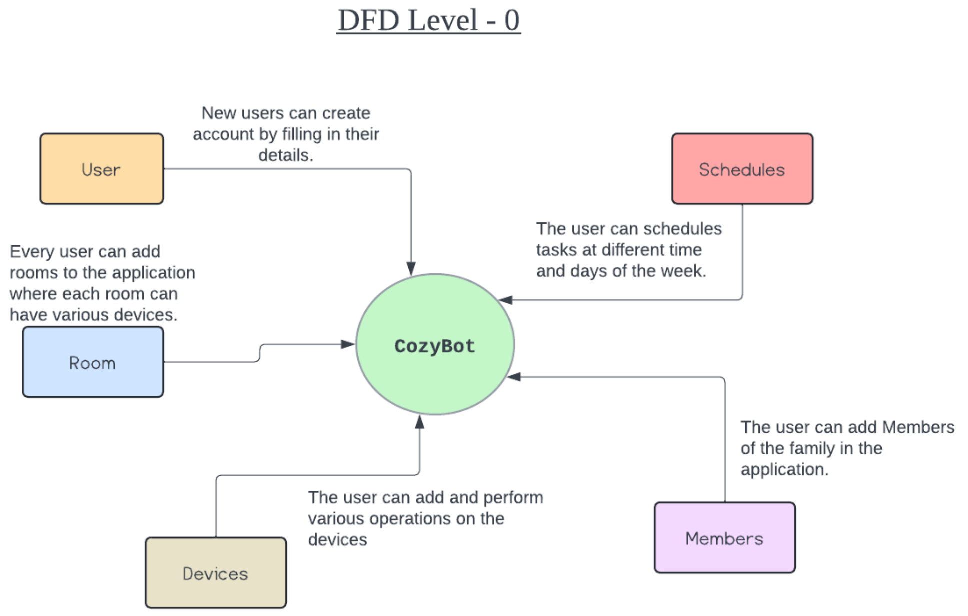

DFD Level - 0
User
New users can create account by filling in their details.
Schedules
The user can schedules tasks at different time and days of the week.
Every user can add rooms to the application where each room can have various devices.
Room
CozyBot
The user can add Members of the family in the application.
The user can add and perform various operations on the devices
Devices
Members

Fig 2.1 DFD Level-0

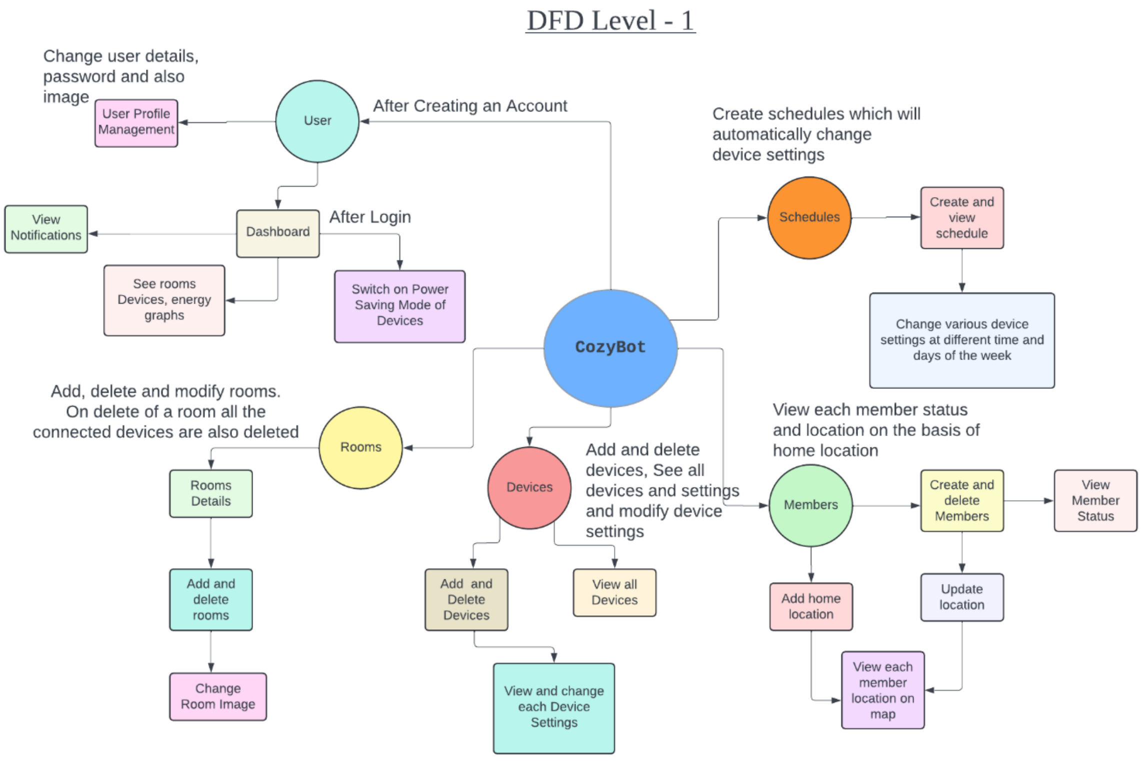

DFD Level - 1
Change user details, password and also image
User Profile Management
User
After Creating an Account
Create schedules which will automatically change device settings
View Notifications
Dashboard
After Login
Schedules
Create and view schedule
See rooms Devices, energy graphs
Switch on Power Saving Mode of Devices
CozyBot
Change various device settings at different time and days of the week
Add, delete and modify rooms. On delete of a room all the connected devices are also deleted
Rooms
View each member status and location on the basis of home location
Devices
Add and delete devices, See all devices and settings and modify device settings
Members
Create and delete Members
View Member Status
Rooms Details
Add and delete rooms
Add and Delete Devices
View all Devices
Add home location
Update location
Change Room Image
View and change each Device Settings
View each member location on map

Fig 2.2 DFD Level-1

2.4.2 ER DIAGRAM & CLASS DIAGRAM

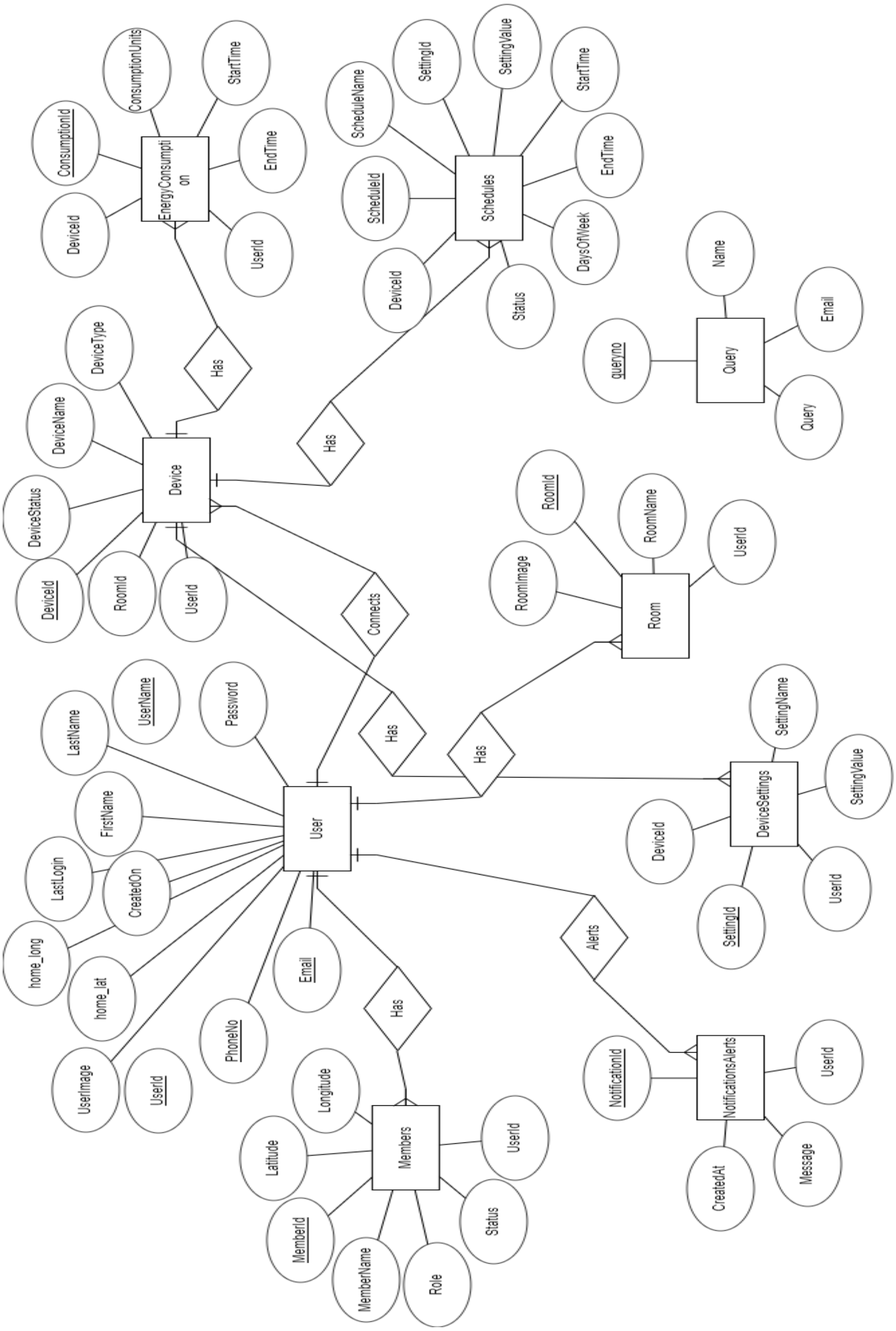


Fig 2.3 Entity Relationship diagram of CozyBot

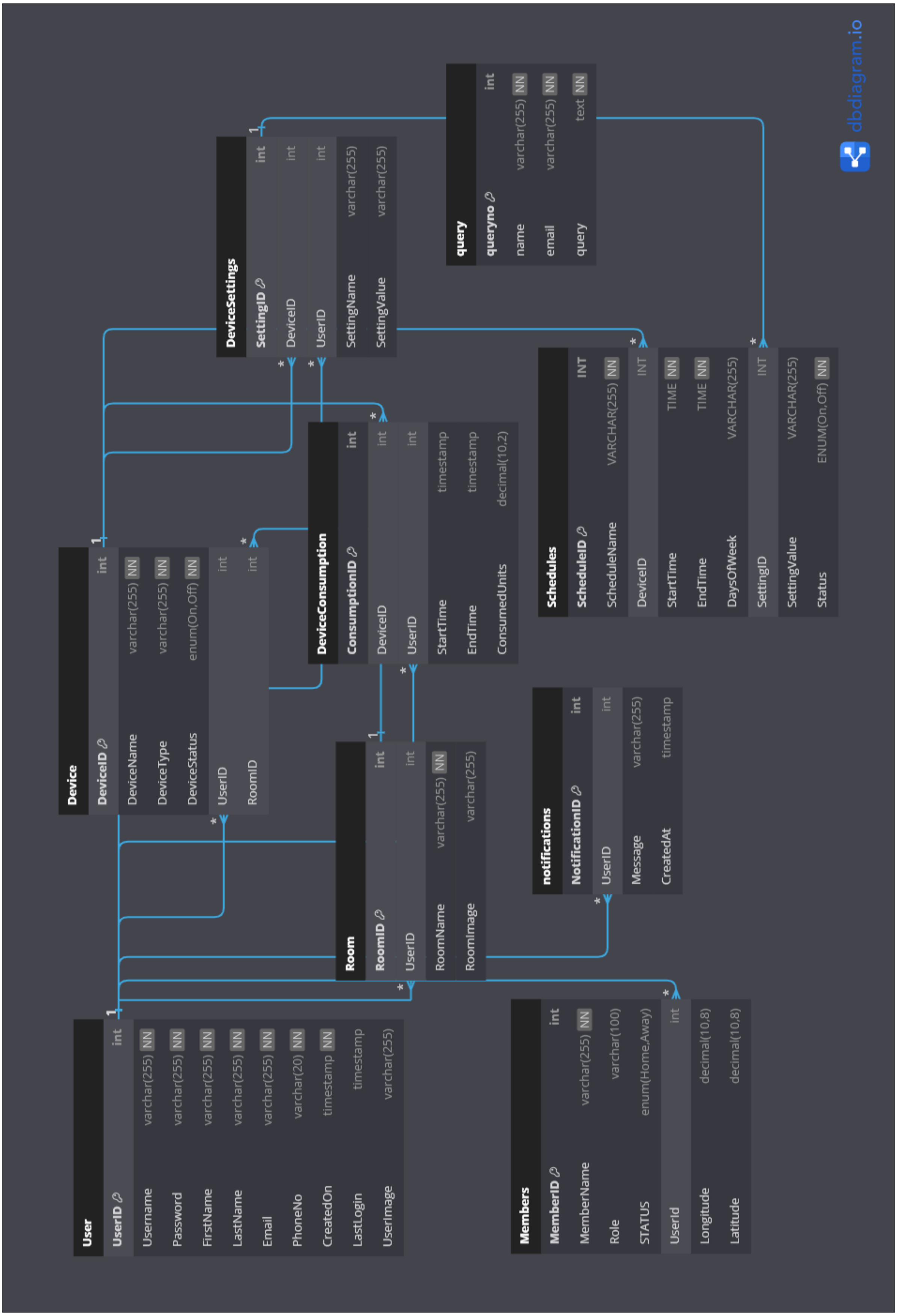


Fig 2.4 Class diagram of CozyBot

2.5 PROPOSED TOOLS & PLATFORMS

2.5.1 Windows 10 / 11

Microsoft Windows 10 / Windows 11 is a personal computer operating system developed and released by Microsoft. All the files containing code and database will be created in the Windows 10 / 11 operating system.

2.5.2 Google Chrome

Google Chrome is a cross platform web browser developed and maintained by Google Chrome. All the .html and .php files will be opened using Google Chrome for viewing their functionality and working

2.5.3 HTML

HTML stands for **H**yper **T**ext **M**ark-Up **L**anguage which is the standard mark-up language for documents designed to be displayed in a web browser. The basic web pages design will be implemented using HTML.

2.5.4 CSS

CSS [**C**ascading **S**tyle **S**heets] is a type sheet language used to design the layout of a web page made using a mark-up language such as HTML. It will be used for adding more design and improving the look and feel of the website

2.5.5 JavaScript

JavaScript [JS] is a programming language that conforms to the ECMAScript specification. It is a high-level, often just-in-time compiled, and multi-paradigm. It will be used to make the website responsive and dynamic.

2.5.6 PHP

PHP is a general-purpose scripting language especially suited for web development. It will be used to write the codes for the server-side and connect to the database.

2.5.7 MySQL

MySQL is an open-source relational database management system. The data will be stored in a database while following maximum normal forms

2.5.8 Visual Studio Code

Visual Studio Code is a source-code editor that can be used with a variety of programming languages, including C#, Java, JavaScript, Go, Node.js, Python, C, C++, Rust and Fortran. It is based on the Electron framework, which is used to develop Node.js web applications that run on the Blink layout engine. Visual Studio Code employs the same editor component (code-named ‘Monaco’) used in Azure DevOps (formerly called Visual Studio Online and Visual Studio Team Services)

3. MODULE DESCRIPTIONS

3.1 USER MODULE

Stores information about users, including personal details, login credentials and timestamps for account creation and last login, including:

- Id: Unique identifier for the user.
- Username: Name chosen by the user for login.
- Password: Securely hashed password for user authentication.
- First Name: Given name of the user.
- Last Name: Surname of the user.
- Email: Email address of the user.
- Phone Number: Contact number of the user.
- CreatedOn: Timestamp indicating when the user account was created.
- LastLogin: Timestamp indicating the last time the user logged in.
- UserImage: Path to the user's profile image.

3.2 DEVICE MODULE

Contains details about smart devices, including their names, types, status, and the rooms they are associated with, along with the user owning the device, including:

- DeviceID: Unique identifier for the device.
- DeviceName: Name of the device.
- DeviceType: Type or category of the device.
- DeviceStatus: Current status of the device (e.g., 'On', 'Off').
- UserID: Identifier of the user who owns the device.
- RoomID: Identifier of the room where the device is located.

3.3 ROOM MODULE

Stores information about rooms, associated with users who own them, including:

- RoomID: Unique identifier for the room.
- UserID: Identifier of the user who owns the room.
- RoomName: Name or label of the room.
- RoomImage: Path to the image representing the room.

3.4 DEVICE SETTINGS MODULE

Stores settings associated with smart devices, linked to users and devices, including:

- SettingID: Unique identifier for the device setting.
- DeviceID: Identifier of the device to which the setting belongs.
- UserID: Identifier of the user associated with the setting.
- SettingName: Name or description of the setting.
- SettingValue: Value assigned to the setting.

3.5 ENERGY CONSUMPTION MODULE

Records energy consumption data for smart devices, associated with users and devices, including:

- ConsumptionID: Unique identifier for the energy consumption record.
- DeviceID: Identifier of the device for which energy consumption is recorded.
- UserID: Identifier of the user associated with the device.
- StartTime: Timestamp indicating the start time of the energy consumption recording.

- EndTime: Timestamp indicating the end time of the energy consumption recording.
- ConsumedUnits: Amount of energy consumed by the device.

3.6 MEMBERS MODULE

Stores information about members associated with the system, including their roles, status, and geographic coordinates, including:

- MemberID: Unique identifier for the member.
- MemberName: Name of the member.
- Role: Role or designation of the member.
- Status: Current status of the member ('Home' or 'Away').
- UserID: Identifier of the user associated with the member.
- Longitude: Geographic longitude coordinates of the member's location.
- Latitude: Geographic latitude coordinates of the member's location.

3.7 NOTIFICATIONS & ALERTS MODULE

Stores notifications generated by the system for users, including:

- NotificationID: Unique identifier for the notification.
- UserID: Identifier of the user who receives the notification.
- Message: Content of the notification.
- CreatedAt: Timestamp indicating when the notification was created.

3.8 SCHEDULES MODULE

Stores schedules for device operations, including start and end times, associated settings, and status, including:

- ScheduleID: Unique identifier for the schedule.

- ScheduleName: Name or description of the schedule.
- DeviceID: Identifier of the device associated with the schedule.
- StartTime: Time when the scheduled operation starts.
- EndTime: Time when the scheduled operation ends.
- DaysOfWeek: Days of the week when the schedule is active.
- SettingID: Identifier of the device setting applied during the schedule.
- SettingValue: Value assigned to the device setting during the schedule.
- Status: Status of the schedule ('On' or 'Off').

3.9 CONTACT US MODULE

Stores queries submitted by users, including:

- QueryNo: Unique identifier for the query.
- Name: Name of the user submitting the query.
- Email: Email address of the user submitting the query.
- Query: Text content of the query.

4. PROPOSED PROCESS LOGIC OF MODULES

Home Automation System setup is not just about convenience; it represents a homeowner’s modern lifestyle. CozyBot aims to acquaint individuals with various home automation solutions available, empowering them to personalize their living spaces according to their preferences. This initiative not only facilitates seamless integration of smart devices but also streamlines the onboarding process to new homeowners. The Smart Home Automation System - CozyBot fosters enhanced connectivity between residents and their homes, ensuring effortless management and control in a user-friendly manner.

- Upon accessing the smart home system, homeowners are presented with a user-friendly interface.
- They proceed by selecting their desired area within the home, such as the living room, bedroom or kitchen.
- Next, homeowners choose the specific devices or appliances they want to interact with, such as lights, thermostats or security cameras.
- Homeowners then have the liberty to customize settings based on their preferences, adjusting lighting levels, temperature settings or security modes such as ‘Arm Away’, ‘Disable Arm’.
- The homeowners can also log in through the custom portal and manage system configurations and monitor home activities.
- After logging in, homeowners are directed to their personal dashboard, where they can oversee the status of connected devices and make necessary adjustments, all while seeing a graph of the usage of connected devices over a certain period of time.
- New users can register by providing their details, and the system automatically updates the database.
- Homeowners possess the authority to modify system settings or deactivate devices.

- Homeowners can create multiple user profiles for family members or guests, enabling each individual to have personalized control over home automation features.
- These steps outline the homeowner’s journey within CozyBot’s ecosystem, ensuring effortless management and customization of their living environment.

5. TESTING

5.1 TESTING STRATEGIES

A method for testing software involves incorporating software test cases into a structured sequence of actions, leading to the effective development of software. Software testing encompasses a larger domain known as verification and validation. Verification encompasses procedures aimed at confirming that the developed software aligns with the customer’s specified requirements.

The steps involved in testing are:

5.1.1 Unit Testing:

Unit Testing means testing each unit of design separately. Here in this project, we tested each unit of design separately and verify that there were no errors. For this testing, each design is run individually. After executing each page if any error occurs, correction mechanism is done instantly.

5.1.2 Integration Testing:

In our project, we combine many units of module to form a sub-system. These sub-systems are then tested. This is done to see whether the modules can be integrated properly. Based on integration testing, some necessary changes were made to the design.

5.1.3 System Testing:

System testing is done to ensure the entire software performs its function as intended. In out project, all the tested sub-systems were integrated and tested for all the possible ranges of coupling variables, based on the testing errors were rectified for pleasant working experience.

5.1.4 Acceptance Testing:

The goal of acceptance testing is to see if the software meets all the requirements as needed. The testing was performed by data of all the users of the system. It was found that the software meets all the requirements of the homeowner, family members and guests using the software.

5.2 TEST CASES AND REPORTS

Table 5.1 Login Module

1.1	**Input**: Valid Credentials with User Type	**Output**: Login Successful	User logged into account and redirected to home page
1.2	**Input**: Valid Credentials with blank fields	**Output**: Please Fill all the details	User is shown an error message that credentials are empty
1.3	**Input**: Invalid Credentials	**Output**: Invalid Email or Password	User is shown an error message that credentials is wrong.

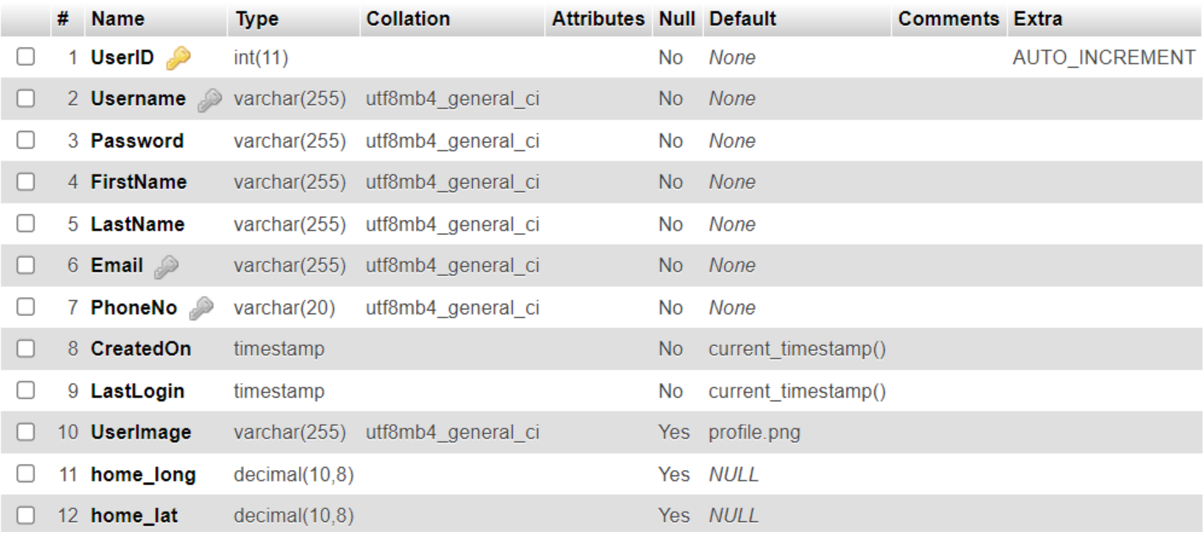
Table 5.2 Registration Module

2.1	**Input**: Valid Credentials with User Type	**Output**: Registration Successful	User registered and redirected to login page
2.2	**Input**: Valid **Credentials** with blank fields	**Output**: Please Fill all the details	User is shown a error message that credentials are empty
2.3	**Input**: Invalid Credentials	**Output**: Invalid Data Entered	User is shown an error message that credentials is wrong.

6. DATABASE DESIGN

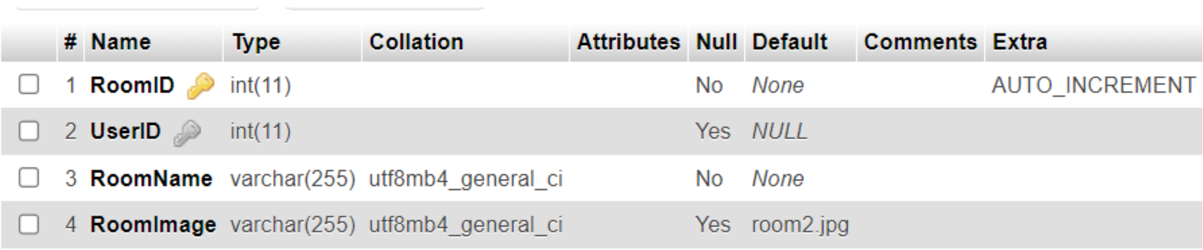
6.1 DATABASE TABLES

Table 6.1 User Table



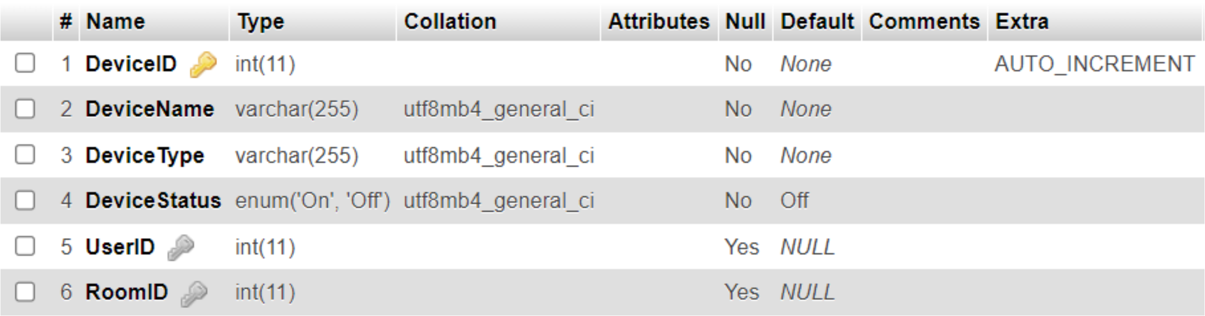
	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
☐	1	**UserID** 🔑	int(11)			No	*None*		AUTO_INCREMENT
☐	2	**Username** 🔑	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	3	**Password**	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	4	**FirstName**	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	5	**LastName**	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	6	**Email** 🔑	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	7	**PhoneNo** 🔑	varchar(20)	utf8mb4_general_ci		No	*None*		
☐	8	**CreatedOn**	timestamp			No	current_timestamp()		
☐	9	**LastLogin**	timestamp			No	current_timestamp()		
☐	10	**UserImage**	varchar(255)	utf8mb4_general_ci		Yes	profile.png		
☐	11	**home_long**	decimal(10,8)			Yes	*NULL*		
☐	12	**home_lat**	decimal(10,8)			Yes	*NULL*		

Table 6.2 Room Table



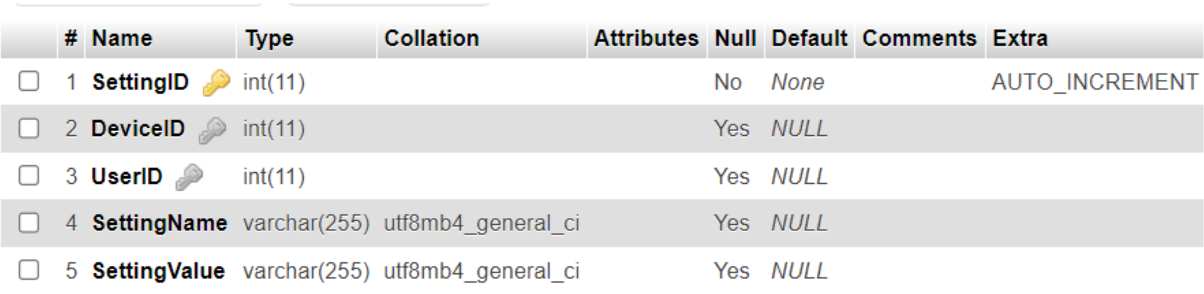
	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
☐	1	**RoomID** 🔑	int(11)			No	*None*		AUTO_INCREMENT
☐	2	**UserID** 🔑	int(11)			Yes	*NULL*		
☐	3	**RoomName**	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	4	**RoomImage**	varchar(255)	utf8mb4_general_ci		Yes	room2.jpg		

Table 6.3 Device Table



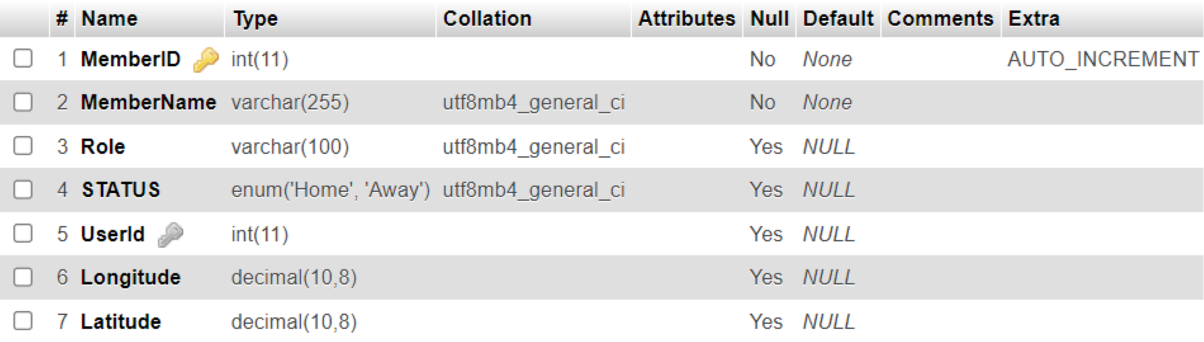
	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
☐	1	**DeviceID** 🔑	int(11)			No	*None*		AUTO_INCREMENT
☐	2	**DeviceName**	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	3	**DeviceType**	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	4	**DeviceStatus**	enum('On', 'Off')	utf8mb4_general_ci		No	Off		
☐	5	**UserID** 🔑	int(11)			Yes	*NULL*		
☐	6	**RoomID** 🔑	int(11)			Yes	*NULL*		

Table 6.4 Device Settings Table



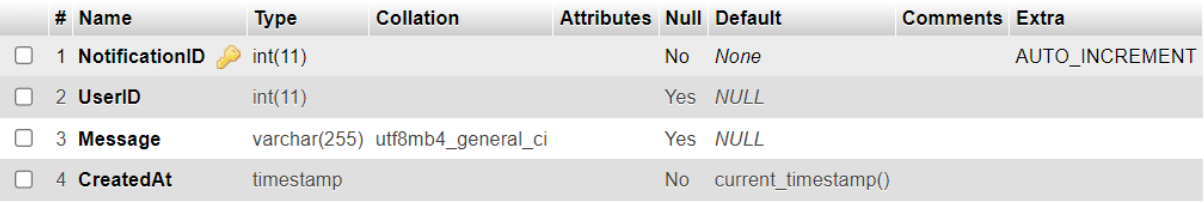
	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
☐	1	**SettingID** 🔑	int(11)			No	*None*		AUTO_INCREMENT
☐	2	**DeviceID** 🔑	int(11)			Yes	*NULL*		
☐	3	**UserID** 🔑	int(11)			Yes	*NULL*		
☐	4	**SettingName**	varchar(255)	utf8mb4_general_ci		Yes	*NULL*		
☐	5	**SettingValue**	varchar(255)	utf8mb4_general_ci		Yes	*NULL*		

Table 6.5 Member Table



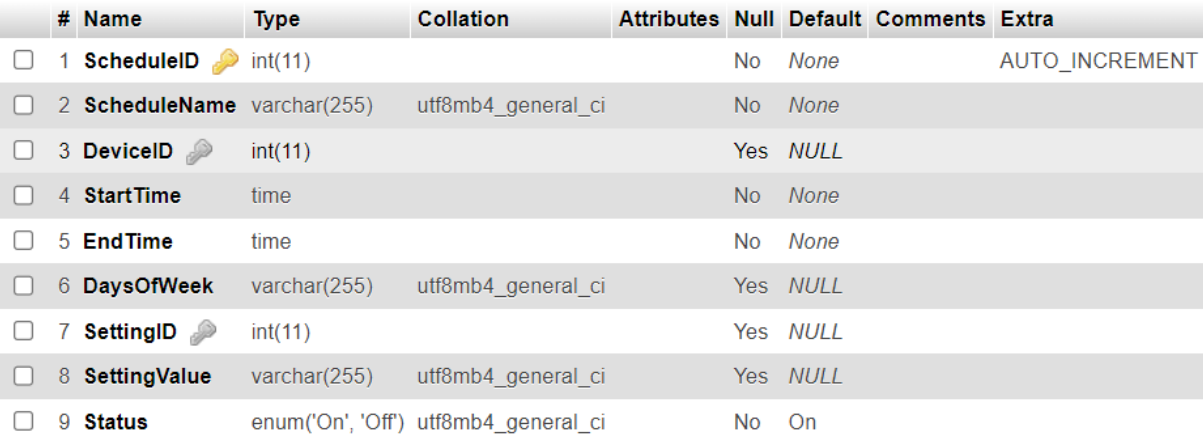
	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
☐	1	**MemberID** 🔑	int(11)			No	*None*		AUTO_INCREMENT
☐	2	**MemberName**	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	3	**Role**	varchar(100)	utf8mb4_general_ci		Yes	*NULL*		
☐	4	**STATUS**	enum('Home', 'Away')	utf8mb4_general_ci		Yes	*NULL*		
☐	5	**UserId** 🔑	int(11)			Yes	*NULL*		
☐	6	**Longitude**	decimal(10,8)			Yes	*NULL*		
☐	7	**Latitude**	decimal(10,8)			Yes	*NULL*		

Table 6.6 Notifications Table



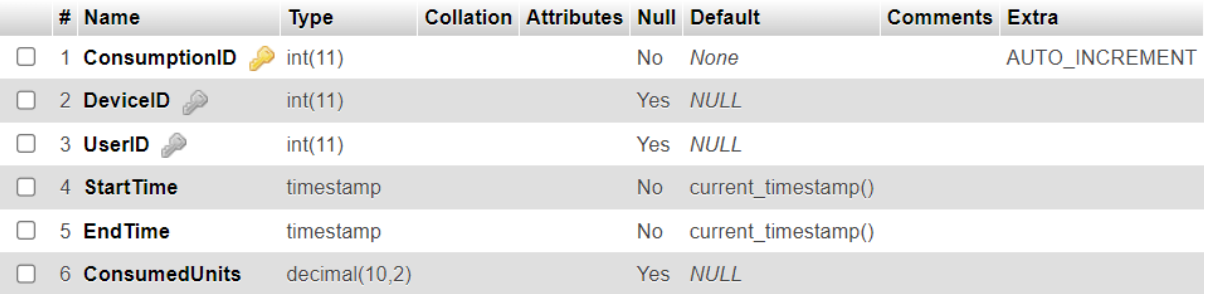
	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
☐	1	**NotificationID** 🔑	int(11)			No	*None*		AUTO_INCREMENT
☐	2	**UserID**	int(11)			Yes	*NULL*		
☐	3	**Message**	varchar(255)	utf8mb4_general_ci		Yes	*NULL*		
☐	4	**CreatedAt**	timestamp			No	current_timestamp()		

Table 6.7 Schedules Table



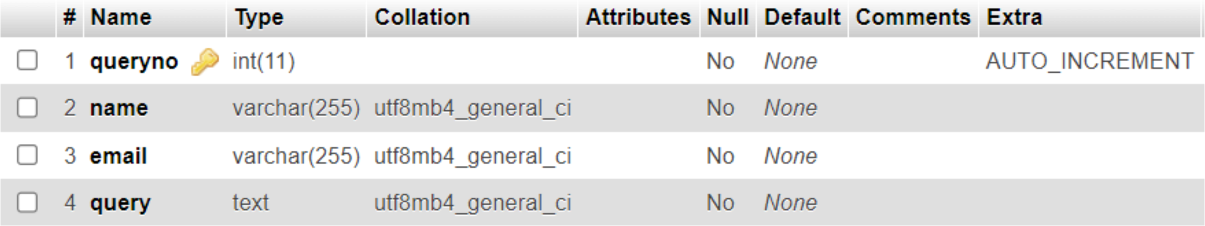
	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
☐	1	**ScheduleID** 🔑	int(11)			No	*None*		AUTO_INCREMENT
☐	2	**ScheduleName**	varchar(255)	utf8mb4_general_ci		No	*None*		
☐	3	**DeviceID** 🔑	int(11)			Yes	*NULL*		
☐	4	**StartTime**	time			No	*None*		
☐	5	**EndTime**	time			No	*None*		
☐	6	**DaysOfWeek**	varchar(255)	utf8mb4_general_ci		Yes	*NULL*		
☐	7	**SettingID** 🔑	int(11)			Yes	*NULL*		
☐	8	**SettingValue**	varchar(255)	utf8mb4_general_ci		Yes	*NULL*		
☐	9	**Status**	enum('On', 'Off')	utf8mb4_general_ci		No	On		

Table 6.8 Energy Consumption Table



	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
□	1	**ConsumptionID** 🔑	int(11)			No	*None*		AUTO_INCREMENT
□	2	**DeviceID** 🔑	int(11)			Yes	*NULL*		
□	3	**UserID** 🔑	int(11)			Yes	*NULL*		
□	4	**StartTime**	timestamp			No	current_timestamp()		
□	5	**EndTime**	timestamp			No	current_timestamp()		
□	6	**ConsumedUnits**	decimal(10,2)			Yes	*NULL*		

Table 6.9 Contact Us Table



	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
□	1	**queryno** 🔑	int(11)			No	*None*		AUTO_INCREMENT
□	2	**name**	varchar(255)	utf8mb4_general_ci		No	*None*		
□	3	**email**	varchar(255)	utf8mb4_general_ci		No	*None*		
□	4	**query**	text	utf8mb4_general_ci		No	*None*		

7. IMPLEMENTATION & UI

7.1 SOURCE CODE

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>CozyBot - Re-designing your life the smart way</title>
    <link rel="icon" href="home.png" type="image/x-icon">
    <link rel="stylesheet" type="text/css" href="home.css">
    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.4/css/all.min.css">
</head>

<body>
    <script src="script.js"></script>
    <header>
        <img id="logo" src="home.png" alt="logo">
        <nav>
            <ul>
                <li><a href="#" class="active">Home</a></li>
                <li><a href="#aboutus">About Us</a></li>
                <li><a href="#contact">Contact us</a></li>
                <li><a href="Sign_Up.html">Login</a></li>
            </ul>
        </nav>
    </header>
    <section id="home">
```

```
        <div class="content-wrapper">
            <div class="text-box">
                <h1 style="margin-bottom: 0px;">CozyBot</h1>
                <h2>Re-designing your home <br> The Smart Way </h2>
                <a href="Sign_Up.html"><button class="button">SIGN UP <img
id="signup" src="play.png"></button></a>
            </div>
            <div id="image">
                <img src="shome1.png" alt="CozyBot product example">
            </div>
        </div>
    </section>



        <section id="aboutus">
            <h1 class="about-us-title">About Us</h1>
            <div class="four-column-section">
                <div class="column">
                    <div class="sub-column">
                        <h3>CozyBot's Capabilities</h3>
                        <p>Introducing CozyBot, your ultimate smart home
companion!
                            This state-of-the-art device effortlessly integrates
automation,
                            adaptive learning, and innovation into your daily routine.
                            Its adaptive learning capabilities tailor responses to your
unique lifestyle.
                            With a commitment to constant innovation, CozyBot
ensures your home evolves alongside the
                            latest technological advancements.</p>
                            <button class="button" onclick="openPopUp()">Learn
More</button>                        </div>
```

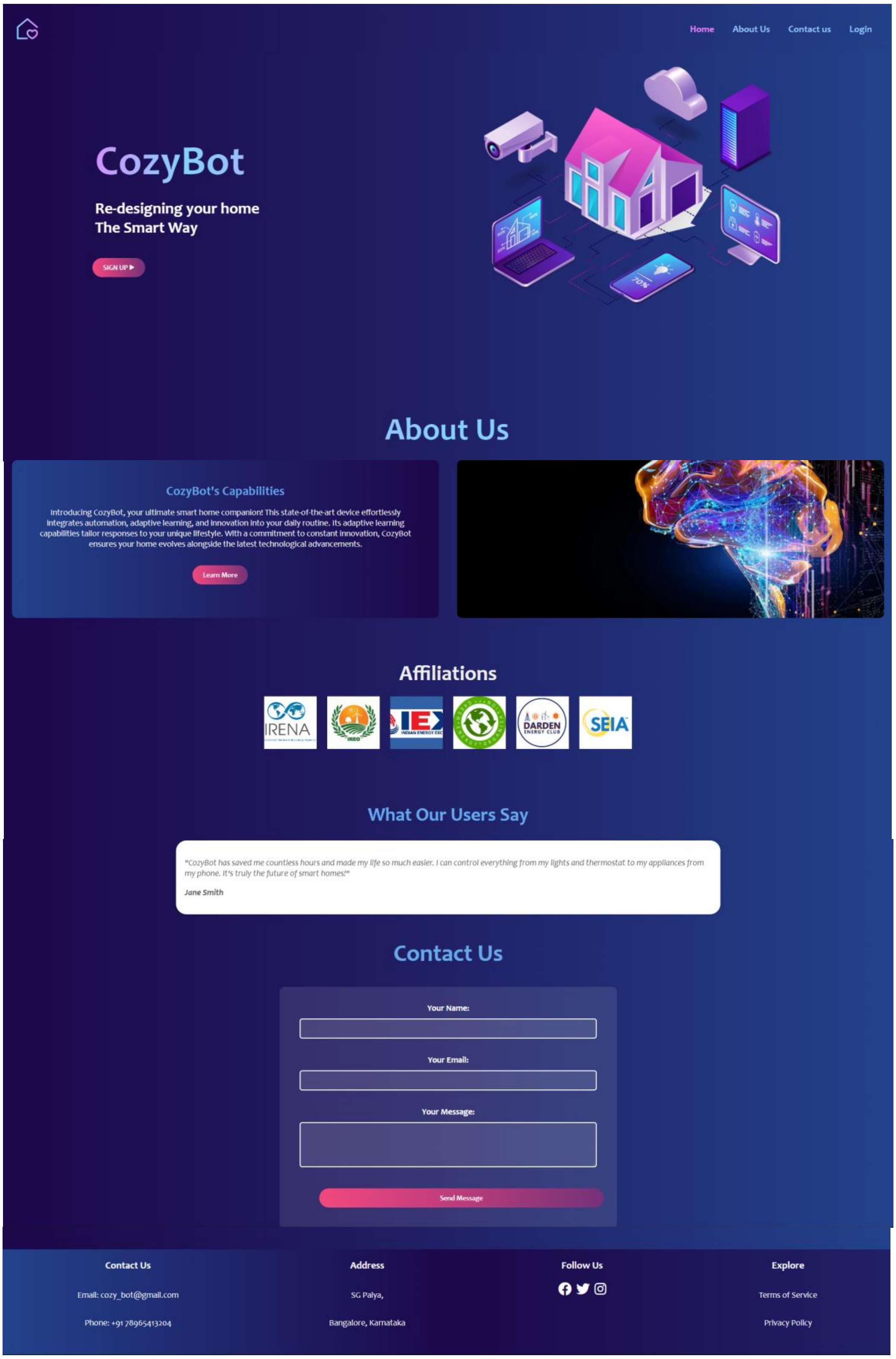
```
          </div>

          <div class="column">

            <div class="sub-column">

            <img src="adaptss.jpg">

            <img src="automatess.jpg">

            <img src="innovatess.jpg">

            </div>

          </div>

        </div>

        <div id="popup" style="display: none;">

          <h2>CozyBot's Smart Home Features</h2>

          <p>CozyBot empowers your home with a range of intelligent features,
including:</p>


          <h3>Automation</h3>

          <p>Experience effortless control over your smart devices. CozyBot
automates tasks like adjusting lighting, managing thermostats, and operating appliances based
on your preferences and routines. Imagine arriving home to a perfectly lit and comfortable
environment, thanks to CozyBot's automated welcome sequence.</p>


          <h3>Adaptive Learning</h3>

          <p>CozyBot goes beyond automation by intelligently adapting to your
unique lifestyle. It learns your preferences, habits, and schedules, personalizing its responses
to optimize your comfort and convenience. The more you interact with CozyBot, the better it
understands your needs, making your smart home experience truly intuitive.</p>


          <h3>Innovation</h3>

          <p>CozyBot is constantly evolving to stay ahead of the curve. Our
team of dedicated engineers is committed to pushing the boundaries of smart home technology,
ensuring your home is always equipped with the latest advancements. With CozyBot, you can
enjoy peace of mind knowing your smart home system is always up-to-date and ready for the
future.</p>


          <button class="button" onclick="closePopUp()">Close</button>
```

```
                    </div>
                    <script>
                      function openPopUp() {
                        document.getElementById("popup").style.display = "block";
                      }

                      function closePopUp() {
                        document.getElementById("popup").style.display = "none";
                      }
                    </script>

              </section>
          <section class="affiliations">
              <h2>Affiliations</h2>
              <div class="affiliation-logos">
                  <img src="affil.jpg" alt="Organization 1">
                  <img src="affil1.jpg" alt="Organization 2">
                  <img src="affil2.jpg" alt="Organization 3">
                  <img src="affil3.jpg" alt="Organization 4">
                  <img src="affil4.jpg" alt="Organization 5">
                  <img src="affil5.jpg" alt="Organization 6">
              </div>
          </section>

          </section>
          <section class="testimonials">
              <h2>What Our Users Say</h2>
              <div class="testimonial active-testimonial">
                  <p>
                      "CozyBot has transformed my home routine. The automation features
are
```

```
                    unbelievable, and the adaptive learning keeps getting better! It's like
                    having a personal smart assistant that just gets me."
                </p>
                <p class="testimonial-author">John Doe</p>
            </div>
            <div class="testimonial">
                <p>
                    "CozyBot has saved me countless hours and made my life so much
                    easier. I can control everything from my lights and thermostat to my
                    appliances from my phone. It's truly the future of smart homes!"
                </p>
                <p class="testimonial-author">Jane Smith</p>
            </div>
            <div class="testimonial">

                <p>
                   "I absolutely love how CozyBot learns my preferences and anticipates
my
                    needs. It's the most intuitive smart home device I've ever used, and
                    the customer support is outstanding."
                </p>
                <p class="testimonial-author">Sarah Johnson</p>
            </div>
        </section>

        <section id="contact">
            <h2>Contact Us</h2>
            <form action="contact.php" method="post">
                <label for="name">Your Name:</label>
                <input type="text" id="name" name="name" required>
                <label for="email">Your Email:</label>
                <input type="email" id="email" name="email" required>

                <label for="message">Your Message:</label>
                <textarea id="message" name="message" rows="4" required></textarea>

                <input class="button" type="submit" value="Send Message">
            </form>
        </section>




        <footer class="footer">
            <div class="footer-section">
              <h3>Contact Us</h3>
              <p>Email:                                                                   <a
href="mailto:saksheepriya2004@gmail.com">cozy_bot@gmail.com</a></p>
              <p>Phone: +91 78965413204</p>
            </div>

            <div class="footer-section">
              <h3>Address</h3>
              <a href="https://maps.app.goo.gl/PkYb64D4FGqjMQUU9">
                <p>SG Palya,</p>
              </a>
              <a href="https://maps.app.goo.gl/PkYb64D4FGqjMQUU9">
                <p>Bangalore, Karnataka</p>
              </a>
            </div>
            <div class="footer-section">
              <h3>Follow Us</h3>
```

```
                    <div class="social-icons">
                        <a href="https://www.facebook.com/" class="social-icon"><i class="fab fa-facebook"></i></a>
                        <a href="https://twitter.com/" class="social-icon"><i class="fab fa-twitter"></i></a>
                        <a href="https://www.instagram.com/" class="social-icon"><i class="fab fa-instagram"></i></a>
                    </div>
                </div>
                <div class="footer-section">
                    <h3>Explore</h3>
                    <p>Terms of Service</p>
                    <p>Privacy Policy</p>
                </div>

            </footer>
</body>
<script src="home_script.js"></script>
</html>
```

7.2 SCREENSHOTS



Introducing CozyBot, your ultimate smart home companion! This state-of-the-art device effortlessly integrates automation, adaptive learning, and innovation into your daily routine. Its adaptive learning capabilities tailor responses to your unique lifestyle. With a commitment to constant innovation, CozyBot ensures your home evolves alongside the latest technological advancements.

"CozyBot has saved me countless hours and made my life so much easier. I can control everything from my lights and thermostat to my appliances from my phone. It's truly the future of smart homes!"

Jane Smith

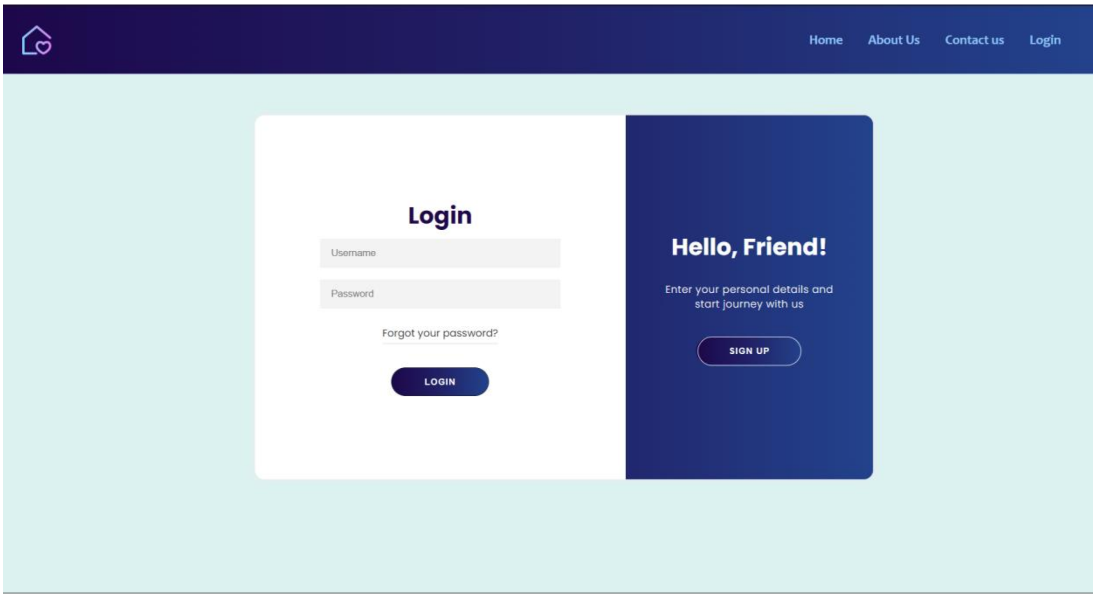
Your Name:

Your Email:

Your Message:

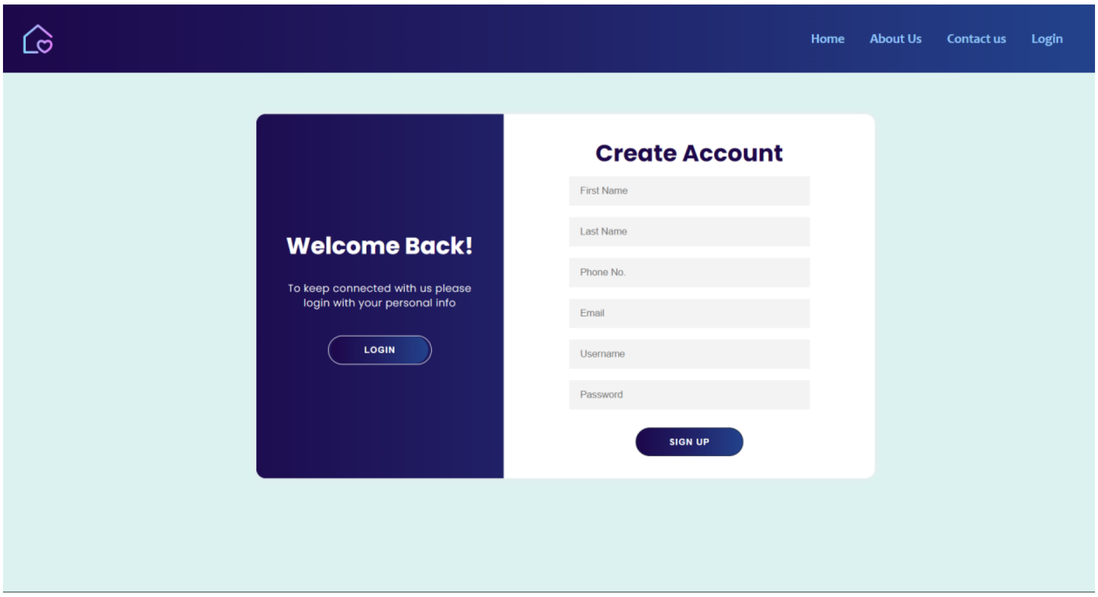
Contact Us	Address	Follow Us	Explore
Email: cozy_bot@gmail.com	SG Palya,		Terms of Service
Phone: +91 78965413204	Bangalore, Karnataka		Privacy Policy

Fig 7.5 Home Page



Enter your personal details and start journey with us

Fig 7.6 Login Page



To keep connected with us please login with your personal info

Fig 7.7 Sign Up Page

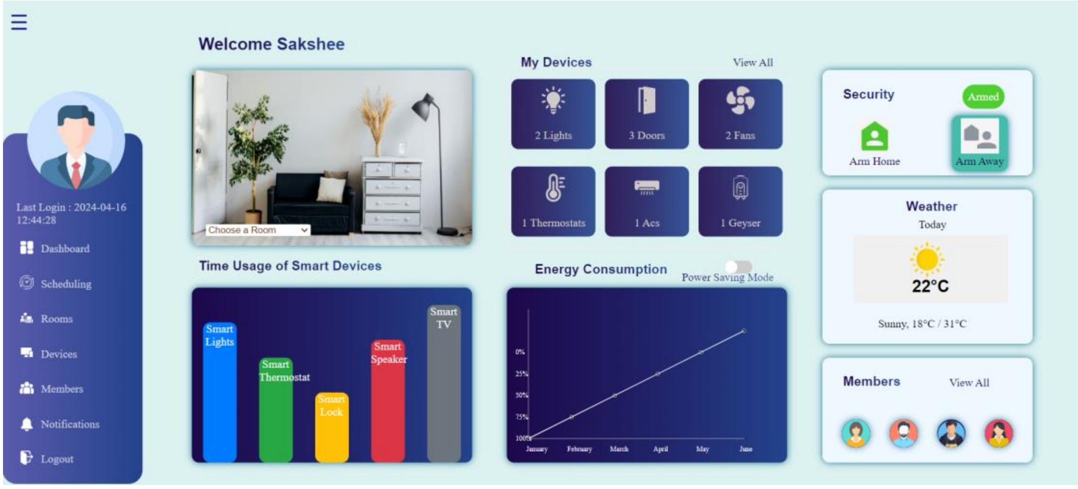


Fig 7.8 Dashboard Page

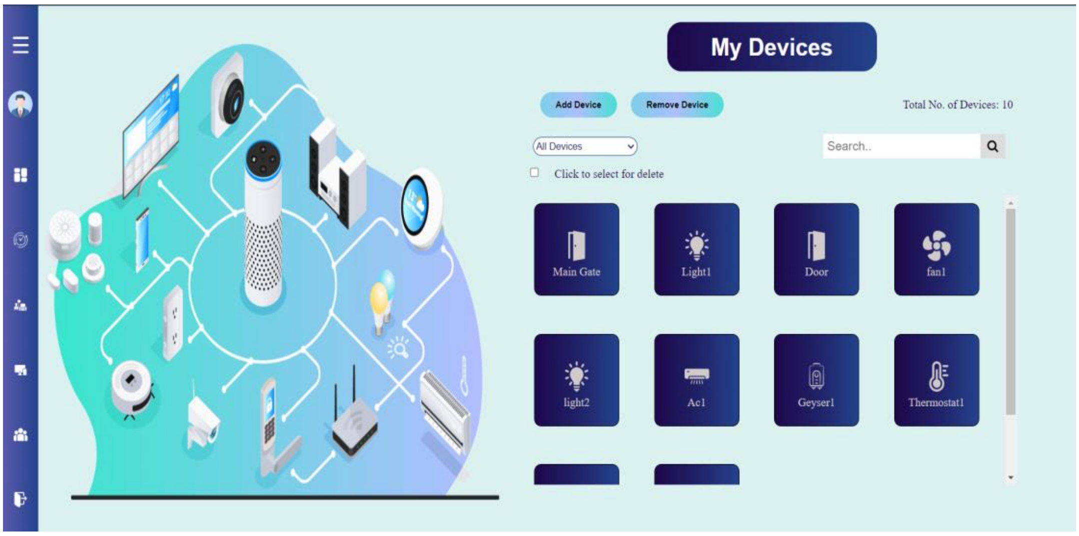


Fig 7.9 My Devices Page

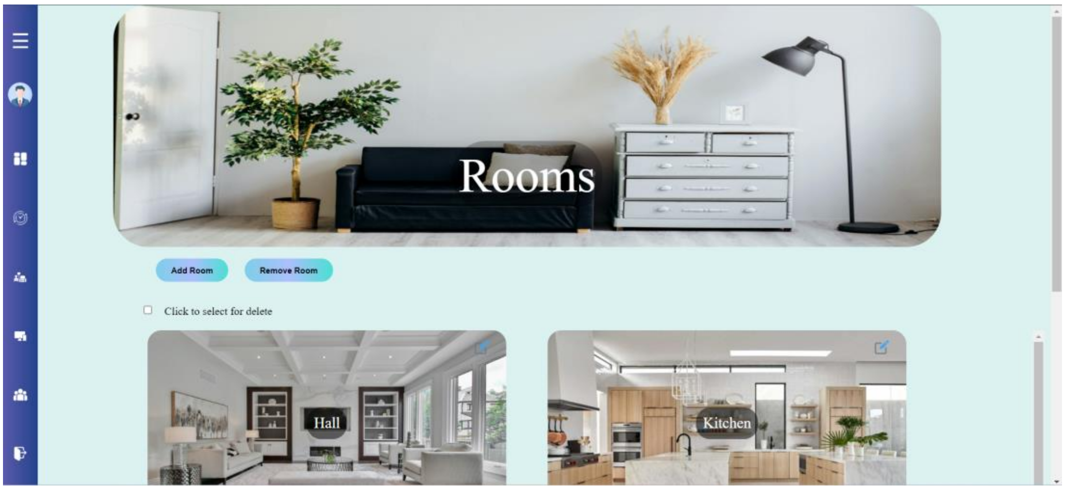
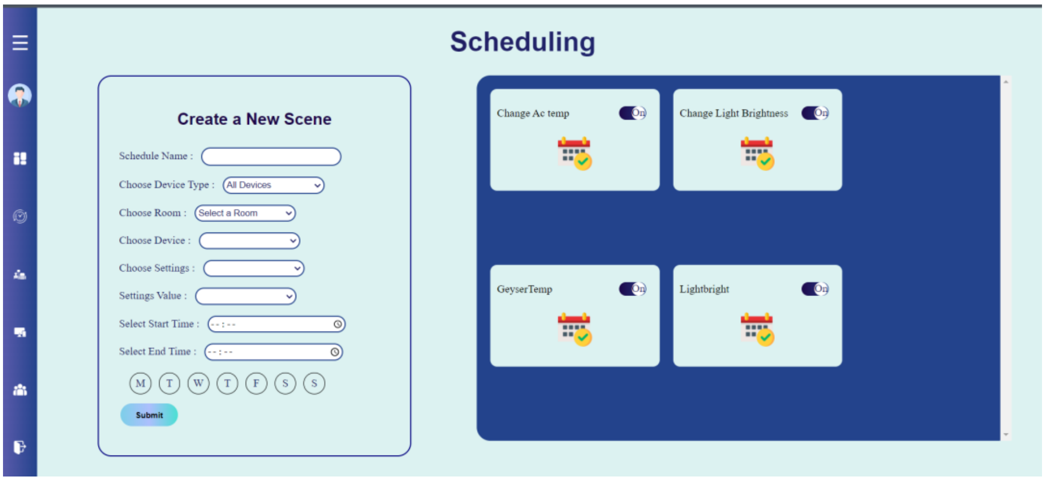
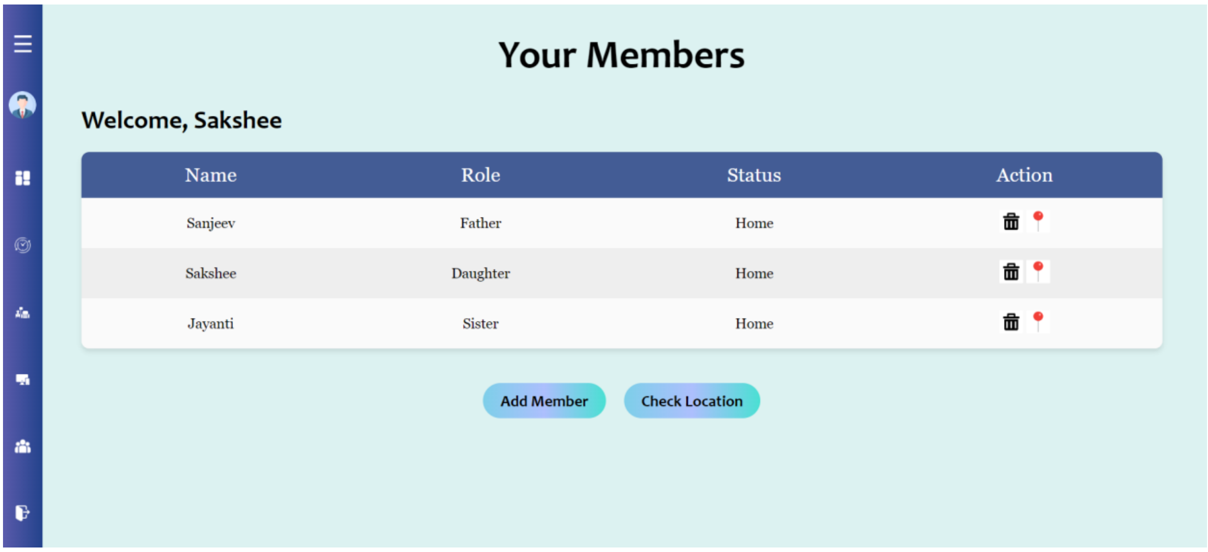


Fig 7.10 Rooms Page



Schedule Name :
Choose Device Type : All Devices
Choose Room : Select a Room
Choose Device :
Choose Settings :
Settings Value :
Select Start Time : --:--
Select End Time : --:--

Fig 7.11 Scheduling Page

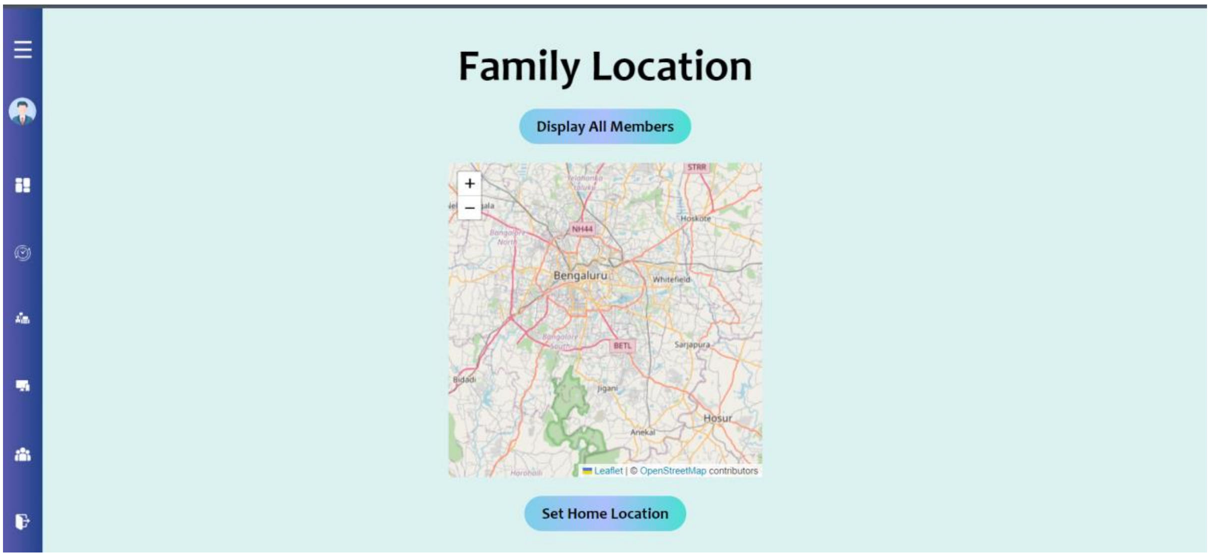


Your Members

Welcome, Sakshee

Name	Role	Status	Action
Sanjeev	Father	Home	🗑 📍
Sakshee	Daughter	Home	🗑 📍
Jayanti	Sister	Home	🗑 📍

Fig 7.12 Members Page



Family Location

Fig 7.13 Location Page

8. CONCLUSION

8.1 ADVANTAGES

8.1.1 Enhanced Safety and Security: Users receive immediate notifications about member arrivals or departures from predefined locations, improving response times to security concerns and ensuring the safety of family members and property.

8.1.2 Streamlined Automation and Convenience: Geolocation-based automation allows for tasks like adjusting thermostats or activating security systems upon member movements, simplifying routines, enhancing convenience, and promoting energy efficiency within the smart home environment.

8.1.3 Efficient Energy Management: Monitors and optimizes energy consumption, promoting energy efficiency and potentially reducing utility bills through automated scheduling and device control, contributing to efficient energy usage.

8.1.4 Enhanced Convenience: Provides users with a user-friendly interface for seamless interaction with their smart home devices, allowing customization of settings based on individual preferences and enhancing comfort and convenience.

8.2 LIMITATIONS

8.2.1 Initial Setup Complexity: Setting up the system and integrating various devices may require technical expertise, potentially posing a challenge for less tech-savvy users.

8.2.2 Reliance on Internet Connectivity: Requires stable internet connectivity for remote access and functionality, making the system vulnerable to outages or connectivity issues.

8.2.3 Cost of Implementation: The initial cost of purchasing smart devices and implementing the system may be prohibitive for some users, limiting accessibility.

8.2.4 Privacy and Data Security Concerns: Raises concerns about data privacy and security due to the collection of personal information and surveillance features, potentially making the system vulnerable to hacking or unauthorized access and compromising user privacy and security.

8.3 FUTURE ENHANCEMENTS

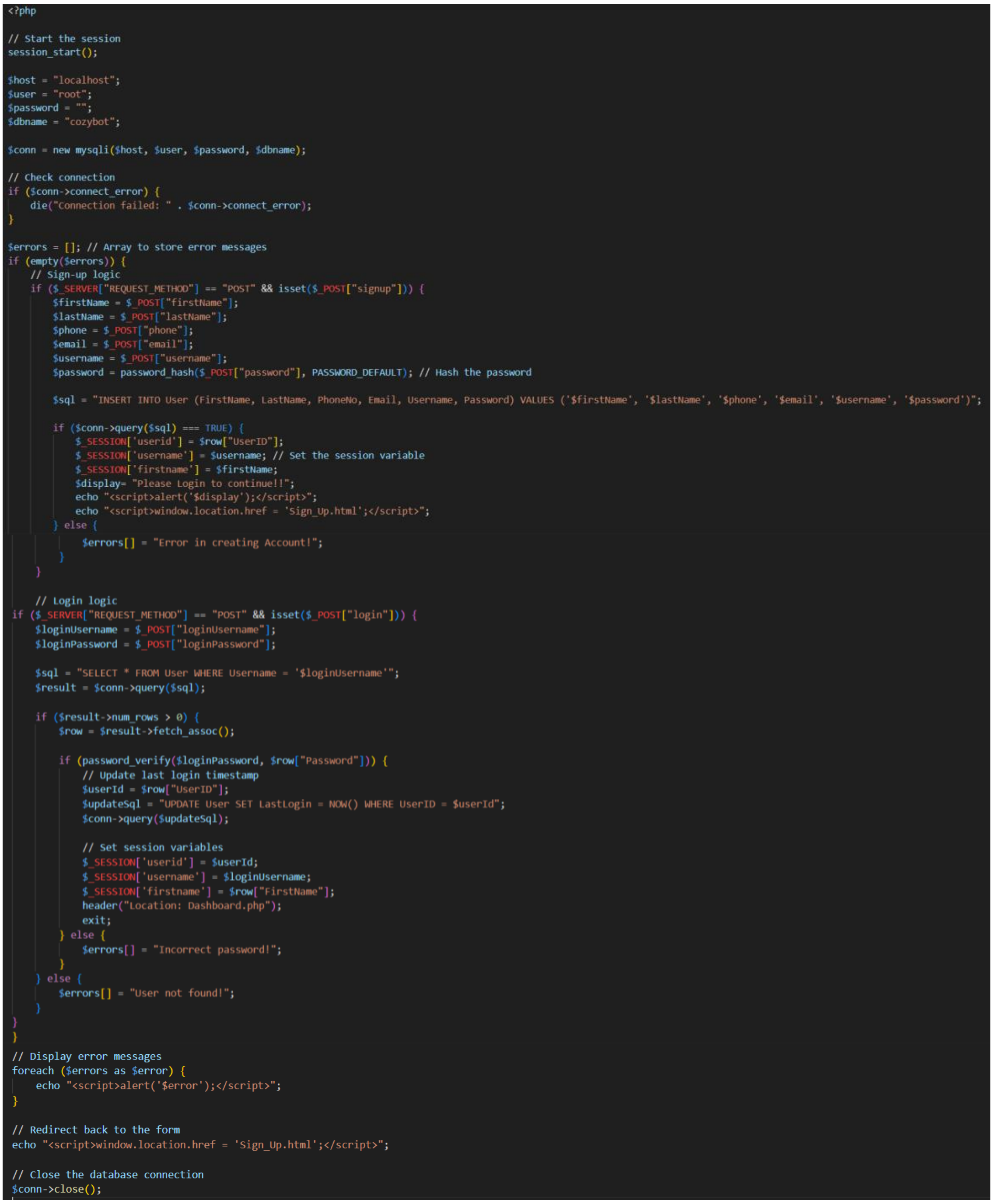
As technology continues to evolve, so too does the potential for enhancing CozyBot. These future enhancements represent an exciting frontier in the realm of home technology, offering homeowners unprecedented levels of convenience, efficiency and security. Let's look at some of the upcoming enhancements that could revolutionize CozyBot and the way we interact with it.

- Integration of Artificial Intelligence [AI] for predictive analysis and personalized automation suggestions tailored to each homeowner's habits and preferences.
- Expansion of device compatibility to include emerging smart home technologies and IoT devices, ensuring seamless integration and control.
- Implementation of voice recognition technology for hands-free control and interaction with the smart home system.
- Integration with smart health monitoring devices to track vital signs, sleep patterns and other health-related data for proactive health management.

In conclusion, CozyBot has successfully introduced a user-friendly and accessible platform that empowers homeowners to manage their homes remotely and effortlessly. This innovative solution eliminates the traditional constraints of manual home management and offers a secure and convenient experience for homeowners. With a comprehensive suite of features including remote monitoring and control, CozyBot puts homeowners in complete command of their living spaces. Overall, the project marks a significant advancement in home technology, catering to the evolving needs of homeowners in the digital age.

9. APPENDIX

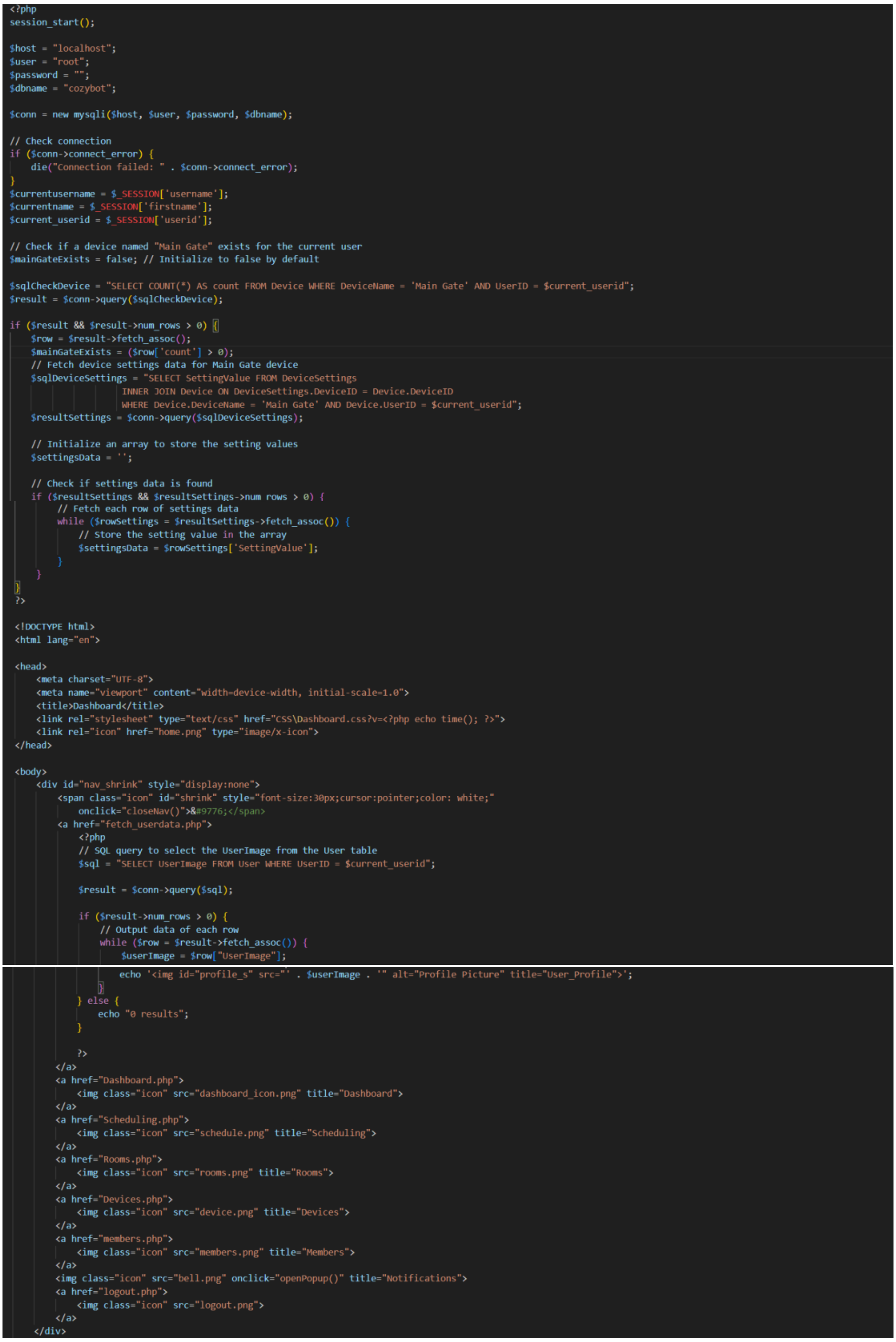
◆ SignUp Code [authentication.php]



```php
<?php

// Start the session
session_start();

$host = "localhost";
$user = "root";
$password = "";
$dbname = "cozybot";

$conn = new mysqli($host, $user, $password, $dbname);

// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}

$errors = []; // Array to store error messages
if (empty($errors)) {
    // Sign-up logic
    if ($_SERVER["REQUEST_METHOD"] == "POST" && isset($_POST["signup"])) {
        $firstName = $_POST["firstName"];
        $lastName = $_POST["lastName"];
        $phone = $_POST["phone"];
        $email = $_POST["email"];
        $username = $_POST["username"];
        $password = password_hash($_POST["password"], PASSWORD_DEFAULT); // Hash the password

        $sql = "INSERT INTO User (FirstName, LastName, PhoneNo, Email, Username, Password) VALUES ('$firstName', '$lastName', '$phone', '$email', '$username', '$password')";

        if ($conn->query($sql) === TRUE) {
            $_SESSION['userid'] = $row["UserID"];
            $_SESSION['username'] = $username; // Set the session variable
            $_SESSION['firstname'] = $firstName;
            $display= "Please Login to continue!!";
            echo "<script>alert('$display');</script>";
            echo "<script>window.location.href = 'Sign_Up.html';</script>";
        } else {
             $errors[] = "Error in creating Account!";
         }
     }

     // Login logic
 if ($_SERVER["REQUEST_METHOD"] == "POST" && isset($_POST["login"])) {
     $loginUsername = $_POST["loginUsername"];
     $loginPassword = $_POST["loginPassword"];

     $sql = "SELECT * FROM User WHERE Username = '$loginUsername'";
     $result = $conn->query($sql);

     if ($result->num_rows > 0) {
         $row = $result->fetch_assoc();

         if (password_verify($loginPassword, $row["Password"])) {
             // Update last login timestamp
             $userId = $row["UserID"];
             $updateSql = "UPDATE User SET LastLogin = NOW() WHERE UserID = $userId";
             $conn->query($updateSql);

             // Set session variables
             $_SESSION['userid'] = $userId;
             $_SESSION['username'] = $loginUsername;
             $_SESSION['firstname'] = $row["FirstName"];
             header("Location: Dashboard.php");
             exit;
         } else {
             $errors[] = "Incorrect password!";
         }
     } else {
         $errors[] = "User not found!";
     }
 }
 }
 // Display error messages
 foreach ($errors as $error) {
     echo "<script>alert('$error');</script>";
 }

 // Redirect back to the form
 echo "<script>window.location.href = 'Sign_Up.html';</script>";

 // Close the database connection
 $conn->close();
```

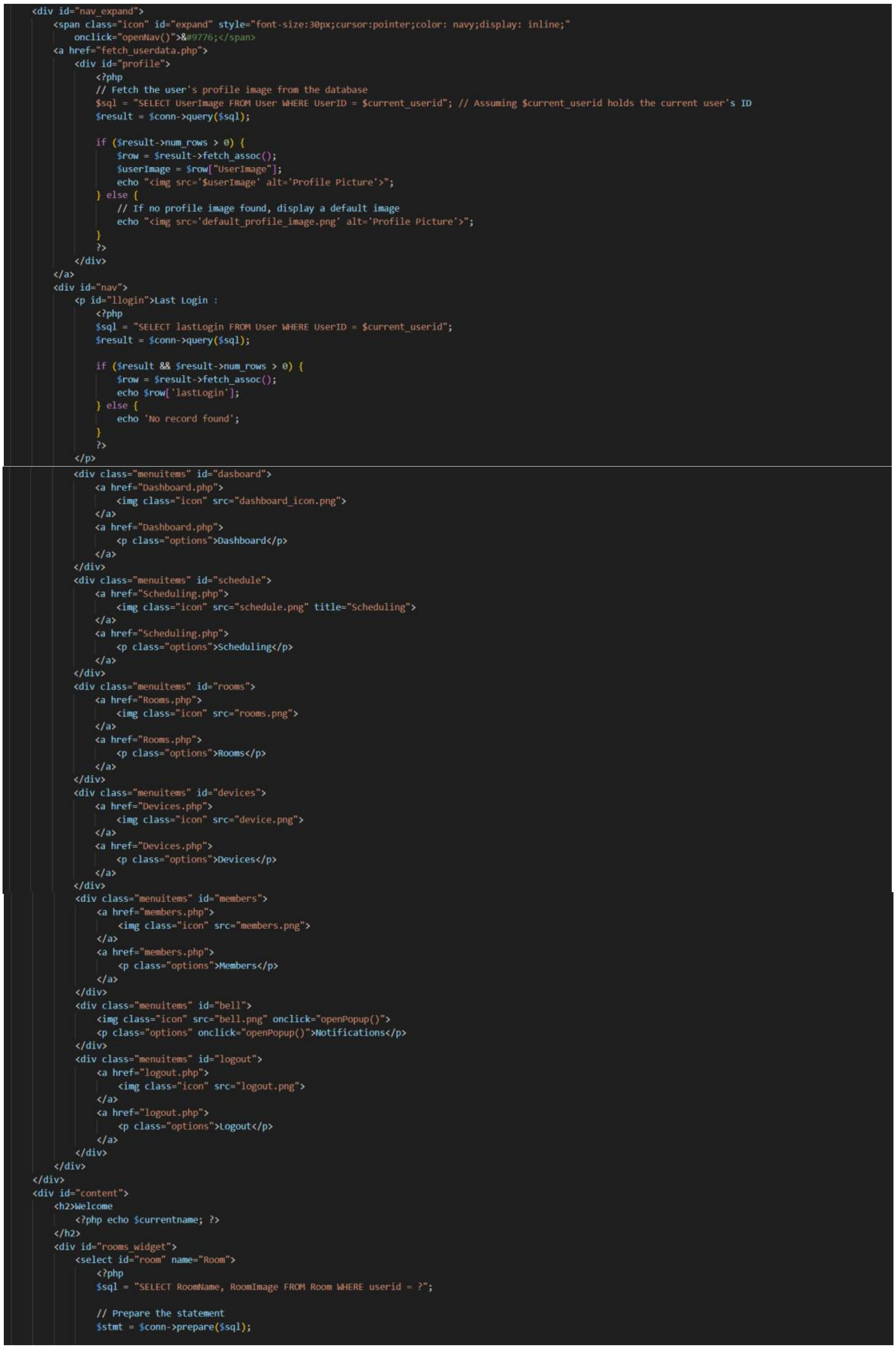
Fig 9.14 Code of Authentication.php

◆ Dashboard.php



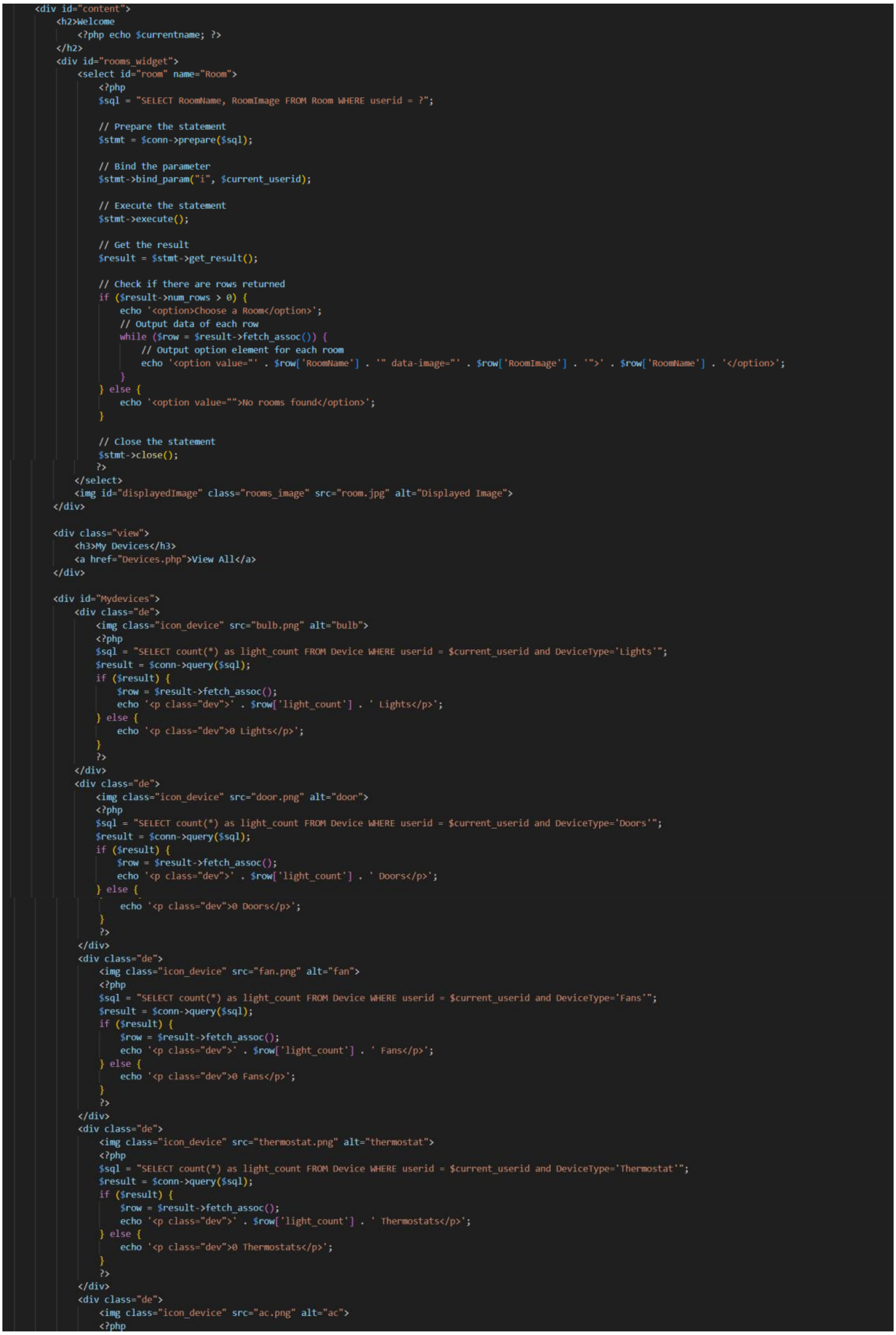
```php
<?php
session_start();

$host = "localhost";
$user = "root";
$password = "";
$dbname = "cozybot";

$conn = new mysqli($host, $user, $password, $dbname);

// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
$currentusername = $_SESSION['username'];
$currentname = $_SESSION['firstname'];
$current_userid = $_SESSION['userid'];

// Check if a device named "Main Gate" exists for the current user
$mainGateExists = false; // Initialize to false by default

$sqlCheckDevice = "SELECT COUNT(*) AS count FROM Device WHERE DeviceName = 'Main Gate' AND UserID = $current_userid";
$result = $conn->query($sqlCheckDevice);

if ($result && $result->num_rows > 0) {
    $row = $result->fetch_assoc();
    $mainGateExists = ($row['count'] > 0);
    // Fetch device settings data for Main Gate device
    $sqlDeviceSettings = "SELECT SettingValue FROM DeviceSettings
                    INNER JOIN Device ON DeviceSettings.DeviceID = Device.DeviceID
                    WHERE Device.DeviceName = 'Main Gate' AND Device.UserID = $current_userid";
    $resultSettings = $conn->query($sqlDeviceSettings);

    // Initialize an array to store the setting values
    $settingsData = '';

    // Check if settings data is found
    if ($resultSettings && $resultSettings->num_rows > 0) {
        // Fetch each row of settings data
        while ($rowSettings = $resultSettings->fetch_assoc()) {
            // Store the setting value in the array
            $settingsData = $rowSettings['SettingValue'];
        }
    }
}
?>

<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Dashboard</title>
    <link rel="stylesheet" type="text/css" href="CSS\Dashboard.css?v=<?php echo time(); ?>">
    <link rel="icon" href="home.png" type="image/x-icon">
</head>

<body>
    <div id="nav_shrink" style="display:none">
        <span class="icon" id="shrink" style="font-size:30px;cursor:pointer;color: white;"
            onclick="closeNav()">&#9776;</span>
        <a href="fetch_userdata.php">
            <?php
            // SQL query to select the UserImage from the User table
            $sql = "SELECT UserImage FROM User WHERE UserID = $current_userid";

            $result = $conn->query($sql);

            if ($result->num_rows > 0) {
                // Output data of each row
                while ($row = $result->fetch_assoc()) {
                    $userImage = $row["UserImage"];
                    echo '<img id="profile_s" src="' . $userImage . '" alt="Profile Picture" title="User_Profile">';
                }
            } else {
                echo "0 results";
            }

            ?>
        </a>
        <a href="Dashboard.php">
            <img class="icon" src="dashboard_icon.png" title="Dashboard">
        </a>
        <a href="Scheduling.php">
            <img class="icon" src="schedule.png" title="Scheduling">
        </a>
        <a href="Rooms.php">
            <img class="icon" src="rooms.png" title="Rooms">
        </a>
        <a href="Devices.php">
            <img class="icon" src="device.png" title="Devices">
        </a>
        <a href="members.php">
            <img class="icon" src="members.png" title="Members">
        </a>
        <img class="icon" src="bell.png" onclick="openPopup()" title="Notifications">
        <a href="logout.php">
            <img class="icon" src="logout.png">
        </a>
    </div>
```

Fig 9.15 Code of Dashboard-Navigation Bar



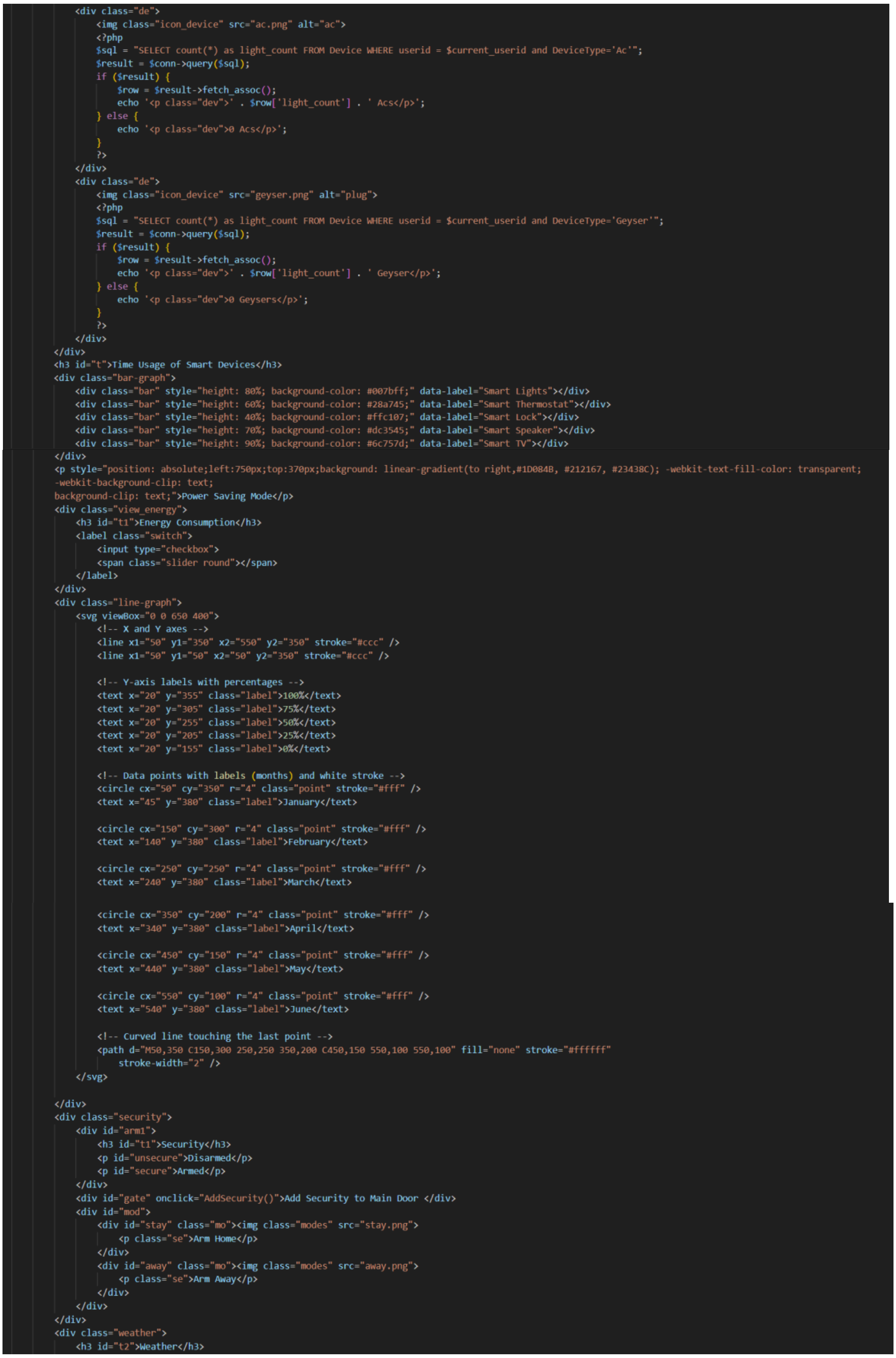
```
<div id="nav_expand">
    <span class="icon" id="expand" style="font-size:30px;cursor:pointer;color: navy;display: inline;"
        onclick="openNav()">&#9776;</span>
    <a href="fetch_userdata.php">
        <div id="profile">
            <?php
            // Fetch the user's profile image from the database
            $sql = "SELECT UserImage FROM User WHERE UserID = $current_userid"; // Assuming $current_userid holds the current user's ID
            $result = $conn->query($sql);

            if ($result->num_rows > 0) {
                $row = $result->fetch_assoc();
                $userImage = $row["UserImage"];
                echo "<img src='$userImage' alt='Profile Picture'>";
            } else {
                // If no profile image found, display a default image
                echo "<img src='default_profile_image.png' alt='Profile Picture'>";
            }
            ?>
        </div>
    </a>
    <div id="nav">
        <p id="llogin">Last Login :
            <?php
            $sql = "SELECT lastLogin FROM User WHERE UserID = $current_userid";
            $result = $conn->query($sql);

            if ($result && $result->num_rows > 0) {
                $row = $result->fetch_assoc();
                echo $row['lastLogin'];
            } else {
                echo 'No record found';
            }
            ?>
        </p>
        <div class="menuitems" id="dasboard">
            <a href="Dashboard.php">
                <img class="icon" src="dashboard_icon.png">
            </a>
            <a href="Dashboard.php">
                <p class="options">Dashboard</p>
            </a>
        </div>
        <div class="menuitems" id="schedule">
            <a href="Scheduling.php">
                <img class="icon" src="schedule.png" title="Scheduling">
            </a>
            <a href="Scheduling.php">
                <p class="options">Scheduling</p>
            </a>
        </div>
        <div class="menuitems" id="rooms">
            <a href="Rooms.php">
                <img class="icon" src="rooms.png">
            </a>
            <a href="Rooms.php">
                <p class="options">Rooms</p>
            </a>
        </div>
        <div class="menuitems" id="devices">
            <a href="Devices.php">
                <img class="icon" src="device.png">
            </a>
            <a href="Devices.php">
                <p class="options">Devices</p>
            </a>
        </div>
        <div class="menuitems" id="members">
            <a href="members.php">
                <img class="icon" src="members.png">
            </a>
            <a href="members.php">
                <p class="options">Members</p>
            </a>
        </div>
        <div class="menuitems" id="bell">
            <img class="icon" src="bell.png" onclick="openPopup()">
            <p class="options" onclick="openPopup()">Notifications</p>
        </div>
        <div class="menuitems" id="logout">
            <a href="logout.php">
                <img class="icon" src="logout.png">
            </a>
            <a href="logout.php">
                <p class="options">Logout</p>
            </a>
        </div>
    </div>
</div>
<div id="content">
    <h2>Welcome
        <?php echo $currentname; ?>
    </h2>
    <div id="rooms_widget">
        <select id="room" name="Room">
            <?php
            $sql = "SELECT RoomName, RoomImage FROM Room WHERE userid = ?";

            // Prepare the statement
            $stmt = $conn->prepare($sql);
```

Fig 9.16 Code of Dashboard-Rooms details



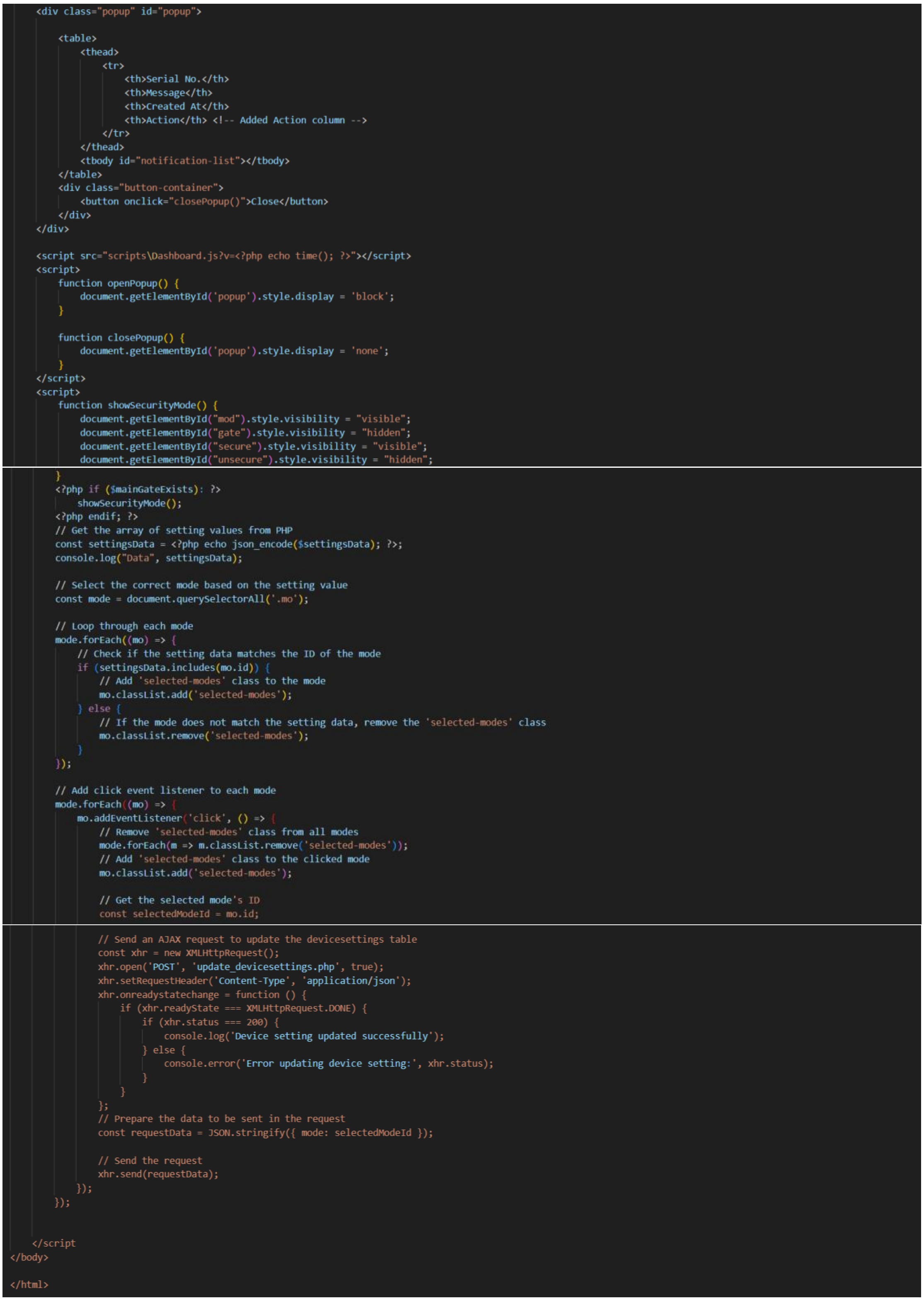
```
<div id="content">
    <h2>Welcome
        <?php echo $currentname; ?>
    </h2>
    <div id="rooms_widget">
        <select id="room" name="Room">
            <?php
            $sql = "SELECT RoomName, RoomImage FROM Room WHERE userid = ?";

            // Prepare the statement
            $stmt = $conn->prepare($sql);

            // Bind the parameter
            $stmt->bind_param("i", $current_userid);

            // Execute the statement
            $stmt->execute();

            // Get the result
            $result = $stmt->get_result();

            // Check if there are rows returned
            if ($result->num_rows > 0) {
                echo '<option>Choose a Room</option>';
                // Output data of each row
                while ($row = $result->fetch_assoc()) {
                    // Output option element for each room
                    echo '<option value="' . $row['RoomName'] . '" data-image="' . $row['RoomImage'] . '">' . $row['RoomName'] . '</option>';
                }
            } else {
                echo '<option value="">No rooms found</option>';
            }

            // Close the statement
            $stmt->close();
            ?>
        </select>
        <img id="displayedImage" class="rooms_image" src="room.jpg" alt="Displayed Image">
    </div>

    <div class="view">
        <h3>My Devices</h3>
        <a href="Devices.php">View All</a>
    </div>

    <div id="Mydevices">
        <div class="de">
            <img class="icon_device" src="bulb.png" alt="bulb">
            <?php
            $sql = "SELECT count(*) as light_count FROM Device WHERE userid = $current_userid and DeviceType='Lights'";
            $result = $conn->query($sql);
            if ($result) {
                $row = $result->fetch_assoc();
                echo '<p class="dev">' . $row['light_count'] . ' Lights</p>';
            } else {
                echo '<p class="dev">0 Lights</p>';
            }
            ?>
        </div>
        <div class="de">
            <img class="icon_device" src="door.png" alt="door">
            <?php
            $sql = "SELECT count(*) as light_count FROM Device WHERE userid = $current_userid and DeviceType='Doors'";
            $result = $conn->query($sql);
            if ($result) {
                $row = $result->fetch_assoc();
                echo '<p class="dev">' . $row['light_count'] . ' Doors</p>';
            } else {
                echo '<p class="dev">0 Doors</p>';
            }
            ?>
        </div>
        <div class="de">
            <img class="icon_device" src="fan.png" alt="fan">
            <?php
            $sql = "SELECT count(*) as light_count FROM Device WHERE userid = $current_userid and DeviceType='Fans'";
            $result = $conn->query($sql);
            if ($result) {
                $row = $result->fetch_assoc();
                echo '<p class="dev">' . $row['light_count'] . ' Fans</p>';
            } else {
                echo '<p class="dev">0 Fans</p>';
            }
            ?>
        </div>
        <div class="de">
            <img class="icon_device" src="thermostat.png" alt="thermostat">
            <?php
            $sql = "SELECT count(*) as light_count FROM Device WHERE userid = $current_userid and DeviceType='Thermostat'";
            $result = $conn->query($sql);
            if ($result) {
                $row = $result->fetch_assoc();
                echo '<p class="dev">' . $row['light_count'] . ' Thermostats</p>';
            } else {
                echo '<p class="dev">0 Thermostats</p>';
            }
            ?>
        </div>
        <div class="de">
            <img class="icon_device" src="ac.png" alt="ac">
            <?php
```

Fig 9.17 Code of Dashboard - Device details



```
            <div class="de">
                <img class="icon_device" src="ac.png" alt="ac">
                <?php
                $sql = "SELECT count(*) as light_count FROM Device WHERE userid = $current_userid and DeviceType='Ac'";
                $result = $conn->query($sql);
                if ($result) {
                    $row = $result->fetch_assoc();
                    echo '<p class="dev">' . $row['light_count'] . ' Acs</p>';
                } else {
                    echo '<p class="dev">0 Acs</p>';
                }
                ?>
            </div>
            <div class="de">
                <img class="icon_device" src="geyser.png" alt="plug">
                <?php
                $sql = "SELECT count(*) as light_count FROM Device WHERE userid = $current_userid and DeviceType='Geyser'";
                $result = $conn->query($sql);
                if ($result) {
                    $row = $result->fetch_assoc();
                    echo '<p class="dev">' . $row['light_count'] . ' Geyser</p>';
                } else {
                    echo '<p class="dev">0 Geysers</p>';
                }
                ?>
            </div>
        </div>
        <h3 id="t">Time Usage of Smart Devices</h3>
        <div class="bar-graph">
            <div class="bar" style="height: 80%; background-color: #007bff;" data-label="Smart Lights"></div>
            <div class="bar" style="height: 60%; background-color: #28a745;" data-label="Smart Thermostat"></div>
            <div class="bar" style="height: 40%; background-color: #ffc107;" data-label="Smart Lock"></div>
            <div class="bar" style="height: 70%; background-color: #dc3545;" data-label="Smart Speaker"></div>
            <div class="bar" style="height: 90%; background-color: #6c757d;" data-label="Smart TV"></div>
        </div>
        <p style="position: absolute;left:750px;top:370px;background: linear-gradient(to right,#1D084B, #212167, #23438C); -webkit-text-fill-color: transparent;
        -webkit-background-clip: text;
        background-clip: text;">Power Saving Mode</p>
        <div class="view_energy">
            <h3 id="t1">Energy Consumption</h3>
            <label class="switch">
                <input type="checkbox">
                <span class="slider round"></span>
            </label>
        </div>
        <div class="line-graph">
            <svg viewBox="0 0 650 400">
                <!-- X and Y axes -->
                <line x1="50" y1="350" x2="550" y2="350" stroke="#ccc" />
                <line x1="50" y1="50" x2="50" y2="350" stroke="#ccc" />

                <!-- Y-axis labels with percentages -->
                <text x="20" y="355" class="label">100%</text>
                <text x="20" y="305" class="label">75%</text>
                <text x="20" y="255" class="label">50%</text>
                <text x="20" y="205" class="label">25%</text>
                <text x="20" y="155" class="label">0%</text>

                <!-- Data points with labels (months) and white stroke -->
                <circle cx="50" cy="350" r="4" class="point" stroke="#fff" />
                <text x="45" y="380" class="label">January</text>

                <circle cx="150" cy="300" r="4" class="point" stroke="#fff" />
                <text x="140" y="380" class="label">February</text>

                <circle cx="250" cy="250" r="4" class="point" stroke="#fff" />
                <text x="240" y="380" class="label">March</text>


                <circle cx="350" cy="200" r="4" class="point" stroke="#fff" />
                <text x="340" y="380" class="label">April</text>

                <circle cx="450" cy="150" r="4" class="point" stroke="#fff" />
                <text x="440" y="380" class="label">May</text>

                <circle cx="550" cy="100" r="4" class="point" stroke="#fff" />
                <text x="540" y="380" class="label">June</text>

                <!-- Curved line touching the last point -->
                <path d="M50,350 C150,300 250,250 350,200 C450,150 550,100 550,100" fill="none" stroke="#ffffff"
                    stroke-width="2" />
            </svg>

        </div>
        <div class="security">
            <div id="arm1">
                <h3 id="t1">Security</h3>
                <p id="unsecure">Disarmed</p>
                <p id="secure">Armed</p>
            </div>
            <div id="gate" onclick="AddSecurity()">Add Security to Main Door </div>
            <div id="mod">
                <div id="stay" class="mo"><img class="modes" src="stay.png">
                    <p class="se">Arm Home</p>
                </div>
                <div id="away" class="mo"><img class="modes" src="away.png">
                    <p class="se">Arm Away</p>
                </div>
            </div>
        </div>
        <div class="weather">
            <h3 id="t2">Weather</h3>
```

Fig 9.18 Code of Dashboard - Energy Consumption Graphs



```
    <div class="popup" id="popup">

        <table>
            <thead>
                <tr>
                    <th>Serial No.</th>
                    <th>Message</th>
                    <th>Created At</th>
                    <th>Action</th> <!-- Added Action column -->
                </tr>
            </thead>
            <tbody id="notification-list"></tbody>
        </table>
        <div class="button-container">
            <button onclick="closePopup()">Close</button>
        </div>
    </div>

    <script src="scripts\Dashboard.js?v=<?php echo time(); ?>"></script>
    <script>
        function openPopup() {
            document.getElementById('popup').style.display = 'block';
        }

        function closePopup() {
            document.getElementById('popup').style.display = 'none';
        }
    </script>
    <script>
        function showSecurityMode() {
            document.getElementById("mod").style.visibility = "visible";
            document.getElementById("gate").style.visibility = "hidden";
            document.getElementById("secure").style.visibility = "visible";
            document.getElementById("unsecure").style.visibility = "hidden";
        }
        <?php if ($mainGateExists): ?>
            showSecurityMode();
        <?php endif; ?>
        // Get the array of setting values from PHP
        const settingsData = <?php echo json_encode($settingsData); ?>;
        console.log("Data", settingsData);

        // Select the correct mode based on the setting value
        const mode = document.querySelectorAll('.mo');

        // Loop through each mode
        mode.forEach((mo) => {
            // Check if the setting data matches the ID of the mode
            if (settingsData.includes(mo.id)) {
                // Add 'selected-modes' class to the mode
                mo.classList.add('selected-modes');
            } else {
                // If the mode does not match the setting data, remove the 'selected-modes' class
                mo.classList.remove('selected-modes');
            }
        });

        // Add click event listener to each mode
        mode.forEach((mo) => {
            mo.addEventListener('click', () => {
                // Remove 'selected-modes' class from all modes
                mode.forEach(m => m.classList.remove('selected-modes'));
                // Add 'selected-modes' class to the clicked mode
                mo.classList.add('selected-modes');

                // Get the selected mode's ID
                const selectedModeId = mo.id;

                // Send an AJAX request to update the devicesettings table
                const xhr = new XMLHttpRequest();
                xhr.open('POST', 'update_devicesettings.php', true);
                xhr.setRequestHeader('Content-Type', 'application/json');
                xhr.onreadystatechange = function () {
                    if (xhr.readyState === XMLHttpRequest.DONE) {
                        if (xhr.status === 200) {
                            console.log('Device setting updated successfully');
                        } else {
                            console.error('Error updating device setting:', xhr.status);
                        }
                    }
                };
                // Prepare the data to be sent in the request
                const requestData = JSON.stringify({ mode: selectedModeId });

                // Send the request
                xhr.send(requestData);
            });
        });


    </script
</body>

</html>
```

Fig 9.19 Code of Dashboard - Notification Feature

REFERENCES

Websites:

[1] Amazon Alexa <https://alexa.amazon.com/>

[2] Google Home <https://home.google.com/welcome/>

[3] Apple HomeKit< https://www.apple.com/in/home-app/>

[4] Samsung SmartThings< https://www.samsung.com/in/smartthings/app/ >

[5] Maheswari, Milan. “How I designed Otomate - Smart Home App” . 17 Jan. 2018. 10 Apr. 2024. < https://blog.prototypr.io/how-i-designed-otomate-smart-home-app-7995eba1ebc>

[6] Yasmeen, Arifa. “Home Monitoring Dashboard UI Design”. 10 July 2023. 20 Mar. 2023. <https://www.behance.net/gallery/174970389/Home-Monitoring-Dashboard-UI-Design?tracking_source=search_projects&l=0>