ICCS COLLEGE OF ENGINEERING & MANAGEMENT

IOT POWERED SMART ENERGY MONITORING CONTROL FOR HOME AUTOMATION

GROUP NO:5

GROUP MENTOR:

Mrs. Gadha M M

AP, CSE Dept.

GROUP MEMBERS:

Akhil M A

Abdul Fahad T P

Erwin Micheal

Krishnasagar P V

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PROBLEM BACKGROUND

- Growing apprehensions about energy scarcity globally highlight the urgent need for more efficient and optimized energy consumption within households.
- The continuous rise in energy costs emphasizes the necessity for effective energy management to mitigate economic burdens on households.
- With the proliferation of smart devices, ensuring the safety of these devices and their optimal energy usage has become a critical concern, necessitating advanced energy management solutions.
- There is a rising demand for simplified and automated energy management systems as homeowners seek user-friendly solutions to effortlessly monitor and control their energy consumption.
- The growing awareness of the importance of energy management, driven by environmental consciousness and sustainability goals, underscores the need for widespread adoption of efficient energy practices within residential spaces.

PROBLEM STATEMENT

- **Energy Scarcity:** The global concern over energy scarcity necessitates more efficient and optimized energy consumption practices within households.
- **Escalating Energy Costs:** The persistent increase in energy costs places economic burdens on households, underscoring the urgency for effective energy management solutions.
- **Device Safety Challenges:** The proliferation of smart devices raises concerns about their safety and optimal energy usage, demanding advanced energy management solutions to address potential risks.
- **Demand for Simplified Systems:** There is a growing demand for user-friendly and automated energy management systems as homeowners seek streamlined solutions for monitoring and controlling energy consumption.
- **Awareness of Energy Management:** Increasing environmental consciousness and sustainability goals drive the need for widespread adoption of efficient energy practices within residential spaces, highlighting the importance of enhanced energy management awareness.

OBJECTIVE OF STUDY

The objective of our project is to develop an IoT-powered smart energy monitoring and control system for home automation that addresses the pressing challenges in residential energy management. Through this study, we aim to achieve the following objectives

- **Design and Implement Advanced Monitoring System:** Develop a comprehensive monitoring system capable of real-time data collection on energy consumption at the device level, enabling homeowners to gain insights into their usage patterns.

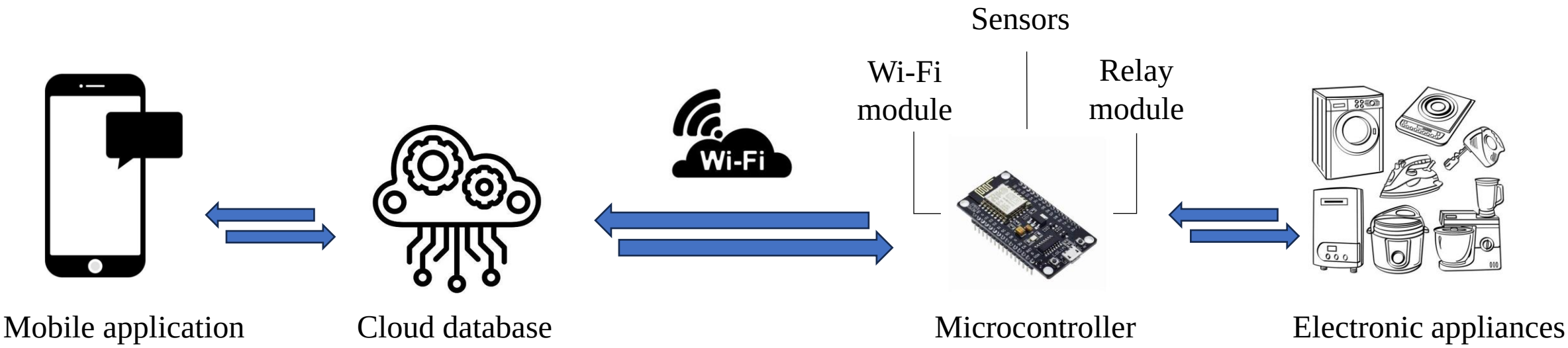
- **Create User-Friendly Interfaces:** Design intuitive user interfaces that provide homeowners with easy access to energy consumption data and intuitive controls for managing devices remotely, enhancing user experience and engagement.

- **Optimize Energy Efficiency:** Implement sophisticated algorithms to analyze energy usage patterns and provide personalized recommendations for optimizing energy efficiency, reducing wastage, and lowering utility costs.

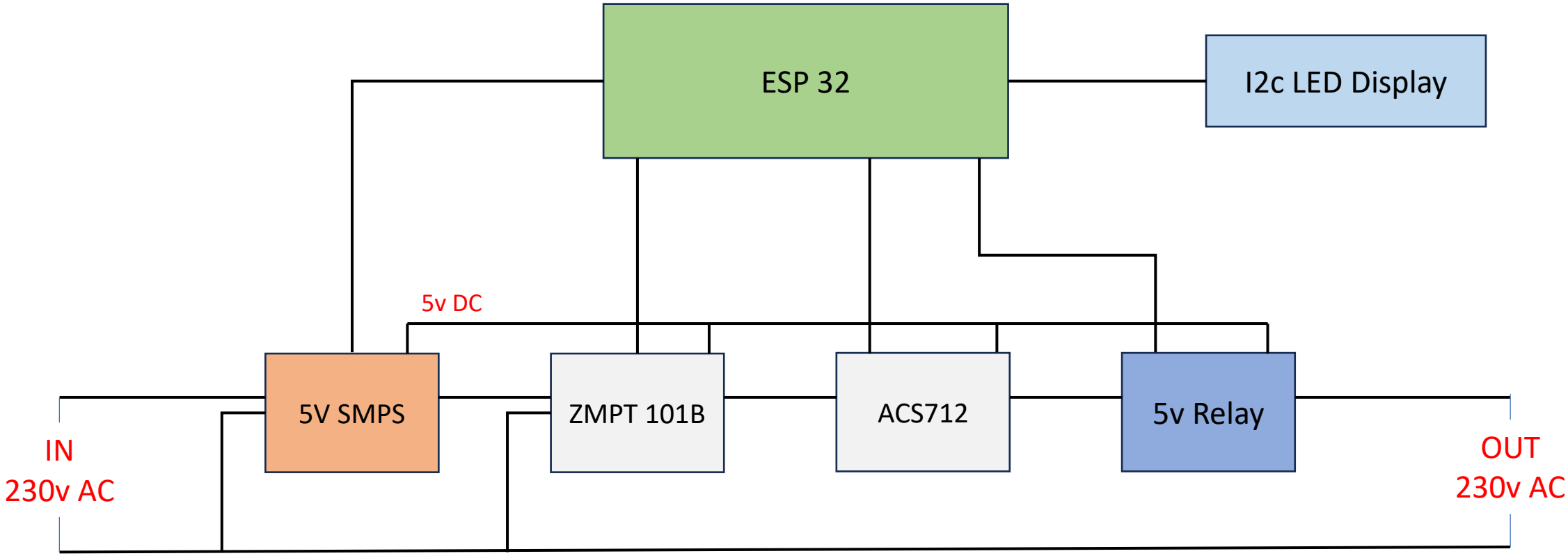
- **Ensure Safety of Electronic Devices:** Incorporate robust safety features to protect electronic devices from potential risks associated with smart device usage, ensuring the longevity and reliability of household appliances.

- **Promote Environmental Awareness:** Raise awareness about the importance of energy management and environmental sustainability among homeowners by providing transparent insights into energy usage and encouraging eco-friendly practices.

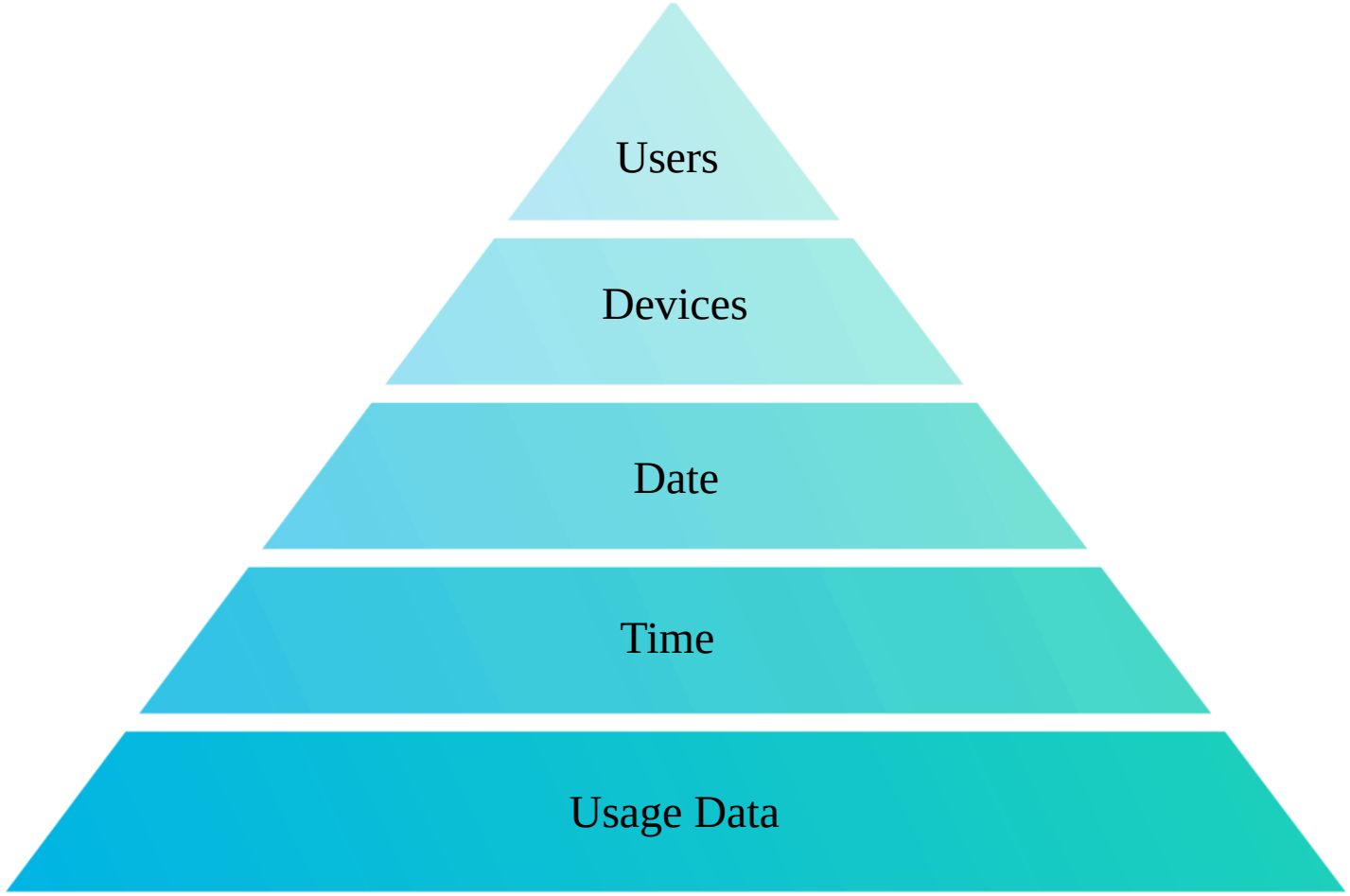
SYSTEM ARCHITECTURE



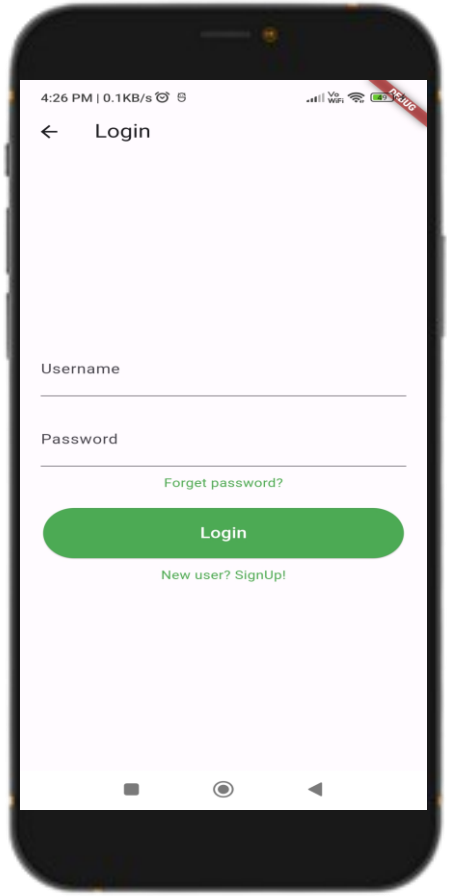
CIRCUIT DIAGRAM

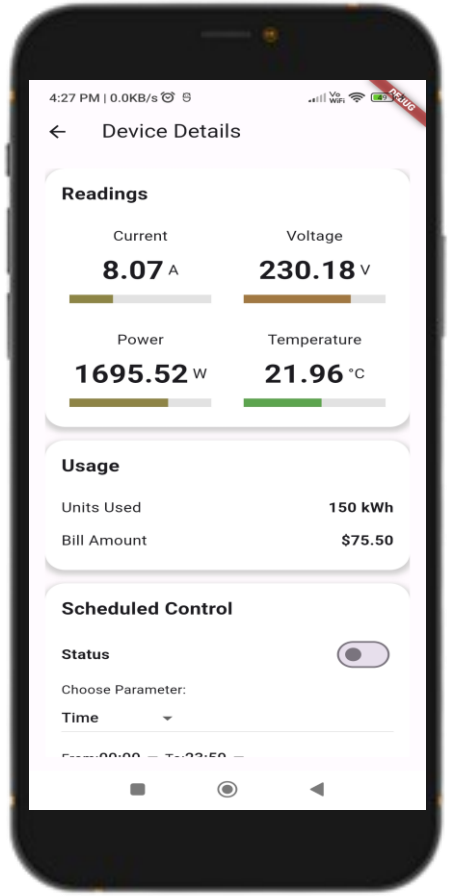


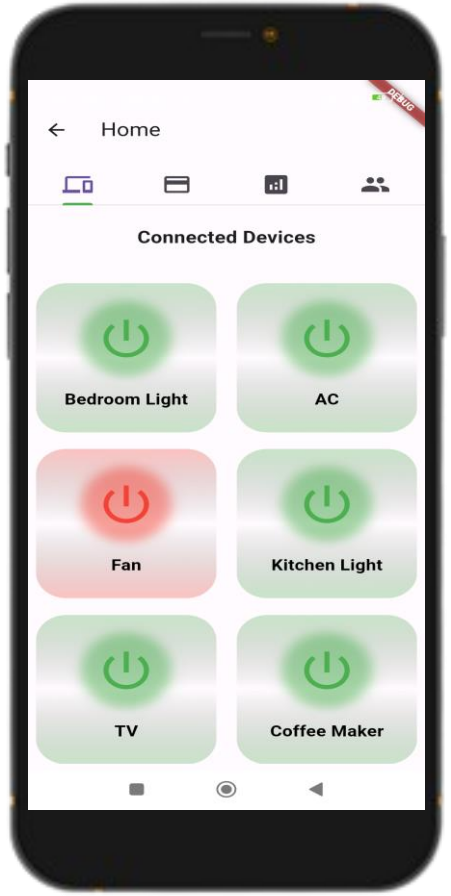
DATABASE STRUCTURE



APPLICATION INTERFACE







PROJECT SHEDULE

Stages	Current state	Completion date
Prototype Design and Development	40%	13/03/2024
Database Configuration	30%	13/03/2024
Prototype Testing	NA	13/03/2024
App Development	40%	15/04/2024
Final Testing and Integration	NA	24/04/2024

TASK DISTRIBUTION

Tasks	Distribution
Prototype Designing	Krishnasagar
Prototype Development	Krishnasagar , Erwin Michael
Database Configuration	Abdul Fahad , Akhil
App Development	Abdul Fahad
Documentation	Akhil , Erwin Michael

CONCLUSION

- Our smart system seamlessly combines real-time monitoring and device control, providing a versatile solution for diverse user needs.
- With a user-friendly app interface and automated setup features, accessibility is prioritized, ensuring a smooth and inclusive experience for all users.
- The system's continuous network monitoring guarantees uninterrupted service, emphasizing its reliability in various connectivity conditions.
- Beyond technology, our project aims to empower users, promote efficiency, and contribute to a more environmentally conscious future by providing insights and personalized recommendations

THANK YOU