SMART HOME SYSTEM

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Abstract. This Arduino project, called the Smart Home System, aims to improve homes by using advanced technology for energy efficiency, safety, and convenience. The goal is to modernize home systems, making them responsive to real-time conditions and adaptable to different needs. This project aims to create smarter, more sustainable, and secure living spaces.
Keywords: Energy Efficiency, Arduino, Home Automation, Smart Lighting, Temperature Control, Air Quality, RFID, Embedded Systems, Sustainable Living

INTRODUCTION

Home environments are changing to become more efficient, safe, and functional. The Smart Home System focuses on lighting, ventilation, security, and automation, creating a more welcoming and sustainable space. Key components include a Night Light System that adjusts to ambient light, an Auto Tunnel Light that uses ultrasonic sensors to turn on only when needed, and a Smoke Cleaner Fan that improves air quality. It also features an Auto Cooling Fan that responds to temperature changes and an Auto Door Lock System using RFID technology for better security.

PROBLEM

The system uses Arduino technology to enhance energy efficiency and home comfort. The Night Light adjusts to ambient light, the Auto Tunnel Light activates with motion, and the Auto Cooling Fan keeps temperatures comfortable. The Smoke Cleaner Fan maintains air quality, and the RFID door lock provides secure access.

APPROACH

These systems have significantly advanced home automation, bringing numerous benefits. Energy-efficient lighting has not only cut costs but also minimized environmental impact, making homes more sustainable. The smoke cleaner enhances air quality, while temperature regulation systems ensure a comfortable living environment year-round. Together, these features create a healthier home experience. Additionally, the Auto Door Lock System provides reliable security, giving homeowners peace of mind with easy access and enhanced protection. Overall, these innovations contribute to a smarter, more efficient, and safer home.

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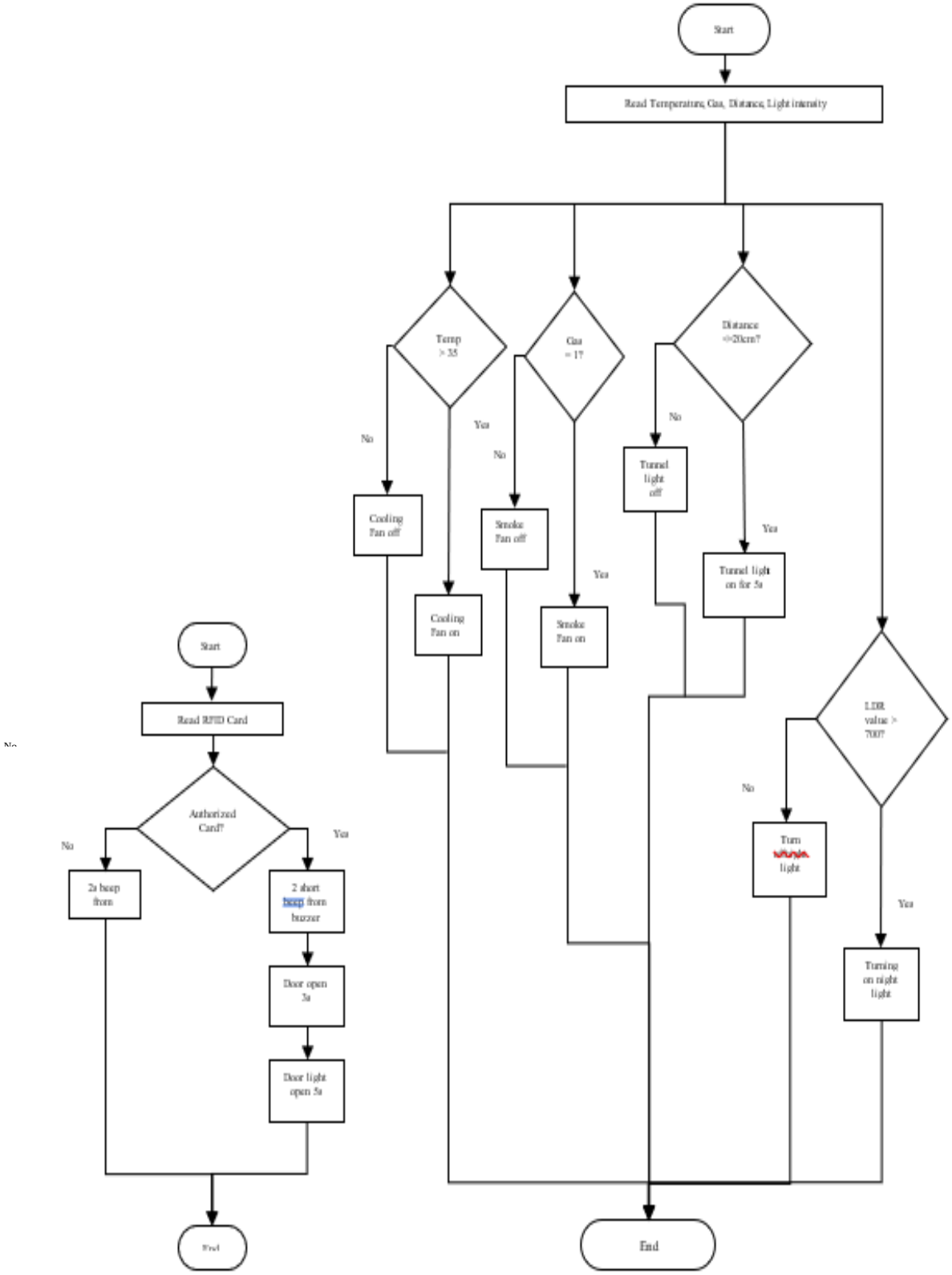

Figure 1: Flowcharts for Arduino Nano and Uno

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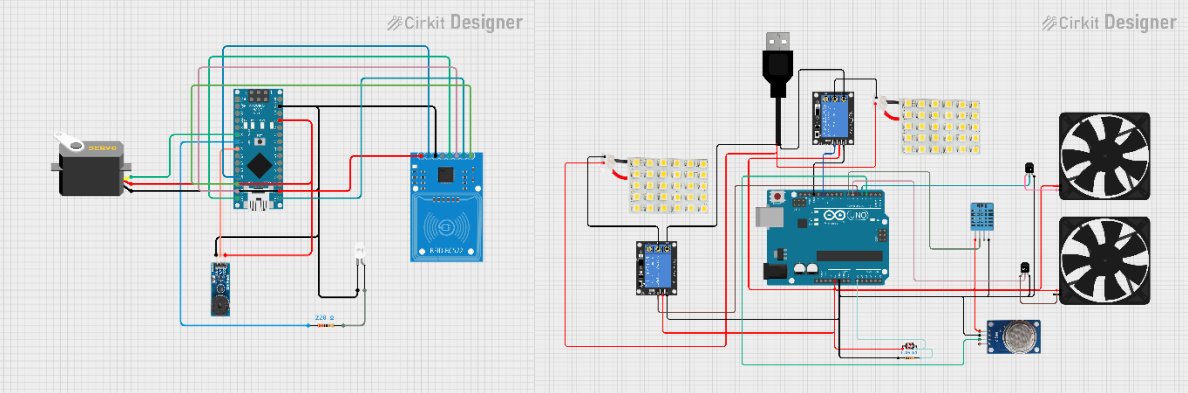

Figure 2: Circuit Diagrams for the System

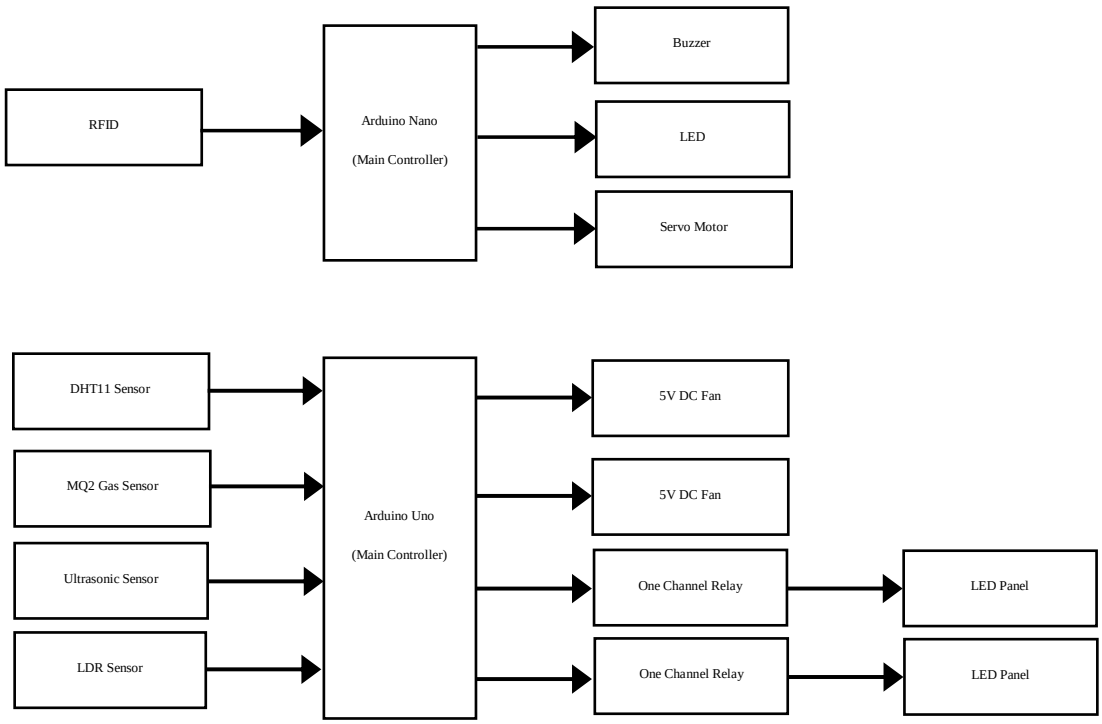

Figure 3: Block Diagrams of the System

RESULTS

The successful use of Arduino technology in the Smart Home System shows a commitment to progress and sustainability. By integrating various sensors and actuators, the system improves energy management, safety, and convenience. This project represents a modern approach to creating a more efficient and secure home.

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CONCLUSION

In the future, there is potential to expand these solutions to other areas of the home, enhancing the system's reliability and functionality. Ultimately, this project highlights how technology can transform homes into modern, sustainable, and inspiring spaces.

Figure 4: Implementation of the system

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