CCN Report

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Abstract
This project provides a complete home automation system to enhance safety, comfort and energy efficiency. The system consists of several subsystems, including fire detection and protection, fan control, and kitchen temperature management. It also features electronic cruise control via DLC 100, garage exhaust leak detection, and garage door control.These components work together to create a smart home environment that responds to real-time conditions, improving safety and overall comfort. A central control room provides monitoring and management of all subsystems. This automation system provides a new solution for modern living, combining technological advances with practical applications to guarantee home safety and energy efficiency.

1 Introduction

The goal of this project is to develop a comprehensive home automation system using Cisco Packet Tracer. The system includes a variety of components, including fire protection and prevention, movement control, temperature monitoring, wireless devices, carbon monoxide detection, and door controls. The system is designed to improve residential safety, comfort, and energy efficiency.

2 System Design

Details about component used in this project.

2.1 Fire Protection and Prevention Systems:

This subsystem consists of 1 MCU chip BR flame retardants and fire retardants. MCU 1 chip is responsible for the BR power display fire sprinklers and the fire sprinklers work to prevent the spread of fire

2.2 Motion-Activated Fan Control System:

In the automation room, the MCU 1 chip is connected to the fans and a motion detector. If motion is detected in the room, the MCU 1 chip activates the fan automatically, providing ventilation and comfort.

2.3 Wireless device connected to DLC 100:

Several wireless devices are connected to the DLC 100 The gate of the house. The device has 2 mosquito detectors, water level monitor, temperature monitor, coffee machine, 3 windows, 2 smoke detectors, garage CO detector, garage door, and smoke detector. The DLC 100 provides communication between these devices and allows Centralized control and monitoring.

2.4 Carbon monoxide detection system and door control:

The garage is equipped with CO detector that detects exhaust coming out of the machine. When a rising CO level indicates a possible hazard, the garage door automatically opens to facilitate ventilation and prevent safe.

2.5 Available cover:

Control Room Setting: DLC 100 (IP 192.168.25.1) in the control room, switch, It connects to the DLC 100 via a cable modem and includes a computer for monitoring the entire home Automation system. The control room has a centralized interface, allowing users to control and... Maintain various subsystems. safe.

3 Implementation Details

Implementation details of every component used in the project.

3.1 Fire Detection and Prevention System:

The MCU 1 chip is programmed to monitor for fire signals and activate the fire monitor BR and fire sprinklers when fire is detected. The fire monitor BR alerts the user about the fire, and the fire sprinklers release water to extinguish the fire.

3.2 Motion-Activated Fan Control System:

The MCU 1 chip in the automation room is programmed to detect motion using the motion detector. When motion is sensed, the MCU 1 chip activates the fan, ensuring a comfortable environment for the occupants.

3.3 Kitchen Temperature Control System:

The thermostat in the kitchen communicates wirelessly with the DLC 100 Home Gateway. Based on the user's temperature preferences, the thermostat adjusts the heating and cooling elements to maintain the desired temperature.

3.4 Wireless Devices Connected to DLC 100:

The DLC 100 Home Gateway facilitates communication between the various wireless devices. Each device is assigned a DHCP IP address for identification and control. The DLC 100 manages the devices' status, allowing the user to monitor and control them through the control room PC.

3.5 Control Room Setup:

The control room contains a DLC 100, which serves as the central hub for the entire home automation system. The DLC 100 is connected to a switch, a TV, and a PC. The switch facilitates network connectivity, while the TV and PC provide a user-friendly interface for monitoring and managing the system.

4 Conclusion

In conclusion, the home automation system designed in this project utilizes various components and subsystems to enhance safety, convenience, and energy efficiency within a residential setting. The system incorporates fire detection and prevention, motion-activated fan control, kitchen temperature control, wireless device management, carbon monoxide detection, and garage door control. The centralized control room setup allows for easy monitoring and management of the entire system.

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5 Network Topology