

IMT School

Mobile Controlled Home System

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Introduction

The Mobile Controlled Home System is a project that allows controlling the home by a mobile phone application through Bluetooth. The system has two subsystems: a safety door and a light control system.

System Overview

The safety door can be opened by the mobile application by entering a username and password. The light can be turned on/off also by the mobile phone. The system supports 10 users with different names and passwords. In case of entering the name or password incorrectly 3 times, the system triggers an alarm.

Hardware Components

The hardware components used in this project include:

- Buzzer: Used for the alarm system.
- LED: Used for the light control system.
- DC Motor: Used for the safety door mechanism.
- Bluetooth Module HC06: Used for communication between the mobile application and the microcontroller.
- AVR ATmega32 Microcontroller: The main controller of the system.
- Wires: Used for connecting the components.

Software Implementation

The software for this project is implemented in two parts: the mobile application and the microcontroller firmware.

Mobile Application

The mobile application is responsible for interfacing with the user. It allows the user to enter their username and password, and send commands to the microcontroller over Bluetooth. The mobile application is developed using the Serial Terminal mobile app.

Microcontroller Firmware

The firmware running on the ATmega32 microcontroller receives commands from the mobile application over Bluetooth. It controls the state of the door and the light based on these commands. The firmware is written in C and uses the UART communication protocol for receiving and sending data.

System Operation

When a user enters their username and password in the mobile application, the application sends these details to the microcontroller. If the entered details match with one of the 10 authorized users, the microcontroller opens the door. If the entered details are incorrect 3 times, the microcontroller triggers the alarm.

The user can also control the light using the mobile application. When the user sends a command to turn the light on/off, the microcontroller controls the state of the light accordingly.

Conclusion

The Mobile Controlled Home System provides a convenient and secure way to control the home using a mobile phone. It utilizes Bluetooth technology for communication, making it a cost-effective solution for home automation.

Code

<https://github.com/EslamAlsaed/Mobile-application-with-avr>