Security System Music Player

Team 59

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Abstract: Today's modern anti-theft systems have evolved from much simpler systems, starting with the basic lock and key concept. Since the invention of this and other less complex safety mechanisms, a variety of high-tech security devices have been produced, including RFID tags and biometric identification. However, users do not currently have the option to customize the security device they want, instead, they have to choose from the devices currently available on the market. For Milestone 3, we want to introduce a customizable **anti-theft product** that will play the pre-installed music based on user's choice when the device detects a possible threat around the home.

Project Idea

- The main idea is to create a responsive auditory security system to alert users to any credible safety threats within the range of user's home.

- The central function of this system is to play the music or melody that the user has pre-selected in response to a possible safety threat so that they are aware of the situation.

- There will also be several forms of visual alerts such as LEDs and LCD screens, as well as detecting features such as gas/smoke detector sensor and motion sensor

Project Design

- I/O devices used: 3x Arduino UNOs,LEDs, buttons, smoke/gas sensor, 4x4 keypad, buzzers, photoresistor, ultrasonic sensor, 16x2 LCD screens, potentiometers.

- Communication used: Serial communications or I2C communication to be used

- Original work: We are combining the security system with music player. Security system also includes keypad for input and smoke sensor to detect smoke.

What Worked And What Did not Work

- What worked:

  All the devices, including 4x4 keypad for input, gas sensor to detect smoke hazard are working as expected on individual arduinos on several conditions/ test cases used.

- What did not work:

  Still working on an efficient way to communicate between the Arduinos and how to implement a very basic function to play simple melodies through a buzzer (we are trying to utilize the Arduino MIDI library).

Development Process

- We are able to connect the keypad to one of the Arduino, tested it thoroughly.
- We programmed the Arduino to be able to receive input from the keypad.
- Add the smoke detector to detect if there is any smoke.
- Add the ultrasonic motion sensor to detect if there is a motion.
- Add the LCD screen to display the exact date and time if received a signal from one of the detector, and other things like status of the system (activated or deactivated).
- Add minor parts such as LEDs for alerting the user.
- Plugged Arduinos into the computer for receiving code to run from the computer.
- Connect all 3 Arduinos together and run the whole program.

Team Related Roles

- Team related roles:

    + Son: Coding for the 1st Arduino, main responsible for the presentation slides and most of the documentations.

    + Quan: Coding for the 2nd Arduino, main responsible for the implementation of make sure all the code for Arduinos work together.

    + Akshant: Coding for the 3rd Arduino, main responsible for the circuit development.

Thank you for listening!