Project Proposal

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1 Introduction

This document explains the development of Smart Home Management using an Arduino. The system comprises of a User intrusion detection alarm with an ultrasonic sensor, fire detection alarm with a flame sensor and managing the music tracks using a remote control with an infrared detecting sensor. Music system will be operated by authenticated users, where the users are validated in the system through a touch sensor. Additionally, it is equipped with an LCD screen to show appropriate texts with the sensors information and welcome messages to the device users.

2 Novel Contribution

This project is an integration of simple projects developed by multiple authors in the project hubs of create.arduino.cc, circuitbasics.com, circuitdigest.com, instructables.com and randomnerdtutorials.com websites. The modification from the original projects lies in the module of choosing the music options from the buttons on a remote control, where only the house owners (authenticated users) will be able to access this feature. The key functionalities of the system include sub-systems like

1. Identification of an intruder entering the house through an alarm.
2. Recognize any fire occurrence in the device surroundings with the help of a buzzer.
3. Play music from Arduino buzzers according to the numbered buttons selected on a remote control for authenticated users in the house.
4. Display welcome messages (Good Morning or Good evening) with respect to the user along with Humidity and temperature sensor information by default and other sensors information on the LCD screen by choosing them from the remote control.

3 Motivation

The main intention behind this project is to use some of the easily available sensors and create a simple design that is advantageous in our daily routine in terms of safety, protection and sometimes for entertainment needs. It also gives me a kind of contentment that I used almost all the sensors bought in my Arduino kit.

4 Materials Required

- Arduino UNO
- Ultrasonic sensor
- Flame sensor
- Touch sensor

- Photoresistor
- IR Receiver
- DTH11
- LCD Display
- Remote Control
- Breadboard
- Rotary Potentiometer
- Active Buzzer
- Passive Buzzer
- Resistors
- Jumper wires

5 Milestones

To keep a track of the project implementation, the following milestones are supposed to be met:

Milestone 1	**March 8**	**Gathering and assembling required components**
Milestone 2	**March 13**	**Complete user intrusion detection module and identifying the humidity and temperature info from sensor**
Milestone 3	**March 21**	**Coding to use the IR Receiver and play sounds using remote control**
Milestone 4	**March 26**	**Complete alarm system for fire detection module**
Milestone 5	**April 2**	**Integrate an LCD that connects with all modules**
Milestone 6	**April 5**	**Complete demo of the working system**
Milestone 7	**April 9**	**Stretch goal: Integrate an RGB LED to Arduino board to identifying the working sensors at any given moment**

I believe that I could definitely reach the sixth milestone, as I do own capabilities of integrating ideas to build them into one. The final one is going to be like driving an extra mile, that comforts the people having a problem in reading the texts on an LCD screen. So, I would like to consider this milestone only after completing the end finishes that are to be done for its previous modules.

6 Team Roles

This is an individual project and I will be responsible for doing the coding stuff and documentation.

7 Summary

The ideology of this system came up from the need to design a low-priced device that meets the minimum requirements for an individual home, which is an amalgamation of a couple of security measures along with music play options. As proposed, a moderate level of protection and safety can be guaranteed for a house that cannot afford a costly surveillance and alarm system.

References

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