CSE 316 Project: Room Environment Monitor

A Brief Description

We will monitor the value of temperature, humidity and sound intensity of a room and notify the manager when any of these parameters exceed a certain threshold.

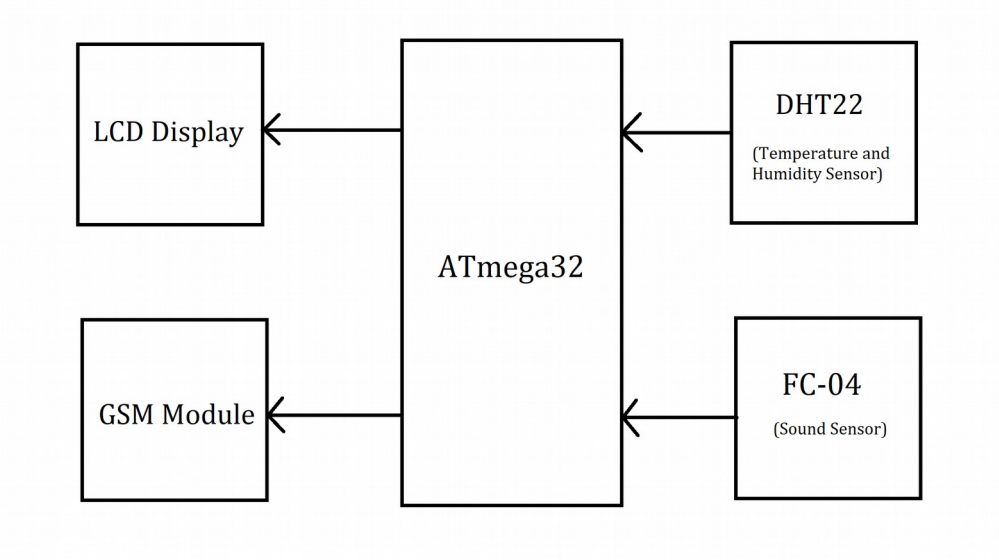
Required Equipments

- ATmega32 Microcontroller
- DHT22 Temperature and Humidity Sensor
- FC-04 Sound Sensor
- Sim900a GSM Module
- LCD Display (16x2)
- Arduino Uno R3
- USBasp AVR Programmer

How it works?

The DHT22 sensor sends 40 bits to the ATmega32. We parsed the binary number into two real numbers representing humidity and temperature. The FC-04 sound sensor provides a voltage to the ATmega32 corresponding to the sound intensity. We converted the voltage to sound intensity in decibel. We showed these parameters on the LCD display. After then, we checked if any of those parameters crossed their respective critical value. If yes, we called the manager (so that immediate attention can be given) and sent an SMS containing the current value of the parameter which crossed its critical value through our GSM module.

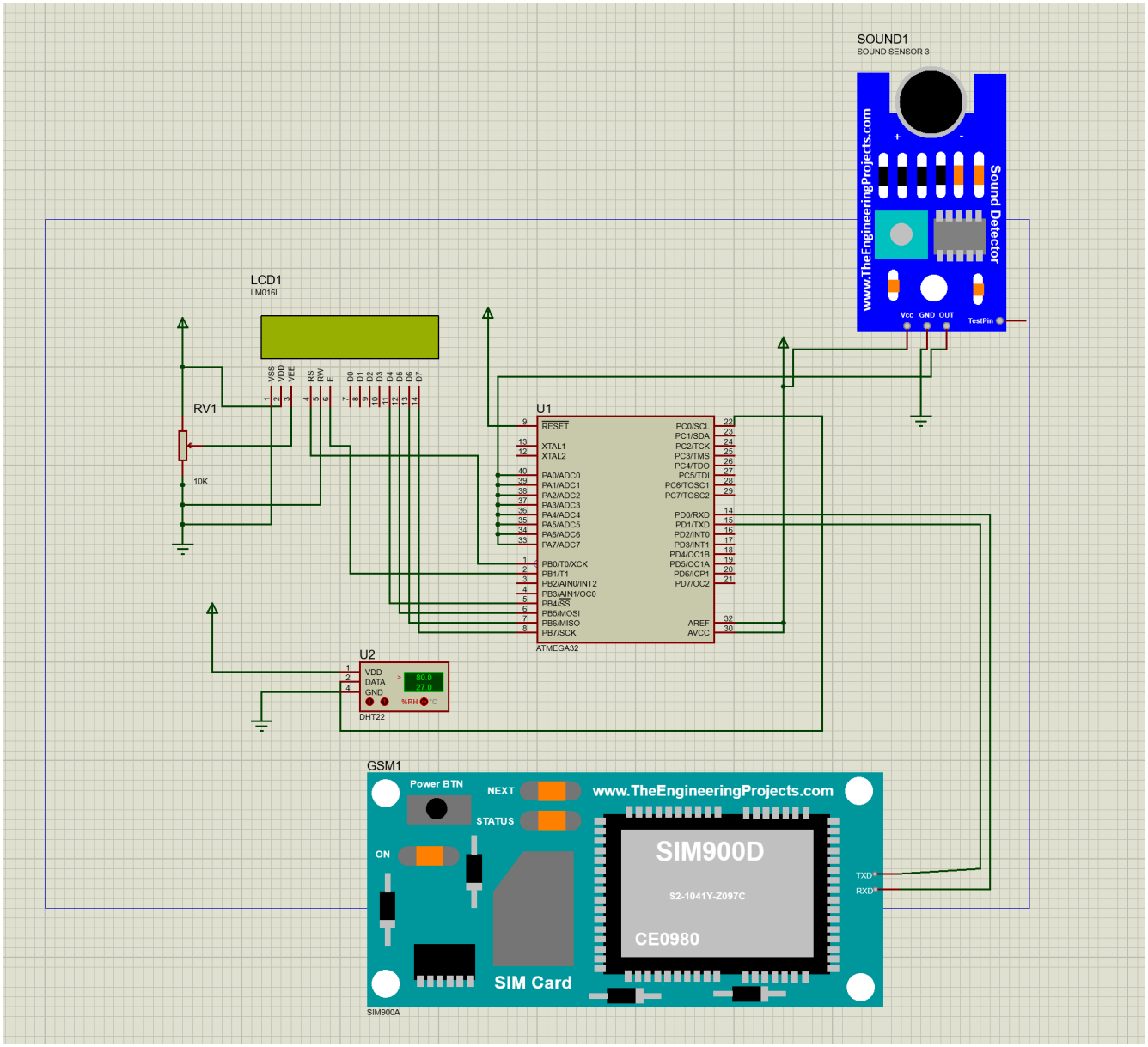
Block Diagram



Algorithm

1. Read Temperature, Humidity and Sound data from the sensors
2. Show the values in the LCD module
3. If humidity > 94% or temperature > 35C or sound intensity > 80dB
4. Notify the manager by a phone call and an SMS using GSM
5. Repeat (1)

Detailed Pin Diagram



Problems Faced

1. Initially, we used DHT11 sensor for measuring humidity and temperature. But the sensor would repeatedly provide garbage value. After we used DHT22 sensor instead, we found success.

2. Initially, we couldn't send digit in our SMS. After many trial and error, we managed to solve this problem.

3. Since the sound sensor was registering more than 5V, we added a 9V battery for better accuracy. But this battery burned some of our wires and we had to construct our circuit again.

4. Our LCD module was not showing any output at the beginning.

5. The GSM module was not working in the beginning when the power supply was coming indirectly from the circuit. The GSM module started working only when we gave direct power supply using an Arduino Uno.

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