

The background of the slide is composed of three geometric sections: a dark grey triangle on the left, a bright orange triangle on the right, and a dark grey horizontal bar at the bottom. A white diagonal line separates the top-left dark grey area from the bottom dark grey bar.

DormWatch



Human Centered Design

Our Solution:
DormWatch.

Key Features

1. Noise Level Monitoring
2. Programmed Quiet Hours
3. Appropriate Feedback for loudness



**Make Some
NOISE!!!**



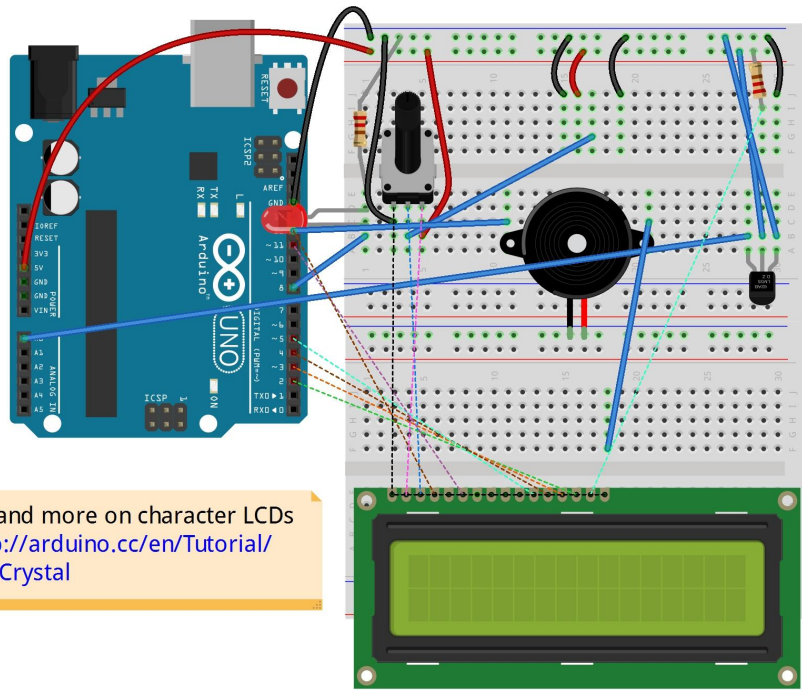
Project Chronology

1. Identify problem and criteria:
 - Create something relevant & innovative in a timely manner
2. Brainstorm possible solutions:
 - Pill dispenser, Dorm Watch system, alarm clock, etc.
3. Select best solution:
 - Dorm Watch
4. Construct prototype:
 - Develop possible designs, use Sparkfun kit and add sound sensor to breadboard
 - Write code to handle inputs, collaborate using GitHub
 - Create packaging
5. Test:
 - Initial test was run with LED, then temperature sensor, and then sound sensor
6. Present solution

Hardware

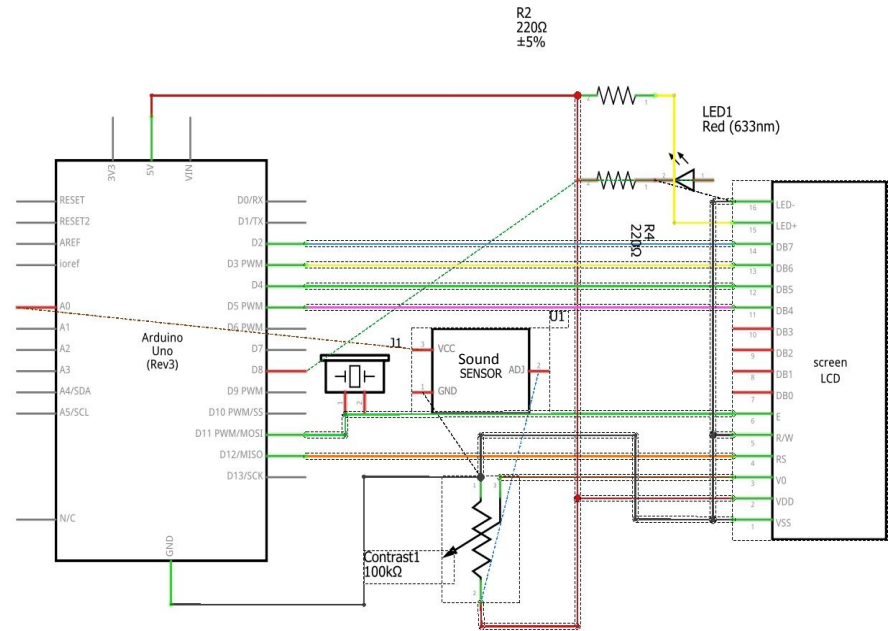
- The circuit contains:
 - LCD w/ Potentiometer for contrast adjustment
 - Piezoelectric buzzer
 - LED
 - Sound Sensor
 - RedBoard

Design



Code and more on character LCDs at <http://arduino.cc/en/Tutorial/LiquidCrystal>

fritzing



Algorithm

- Receive sound sensor analog inputs
- Check input against pre-set threshold value
- If input exceeds threshold 50 times in 25 seconds
 - Display appropriate feedback (message/tone)

Code

```
95 // The LED must light up for 15 seconds if
96 // the sound level is exceeded for a given amount of time, in this case
97 // when the counter exceeds 80.
98 if (counter > ledThreshold) {
99     //highNoise();
100     unsigned long timeStart = millis();
101
102     // Print a message telling people to be quiet
103     lcd.clear();
104     lcd.setCursor(0, 0);
105     lcd.print("SHHHHHHHHHHH");
106     lcd.setCursor(0, 1);
107     lcd.print("BE QUIET!!!!");
108     // Turn the LED on
109     digitalWrite(8, HIGH);
110
111     // Keep the message on the lcd screen and the led on for 15 seconds
112     while (millis() - timeStart < 15000) {
113         // play a tone to annoy people
114         tone(7, 440, 5);
115
116         // magical wait statement
117         delay(5);
118     }
119
120     // After the current period is over, turn the LED off, and the tone will
121     // automatically stop playing.
122     digitalWrite(8, LOW);
123     previousTime = millis();
```

If sensor value
is too high,

Give feedback:
sound/tone.

```
110
111 // Keep the message on the lcd screen and the led on for 15 seconds
112 while (millis() - timeStart < 15000) {
113     // play a tone to annoy people
114     tone(7, 440, 5);
115
116     // magical wait statement
117     delay(5);
118 }
119
120 // After the current period is over, turn the LED off, and the tone will
121 // automatically stop playing.
122 digitalWrite(8, LOW);
123 previousTime = millis();
124 counter = 0;
125 }
126
127
128 // After each 25-second period of over, set the time comparator to the current time
129 // and reset the high counter.
130 if (millis() - previousTime > interval) {
131     previousTime = millis();
132     counter = 0;
133 }
134
135
136
137 delay(10);
138 }
```

Eventually,
turn off tone.

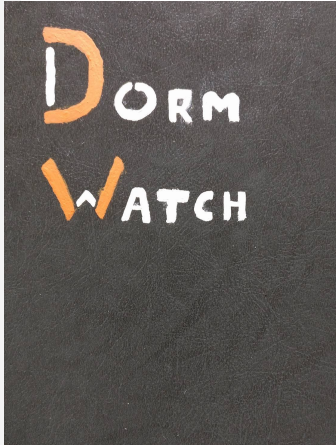
Reset the time
counter.

Further Improvements

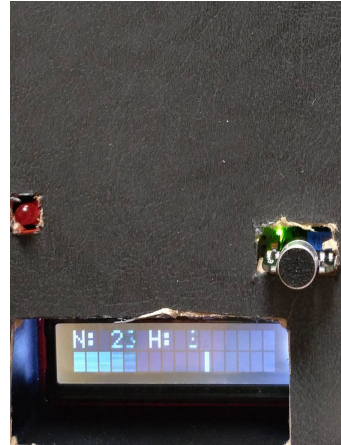
- ▶ Panoramic photography
- ▶ Facial recognition
- ▶ Add a clock
- ▶ Data Logging
- ▶ Snapchat Account
- ▶ Wider application to schools and other public areas that are sound sensitive

Human Centered Design: Psychology

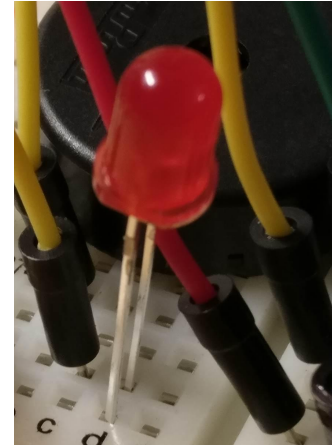
COLORING



THRESHOLD



NEGATIVE REINFORCEMENT



Teamwork

▶ Teams

- ▷ Software: Shantanu, Niranjana, Joshua
- ▷ Hardware/Aesthetics: Sukrut, Daniel, Nitya, Aditya, Pranav

▶ Overall group dynamic:

- ▷ Strengths: good collaboration, harmony in ideas for project, not much conflict
- ▷ Weaknesses: time management