Voice Activated Security System

!Deactivate or be locked out forever!

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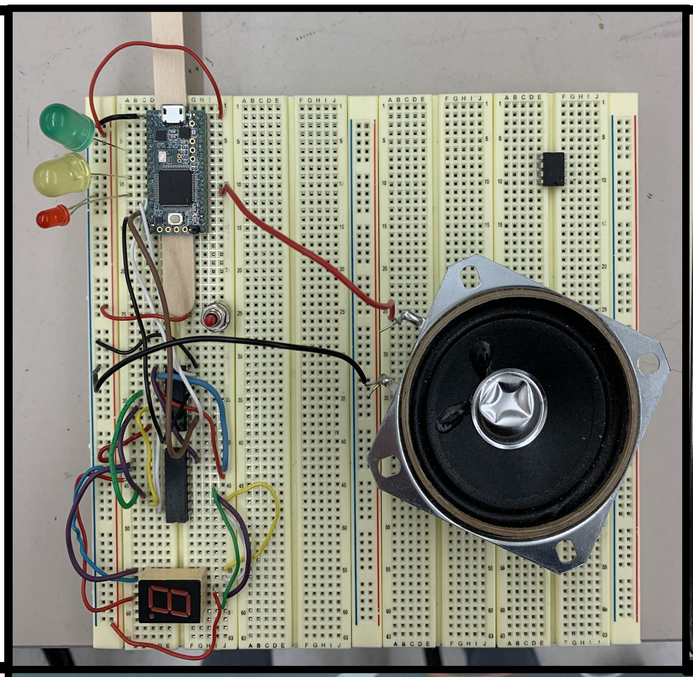
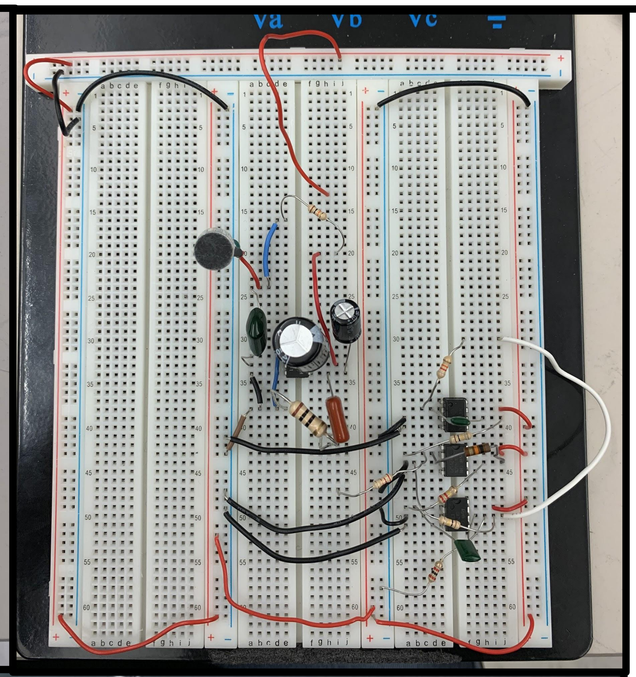
Our Project:

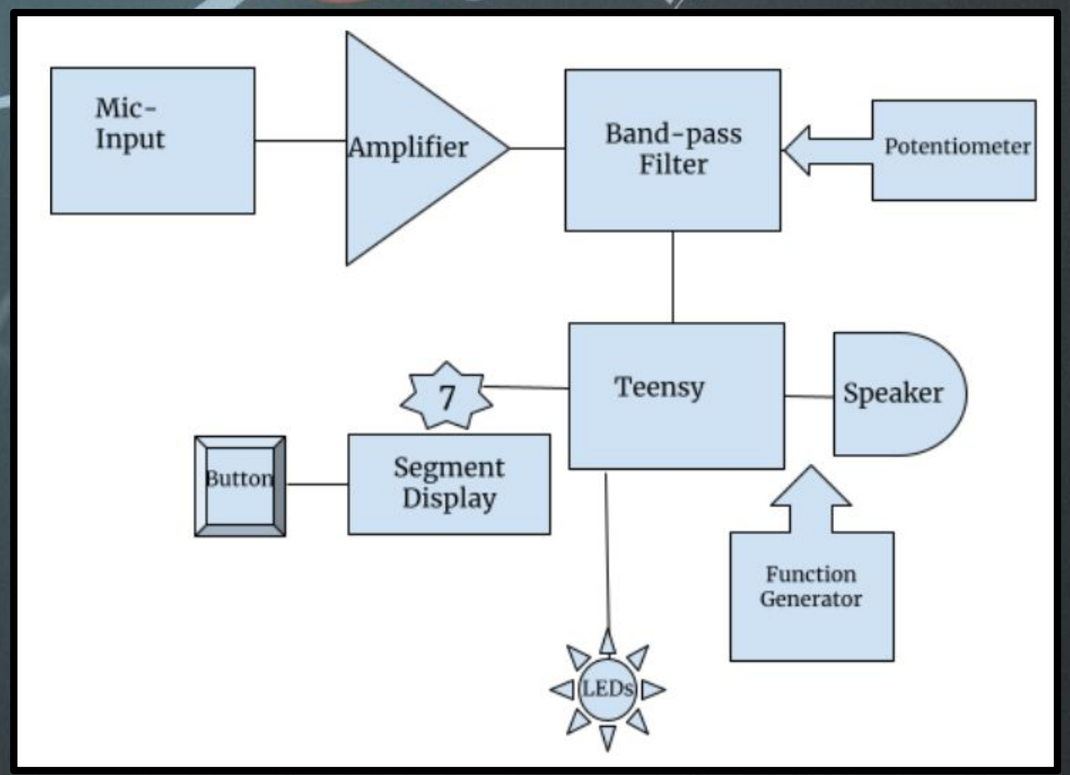
The voice activated security system is essentially a game where a player has to press a button to initiate the device then has to speak into a microphone and guess at what frequency they have to say the words “deactivate”. If they initiate with the wrong frequency, a countdown will begin and the player has 9 seconds to repeat the word “deactivate” in different pitches until the security system turns on a green LED and a tone of victory is played. If the player is unsuccessful, the LED will flash red and play a tone of failure.





Components:

1 Power Supply
Microphone
Speaker
LM386
10 µF capacitor
470 µF capacitor
0.047 µF capacitor
0.1 µF capacitor
10 Ω resistor
8 Ω resistor
10 kΩ resistor
21 kΩ resistor
10 kΩ resistor
(2) 100 kΩ resistor
2 kΩ resistor
(2) 1000 pF capacitor
(3) LM741
1 Teensy
Button
74LS47
7116RLF
7-segment display
(2) 741CN op-amp
(1) 17741 op-amp
1 Potentiometer
1 Oscilloscope
1 Function Generator



How It Works:

With the use of both digital and analog components, we decided to use a microphone as the input into an amplifier that is then connected to an active band-pass filter and then connected to Teensy. The band pass filter will allow us to pre-determine which frequencies we will allow the player to pass through as they speak into the microphone. The three outputs of the Teensy are the 7-segment display that will execute the 9 second countdown, the flashing LEDs, and the speaker. Along with the 7-segment display there is a button that will allow the game to begin. The tones are played by sending a voltage into the Voltage to Frequency input of the function generator, allowing us to connect the speaker output to the teensy.

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Our Tutors The Goats