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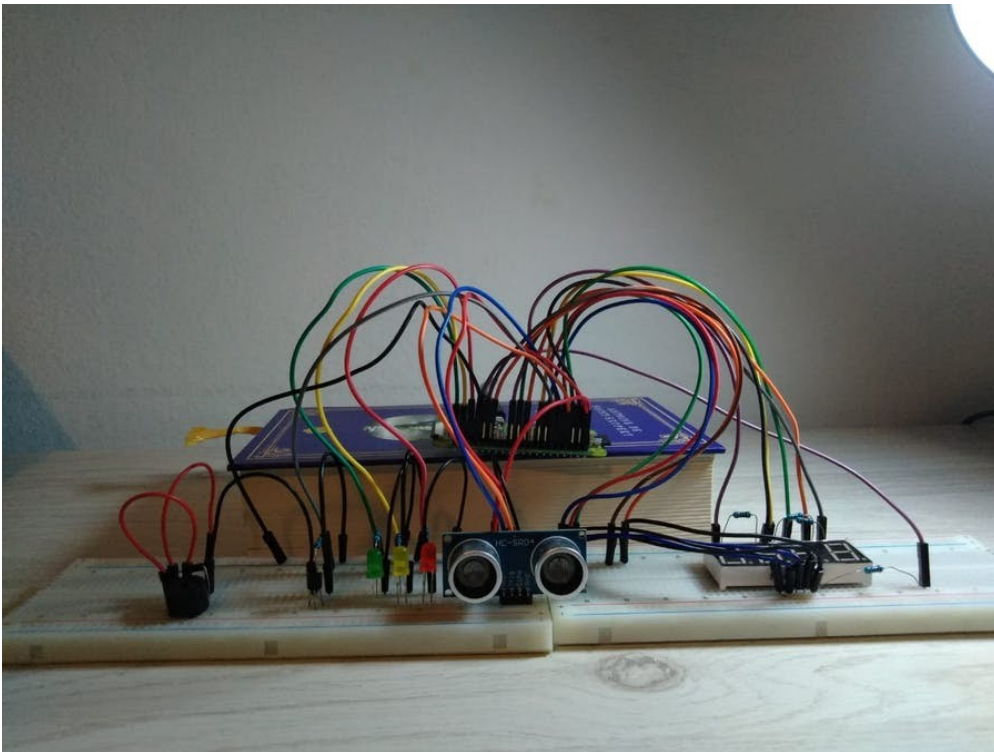
Proiect:

Park sensor with 4 Digit 7 Segment Display

Elevator pitch:

The parking sensor displays the distance between the obstacle and the sensor. When the obstacle is very close a sound will be transmitted.

Cover image:



Story:

Our project wants to help all the drivers to park their cars easily and without the risk of hitting any obstacle.

How it works?

1. If the obstacle is far enough, and it doesn't represent a threat, the green led will turn on and the other two leds (yellow and red) will turn off.
2. If the obstacle is at an intermediate distance from the sensor, neither too close, nor too far, the yellow led will turn on and the other two, green and red, will turn off.
3. If the obstacle is very close to the sensor, the red led will turn on, the green and yellow will turn off and the warning sound will be transmitted.

All this time the distance from the obstacle to the car will be displayed permanently using the 4-












digit segment 7 with common-cathode display.

To check the created program, we considered the following cases (intervals):

- | distance between obstacle and sensor | Red Led | Yellow Led | Green Led | Buzzer |
|--------------------------------------|---------|------------|-----------|--------|
| ≤ 10 cm | on | off | off | on |
| $(10,20)$ cm | off | on | off | off |
| ≥ 20 cm | off | off | on | off |

Components and apps:

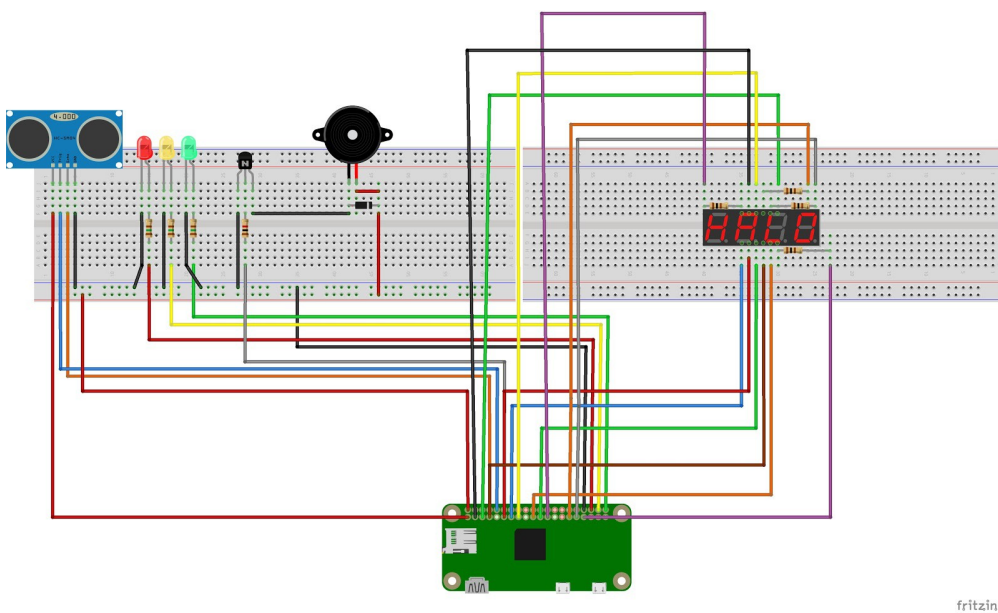
Hardware components

 Raspberry Pi Zero Wireless	× 1	<input type="button" value="🛒"/> <input type="button" value="▼"/>
 LED (generic)	× 3	<input type="button" value="🛒"/> <input type="button" value="▼"/>
 Ultrasonic Sensor - HC-SR04 (Generic)	× 1	<input type="button" value="🛒"/>
 Breadboard (generic)	× 2	<input type="button" value="🛒"/> <input type="button" value="▼"/>
 Buzzer	× 1	<input type="button" value="🛒"/> <input type="button" value="▼"/>
 1N4007 – High Voltage, High Current Rated Diode	× 1	<input type="button" value="🛒"/>
 General Purpose Transistor NPN	× 1	<input type="button" value="🛒"/>
 Resistor 1k ohm	× 1	<input type="button" value="🛒"/>
 Resistor 100 ohm	× 4	<input type="button" value="🛒"/>
 Through Hole Resistor, 150 ohm	× 3	<input type="button" value="🛒"/>
Male/Male Jumper Wires	× 8	
4 Digit 7 Segment Display	× 1	<input type="button" value="🛒"/>
 Male/Female Jumper Wires	× 21	<input type="button" value="🛒"/> <input type="button" value="▼"/>

Software apps and online services

 Raspberry Pi Raspbian	<input type="button" value="🛒"/>
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Schematics



Code:

<https://github.com/ManciuLarisaEvelina/SM-Project/blob/master/parkSensor4Digit7SegmentDisplay.py>

Video:

<https://www.youtube.com/watch?v=WieWguVmW2s&feature=youtu.be>

<https://www.youtube.com/watch?v=LnpsFEb1c5A&feature=youtu.be>

Hackster:

<https://www.hackster.io/manciu-larisa-evelina/park-sensor-with-4-digit-7-segment-display-fc6d94#things>