Arduino uno – Parking sensor Project

A basic functional parking sensor. It uses an ultrasonic sensor to gather distance information and send it back to the microcontroller. Depending on the distance (measured in cm) a different number of LEDs will light up. If there is no object in the proximity that the sensor is set to measure no LED will light up.

Components:

-Arduino uno R3 (https://docs.arduino.cc/resources/datasheets/A000066-datasheet.pdf)

-HC-SR04 ultrasonic sensor (https://lastminuteengineers.com/arduino-sr04-ultrasonic-sensor-tutorial/)

-MB-102 solderless breadboard (https://handsontec.com/index.php/product/mb102-830-full-sized-solderless-bread-board/)

-2 colored LEDs (yellow and red) (https://www.electronics-notes.com/articles/electronic_components/diode/light-emitting-diode-led-datasheet-specifications-parameters-characteristics.php)

-circuit wires (https://www.thespruce.com/electrical-wiring-1152909)

-2 220ohm resistors (https://somanytech.com/220-ohm-resistor-color-code/)

Set-up:

1.Connect the ultrasonic sensor to the Arduino (5v to Vcc, pin 10 to Trigger, pin 11 to Echo, ground to ground)

2.Connect the positive side of the Leds to pins 4 and 7 respectively and add a 220ohm resistor between the negative side of the led and the ground wire of the breadboard.

3.Connect the arduino to a pc, upload and run the script.

Running Scritp:

```
#include <NewPing.h>


NewPing sonar(10,11,400);

int LED1=7;
```

```
int LED2=4;

void setup() {
  pinMode(LED1, OUTPUT);
  pinMode(LED2, OUTPUT);
  Serial.begin(9600);
  delay(50);
}

void loop() {
  Serial.print("The Distance is:");
  Serial.println( sonar.ping_cm());
      digitalWrite(LED1, LOW);
      digitalWrite(LED2, LOW);
  if(sonar.ping_cm()!=0){
    if(sonar.ping_cm()<=6){
       digitalWrite(LED1, HIGH);
       digitalWrite(LED2, HIGH);
    }else if(sonar.ping_cm()<=12){
      digitalWrite(LED1, HIGH);
      digitalWrite(LED2, LOW);
    }
    else{
      digitalWrite(LED1, LOW);
      digitalWrite(LED2, LOW);
    }
  }
```

```
  delay(1000);
}
```

Schematic: