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#include <Wire.h>
#include <LiquidCrystal_I2C.h>

// Define LCD (I2C Address: 0x27 or 0x3F based on module)
LiquidCrystal_I2C lcd(0x27, 16, 2);

// Define sensor and output pins
const int trigPin = 7;
const int echoPin = 6;
const int buzzer = 9;
const int greenLED = 3;
const int yellowLED = 4;
const int redLED = 5;

long duration;
int distance;

void setup() {
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  pinMode(buzzer, OUTPUT);
  pinMode(greenLED, OUTPUT);
  pinMode(yellowLED, OUTPUT);
  pinMode(redLED, OUTPUT);

  lcd.begin();
  lcd.backlight();
  lcd.setCursor(0, 0);
  lcd.print("Reverse Parking");

  delay(1000);
}

void loop() {
  // Send ultrasonic pulse
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  // Read echo time
  duration = pulseIn(echoPin, HIGH);
  distance = duration * 0.034 / 2; // Convert time to distance in cm

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// Display distance on LCD
lcd.setCursor(0, 1);
lcd.print("Distance: ");
lcd.print(distance);
lcd.print(" cm ");

// LED and Buzzer Logic
if (distance > 50) {
    digitalWrite(greenLED, HIGH);
    digitalWrite(yellowLED, LOW);
    digitalWrite(redLED, LOW);
    noTone(buzzer);
}
else if (distance > 20 && distance <= 50) {
    digitalWrite(greenLED, LOW);
    digitalWrite(yellowLED, HIGH);
    digitalWrite(redLED, LOW);
    tone(buzzer, 1000, 200);
}
else if (distance > 5 && distance <= 20) {
    digitalWrite(greenLED, LOW);
    digitalWrite(yellowLED, LOW);
    digitalWrite(redLED, HIGH);
    tone(buzzer, 2000, 100);
}
else if (distance <= 5) {
    digitalWrite(greenLED, LOW);
    digitalWrite(yellowLED, LOW);
    digitalWrite(redLED, HIGH);
    tone(buzzer, 3000);
}

delay(200);
}

```