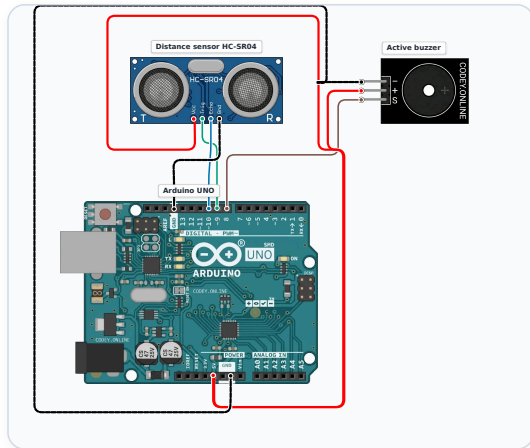


★★ Advanced beginner ⌚ 20 minutes

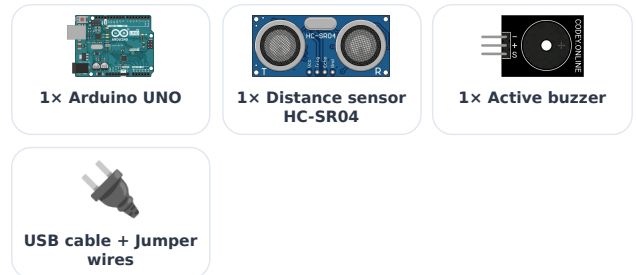
Parking sensor

You build a parking sensor, just like in a car. The closer you get to the sensor, the faster the buzzer beeps. Very close? Then you hear one long tone.

Wiring diagram



What do you need?



This is how you build it

1. Connect the HC-SR04: Trig to pin 9, Echo to pin 10, Vcc to 5V and Gnd to GND.
2. Connect the buzzer: S to pin 8, + to 5V and – to GND.
3. Use the + and – strips on your breadboard for 5V and GND.

The code

```
// Parking sensor
// The closer you get to the sensor, the faster the buzzer beeps.
// Just like in a car!

const int TRIG_PIN = 9;    // Trig of the HC-SR04 on pin 9
const int ECHO_PIN = 10;   // Echo of the HC-SR04 on pin 10
const int BUZZER_PIN = 8;  // S of the buzzer on pin 8

void setup() {
  Serial.begin(9600);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  pinMode(BUZZER_PIN, OUTPUT);
}

// Measure the distance in centimeters
long measureDistance() {
  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);    // Send a short sound (you
  // cannot hear it)
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);

  long duration = pulseIn(ECHO_PIN, HIGH, 30000); // How long
  // until the echo comes back?

  if (duration == 0) return 999;          // No echo:
  nothing nearby
  return duration / 58;                   // Convert time
  // to centimeters
}

void loop() {
  long distance = measureDistance();
  Serial.print(F("Distance: "));
  Serial.print(distance);
  Serial.println(F(" cm"));

  if (distance < 5) {
    digitalWrite(BUZZER_PIN, HIGH); // Very close: one long tone
    delay(100);
  } else if (distance < 50) {
    digitalWrite(BUZZER_PIN, HIGH); // Short beep
    delay(50);
    digitalWrite(BUZZER_PIN, LOW);
    delay(distance * 10);           // Closer = shorter pause =
    // faster beeps
  } else {
    digitalWrite(BUZZER_PIN, LOW); // Far away: quiet
    delay(100);
  }
}
```

What does the code do?

- `measureDistance()` sends a sound and measures how long it takes for the echo to come back. We turn that into centimeters.
- More than 50 cm away: the buzzer is quiet.
- Closer: the pause between the beeps gets shorter. Under 5 cm it beeps without stopping.

Try this...

- Make the parking sensor start beeping from 1 meter away
- Add a red LED that lights up when it is too close
- Show the distance in the serial monitor, with a little bar of stars

🚀 Build this project with Codey: open codey.online/starter-kits/uno/projects/parking-sensor and click MAKE THIS. Then the code and the wiring diagram are ready right away.