

### Grage Gate Code:

```
// Define pins
const int trigPin = 9; // HC-SR04 Trig pin connected to Arduino digital pin 9
const int echoPin = 10; // HC-SR04 Echo pin connected to Arduino digital pin 10
const int servoPin = 3; // Servo signal pin connected to Arduino digital pin 3

// Create Servo object
Servo gateServo;

// Distance thresholds
const int detectionDistance = 15; // Distance (in cm) to detect the car

void setup() {
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);

  gateServo.attach(servoPin);
  gateServo.write(0); // Start with the gate closed (0 degrees)

  Serial.begin(9600); // For debugging
}

void loop() {
  long duration;
  int distance;
```

```
// Send ultrasonic pulse
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);

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

Serial.print("Distance: ");
Serial.println(distance); // Debugging

// Check distance and control gate
if (distance <= detectionDistance && distance > 0) {
  gateServo.write(90); // Open the gate (90 degrees)
  delay(3000); // Wait 3 seconds for the car to pass
  gateServo.write(0); // Close the gate (0 degrees)
}

delay(100); // Small delay for stability
}
```