

Security System code

```
// This is an example where the UltraSonic sensor is used to trigger  
the LEDs on and off
```

```
const int LED_PINS_LEFT = 9; // Connects LED pin to the Arduino Board  
Pin 9
```

```
const int LED_PINS_RIGHT = 8; // Connects LED pin to the Arduino Board  
Pin 8
```

```
const int TRIG_PIN = 7; // Connects Ultrasonic Sensor's TRIG pin to  
the Arduino Board Pin 7
```

```
const int ECHO_PIN = 6; // Connects Ultrasonic Sensor's ECHO pin to  
the Arduino Board Pin 6
```

```
const int DISTANCE_THRESHOLD = 10; // Sets the max distance in  
centimeters the Ultrasonic Sensor will use to decide when to turn on  
the LEDs
```

```
// variables will change:
```

```
float duration_us, distance_cm;
```

```
void setup() {
```

```
  Serial.begin (9600); // initialize serial port
```

```
  pinMode(TRIG_PIN, OUTPUT); // set trigger pin to output mode on the  
Arduino
```

```
  pinMode(ECHO_PIN, INPUT); // set echo pin to input mode on the  
Arduino
```

```
  pinMode(LED_PINS_LEFT, OUTPUT); // set led pins to output mode on  
the Arduino
```

```
  pinMode(LED_PINS_RIGHT, OUTPUT);
```

```
}
```

```
void loop() {
```

```
  // generate 10-microsecond pulse to TRIG pin
```

```
  digitalWrite(TRIG_PIN, HIGH);
```

```
  delayMicroseconds(10);
```

```
  digitalWrite(TRIG_PIN, LOW);
```

```
  // measure duration of pulse from ECHO pin
```

```
  duration_us = pulseIn(ECHO_PIN, HIGH);
```

```
  // calculate the distance
```

```
  distance_cm = 0.017 * duration_us;
```

```
  if(distance_cm < DISTANCE_THRESHOLD) // if Ultrasonic senses object  
within threshold,
```

```

{
  digitalWrite(LED_PINS_LEFT, HIGH); // turns on LEDs
  digitalWrite(LED_PINS_RIGHT, HIGH);
}
// turn on LED
else if (distance_cm > DISTANCE_THRESHOLD) // if onject beyond
threshold,
{
  digitalWrite(LED_PINS_LEFT, LOW); // turns off LEDs
  digitalWrite(LED_PINS_RIGHT, LOW);
}

// print the value to Serial Monitor
// helpful for troubleshooting
Serial.print("distance: ");
Serial.print(distance_cm);
Serial.println(" cm");

// pause for half a second before checking the distance from the
sensor again
delay(500);
}

```

Color coding

- Comment lines are grey. They provide useful descriptions but do not alter the functionality of the code.
- **Command lines which relate to the LEDs are red**
- **Command lines which relate to the Ultrasonic sensor are blue**
- **A serial monitor is used for troubleshooting; it provides the distances measured. Those lines are green.**
- **Command lines used for decision making based on distance are orange.**
- **Command lines which are black are essential for every Arduino sketch**