**Practical 9**

**AIM:** Building Intrusion Detection System with Arduino and Ultrasonic Sensor.

#define echo 2

#define trig 3

#define outA 8 // Red LED

#define outB 9 // Green LED

#define outC 10 // Buzzer

float duration; // time taken by the pulse to return back

float distance; // one way distance travelled by the pulse

const int intruderDistance = 10; // the minimum distance up to which the

sensor is able to sense any object

void setup() {

pinMode(trig, OUTPUT);

pinMode(echo, INPUT);

pinMode(outA, OUTPUT);

digitalWrite(outA, LOW);

pinMode(outB, OUTPUT);

digitalWrite(outB, LOW);

pinMode(outC, OUTPUT);

digitalWrite(outC, LOW);

Serial.begin(9600);

}

void loop() {

time\_Measurement();

distance = (float)duration \* (0.0343) / 2;

// calculate the one way distance travelled by the pulse

Serial.println(distance);

alarm\_condition();

}

void time\_Measurement()

{ // function to measure the time taken by the pulse to return back

digitalWrite(trig, LOW);

delayMicroseconds(2);

digitalWrite(trig, HIGH);

delayMicroseconds(10);

digitalWrite(trig, LOW);

duration = pulseIn(echo, HIGH);

}

void alarm\_condition()

{ //function to execute the output commands based on the sensor

input

if(distance<=intruderDistance)

{

digitalWrite(outA,HIGH);

digitalWrite(outB,LOW);

analogWrite(outC,200);}

else

{

digitalWrite(outA,LOW);

digitalWrite (outB, HIGH);

analogWrite (outC,0);

}

}

**OUTPUT:**

