

1) Ultrasonic Sensor with LED

```
int trigPin = 9;
int echoPin = 10;
int ledPin = 6;

void setup() {
  Serial.begin(9600);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  pinMode(ledPin, OUTPUT);
}

void loop() {
  long duration;
  float distance;

  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  duration = pulseIn(echoPin, HIGH);
  distance = duration * 0.034 / 2;

  Serial.print("Distance: ");
  Serial.print(distance);
  Serial.println(" cm");

  if (distance < 10 && distance > 0) {
    digitalWrite(ledPin, HIGH);
  } else {
    digitalWrite(ledPin, LOW);
  }

  delay(500);
}
```

2) Blinking LED

```
int led = 6;
```

```
void setup() {  
    pinMode(led, OUTPUT);  
}  
  
void loop() {  
    digitalWrite(led, HIGH);  
    delay(1000);  
    digitalWrite(led, LOW);  
    delay(1000);  
}
```

3)Traffic Light System

```
int redLed = 6;
```

```
int yellowLed = 7;
```

```
int greenLed = 8;
```

```
void setup() {  
    pinMode(redLed, OUTPUT);  
    pinMode(yellowLed, OUTPUT);  
    pinMode(greenLed, OUTPUT);  
}
```

```
void loop() {  
    digitalWrite(greenLed, HIGH);  
    delay(5000);  
    digitalWrite(greenLed, LOW);  
  
    digitalWrite(yellowLed, HIGH);  
    delay(2000);
```

```
digitalWrite(yellowLed, LOW);

digitalWrite(redLed, HIGH);
delay(5000);
digitalWrite(redLed, LOW);
}
```

4)Smoke Sensor with Buzzer

```
int smokeSensor = A0;
int buzzer = 8;
int redLed = 6;
int greenLed = 7;
int threshold = 400;

void setup() {
  Serial.begin(9600);
  pinMode(smokeSensor, INPUT);
  pinMode(buzzer, OUTPUT);
  pinMode(redLed, OUTPUT);
  pinMode(greenLed, OUTPUT);
}

void loop() {
  int smokeLevel = analogRead(smokeSensor);
  Serial.print("Smoke Level: ");
  Serial.println(smokeLevel);

  if (smokeLevel > threshold) {
```

```
    digitalWrite(buzzer, HIGH);  
    digitalWrite(redLed, HIGH);  
    digitalWrite(greenLed, LOW);  
} else {  
    digitalWrite(buzzer, LOW);  
    digitalWrite(redLed, LOW);  
    digitalWrite(greenLed, HIGH);  
}
```

```
delay(1000);
```

5) IR SENSOR

```
int irSensor = 2;
```

```
int led = 6;
```

```
int obstacle;
```

```
void setup() {  
    Serial.begin(9600);  
    pinMode(irSensor, INPUT);  
    pinMode(led, OUTPUT);  
}
```

```
void loop() {  
    obstacle = digitalRead(irSensor);  
  
    if (obstacle == LOW) {  
        digitalWrite(led, HIGH);  
        Serial.println("Obstacle detected! LED is ON.");  
    } else {
```

```
        digitalWrite(led, LOW);  
        Serial.println("No obstacle detected. LED is OFF.");  
    }  
}
```

6)Flame sensor

```
int flameSensor = A0;  
int led = 6;  
int threshold = 400;  
void setup() {  
    Serial.begin(9600);  
    pinMode(flameSensor, INPUT);  
    pinMode(led, OUTPUT);  
}  
void loop() {  
    int flameLevel = analogRead(flameSensor);  
    Serial.print("Flame Level: ");  
    Serial.println(flameLevel);  
  
    if (flameLevel > threshold) {  
        digitalWrite(led, HIGH);  
        Serial.println("Flame detected! LED is ON.");  
    } else {  
        digitalWrite(led, LOW);  
        Serial.println("No flame detected. LED is OFF.");  
    }  
    delay(500);  
}
```