# IR Proximity Alert System with Visual & Audio Feedback

## TEAM MEMBERS:

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## PROBLEM STATEMENT:

Develop an IR Proximity Alert System using a VEGA Aries board that:

- Activates a Red LED + Buzzer when an object is detected (warning state).
- Shows a Green LED + Silent mode when no object is present (safe state).
- Provides real-time debugging via Serial Monitor (for calibration and testing).

## COMPONENTS USED:

Aries Development Board v3, USB Cable, IR sensor, Buzzer, RYG LED Strip

## PIN CONNECTIONS:

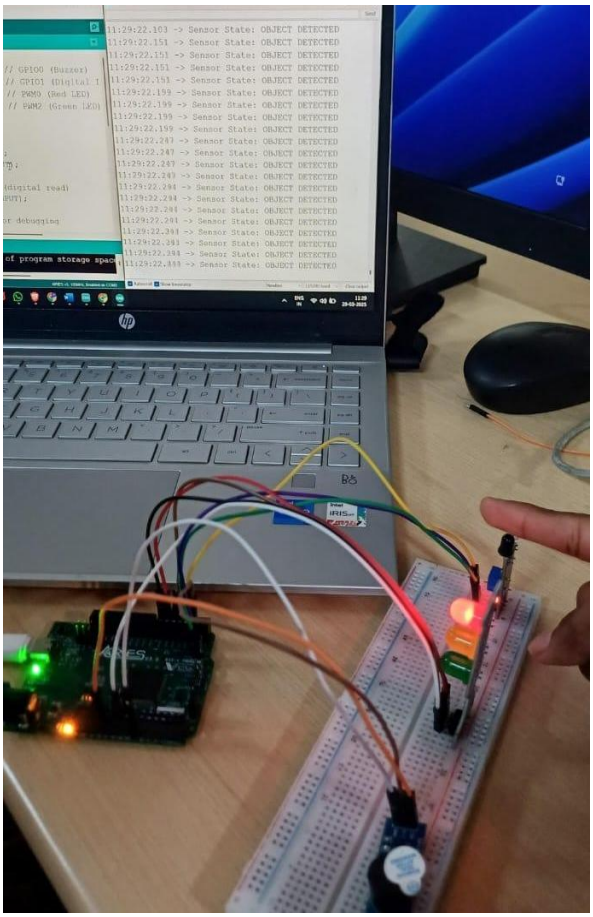
| Component | VEGA Aries Connection |
|---|---|
| IR Sensor (HW-201) | VCC → 3.3V<br>GND → GND<br>OUT → GPIO1 (Analog Input) |
| Buzzer | VCC → 3.3V<br>I/P → GPIO0<br>GND → GND |
| LED Strip | GND → GND<br>Red → PWM0<br>Yellow → PWM1 (unused)<br>Green → PWM2 |

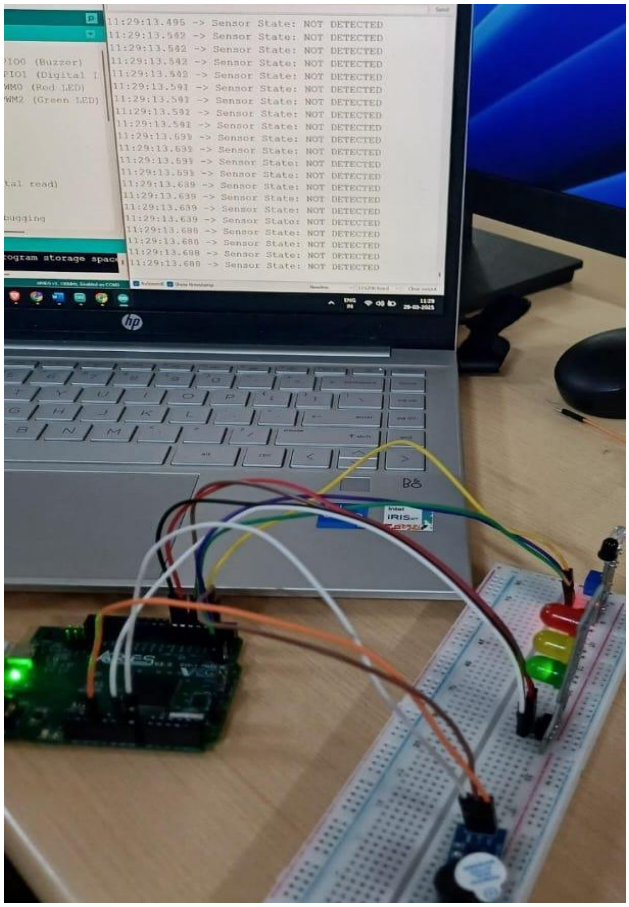
## CODE:

```
// Pin Definitions
```

```
const int BUZZER_PIN = 0;       // GPIO0 (Buzzer)
const int PROX_SENSOR_PIN = 1;  // GPIO1 (Digital Input from IR Sensor)
const int RED_LED_PIN = 0;      // PWM0 (Red LED)
const int GREEN_LED_PIN = 2;    // PWM2 (Green LED)

void setup() {
  pinMode(BUZZER_PIN, OUTPUT);
  pinMode(RED_LED_PIN, OUTPUT);
  pinMode(GREEN_LED_PIN, OUTPUT);

  // Set sensor pin as INPUT (digital read)
  pinMode(PROX_SENSOR_PIN, INPUT);

  Serial.begin(115200); // For debugging
}

void loop() {
  // Read digital value (HIGH = object detected, LOW = no object)
  bool objectDetected = digitalRead(PROX_SENSOR_PIN);

  Serial.print("Sensor State: ");
  Serial.println(objectDetected ? "NOT DETECTED" : "OBJECT DETECTED");

  if (objectDetected) {
    // Object detected → Red LED + Buzzer ON
    analogWrite(RED_LED_PIN, 0);  // Full brightness
    analogWrite(GREEN_LED_PIN,255);  // Turn off green
    digitalWrite(BUZZER_PIN, LOW);
    // Buzzer ON
  } else {
    // No object → Green LED + Buzzer OFF
    analogWrite(RED_LED_PIN, 255);     // Turn off red
    analogWrite(GREEN_LED_PIN, 0); // Full brightness
    digitalWrite(BUZZER_PIN, HIGH);  // Buzzer OFF
  }

  delay(10); // Small delay to avoid flickering
}
```

# OUTPUT:


11:29:22.103 -> Sensor State: OBJECT DETECTED
11:29:22.151 -> Sensor State: OBJECT DETECTED
11:29:22.151 -> Sensor State: OBJECT DETECTED
11:29:22.151 -> Sensor State: OBJECT DETECTED
11:29:22.151 -> Sensor State: OBJECT DETECTED
11:29:22.199 -> Sensor State: OBJECT DETECTED
11:29:22.199 -> Sensor State: OBJECT DETECTED
11:29:22.199 -> Sensor State: OBJECT DETECTED
11:29:22.199 -> Sensor State: OBJECT DETECTED
11:29:22.247 -> Sensor State: OBJECT DETECTED
11:29:22.247 -> Sensor State: OBJECT DETECTED
11:29:22.247 -> Sensor State: OBJECT DETECTED
11:29:22.249 -> Sensor State: OBJECT DETECTED
11:29:22.294 -> Sensor State: OBJECT DETECTED
11:29:22.294 -> Sensor State: OBJECT DETECTED
11:29:22.294 -> Sensor State: OBJECT DETECTED
11:29:22.294 -> Sensor State: OBJECT DETECTED
11:29:22.343 -> Sensor State: OBJECT DETECTED
11:29:22.344 -> Sensor State: OBJECT DETECTED
11:29:22.393 -> Sensor State: OBJECT DETECTED


11:29:13.495 -> Sensor State: NOT DETECTED
11:29:13.542 -> Sensor State: NOT DETECTED
11:29:13.542 -> Sensor State: NOT DETECTED
11:29:13.542 -> Sensor State: NOT DETECTED
11:29:13.542 -> Sensor State: NOT DETECTED
11:29:13.591 -> Sensor State: NOT DETECTED
11:29:13.591 -> Sensor State: NOT DETECTED
11:29:13.591 -> Sensor State: NOT DETECTED
11:29:13.591 -> Sensor State: NOT DETECTED
11:29:13.639 -> Sensor State: NOT DETECTED
11:29:13.639 -> Sensor State: NOT DETECTED
11:29:13.639 -> Sensor State: NOT DETECTED
11:29:13.639 -> Sensor State: NOT DETECTED
11:29:13.639 -> Sensor State: NOT DETECTED
11:29:13.688 -> Sensor State: NOT DETECTED
11:29:13.688 -> Sensor State: NOT DETECTED
11:29:13.688 -> Sensor State: NOT DETECTED