**Project Report: Alcohol Detection System using Arduino and MQ-3 Sensor**

1. Introduction:

The Alcohol Detection System presented in this project utilizes an Arduino microcontroller along with the MQ-3 alcohol sensor to monitor alcohol levels in the surrounding environment. The system features LED indicators that provide visual feedback based on the alcohol concentration detected by the sensor.

2. Components Used:

- Arduino Board

- MQ-3 Alcohol Sensor

- Led Addon Board

- Arduino Kit

3. Wiring Instructions:

Connect the components as follows:

- MQ-3 Sensor:

- VCC to Arduino 5V

- GND to Arduino GND

- AOUT to Arduino A3

- DOUT (optional) not used in this project

- LEDs:

- LED 1: Connect to Arduino pin 2

- LED 2: Connect to Arduino pin 3

- LED 3: Connect to Arduino pin 4

- LED 4: Connect to Arduino pin 5

- Connect the cathode of each LED to GND through an appropriate resistor.

**4. Working Principle:**

The MQ-3 alcohol sensor outputs an analog voltage proportional to the concentration of alcohol in the air. The Arduino reads this analog value from pin A3 and maps it to a range of 0-100 using the `map` function. The LEDs are then activated based on specific threshold values.

- LED 1: Turns on when alcohol concentration is 25 or above

- LED 2: Turns on when alcohol concentration is 50 or above

- LED 3: Turns on when alcohol concentration is 75 or above

- LED 4: Turns on when alcohol concentration is 100

**5. Arduino Code:**

// Include necessary libraries

const int sensorPin = A3;

const int led1Pin = 2;

const int led2Pin = 3;

const int led3Pin = 4;

const int led4Pin = 5;

void setup() {

pinMode(led1Pin, OUTPUT);

pinMode(led2Pin, OUTPUT);

pinMode(led3Pin, OUTPUT);

pinMode(led4Pin, OUTPUT);

}

void loop() {

// Read analog sensor value

int sensorValue = analogRead(sensorPin);

// Map the sensor value to a range of 0-100

int mappedValue = map(sensorValue, 0, 1023, 0, 100);

// Turn on LEDs based on threshold values

digitalWrite(led1Pin, mappedValue >= 25);

digitalWrite(led2Pin, mappedValue >= 50);

digitalWrite(led3Pin, mappedValue >= 75);

digitalWrite(led4Pin, mappedValue == 100);

}

6. Conclusion:

The Alcohol Detection System provides a simple and effective way to monitor alcohol levels using the MQ-3 sensor and Arduino. This project can be extended for applications such as breathalyzer devices or alcohol monitoring in restricted areas. Ensure proper calibration of the MQ-3 sensor for accurate results.