



# YCCE

Yeshwantrao Chavan College of Engineering

(An Autonomous Institution Affiliation to Rashtrasant Tukadoji Maharaj Nagpur University)

Institute code : 4167



## Mini Project Report

- **Subject:** Electronics Workshop[EWS]
- **Project Topic :** 1) Badminton Score board using 7 segment display  
2) Gas Leakage identification Using Arduino
- **Branch:** Electronics And Telecommunication
- **Semester:** V
- **Section:** C(C4)
- **Guided By :** Prof. C. S. Gode
- **Group Members:**

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# **1) Badminton Score Board Using 7 Segment Display**

## **Introduction**

A scoreboard is a large board for publicly displaying the score in a game. Most levels of sport from high school and above use at least one scoreboard for keeping score, measuring time, and displaying statistics. Scoreboards in the past used a mechanical clock and numeral cards to display the score. When a point was made, a person would put the appropriate digits on a hook. Most modern scoreboards use electromechanical or electronic means of displaying the score. In these, digits are often composed of large dot-matrix or seven-segment displays made of incandescent bulbs, light-emitting diodes, or electromechanical flip segments. An official or neutral person will operate the scoreboard, using a control panel.

## ➤ Components :

- 1) Arduino uno or nano
- 2) Two pieces of 7-segment displays
- 3) MAX7219 LED driver
- 4) One 10 uF electrolytic capacitor
- 5) One 100nF electrolytic capacitor
- 6) One 10K ohm resistor
- 7) Four switches (one for power/on/off, two for roll the numbers/one for reset and One for Swap the scores)
- 8) Power supply (batteries)
- 9) Wires/cables
- 10) Circuit board

## ➤ Working Principle :

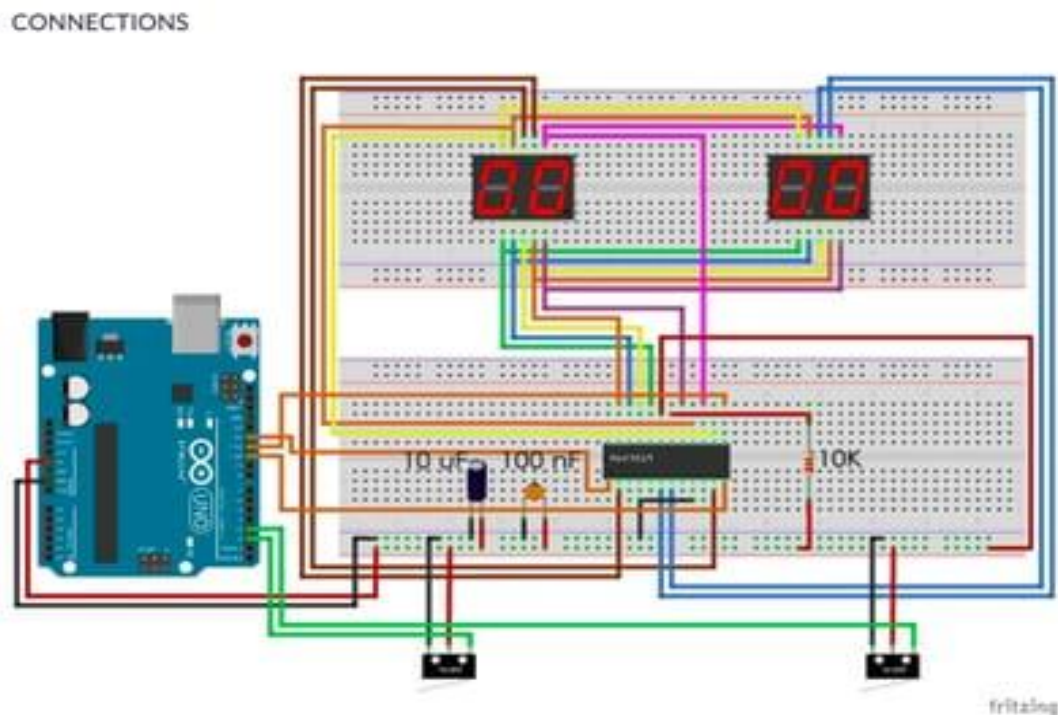
In badminton score board we required Atmega328p(main controller) , Ic7219max(64 individual led control IC) , 433Mhz RF tx & Rx(to make the score board remort controlled), three switch for increase and swap the score

The connection of the score board show in the circuit diagram  
The 433mhz RF receiver connect to the arduino RF receiver received signal from RF transmitter tx has three button two button for increase the point ans remaining one for swapping  
When any button press in the RF tx by the users the signal is convert withthe help of encoder(ic12E) and will send tx to rx  
Rx received that signal and decode with the help of ic12d and give to the controller

Basically we use Atmega328p as a controller according to the program the controller control ic max7219

Max 7219 are used to 64 individual led control we used only four 7-segment display (1 display = 8) means  $4 \times 8 = 32$  led we control using ic max7219

➤ **Circuit Diagram :**



➤ **Program:-**

```
#include "LedControl.h"
// Library used for communcation with 7 segment
LedControl lc=LedControl(12,11,10,1);
// (DIN, CLK, LOAD, number of Max7219 chips)
// Variable to hold current scores
int displayone=0;
int displaytwo=0;
int temswap=0;

// Variables to split whole number into single digits
```

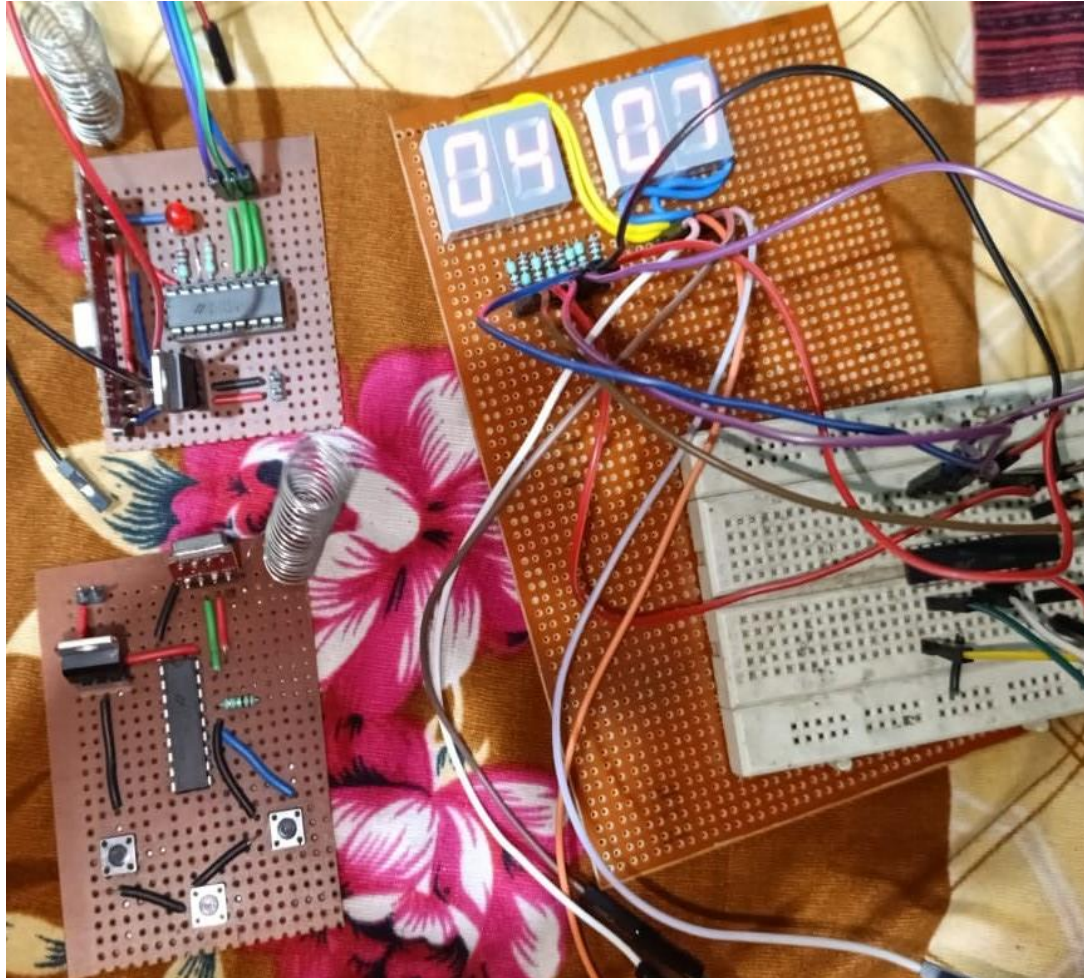
```

int rightdigit;
int leftdigit;
int rightdigit2;
int leftdigit2;
// Switches pin connection to Arduino UNO
#define switchone 2
#define swichtwo 3
#define switchthree 4
void setup() {
    pinMode(switchone,INPUT_PULLUP);
    pinMode(swichtwo,INPUT_PULLUP);
    pinMode(switchthree,INPUT_PULLUP);
    lc.shutdown(0,false); // Wake up MAX721
    lc.setIntensity(0,7); // Set brightness to medium
    lc.clearDisplay(0); // Clear all displays connected to MAX7219 chip #
    // Put zeros on both displays at startup
    lc.setDigit(0,0,0,false); // (Max7219 chip #, Digit, value, DP on or off)
    lc.setDigit(0,1,0,false);
    lc.setDigit(0,2,0,false);
    lc.setDigit(0,3,0,false);
}
void loop() {
    // If switch 1 is clicked
    if (!digitalRead(switchone)) {
        displayone++; // Increase score by 1
        // convert whole number to single digits
        rightdigit=displayone%10;
        leftdigit=displayone%100/10;
        // Display extracted digits on the display
        lc.setDigit(0,0,leftdigit,false);
        lc.setDigit(0,1,rightdigit,false); }

```

```
if (!digitalRead(switchtwo)) {  
  displaytwo++;  
  rightrightdigit2=displaytwo%10;  
  leftrightdigit2=displaytwo%100/10;  
  lc.setDigit(0,2,leftrightdigit2,false);  
  lc.setDigit(0,3,rightrightdigit2,false);  
}  
  else if (!digitalRead(switchthree)) {  
  
    temswap = displayone;  
    displayone = displaytwo;  
    displaytwo = temswap;  
  
    rightrightdigit=displayone%10;  
    leftrightdigit=displayone%100/10;  
    rightrightdigit2=displaytwo%10;  
    leftrightdigit2=displaytwo%100/10;  
  
    lc.setDigit(0,0,leftrightdigit,false);  
    lc.setDigit(0,1,rightrightdigit,false);  
    lc.setDigit(0,2,leftrightdigit2,false);  
    lc.setDigit(0,3,rightrightdigit2,false);  
    while (!digitalRead(switchthree)) {  
      }  
      delay(5);  
    }  
  }  
}
```

### ➤ Snapshot Of Activity :



- **Conclusion:-** Implementing a badminton scoreboard using a 7-segment display and Arduino allows for a compact and efficient way to showcase scores. By leveraging the 7-segment display's simplicity and Arduino's programmability, it's possible to create a clear visual representation of the scores. The setup can efficiently update and showcase scores in real-time during matches. This system provides a user-friendly interface for players and spectators, enhancing the game experience by ensuring accurate and easily visible scorekeeping.

## 2) Gas Leakage identification Using Arduino

### ➤ **Components :**

- 1) Arduino Uno
- 2) Gas Leakage Sensor (MQ6)
- 3) Resistor 220ohm
- 4) LED
- 5) Buzzer
- 6) Connecting Wires
- 7) PCB

### ➤ **Working Principle :**

A gas leakage sensor using an Arduino Uno and an MQ6 gas sensor is designed to detect the presence of certain gases and alert you when gas leakage is detected. Here's a general overview of its working principle:

#### **Components:**

**Arduino Uno:** The Arduino used to interface with the gas sensor and other components.

**Gas Leakage Sensor MQ6:** A gas sensor that detects various gases, including LPG, propane, methane, and other flammable gases.

**Resistor 220 ohm:** A current-limiting resistor used to protect the LED.

**Buzzer:** An audible alarm device to sound an alarm when gas leakage is detected.



LED: A visual indicator to provide a visual alert.

### Working Principle:

**Gas Detection:** The MQ6 gas sensor detects the presence of specific gases in its vicinity. It changes its resistance based on the concentration of the gas. When it detects a significant level of the target gas, its resistance decreases.

**Arduino Interface:** The MQ6 sensor is connected to the Arduino Uno. The sensor typically has multiple pins, including power (Vcc), ground (GND), and an analog or digital output pin. The sensor's output is connected to an analog or digital pin on the Arduino.

### Alert Mechanisms:

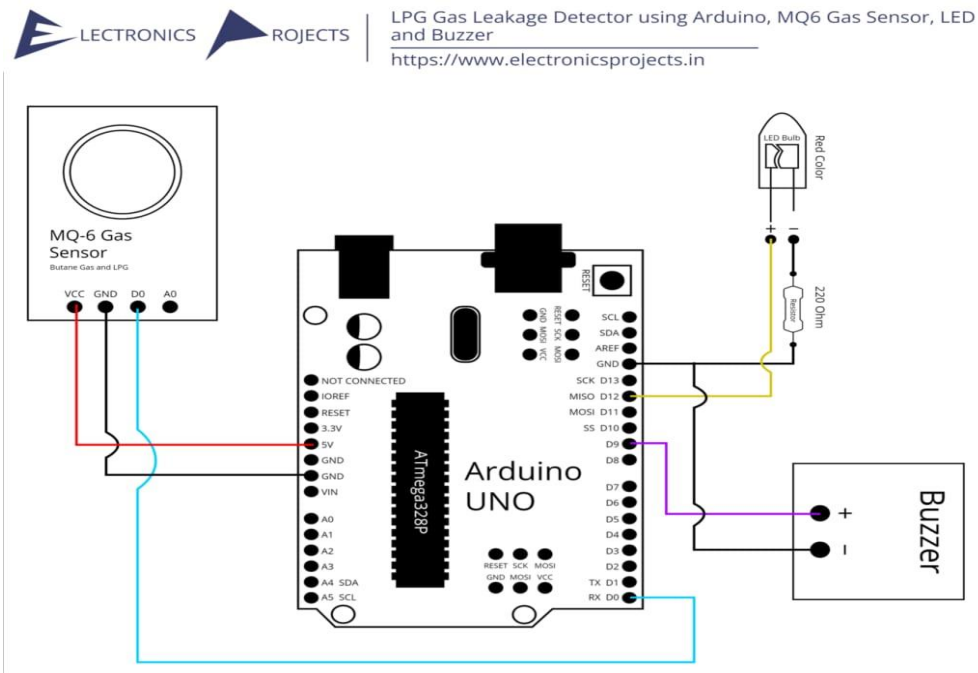
**LED Indicator:** When gas leakage is detected, the Arduino can turn on the LED as a visual indicator.

**Buzzer Alarm:** The Arduino can activate the buzzer to sound an audible alarm.

**Serial Communication (Optional):** You can also implement serial communication to send alerts to a computer or display information on a screen.

**Action on Detection:** When gas leakage is detected (i.e., the sensor reading crosses the set threshold), the Arduino triggers the LED and the buzzer to provide both visual and audible warnings. You can also take additional actions, such as turning off gas valves or sending alerts over the internet if needed.

➤ **Circuit Diagram:**



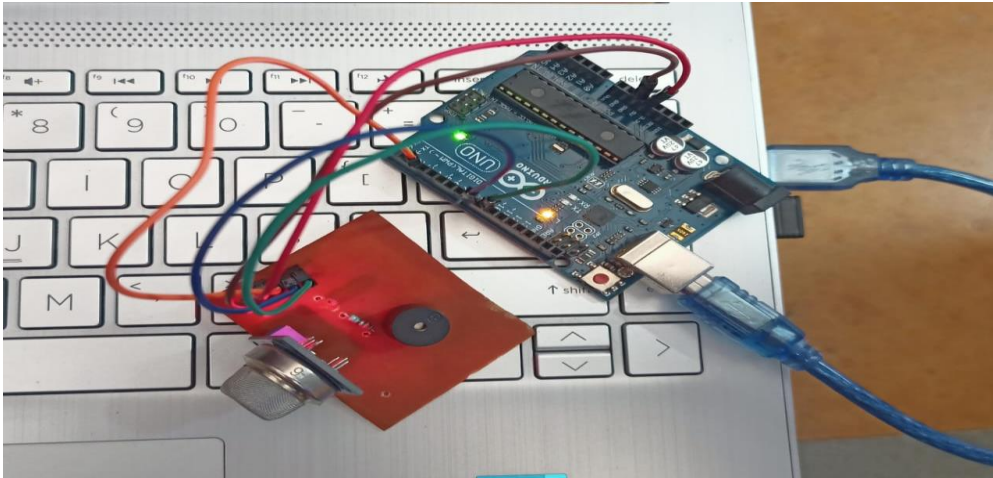
```
Program:- int RedLED = 12;

int BUZZER = 9;
int MQ6 = 0;
int LPG;

void setup() {
  Serial.begin(9600);
  pinMode(RedLED, OUTPUT);
  pinMode(BUZZER, OUTPUT);
  pinMode(MQ6, INPUT); }

void loop() {
  LPG = digitalRead(MQ6);
  Serial.println(LPG);
  if (LPG == 1) {
    Serial.println("LPG Gas in da house ! Bad Air");
    digitalWrite(RedLED, HIGH);
    digitalWrite(BUZZER, HIGH);
  } else {
    Serial.println("No LPG. Clean Air");
    digitalWrite(RedLED, LOW);
    digitalWrite(BUZZER, LOW);
  }
}
```

### ➤ Snapshot Of Project:-



### ➤ Conclusion :

**The Gas leakage sensor using the Arduino is an effective and reliable solution for detecting gas leaks. The Arduino provides precise and timely measurements, ensuring the safety of the environment and occupants. With its efficient design and advanced features, this sensor system can swiftly detect gas leaks, trigger alarms, and activate safety measures, preventing potential hazards and minimizing damage.**