(DIVYA T)

IBM-Assignment 1-MAKE A SAMRT HOME IN TINKERCAD,USING 2+ SENSORS LEDS BUZZER IN SINGLE CODE AND CIRCUIT

Project Title:

Real-Time River Water Quality Monitoring And Control System

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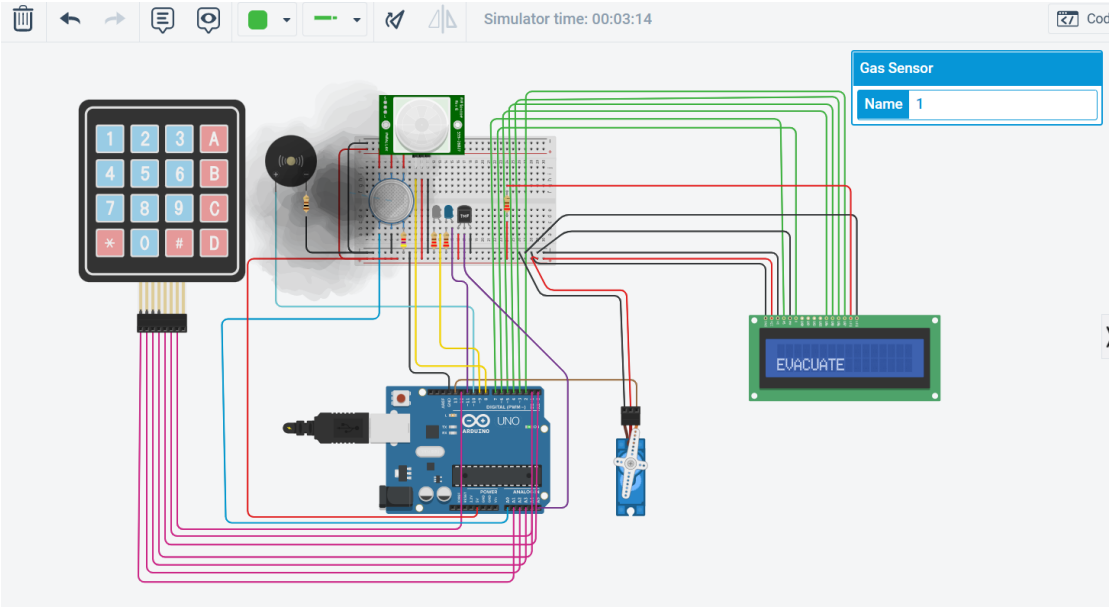
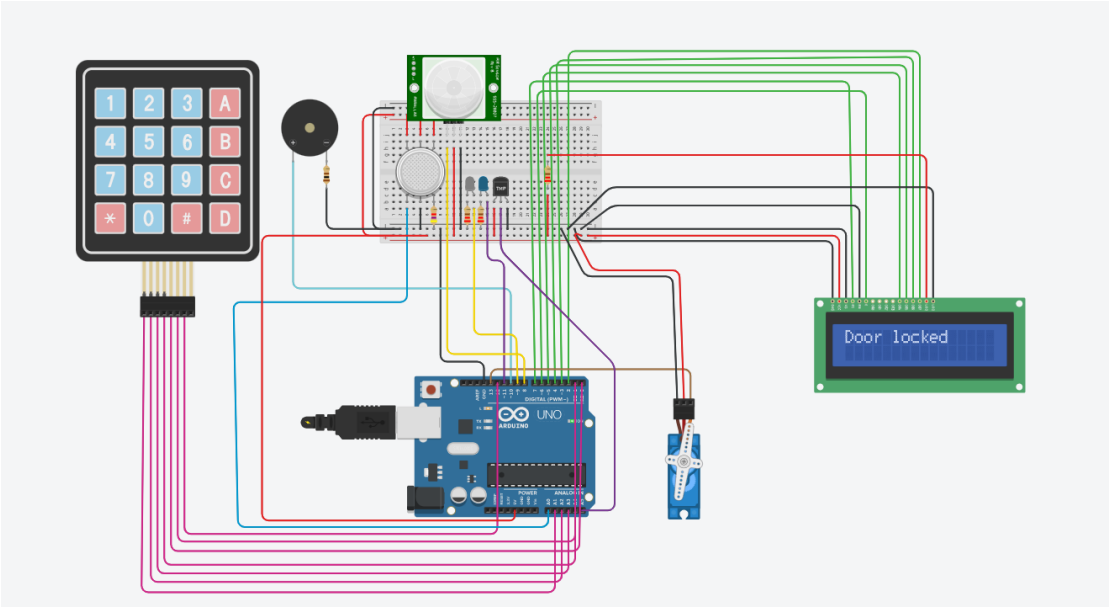
Circuit:

GAS LEAKAGE DETECTION:



DOOR LOCKING SYSTEM:



```
#include <Servo.h>
#include <Keypad.h>
// include the library code:
#include <LiquidCrystal.h>

const byte rows=4; //initializing 4 rows
const byte cols=3; //initializing 3 columns

// initialize the library by associating any needed LCD interface pin
// with the arduino pin number it is connected to
const int rs = 7, en = 6, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);//defines pin numbers for LCD
char key[rows][cols]={
{'1','2','3'},
{'4','5','6'},
{'7','8','9'},
{'*','0','#'}
};
byte rowPins[rows]={A1,A2,A3,A4};//defines pin number for rows
byte colPins[cols]={0,1,12}; //defines pin numbers for columns
Keypad keypad= Keypad(makeKeymap(key),rowPins,colPins,rows,cols);

int counter = 0;
int buzzer = 10;
int gasSensor=A0;
int sensorThresh= 400;
String password = "4567";//declaring the password as 4567
String pressed = ""; // checks the pressed password
Servo servo1;//defining servo motor
int currentposition=1;

int PIRsensor = 0;

int tmpPin = A5;
int reading = 0;
float vout = 0;
float temperature = 0;
int AC =11;
int idealTemperature=25;


void setup() {
  pinMode (buzzer,OUTPUT);
```

```
  pinMode (gasSensor,INPUT);
  servo1.attach(13);//defines pin number for sevo
  lcd.begin(16,2); //specifying the LCD size in columns and rows

  pinMode(8, INPUT);
  pinMode(AC, OUTPUT);
  pinMode(9, OUTPUT);
  pinMode(tmpPin, INPUT);

  servo1.write(0);//Door closed initially

}

void loop() {
   reading = analogRead(tmpPin);
   vout = reading*5.0/1023;
   temperature = (vout-0.5)*100;
   if(temperature>idealTemperature)
   {digitalWrite(AC, HIGH);
   lcd.clear();
   lcd.setCursor(0,0);
   lcd.print("AC is turned on");
   delay(1000);
   lcd.clear();}
   else
   {digitalWrite(AC, LOW);}


  // read the state of the sensor/digital input
  PIRsensor = digitalRead(8);
  // check if sensor pin is HIGH. if it is, set the
  // LED on.

  if (PIRsensor == HIGH) {

    digitalWrite(9, HIGH);
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("Motion detected!");
    delay(1000);
    lcd.clear();
  } else {
    digitalWrite(9, LOW);
```

```
  }

  delay(10); // Delay a little bit to improve simulation performance



  char key = keypad.getKey();//read key pressed on keypad and assign it
to the variable char key
  if(int(key)!=0) //checks whether any input is pressed
  {
    if(key=='0'){
      reset();
      initializeLcd();
    }
    else if (key=='*')//check if key is equal to *
    {
    checkPassword();
    }
    else if(key=='#')//check if key is equal to #
    {
    lockDoor();//user-defined function
    }
    else
    {
     pressed.concat(key);//string concatination
     lcd.setCursor(currentposition,1);
     lcd.print("*");//prints * on LCD display
     currentposition++;
     if(currentposition==5)
       currentposition=1;
    }

  }
  int analogValue = analogRead (gasSensor);
  if (analogValue>sensorThresh )
  {tone(buzzer,1000,6000);
   lcd.clear();
   lcd.setCursor(0,0);
   lcd.print("ALERT");
   lcd.setCursor(0,1);
   lcd.print("Gas detected");
   delay(1000);
   lcd.clear();
```

```
   lcd.setCursor(0,1);
   lcd.print("EVACUATE");
   delay(1000);
   lcd.clear();
  }
  else
  {
   noTone(buzzer);

  }
}

 void initializeLcd(){
   lcd.clear();
   lcd.print("PASSWORD:");
   lcd.setCursor(1,1);//setting cursor to row 2,column 2
   servo1.write(0);//Door closed initially
  }


void checkPassword()
{
  if (pressed==password){//check if the pressed key matches with the
actual password
  lcd.clear();
  lcd.setCursor(0,0);
    lcd.print("Access Granted!");
    servo1.write(90); //Door opened
  }
  else{
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("Access denied!");
  servo1.write(180); //Door closed
  }
}
void lockDoor(){
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("Door locked");
  servo1.write(180); //Door closed
}
```

```
void reset()
{
  pressed="";//clear pressed password
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("Resetting...");
  delay(500); //displays Resetting for half a second
}

void incorrect()
{
delay(500);
lcd.clear();
lcd.setCursor(1,0);
lcd.print("CODE");
lcd.setCursor(6,0);
lcd.print("INCORRECT");
lcd.setCursor(15,1);
lcd.println(" ");
lcd.setCursor(4,1);
lcd.println("GET AWAY!!!");
}
```