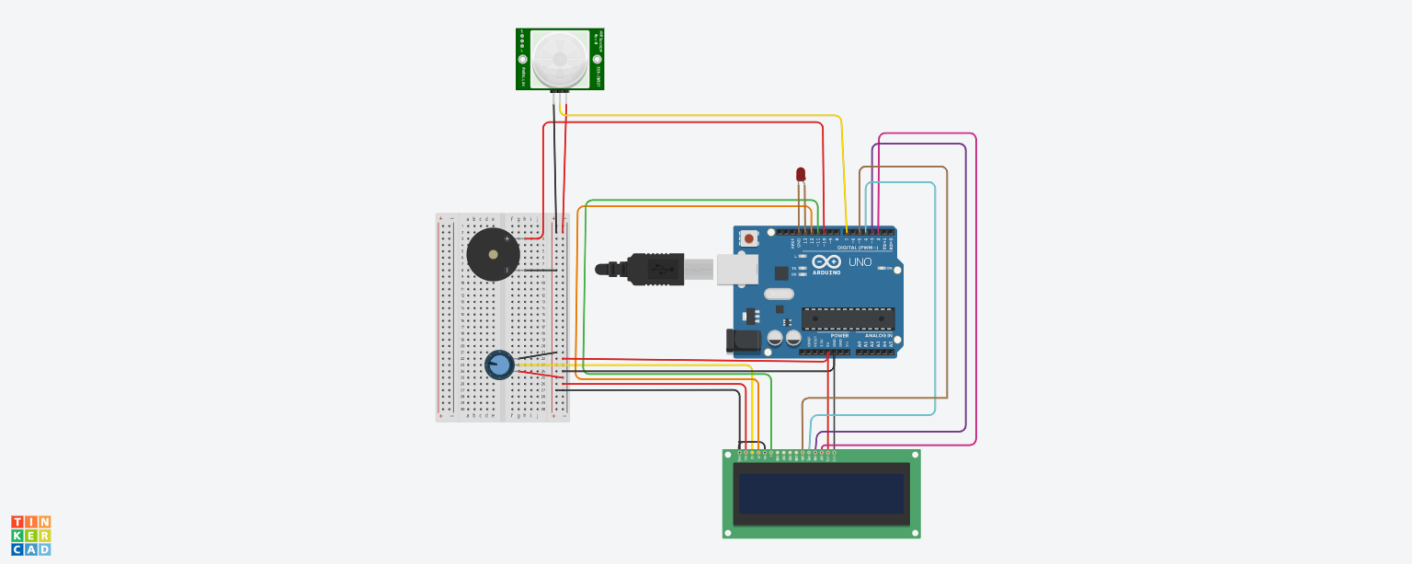
IBM ASSIGNMENT 1 HOME AUTOMATION

CIRCUIT DIAGRAM:



CODE:

```
// C++ code
//
#include <LiquidCrystal.h>     // Include library for LCD Display
int ledPin = 13;               // choose the pin for the LED
int inputPin = 7;              // choose the input pin (for PIR sensor)
int pirState = LOW;            // we start, assuming no motion detected
int val = 0;                   // variable for reading the pin status
int pinSpeaker = 10;           // Set up a speaker on a PWM pin (digital 9, 10, or 11)
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);    // initialize the library with the numbers of the interface pins
void setup()
{
pinMode(ledPin, OUTPUT);      // declare LED as output
 pinMode(inputPin, INPUT);       // declare sensor as input
 pinMode(pinSpeaker, OUTPUT);
 Serial.begin(9600);                // Baud Rate
 lcd.begin(16, 2);
```

```
 lcd.setCursor(2, 0);              // Set LCD cursor position (column, row)
lcd.print("P.I.R Motion");        // Print text to LCD
 lcd.setCursor(5, 1);              // Set LCD cursor position (column,row)
 lcd.print("Sensor");              // Print text to LCD
 delay(4000);                      // Delay to read text
 lcd.clear();                      // Clear the display
 lcd.setCursor(2, 0);              // Set LCD cursor position (column, row)
 lcd.print("Developed By");     // Print text to LCD
 lcd.setCursor(2, 1);              // Set LCD cursor position (column, row)
 lcd.print("rees52");              // Print text to
LCD
 delay(5000);                      // Delay to read text
 lcd.clear();                      // Clear LCD
 lcd.setCursor(0, 0);              // Set the Cursor
 lcd.print("Processing Data.");
 delay(3000);
 lcd.clear();
 lcd.setCursor(3, 0);
 lcd.print("Waiting For");
 lcd.setCursor(3, 1);
 lcd.print("Motion....");
}


void loop()
{
val = digitalRead(inputPin);  // read input value
 if (val == HIGH) {           // check if the input is HIGH
digitalWrite(ledPin, HIGH);  // turn LED ON
playTone(300, 300);
delay(150);
if (pirState == LOW) {
 // we have just turned on
Serial.println("Motion detected!");
```

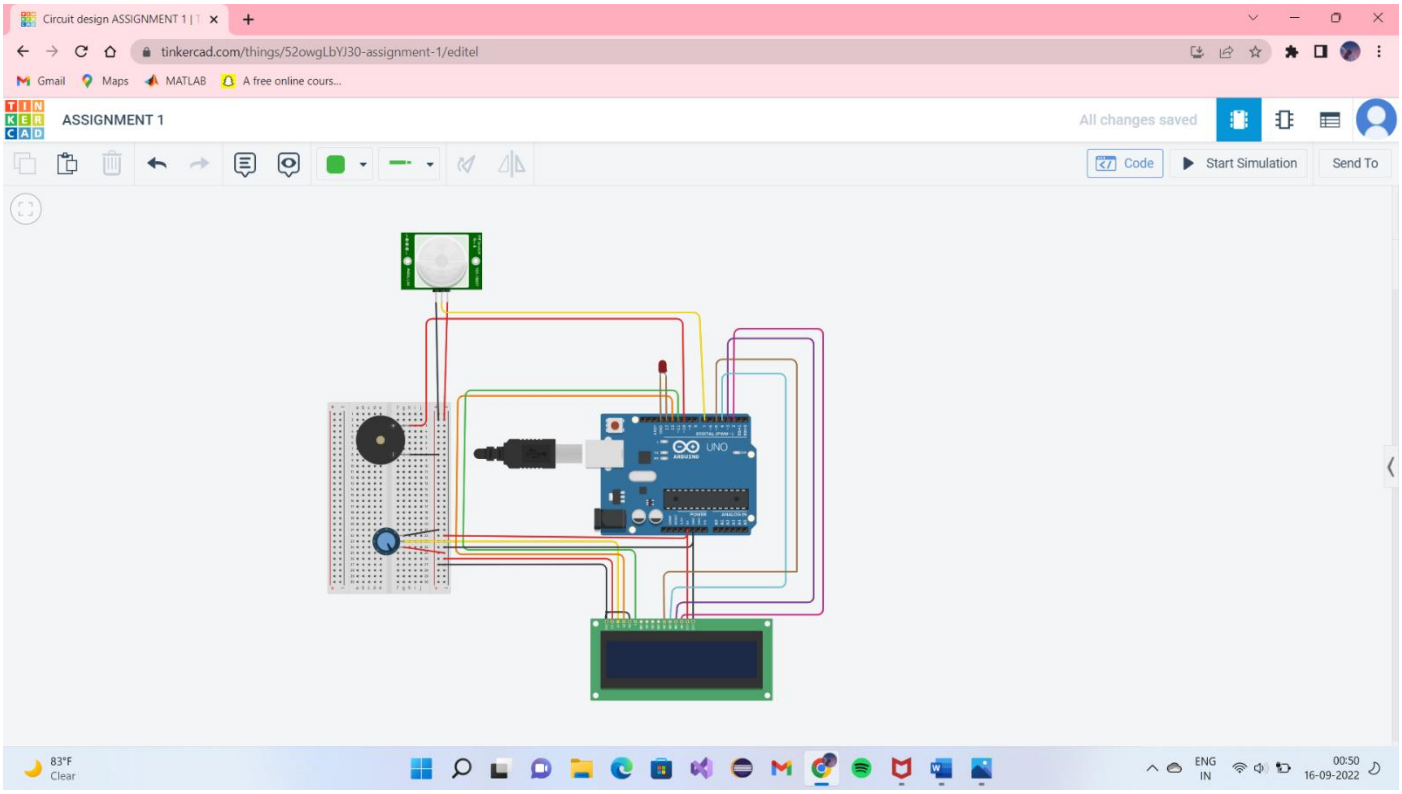
```
lcd.clear() ;
lcd.setCursor(0, 0);                              // Set LCD cursor position (column 0, row 0)
lcd.print("Motion Detected!");


 pirState = HIGH;
    }
}
else
{
    digitalWrite(ledPin, LOW); // turn LED OFF
    playTone(0, 0);
    delay(300);
    if (pirState == HIGH)
{

    Serial.println("Motion ended!");  // Print the Message
    lcd.clear() ;
    lcd.setCursor(3, 0);
    lcd.print("Waiting For");     // Print on LCD
    lcd.setCursor(3, 1);
    lcd.print("Motion....");
     pirState = LOW;
 }
 }
}
void playTone(long duration, int freq)
{
  duration *= 1000;
  int period = (1.0 / freq) * 100000;
  long elapsed_time = 0;
  while (elapsed_time < duration)
 {
```

```
  digitalWrite(pinSpeaker,HIGH);
  delayMicroseconds(period / 2);
  digitalWrite(pinSpeaker, LOW);
  delayMicroseconds(period / 2);
  elapsed_time += (period);
}
}
```

TINKERCARD LINK:

https://www.tinkercad.com/things/52owgLbYJ30-assignment-1/editel

OUTPUT:



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