

**VELAMMAL ENGINEERING COLLEGE**

**ELECTRONICS AND COMMUNICATION ENGINEERING**

# **SMART FARMERS - IOT ENABLED FARMING APPLICATION**

## **ASSIGNMENT – 1 HOME AUTOMATION SYSTEM**

**BY:**

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# Code for Home Automation System:

```
#include <Servo.h>

int output1Value =0;
int sen1Value= 0;
int sen2Value = 0;
int const gas_sensor = A1;
int const LDR = A0;
int limit = 400;

long readUltrasonicDistance(int triggerPin, int echoPin)
{
  pinMode(triggerPin, OUTPUT); // Clear the trigger
  digitalWrite(triggerPin, LOW);
  delayMicroseconds(2);
  // Sets the trigger pin to HIGH state for 10
  microseconds
  digitalWrite(triggerPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin, LOW);
  pinMode(echoPin,INPUT);
  // Reads the echo pin, and returns the sound wave travel
  time in microseconds
  return pulseIn(echoPin, HIGH);
}
```

```
Servo servo_7;
void setup()
{
  Serial.begin(9600); //initialize serialcommunication
  pinMode(A0, INPUT); //LDR
  pinMode(A1, INPUT); //gas sensor
  pinMode(13, OUTPUT); //connected to relay
  servo_7.attach(7, 500, 2500); //servomotor
  pinMode(8,OUTPUT); //signal to piezo buzzer
  pinMode(9,INPUT); //signal to PIR
  pinMode(10, OUTPUT); //signal to npn as switch
  pinMode(4, OUTPUT); //Red LED
  pinMode(3, OUTPUT); //Green LED
}
void loop()
{
  int val1 =
  analogRead(LDR);
  if (val1 > 500)
  {
    digitalWrite(13,LOW);
    Serial.print("Bulb ON=");
    Serial.print(val1);
```

```
}  
else  
{  
digitalWrite(13, HIGH);  
Serial.print("Bulb OFF = ");  
Serial.print(val1);  
}  
//----- light & fan control //  
sen2Value =  
digitalRead(9); if  
(sen2Value == 0)  
{  
digitalWrite(10, LOW); //npn as switch OFF  
digitalWrite(4, HIGH); // Red LED ON, indicating no  
motion  
digitalWrite(3, LOW); //Green LED OFF, since no Motion  
detected  
Serial.print(" || NO Motion Detected " );  
}  
if (sen2Value == 1)  
{  
digitalWrite(10, HIGH); //npn as switch ON  
delay(5000);
```

```
digitalWrite(4, LOW); // RED LED OFF
digitalWrite(3, HIGH); // GREEN LED ON , indicating
motion detected

Serial.print("|| Motion Detected!" );

// ----- Gas Sensor //

int val = analogRead(gas_sensor);
//read sensor value

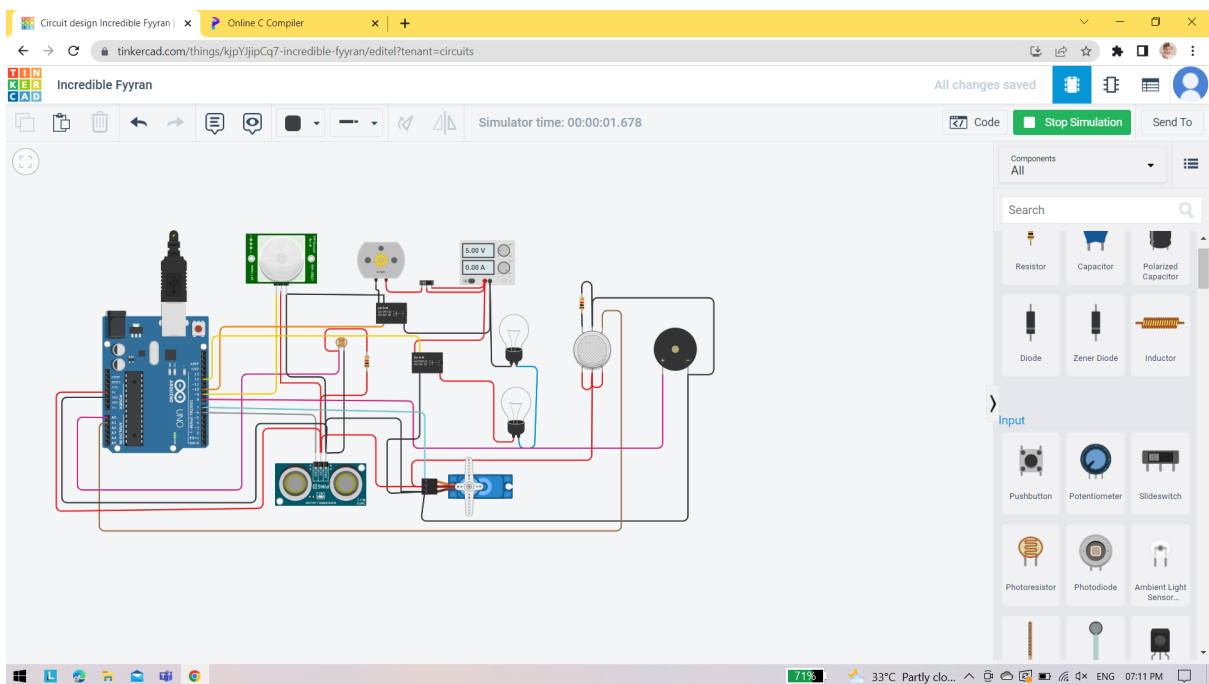
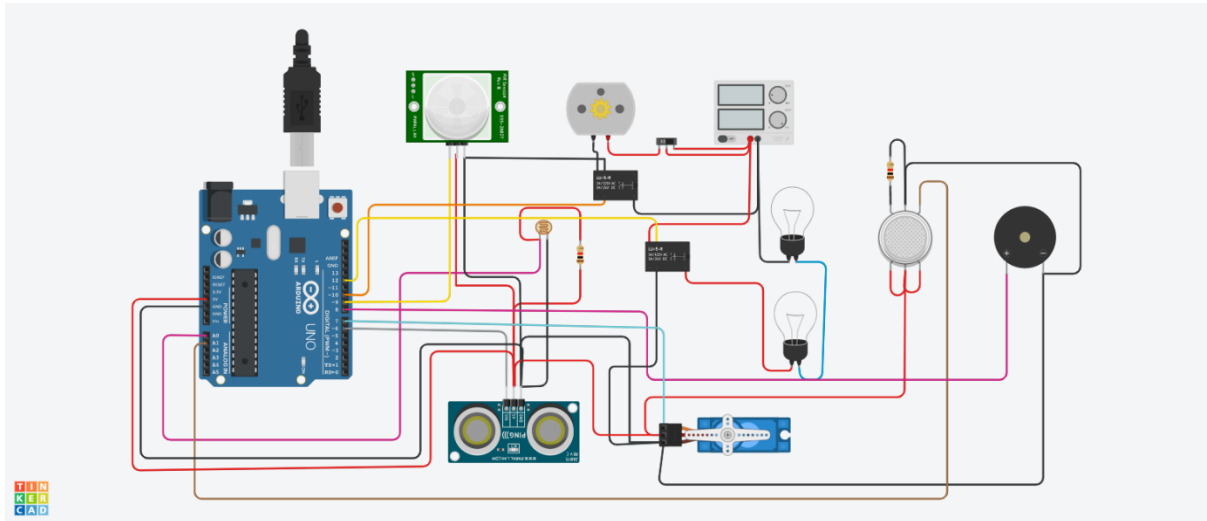
Serial.print("|| Gas Sensor Value = ");
Serial.print(val); //Printing in serial monitor

//val = map(val, 300,750, 0, 100);
if (val > limit)
{
tone(8, 650);
}
delay(300);
noTone(8
);
//----- servo motor //
// - -

sen1Value = 0.01723 *
readUltrasonicDistance(6, 6);
if (sen1Value < 100)
{
```

```
servo_7.write(90);  
Serial.print(" || Door Open!;Distance = ");  
Serial.print(sen1Value);  
Serial.print("\n");  
}  
else  
{  
servo_7.write(0);  
Serial.print(" || Door Closed! ; Distance = ");  
  
Serial.print(sen1Value);  
Serial.print("\n");  
}  
    delay(10); // Delay a little bit to improve simulation  
performance  
}  
}
```

# OUTPUT:



Circuit design Incredible Fyran | x Online C Compiler x +

tinkercad.com/things/kjpYjipCq7-incredible-fyran/edit?tenant=circuits

Incredible Fyran

All changes saved

Simulator time: 00:00:01.082

Code Stop Simulation Send To

1 (Arduino Uno R3)

```
1 #include <Servo.h>
2 int output1Value=0;
3 int sen1Value= 0;
4 int sen2Value = 0;
5 int const gas_sensor = A1;
6 int const LDR = A0;
7 int limit = 400;
8 long readUltrasonicDistance(int triggerPin, int echoPin)
9 {
10  pinMode(triggerPin, OUTPUT); // Clear the trigger
11  digitalWrite(triggerPin, LOW);
12  delayMicroseconds(2);
13  // Sets the trigger pin to HIGH state for 10 microseconds
14  digitalWrite(triggerPin, HIGH);
15  delayMicroseconds(10);
16  digitalWrite(triggerPin, LOW);
17  pinMode(echoPin,INPUT);
18  // Reads the echo pin, and returns the sound wave travel time in
19  return pulseIn(echoPin, HIGH);
20 }
21 Servo servo_7;
22 void setup()
23 {
24  Serial.begin(9600); //initialize serialcommunication
25  pinMode(A0, INPUT); //LDR
26  pinMode(A1,INPUT); //gas sensor
27  pinMode(13, OUTPUT); //connected to relay
28  servo_7.attach(7, 500, 2500); //servomotor
29 }
```

Serial Monitor

ON-1017 || NO Motion Detected Bulb ON-1017 || NO Motion Detected Bulb ON-1017 || NO Motion Detected Bulb ON-1017

Send Clear

70% 33°C Partly clo... ENG 07:12 PM