**Internet Of Things**

**IN and OUT Automatic Door Sensor**

**PROJECT GROUP**

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**Aim:**

To develop an automatic door opening system using the Arduino Uno board

**Objective:**

The main objective of this is to build an IoT based automated automatic door opening system that automatically opens the door in presence of a movement. This is one of the key components of the smart city where our project can be used in various places where physical contact is minimized.

**Abstract:**

In the Automatic Door Opening System, the main component or hardware is the sensor which detects the persons (well, the motion of the person in our case). For this purpose, we will be using the PIR Motion Detector Sensor.

When you step on the mat, the sensors send a signal to the automatic doors that tells them to open. Other automatic doors operate on optic or motion sensors. When these optic or motion sensors sense motion nearby, they trigger the automatic doors to open and then close.

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**The components used in our project are:**

* Arduino UNO
* PIR Sensor
* Servo Motor
* LCD with I2C module
* DHT sensor
* Breadboard
* Connecting Wires
* Power Supply

**Pin-out diagram**

**Servo Motor**

* GND ground pin
* VCC 5V pin
* Pin-Out 1. 13(digital pin)

2. 12(digital pin)

**PIR sensor**

* GND ground pin
* VCC 5V pin
* Pin-Out 1. 6(digital pin)

2. 7(digital pin)

3. 8(digital pin)

**LCD(I2C**)

* GND GND
* VCC 5V
* SDA A4
* SCL A5

**DHT**

* GND GND
* VCC 5V
* signal 11(Digital Pin)

**WORKING OF AUTOMATIC DOOR OPENER SYSTEM**

The working of the Automatic Door Opener System using Arduino and PIR Sensor is very simple. This project can be considered as an extension of Arduino PIR Sensor Tutorial and Arduino L298N DC Motor Control Tutorial.

When the PIR Sensor detects any motion of a person, its Data OUT Pin will become HIGH. As this pin is connected to the Arduino, it will detect this HIGH Signal and understands that there is person approaching the door.

Arduino then immediately activates the L298N Motor Driver module to open the door. After some time (about 2 to 5 seconds in this project), the Arduino will once again activate the Motor Drive to close the door.

**PROGRAM:**

#include<Servo.h>

#include <Wire.h> // Library for I2C communication

#include <LiquidCrystal\_I2C.h> // Library for LCD

#include <dht.h>

dht DHT;

#define DHT11\_PIN 11

LiquidCrystal\_I2C lcd = LiquidCrystal\_I2C(0x27, 16, 2);

Servo myServo;

Servo myServo1;

//pir

int pir1=7;

int pir2=8;

int pir3=6;

//variables

int a=0;

int b=0;

int d=0;

int g=0;

int h=0;

int f=0;

int n=0;

void setup()

{

lcd.init();

lcd.backlight();

lcd.begin(16,2);

myServo.attach(13);

myServo1.attach(12);

pinMode(pir1, INPUT);

pinMode(pir2, INPUT);

pinMode(pir3, INPUT);

myServo.write(0);

myServo1.write(0);

Serial.begin(9600);

}

void loop()

{

int chk = DHT.read11(DHT11\_PIN);

delay(3000);

h=0;

f=digitalRead(pir1);

g=digitalRead(pir2);

d=digitalRead(pir3);

delay(1000);

lcd.setCursor(0, 1);

lcd.print("Temp=");

lcd.setCursor(5, 1);

lcd.print(DHT.temperature);

lcd.setCursor(7, 1);

lcd.print(" Hum=");

lcd.setCursor(12, 1);

lcd.print(DHT.humidity);

if(d==1)

{

f=0;

}

else if(f==1)

{

d=0;

}

if(n==0)

{

Serial.println("0 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("0 person"); // Print the string "Hello World!"

a=1;

b=0;

}

if((d==1)&&(n==0))

{

Serial.println("1 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("1 person"); // Print the string "Hello World!"

myServo.write(120);

delay(5000);

myServo.write(0);

delay(2000);

n=1;

goto out;

}

else if((d==1)&&(n==1))

{

Serial.println("2 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("2 person"); // Print the string "Hello World!"

myServo.write(120);

delay(5000);

myServo.write(0);

delay(2000);

n=2;

goto out;

}

else if((d==1)&&(n==2))

{

Serial.println("3 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("3 person"); // Print the string "Hello World!"

myServo.write(120);

delay(5000);

myServo.write(0);

delay(2000);

n=3;

goto out;

}

else if((d==1)&&(n==3))

{

Serial.println("4 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("4 person"); // Print the string "Hello World!"

myServo.write(120);

delay(5000);

myServo.write(0);

delay(2000);

n=4;

goto out;

}

else if((d==1)&&(n==4))

{

Serial.println("5 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("5 person"); // Print the string "Hello World!"

myServo.write(120);

delay(5000);

myServo.write(0);

delay(2000);

n=5;

goto out;

}

else if((d==1)&&(n==5))

{

Serial.println("Full Capacity");

lcd.clear();

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("Full Capacity"); // Print the string "Hello World!"

delay(1000);

}

else if((f==1)&&(n==5))

{

lcd.clear();

Serial.println("4 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("4 person"); // Print the string "Hello World!"

myServo1.write(120);

delay(5000);

myServo1.write(0);

delay(2000);

n=4;

goto out;

}

else if((f==1)&&(n==4))

{

Serial.println("3 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("3 person"); // Print the string "Hello World!"

myServo1.write(120);

delay(5000);

myServo1.write(0);

delay(2000);

n=3;

goto out;;

}

else if((f==1)&&(n==3))

{

Serial.println("2 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("2 person"); // Print the string "Hello World!"

myServo1.write(120);

delay(5000);

myServo1.write(0);

delay(2000);

n=2;

goto out;

}

else if((f==1)&&(n==2))

{

Serial.println("1 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("1 person"); // Print the string "Hello World!”;

myServo1.write(120);

delay(5000);

myServo1.write(0);

delay(2000);

n=1;

goto out;

}

else if((f==1)&&(n==1))

{

Serial.println("0 Person");

lcd.setCursor(0, 0); // Set the cursor on the first column and first row.

lcd.print("0 person"); // Print the string "Hello World!"

myServo1.write(120);

delay(5000);

myServo1.write(0);

delay(2000);

n=0;

delay(1000);

goto out;

}

else if((f==1)&&(n==0))

{

delay(1000);

}

out:

delay(100);

}

**TINKERCAD CIRCUIT**



**The Complete picture of our Project**

