

Home Applicants Automation System Using IR Sensor

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CERTIFICATE

This is to certify that this project report titled Home Applicants Automation System Using IR Sensor submitted in partial fulfillment of requirements for award of the degree Bachelor of Technology (B. Tech) in Computer Science And Engineering of Maulana Abul Kalam Azad University of Technology is faithful record of the original work carried out by,

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under my guidance and supervision.

It is further certified that it contains no material, which to a substantial extent has been submitted for the award of any degree/diploma in any institute or has been published in any form, except the assistances drawn from other sources, for which due acknowledgement has been made.

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Date:.....

DR. Rictor Bhowmick <<Guide's name>

Project Brief

Employment to Population ratio has increased drastically with increasing living standards. Home Automation plays an important role in maintaining these living standards of employed population by providing a secure & convenient environment. Home automation is similar to smart home, digital home, e-home and intelligent household. They both mean a high living condition with many smart devices. It is the residential extension of building automation which is using automation technology, computer technology and telecommunication technology to give the user a developed living condition, entertainment and security. It helps people to reduce house working and household management by its automation. The Home Automation Systems not only benefit the employed population but it also helps the disabled and elderly population.

We have connected an IR sensor with nodeMcu .Whenever a person enters into a Particular zone, his presence will be detected by IR Sensor and it will send this information to nodeMcu that transfers the signal to monitor which displays the output about motion detection then after the appliance will turn on/off due to presence/absence of person.

Components

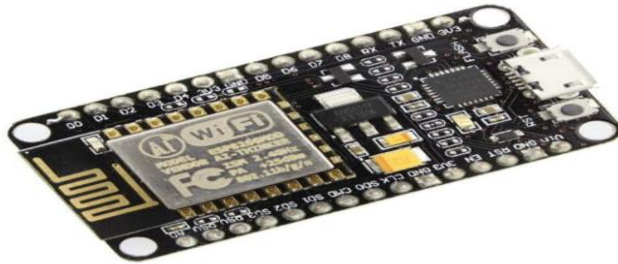
1. NodeMcu
2. IR Sensor
3. Register
4. Jumping Wires
5. Bread board
6. Cable wire

- **NodeMcu:-**

NodeMCU is an open source LUA based firmware developed for ESP8266 wifi chip. By exploring functionality with ESP8266 chip, NodeMCU firmware comes with ESP8266 Development board/kit i.e. NodeMCU Development board. Since NodeMCU is open source platform, their hardware design is open for edit/modify/build.

NodeMCU Dev Kit/board consists of ESP8266 wi-fi enabled chip. The **ESP8266** is a low-cost Wi-Fi chip developed by Espressif Systems with TCP/IP protocol. For more information about ESP8266, you can refer ESP8266 WiFi Module. NodeMCU Dev Kit has **Arduino**

like Analog (i.e. A0) and Digital (D0-D8) pins on its board. It supports serial communication protocols i.e. UART, SPI, I2C etc. Using such serial protocols we can connect it with serial devices like I2C enabled LCD display, touch screen displays, SD cards etc.

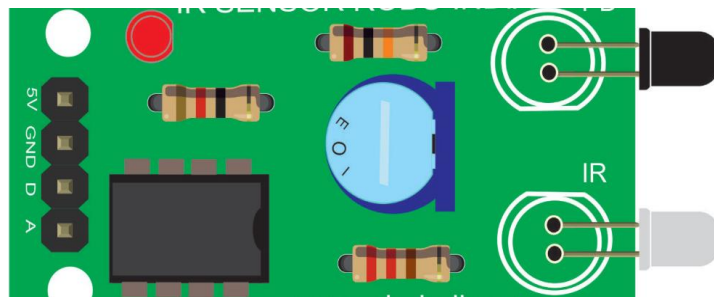


NodeMcuDevelopment Board/kit v1.0 (Version2)

- **IR sensor:-**

This is a multipurpose infrared sensor which can be used for color detection. The sensor provides a digital as well as analog output. An on-board LED is used to indicate the presence of an object. This digital output can be directly connected to an Arduino, NodeMCU, Raspberry Pi or any other microcontroller to read the sensor output.

IR sensors are highly susceptible to ambient light and the IR sensor on this sensor is suitably covered to reduce effect of ambient light on the sensor. The on-board potentiometer should be used to calibrate the sensor.



IR SENSOR

IR Sensor have four pins:

S.No.	IR Sensor	Node MCU
1.	VCC	Vin
2.	GND	GND
3.	D	D1 (When IR Pair use as Digital Sensor)
4.	A	A0 (When IR Pair use as Analog Sensor)

Working:-

- If there is any movement near IR sensor then it will detect the infrared radiations and send the signal to nodemcu input pin .
- If the input is high then the motion is detected and results into glowing led and continue to check further movement in loop .
- If the input is low then monitor will display input is not detected and will further check for movement.

Code:

```
void setup() {  
    // put your setup code here, to run once:  
  
    pinMode (D1,INPUT );  
    Serial.begin(9600);  
}  
  
void loop() {  
    // put your main code here ,to run repeatedly:  
  
    if(digitalRead(D1) != HIGH )  
    {  
        Serial.println(" MOTION DETECTED ");  
        delay(5000);  
    }  
  
    else  
  
    {  
  
        Serial.println(" NO MOTION DETECTED ");  
  
        delay(5000); } }
```

Index.html

```
<html>
<head>
<title>Welcome!</title>
<style>
</head>
<body>
<form name="form1" method="post" action="login.php">
<div align="center">
<p></p>
<table id="title">
<tr>
<td>Username:</td>
<td><input type="text" name="username" /></td>
</tr>
<tr>
<td>Password:</td>
<td><input type="password" name="password" /></td>
</tr>
<tr>
<td>&nbsp;</td>
<td><input type="submit" name="submit" value="Log In" /></td>
</tr>
</table>
<p>New here? <a href="signup.php">Register!</a></p>
</div>
</form>
</body>
</html>
```

To Login : login.php

```
<?php
```

```
include("db.php");
```

```
session_start();
```

```
$username=$_POST['username'];
```

```
$password=$_POST['password'];
```

```
$result=mysql_query("SELECT count(*) FROM student WHERE username='$username' and  
password='$password'");
```

```
$count=mysql_fetch_array($result);
```

```
if($count==0){
```

```
    session_register("username");
```

```
    session_register("password");
```

```
    header("location:success.php");
```

```
} else {
```

```
    echo 'Wrong Username or Password! Return to <a href="index.html">login</a>';
```

```
}
```

```
?>
```

To connect to db : db.php

```
<?php
    $conn = mysql_connect('localhost', 'root', 'ella');
    if (!$conn)
    {
        die('Could not connect: ' . mysql_error());
    }
    mysql_select_db("studrecord", $conn);
?>
```

To Signup : signup.php

```
<html>
<head>
<title>Register</title>
</head>
<body>
<form action="index.html">
    <table id="title">
        <tr>
            <td>First Name:</td>
            <td><input type="text" name="fname" /></td>
        </tr>
        <tr>
            <td>Last Name:</td>
```



```
<td><input type="text" name="lname" /></td>

</tr>

<tr>

<td>Address:</td>

<td><input type="text" name="address" /></td>

</tr>

<tr>

<td>Username:</td>

<td><input type="text" name="username" /></td>

</tr>

<tr>

<td>Password:</td>

<td><input type="password" name="password" /></td>

</tr>

<tr>

<td>&nbsp;</td>

<td><input type="submit" name="submit" value="Sign Up" /></td>

</tr>

</table>

</div>

</form>

<?php
if (isset($_POST['submit']))
{
```

```
include 'db.php';
```

```
    $fname=$_POST['fname'];
```

```
    $lname=$_POST['lname'];
```

```
    $address=$_POST['address'];
```

```
    $username=$_POST['username'];
```

```
    $password=$_POST['password'];
```

```
mysql_query("INSERT INTO student(fname,lname,address,username,password)
```

```
VALUES ('$fname','$lname','$address','$username','$password')");
```

```
    }
```

```
?>
```

To Connect Nodemcu to Server :

```
#include <ESP8266WiFi.h>
```

```
#include <ESP8266WebServer.h>
```

```
const int ProxSensor=A0;
```

```
int LED = 16;
```

```
const char *ssid = "Meeee"; // replace with your wifi ssid and wpa2 key
```

```
const char *pass = "12345678";
```

```
WiFiClient client;
```

```
ESP8266WebServer server(80);
```

```
void setup()
```

```
{
```

```
    pinMode(LED, OUTPUT);      // Pin 13 has an LED connected on most Arduino boards:
```

```
    pinMode(ProxSensor,INPUT); //Pin 2 is connected to the output of proximity sensor
```

```
    //Serial.begin(9600);
```

```
    Serial.begin(115200);
```

```
    delay(100);
```

```
    //pinMode(DHTPin, INPUT);
```

```
//dht.begin();

Serial.println("Connecting to ");
Serial.println(ssid);

//connect to your local wi-fi network
WiFi.begin(ssid, pass);

//check wi-fi is connected to wi-fi network
while (WiFi.status() != WL_CONNECTED) {
  delay(1000);
  Serial.print(".");
}
Serial.println("");
Serial.println("WiFi connected..!");
Serial.print("Got IP: "); Serial.println(WiFi.localIP());

server.on("/", handle_OnConnect);
server.onNotFound(handle_NotFound);

server.begin();
Serial.println("HTTP server started");
}

void loop()
{
```

```

server.handleClient();

/*long state = analogRead(ProxSensor);

if(state == HIGH)    //Check the sensor output
{
    digitalWrite(LED, HIGH); // set the LED on
    Serial.println(state);
    delay(1000);
}
else
{
    digitalWrite(LED, LOW); // set the LED off
    Serial.println(state);
    delay(1000);
}

server.send(200, "text/html", state+"");*/

}

void handle_OnConnect() {

    long state = analogRead(ProxSensor);

    if(state == HIGH)    //Check the sensor output
    {
        digitalWrite(LED, HIGH); // set the LED on

```

```
    Serial.println(state);

    delay(1000);
}
else
{
    digitalWrite(LED, LOW);  // set the LED off

    Serial.println(state);

    delay(1000);
}
```

```
//server.send(200, "application/json", {"one": "1"});

server.setHeader("Access-Control-Allow-Origin", "*");

server.setHeader("Access-Control-Max-Age", "10000");

server.setHeader("Access-Control-Allow-Methods", "PUT,POST,GET,OPTIONS");

server.setHeader("Access-Control-Allow-Headers", "*");

server.send(200, "text/plain", String(state));

}
```

```
void handle_NotFound(){

    server.send(404, "text/plain", "Not found");

}
```

To send the data to Server :

```
<html>
```

```
<body>
```

```
<script src = "https://ajax.googleapis.com/ajax/libs/jquery/3.4.0/jquery.min.js"></script>
```

```
<script>
```

```
function get_data(){
```

```
$.ajax({
```

```
url: "http://",
```

```
type: 'get',
```

```
success: function(data){
```

```
    alert(data);
```

```
},
```

```
error: function(data){
```

```
    alert(data);
```

```
}
```

```
});
```

```
}
```

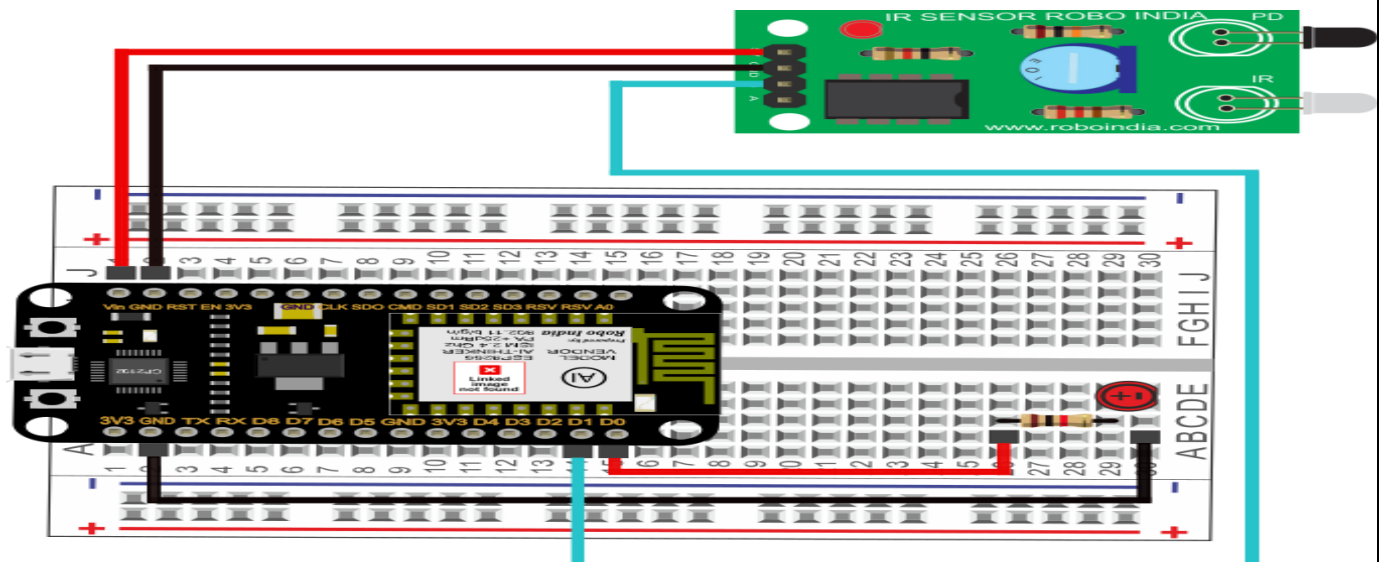
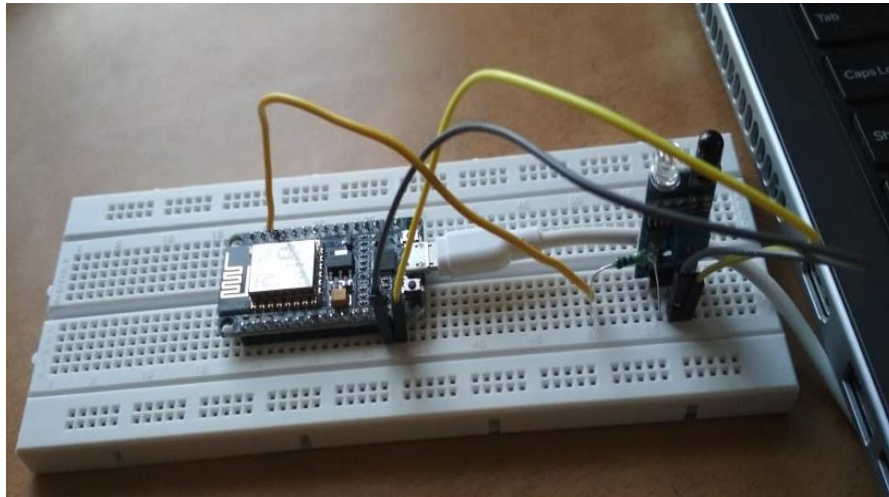
```
</script>
```

```
<button onclick = "get_data()">test</button>
```

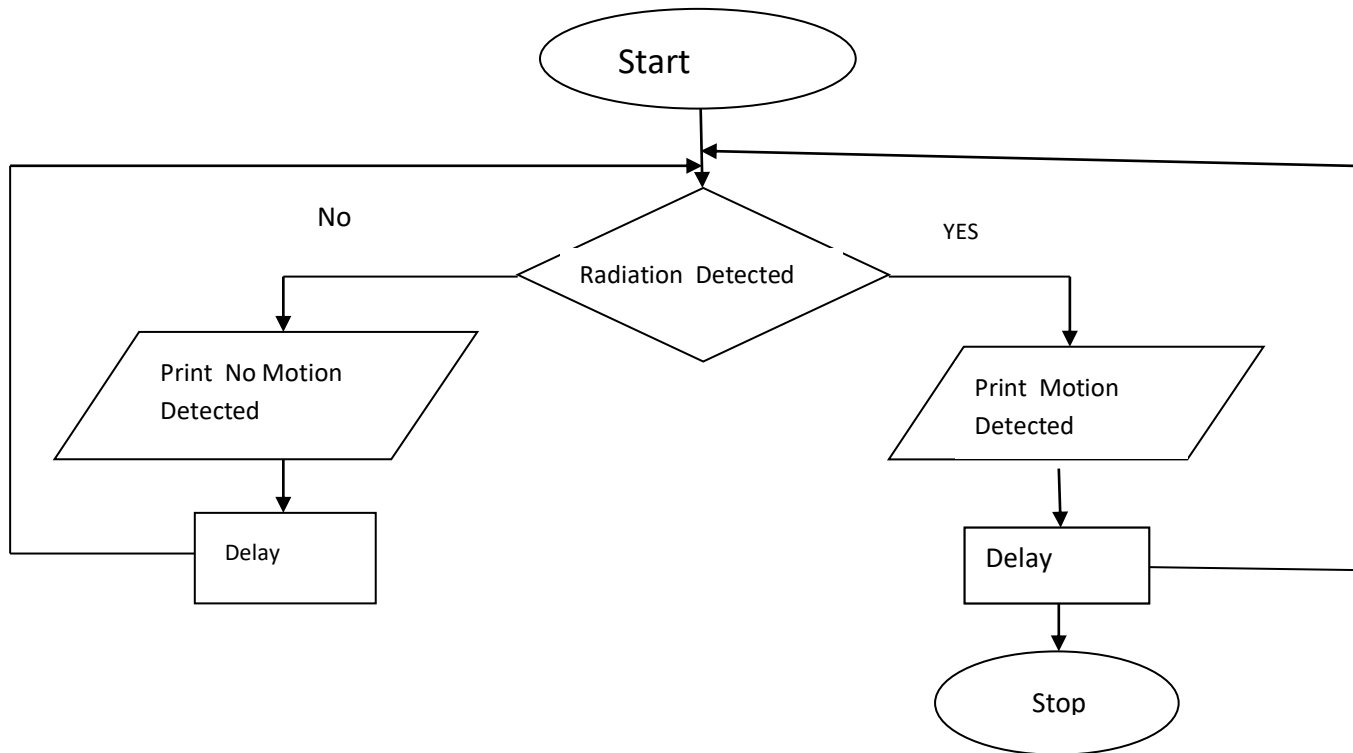
```
</body>
```

```
</html>
```


Circuit Diagram



PROJECT FLOW



TEST CASES

Sl no	Test cases	Results
1.	Place your hand in front of IR sensor	LED glows
2.	Hand is removed(no radiation is detected)	LED is turned off

Future Scope

As time goes on, you should be able to connect more and more of your home devices automating every aspect of your home life. Voice command technology will be everywhere, and remote controls will be a thing of the past.

Home automation products aim to simplify your home life in ways you didn't even realize you wanted or needed. The future will bring an increase in combination sensor products, like the connected sensors. Ultimately, these multi-sensing home automation devices will better "understand" the context of how we live our lives and automatically adjust our environment accordingly.

Project Prospect In Society

As technology is advancing so houses are also getting smarter. Modern houses are gradually shifting from conventional switches to centralized control system, involving remote controlled switches. Presently, conventional wall switches located in different parts of the house makes it difficult for the user to go near them to operate. Even more it becomes more difficult for the elderly or physically handicapped people to do so. Remote controlled home automation system provides a most modern solution with smart phones.