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# AUTOMATIC LIGHTS AND FANS CONTROL SYSTEM USING HUMAN MOTION RECOGNITION WITH TEMPERATURE SENSOR

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## ABSTRACT

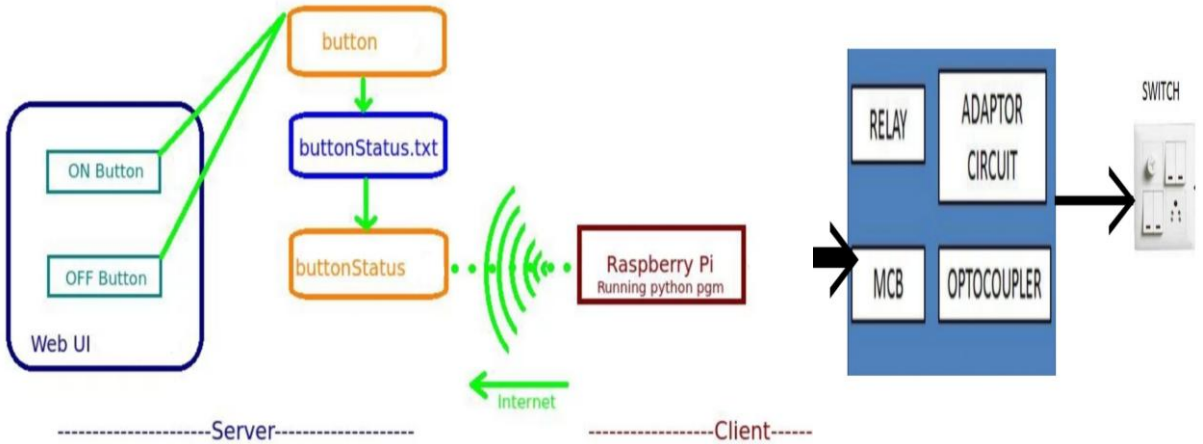
In this generation , we want to do replace the manual works with Automation and try to doing everything by an Automation. It provides a good platform that allows to connect all the devices sensing and controlling the Lights and fans in order to reduce use of the power consumption (or) wastage of electricity. In this project, the electronic appliances that is lights and fans are connected to the board , by this we can save the electricity by consuming a less amount of electric power. This system can be allow for automating the things in House, office, Bank ,college and Hospital. The system can be easily handled and accessed remotely through an Internet of Things platform that is we can operate Lights and fans by using smart phone . The paper mainly focuses on the controlling of electronic equipment like Lights and Fans through Raspberry Pi by sensing the room temperature by use of DS18B20 (Humidity and Temperature sensor) and the presence of human by recognition of motion of humans in the room using the PIR sensor. The paper is intended to control electrical appliances and devices in the house with less cost design, simple to understand to user with easy installation.

**Keywords:** Light, Fans, Human Motion Recognition, Raspberry pi, DS18B20

## I. INTRODUCTION

Today the technological worlds is fast growing towards the innovative technology have centralize idea to automate the thing for simplicity and comfort in life, providing security, saving electric power as well as time. In the home automation is one of the preceding things to automatically on and off the household appliances ( i.e. lights and fan ).Home automation can be define as a method for doing something without human interference. Home automation can be characterized as a mechanism removing as much human interaction .Electricity is an important weapon to providing as much comfort the human life. it's a heart of innovating technology because without electric power world's couldn't work.To providing a great comfort to human in their daily life cycle we have used Iot based Home automation technology. When there is regulate of all the lights and fans together with the use of internet and detection of temperatures and presence of human by human motion recognition. In this project, we have Design and Development of Home Automation System via the web or android application using Raspberry pi. A lots people are too busy also they are in hurry so they are forget to turn OFF the lights and fans before the leaving room. In such situation , this system are frequently used because this system play an important role in reduction of power consumption and save the electric power by human motion recognition to detect presence of human and detecting temperature in room , and lights and fans be automatically ON or OFF .

## II. METHODOLOGY



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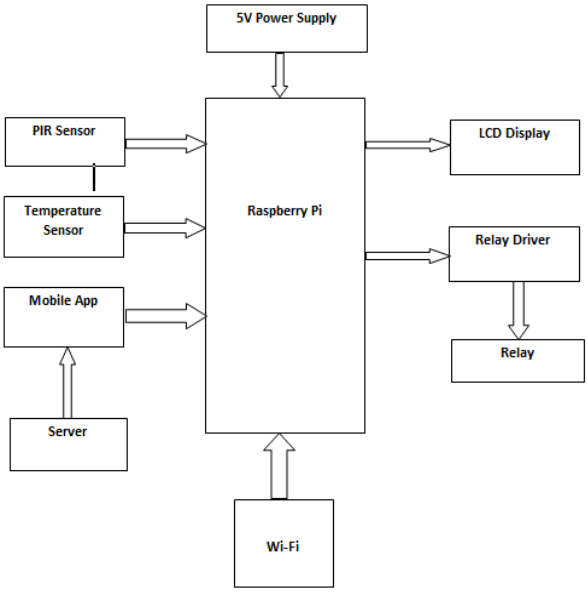
## III. BLOCK DIAGRAM




## IV. SYSTEM DESIGN

### System Architecture

**1. Hardware implementation**

To design the system hardware we gone through block diagram.

Block diagram of Automation system. Raspberry Pi is a central device to which control all hardware components are connected and perform all the operations. on the Raspberry pi. Raspberry pi is consists of 40 GPIO pins. These GPIO pins are used to control the home appliances. PIR Sensor connected to GPIO Pin 25 which used to detect the motion of human and digital output give to Raspberry pi and Temperature sensor attached to GPIO pin 4 for detect the humidity and room Temperature and output generate given to pi module. Relay are connected through Relay Driver circuitary to the GPIO pins of the Raspberry pi module and the result gets from GPIO pins is about 3.3V. In order to drive Relay is require least amount power supply that is minimum 6 Volt, so the result can be produce with the help of Relay driver circuitry. All Household appliances (Lights and Fans) are attached to the Relay Module. Raspberry Pi also consists of in build Wi-Fi module through which internet is access, Mobile device to access the Raspberry pi by using the internet. If the user connects mobile device in network, we can control lights and fans using mobile application. Mobile application contains buttons to toggle the status of electronic gadgets of the room. For each light and fan one toggle button is provide on mobile application through which Number of home appliances can be controlled simultaneously .

**2. Software implementation**

Programming is done with PYTHON language.There are several platforms for developing android applications for smart phone such as Windows Mobile, Symbian, iOS and Android. In this system, the Android platform mobile Application software is develop by using AppGeyser it provide open source platform to develop application software without coding the software application. AppGeyser is a free web platform that uses template system allows to convery any web page into an Android Application to create customized application without consisting any code . It is an Android application development platform that create codeless apps and users develop template mobile apps b pulling content from webpages.

There are three steps to create are

1. you can enter the URL of any mobile-formatted website and it will be wrapped up into an app.

2. You can enter the HTML for any Web widget code and get it turned straight into an app.

3.Use a tool on the site which can ‘Grab’ chunks of Web pages to turn them into apps

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## V. WORKING OF THE SYSTEM

As shown in the design, a low cost smart home automation system for controlling Lights and fan, A summary of the home automation system architecture is shown in Figure.

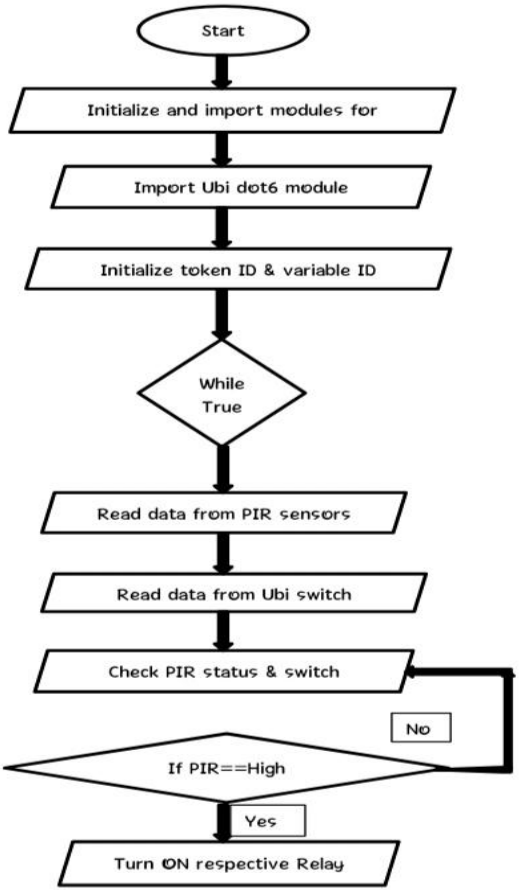
Raspberry-pi card size CPU which provides open source platform to perform software and hardware operations.

This is profitable project as Raspberry pi with PIR sensor and temperature sensor is used thereby lights and fans in a room will turn on automatically by recognition of human motion using PIR sensor and detecting room temperature and stay turn on as long as the person present in the room. The output of PIR sensor goes high as person enter in the room. PIR sensor detects the Infrared radiation. GPIO pin of raspberry pi is used to connect the data OUT pin of PIR sensor. When this becomes HIGH, the activation of relay takes place by raspberry pi. So those relay pins in the LOW mode; because relay is an active LOW device. Now, the lights and fans will turn ON till person present in the room. The motions in front of sensor stop also there will be no change in IR radiation, when person exit from room Hence, data OUT pin of PIR sensor will getting to in LOW mode. This leads to turn of the relay. So, relay is in HIGH mode. Hence, room light will be turn off.

### System Operation

- The User Interface of the mobile application allows the user to interact pi module and communicate with the Raspberry Pi over the internet.
- The end user orders the command of switching ON or OFF the specific Light and Fan by pressing the ON/OFF button in the application.
- By use of the internet the application are interact and transmitting the code to the Raspberry Pi module.
- Pi module reading the command also leads to send the signal to the respective SSR via GPIO.GPI
- The respected relay is operates and responsible for turn the appliance ON or OFF.

### Flow Chart



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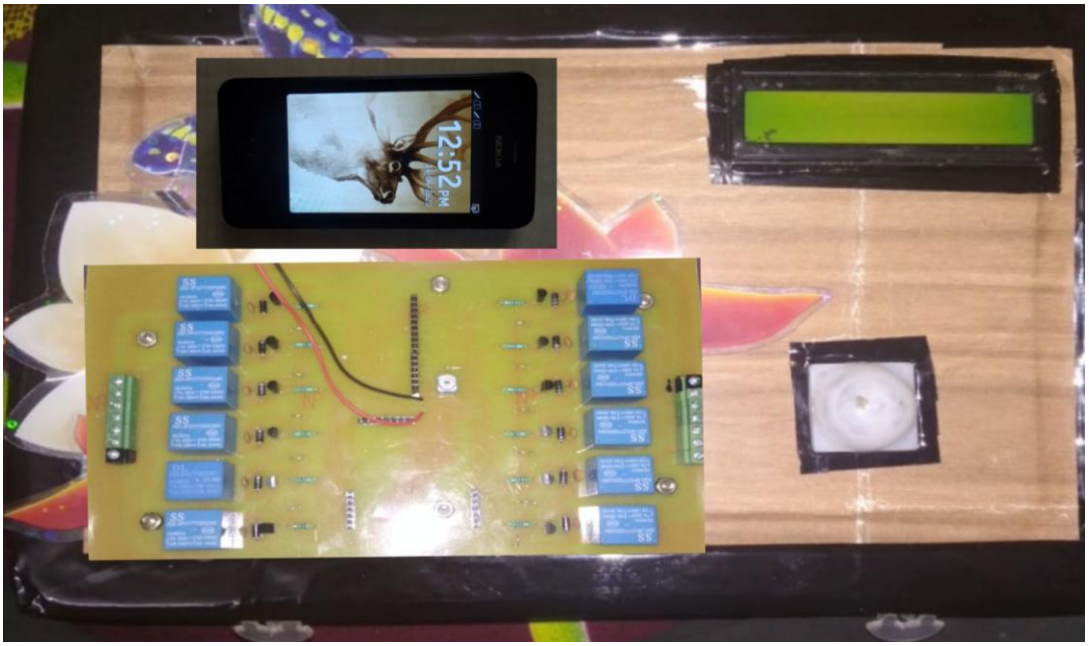
**Steps of the project**

1. Start
2. Initialize Raspberry Pi, PIR sensor, Temperatures Sensor, Relay driver
3. Initialize and import module for CCD
4. Import ubi module
5. Initialize token id and variable id
6. while Read data from PIR sensor
7. Read data from ubi switch
8. Check PIR status and Switch
9. If PIR is High then Turn ON respective relay
10. Otherwise go to step 8.

## VI. RESULT

The design of automation system is used to turn ON and OFF the room lights automatically by an efficient the human recognition and detection of temperature in the room. There is no need to manually on the lights and fans by press the button every time when person get enters in the room. This system allowing the user to control the electronic gadgets ie Lights and fans from anywhere in the world use of an internet connection. The proposed home automation system is practically implemented and thus the results are obtained.




## VII. CONCLUSION

The aim of the paper is to design a home automated system by using Raspberry pi. So,the people are able to operate the home appliances i.e. light and fan easily by use of smart phones or by an automation. This project is based on the Raspberry pi and having the interconnections between the electronic gadgets(Light and fan) also has various sensors for handelling and monitoring the device. It is a system that having different technologies as well as its applications that can be efficiently provide control and security of the home.

## VIII. FUTURE WORK

In the future extensions to this project, the smart DoorBell can be made by implement through voice and video calls by the person standing right outside the door and the owner remotely. Thereby increasing the safety quotient of the system use of sensors that can be used to handle, monitor and secure the home.

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