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SMART ROOM

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Abstract: In our project we are trying to make a home more smarter than what is it now-a-days. We have developed a system that will take care of opening and closing of curtains according to ambient sun-light. We have developed an alarm that sprays fragrance in the room as per time set. Apart from that we have also developed a system that will control speed of fan and light intensity.
All these tasks are done with the help of IoT, so that user can control system from remote place and monitor it too.
Keywords: *IoT, Home appliances, Sensors.*

I INTRODUCTION

Home automation is commonly called smart room/home. It involves the control and handles the things like Light, Fan, Door, Alarming, Freshening (rooms, kitchens and bathrooms) and Windows for certain remainders, security purposes etc. All the things are connected to the internet and all of them can be accessed at any place and any time. The web server is simultaneously updated by sensing the status of the things which are connected to the network. The status of the appliances is controlled by the switch it either ON or OFF using the computer technology. It also provides the security, energy efficient, and ease of use, hence it is more adopted. It helps in controlling and monitoring on web browser. The main objective of the project is to help handicapped people and aged people by alerting in the critical situations. All the devices can be used in our own sitting place itself. The problem overcome by this paper is about that smart room is generally implemented by using WIFI through our PC. Pin check algorithm is used to implement this set-up by using the cable network other than the wireless communication. The device ESP8266, which is the embedded device used to access the cloud. We are using PIR sensor, IR sensor and proximity. Where the devices in IOT is used for controlling or nominating the devices where all of them are far away from this. MQTT and TCP protocols are also used to implement the ESP8266 Wi-Fi module. The potential IOT applications develop the environment that covers all together the applications, command, control and routing process and security of the node and system. All the IOT devices include various objects like personal computer, smart phones, tablets, which gives the communication between the things and people and also the things between them [6]. To reduce the need for the home intervention, we are used to control the smart room through the use of control systems.

II LITERATURE REVIEW

Home automation is a challenging one not only to the developer but also to the consumer. Developer has to choose the component as per the customer requirement. Due to all the customer demands are not equal hence they have to compromise with the existing products. Through detailed study of "Home Automation Using Internet of Thing" proposed by Shopan Dey, Ayon Roy and Sandip Das, it is found that they have used Raspberry pi module to connect ESP8266-01 module to the internet. Through this module they are controlling various devices through web page and also through android application [2]. K. Venkatesan and Dr. U. Ramachandraiah in their paper have implemented Zigbee module in Arduino mega through which they are controlling devices. They have used various sensors for various purpose. Also they have provided real time notification, feedback on web-server in which customers can see what is happening in their home [1]. With the help of logic gates, a Raspberry pi, 555 timer and flip-flop also the devices are controlled from web app. Paper proposed by Shashank Shiva Kumar Jha, Vishwateja Mudiam Reddy, Tapan Pokharna, Naresh Vinay shows how this is operated and controlled [3]. International Journal of Pure and Applied Mathematics Special Issue 770 "Programmable Infrared Accessory Light Switch" by Warsuzarina Mat Jubadi and Normaziah Zulkifli shows how TV remote is used to control room light and other appliances. Here IR remote and one IR receiver is used and programmed in such a way that it stores the frequency of the existing remote and use them directly to control appliances [4]. So, here we introduce Arduino Uno with ESP8266-01 module. This is not only cost-effective but also prove to be the easiest one when it comes in term of programming and also implementation.

III PROPOSED SYSTEM

The aim of the project is to give user both the option to either control various appliances through the app interface or through physical touch. The user first needs to authenticate by press the button. The application on your smart device acts as a central means through which the user communicates with the appliances. The application sends the signals to the NodeMCU which in turn send the appropriate command to the Relay through which the appliances are controlled, this demonstrates the concept i.e. IOT. The ESP8266 is programmed to send controls to relay which in turns control the appliances. With the help of this project you will be able to automate every appliance, which will greatly help in reducing power consumption.

The user was also given the option to control the devices automatically using the input provided by the different types of sensor that are interfaced with the Arduino. The sensors provide the Arduino readings from the surrounding, the Arduino is in turn connected to the Relay which is in turn connected to the appliances, so the devices were able to be controlled automatically using the input from the sensors.

IV METHODOLOGY

ALGORITHM

1) START

2) Sensor will sense at the door unit and glows a small light.

3) As the person is detected by PIR sensor, the light of the room and kitchen will be ON.

4) If the room or kitchen is smelled bad then the fragrance unit will be enabled.

5) Daily the alarm is set in the system which enables the fragrance unit which freshens the room.

6) Any form of disturbances (sunlight, air/rain) while sleeping in holidays then curtains part is enabled.

7) Fan dimming is to be controlled remotely.

8) While going to the washroom the switch enables the exhaust fan and after this fragrance unit is enabled which is placed inside the washroom.

9) The things are controlled by remote and web server.

10) END

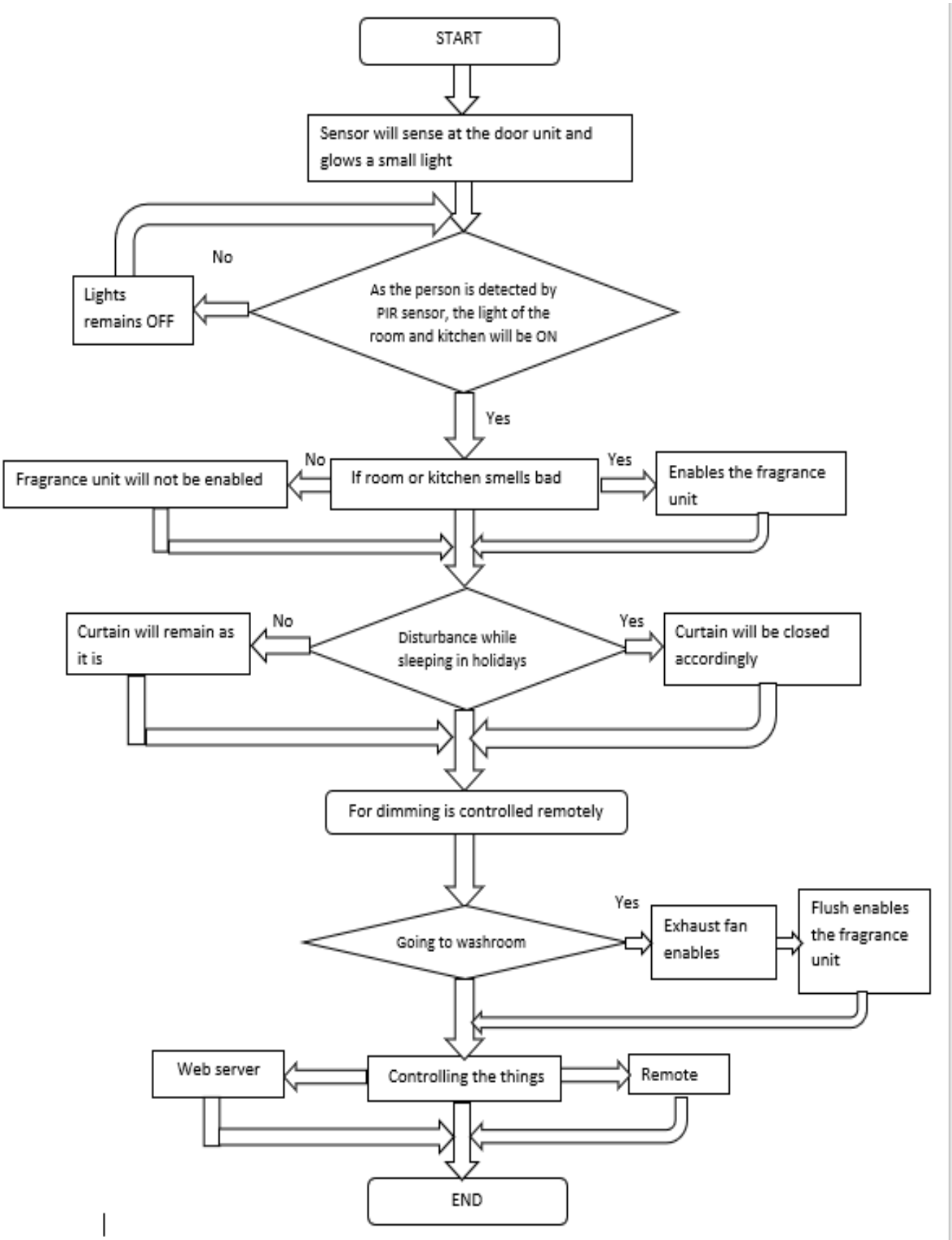

Figure 1: Flow Chart of systematic development of proposed system

V. WORKING

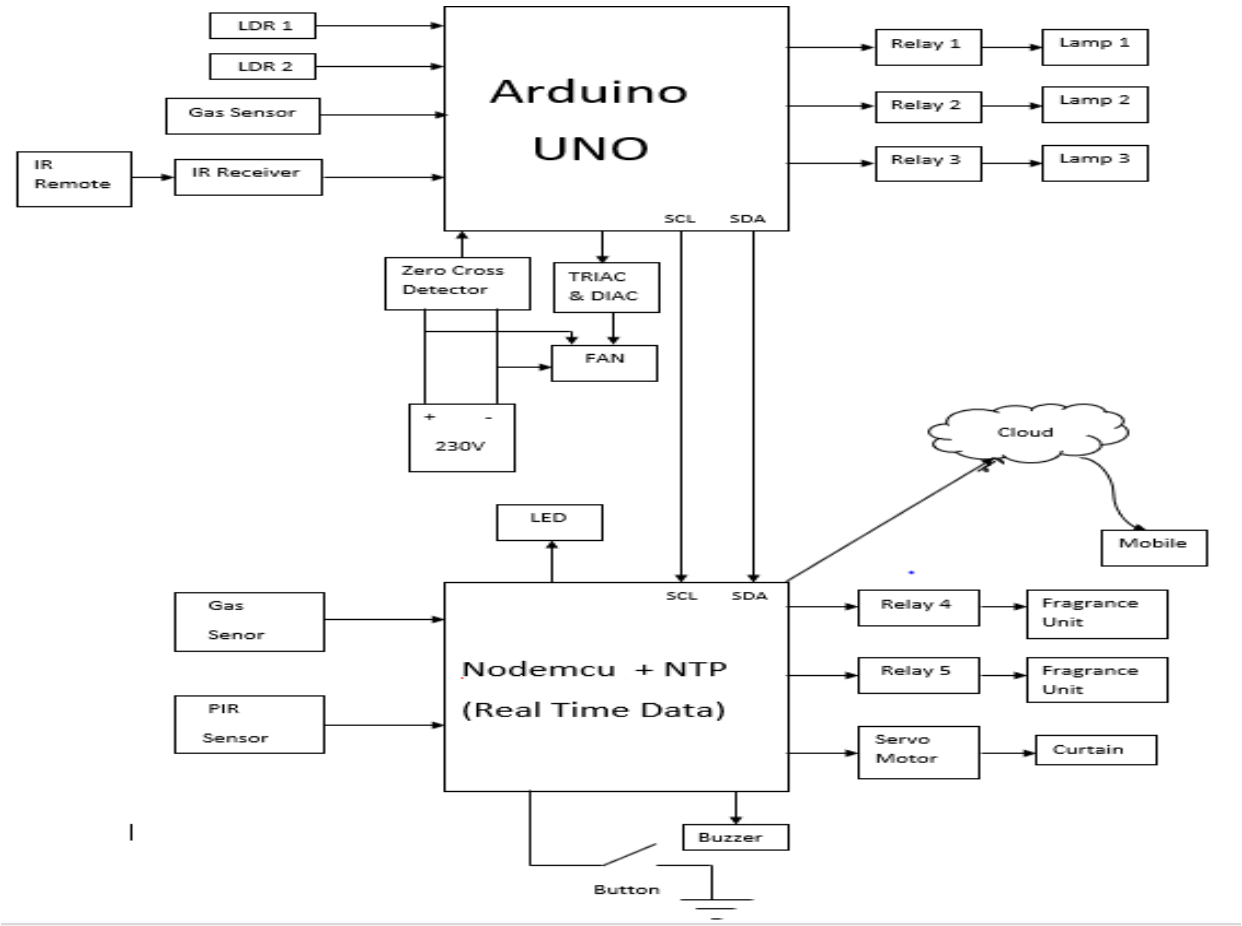

Figure 2 Block Diagram of Proposed System

The Arduino Uno is interfaced with all the sensors that we are using in the project, the sensors provide the Arduino with input of specific type, upon receiving which the Arduino is programmed to execute a certain list of commands. The input received from the sensors are usually in analog form and hence are connected to the analog pin on the Arduino, every sensor has a different style of working, the discussed module provides the Arduino with different kind of Input received from different kind of sensor that are integrated with the device. The Arduino is programmed in such a manner that it is supposed to execute a set of commands depending upon the type of Input received from the sensors, the Arduino is connected to the relay through the digital pins, the Input to the relay is provided by the Arduino and based on the Input received the relay is turned ON and OFF.

The NodeMCU is also used as it is also a type of microcontroller with the added functionality of connecting to the Internet using the Wi-Fi module, it is interfaced with the relay to give user the option to manually control all the home appliances either from the touch interface present on the mobile application. The digital pins on the NodeMCU are connected to the input pins on the relay, through which the relay receives input from the Arduino and based on the input received, the relay is turned ON and OFF.

We have introduced new type of interfacing of fragrance with NodeMCU by which it will operate when a daily alarm will ring as per time and fragrance will get enabled and when some kind of bad smell or gases are detected inside the room then fragrance will get enabled(exhaust) and also we have introduced a fragrance in washroom using flush. In curtains we will detect two types of data one from inside and other from outside which will operate curtain automatically/ manually(when needed).

VI RESULTS

VII FUTURE SCOPE

Smart Homes

In the coming years, fully automated smart homes will surely become a reality as the home automation is developing rapidly. Due to good user convenience, smart homes are appealing a wide range of people all over the globe. The User can check for the electricity usage, the condition of his devices and get notification accordingly.

Smart Cities

With increasing automation and IoT, devices can communicate with each other. This will help in building new and smarter cities. Cities that would be free form pollution, traffic accidents, and etc. problems.

Agriculture

The proposed system can be used in Agriculture as well. The various devices used in fields can be operated from any remote location. Equation *or* Math Type Equation). "Float over text" should *not* be selected.

VIII CONCLUSION

The main barrier towards the acceptance of home automation presently is its high cost. This paper has studied and reviewed the presently available home automation system. These systems require additional network devices like hubs for their working, which in turn increase their cost.

By the use of NodeMCU and the IoT platform, these devices can be made cost-effective. Above all, it will provide great user convenience as it will be possible to control the devices from a remote location. Using a web page or an application, the system has been made platform independent. There is no need for any particular operating system so as to operate this system. The system will provide optimal results.

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