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ENHANCEMENT OF OPERATIONAL SAFETY OF HOME EQUIPMENTS

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Abstract **--- In our project we are trying to enhance the safety of home equipment' s than what is it now-a-days.**

We have developed a system that will take care –of opening and closing of window according to ambient weather. We enhance the safety features in room heater by using IOT. we have also developed a system that will control door latch remotely and work smartly. Apart from that we make a small unit which can control the current leakage in geyser.

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. Generally, when we go out the house we switch off the light or the electrical equipment to avoid accidents such as short circuit, firing, etc. but sometimes we forget to switch them off, we have to come back home to do so. This is wastage of time and creates lots of chaos and tension. So to avoid such kind of situation the latest technology already came worldwide is smart home technology. Smart home is one in which all electrical equipment around the home is technologically smart or intelligent or automated with highly advanced automatic system for security in other system. Smart home is consisting of three parts- network, controlling device and Home automation. Network can be wired or wireless. It is used for connecting the automation to controlling device. Controlling devices can be used for managing the system. Home automation is the devices which control the physical environment. 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

The old room heater available in market can be easy to use but according to present technology it may be outdated and may have lack in different safety point of view like child safety, overheating and in case of power consumption.

Smart Windows available in the market can only consider transparency. This can be used in bathroom and offices for privacy purpose. They can' t consider windows movement (opening and closing for ventilation) which are in our houses.

Smart door-lamp with safety latch which can reduce manual work and increase safety from door-lock.

So we intend to develop a smart individual room heating IS that empowers residents to save energy and improve comfort by providing better controls and information to adapt room temperatures and increase safety. The user is then equipped with a Smartphone app that we designed to control the equipment from remote area for their reliability and according to their comfortness. Solutions of connected system with Smartphone and web-based interfaces are already available..

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

Through Node MCU and HTML the optimization of smart home has been done. We observed the variation of temperature, and the room heater will turn on and turn off as per temperature. And the loads which are connected through relays which are used to switch on and switch off the loads via sending request through mobile phone. It will work only with the output of 3.3V

ALGORITHM

1. START
2. Sensor will sense human on the front of door and glow the light.
3. As the person is detected by PIR sensor, after opening of door, small light at switch board will ON
4. Door latch will controlled by mobile.
5. Temperature of house can be controlled by room heater according to situation.
6. Any form of disturbances (high speed wind and rain) then window will close.
7. Geyser coil can be continuously detected by safety coil.
8. The things are controlled by remote and web server.
9. END

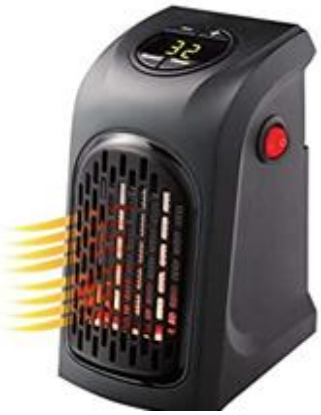
V. WORKING

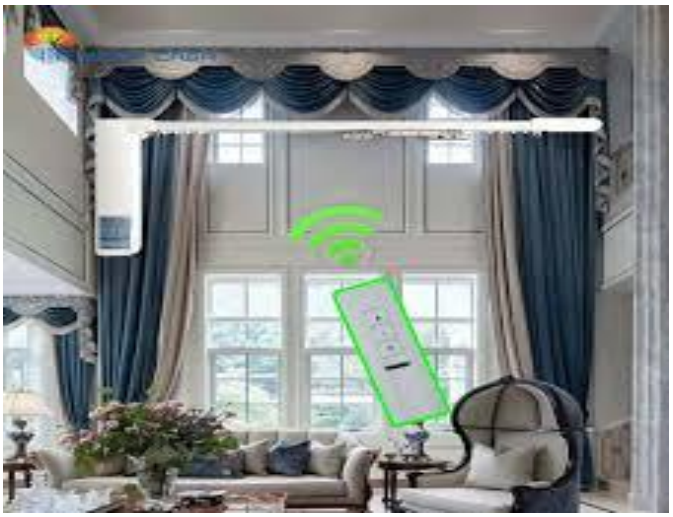
The Arduino Uno is interfaced with all the sensors that we are using in the project, the sensors provide the Arduino with input of specific type, upon receiving which the Arduino is programmed to execute a certain list of commands. The input received from the sensors are usually in analog form and hence are connected to the analog pin on the Arduino, every sensor has a different style of working, the discussed module

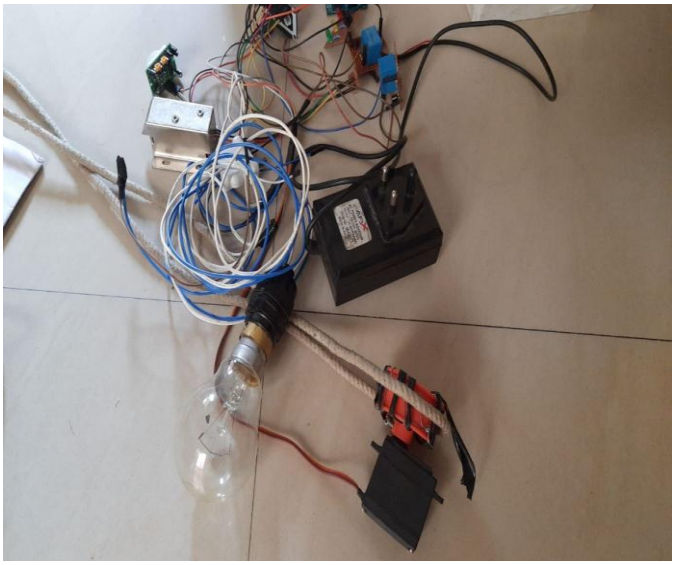
provides the Arduino with different kind of Input received from different kind of sensor that are Integrated with the device. The Arduino is programmed in such a manner that it is supposed to execute a set of commands depending upon the type of Input received from the sensors, the Arduino is connected 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

VI.RESULTS

It is evident from this project work that an individual control home automation system can be cheaply made from low-cost locally available components and can be used to control multifarious home appliances ranging from the lamps, the television to the air conditioning system and even the entire house lighting system. And better still, the components required are so small and few that they can be packaged into a small inconspicuous container.







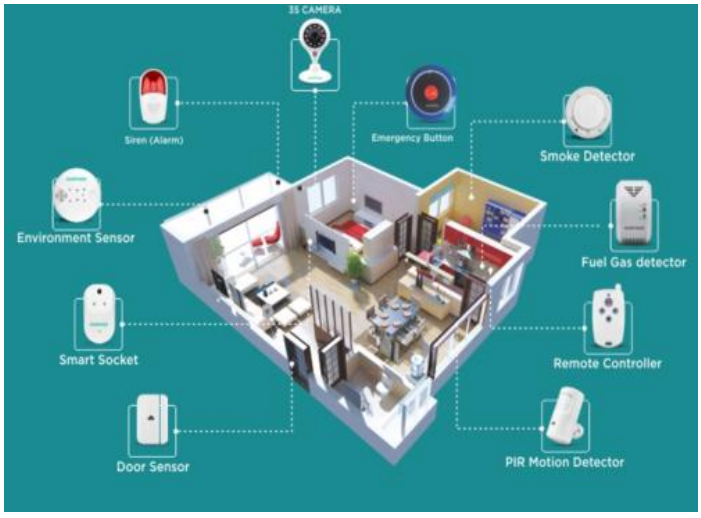
VII. FUTURE SCOPE

The next phase for the Home automation market will occur based on a few key improvements in the technology available in Automation, such as improvement in Wireless Automation solutions as well as lowering of price points as the market begins to accept Home automation usage in larger volumes. Some trends that we foresee for this phase of the industry are: Big companies like Philips, Siemens & Schneider will eventually bring out fairly mass market automation products with appealing user interface but at a lower price point than today, and more people will be able to afford the products Solution offerings will slowly move to a more user friendly design, where aside from a few key components, users will be able to buy and use the Automation products themselves without the aid of any technical expert Some foreign players will have niche in

high end automation and focus on the premium market (>20 Lakh ticket size).

VIII. CONCLUSION

The designed home automation system was tested a number of times and certified to control different home appliances used in the lighting system, air conditioning system, heating system, home entertainment system and many more (this is as long as the maximum power and current rating of the appliance does not exceed that of the used relay). Finally, this home automation system can be also implemented over WI-FI, Infrared and WAP connectivity without much change to the design and yet still be able to control a variety of home appliances. Hence, this system is scalable and flexible.



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REFERENCES

[1] Warodom Werapun, Amatawit Kamhang & Aekawat Wachiraphan 2014, " Design of Home Automation Framework With Social Network Integration" Journal of Networking Technology Vol. 5 No. 4.

[2] Patil Ketan C , PatilRohan A , MusaleShrikant K & Rane R.D 2014, " An Ethernet Based Monitoring and Controlling Of Home Appliances Using Rabbit Processor" International Journal Of Engineering And Computer Science Vol. 3, No. 2.

[3] VaishnaviS.Gunge & PratibhaS.Yalagi 2016, " Design of Raspberry pi Based Home Automation Through Android Application" International Journal of Innovations in Engineering and Technology Vol. 7,No.1.