Cloud Based Room Controller

PRANJALI V DESHMUKH[1], SHUBHDEEP SINGH[2], ATUL LAKHAWADE[3], KOMAL RAUT[4], VIRENDRA JADHAV[5]

[1] Assistant Professor, Computer Engineering Department, MMIT Lohgaon Pune, India.

[2, 3, 4, 5] Under Graduate Student, Computer Engineering Department, MMIT Lohgaon Pune, India.

Abstract- As we are living in 21st century the whole world is focusing on automation. But there is not a significant development in automating of homes. With the help of IOT we can make the whole lot of difference in the field of home automation. This paper majorly focus on making a system to integrate with the house or building or a particular room so that we can control the room remotely as well as we can allow the system to make decisions on its own based on the predefined values that we have set in the system. Also the working of the system will be totally independent of the network that the system and the user will be connected.

Indexed Terms- Artificial Intelligence, IOT, Cloud, and Automation.

I. INTRODUCTION

Cloud Based Room Controller is controlling of devices present in home or any building. We can also say it uses combination of Computer software and hardware to control the devices present in our system .It integrates electronic home devices with our device to integrate with each other. Eg. We can have centralized control of all the electronic devices present in our system to improve comfort, convenience, energy, efficiency and safety. In today's world automation is being appreciated due to easiness of viewing, monitoring or controlling the appliances and various other things according to users comfort and needs. The huge popularity of automation has been increasing drastically due to considerable affordability and simplicity through various devices like smart phone and PC connectivity with the system .A home automation system integrates electrical and electronic devices of the house with each other also with the system .The various techniques applied in home automation includes those in business automation as well as those of domestic activities such as lighting control system and the use of other electronic appliances. Devices may be connected through a home network to allow control to a personal computer, and may allow remote access from the internet.

II. LITERATURE REVIEW

In paper "IOT Based Home Automation Using Arduino "it specifies controlling over switches using PAN network. In this system the whole system works with the total dependency on bluetooth means we can control the electrical devices present in our home using bluetooth. Here the range of controlling of very less and this type of system will work efficiently on the smaller scale only. In paper "IOT Based Smart Security and Smart Home Automation" the main focus is to provide security to the households or offices it specifies usage of security system like camera and door locks to be monitored remotely so the security of the households is easy to manage and monitor. But we cannot control all the appliances in this system the focus is on security only. In paper "A Node MCU Based Home Automation System" here it uses a Wi-Fi based home automation system without use of a dedicated microcontroller this system can be implemented on a small scale only as there is no microcontroller so it is totally dependent on Node MCU. In paper entitled "IoT Based Home Automation using Node MCU" here dynamic switch modules are present so that we can control the switches dynamically. Here we can only take control manually the system cannot works on its own.

III. PROPOSED SYSTEM FEATURES

The system that we have proposed in this we can take control of the various appliances present in the system manually as well as we can make the system to work on its own based on the conditions that we have set. We can use an android mobile application to control our devices present in huge buildings or in a particular room in which there are various appliances we can

easily monitor as well as manage all of it by a single device here in our system we are not using lan we are connecting the system to the cloud so we can control the system remotely from any corner of the world or in the same network also. Here range is not an issue our system is easily scalable and can be controlled remotely, here dependency is very less and if we have put the system to automatic mode the various calculations that we will need for the system to work in automatic mode will be calculated on the cloud. The system is easily scalable also every module that is present can be controlled uniquely. For example: In a huge building we can control each and every room differently.

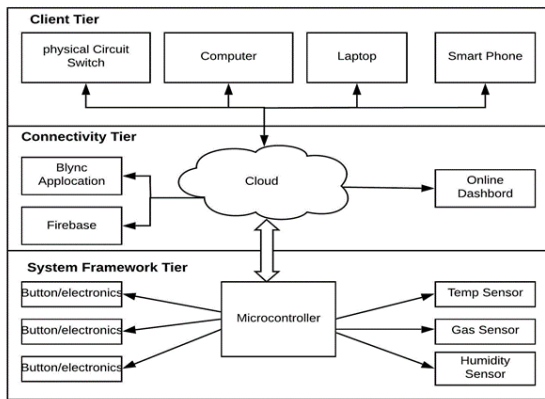## IV. SYSTEM DESIGN AND IMPLEMENTATION

Figure 1: Architecture of System

In figure.1 it represents the three tier architecture of the system.

- Client Tier: In this tier the user interacts with the system this is the visual layer of the system. Here the user interacts with the system with the help of various devices like Computer, Laptop, Switches or Smart phone depending on the availability and convenience of the user, the interfaces which the client use can be used to take control of the system manually also we can make the system to work on its own or we can automate the system so that it can work on its own based on the preconditions that we have set. In this tier the user interacts with the system and make the system to work according to its need and convenience.

- Connectivity tier: This tier consists of various components these are: Blynk Application, Firebase, and Online Dashboard.

Blynk application is used to get the user connected to the system with the help of an android device. This application is freely available on google play store and the user gets connected to the system irrespective of the location.

Firebase: It is an NO SQL database which helps the user to connect to the system with the help of a personal computer or laptop depending on the convenience and availability of the user.

Online Dashboard: Here it acts as a virtual dashboard with tells us about the information of the various components and appliances present in the system so that it will be easy to control and manage each and every component..

- System Framework Tier: In this tier the main component is microcontroller here it is connected to the various buttons and sensors which on the basis of input from the sensors make the buttons to work in a particular manner based on the various preconditions that we have set or based on the user's input what the user wants. It is directly connected to the cloud so that it can fetch the information and data needed to work in a particular fashion.

V. ALGORITHM

- Step 1. Start the service.
- Step 2. User will choose between Mode = Automatic or Mode = Manual mode.
- Step 3. Saving the mode to cloud.
- Step 4.: Update the mode from cloud
- Step 5.: If Mode = Manual then perform step 6 else go to step number 9
- Step 6.: Check the status of buttons on client's application
- Step 7.: Replicate the status to the actual hardware connected to the micro-controller
- Step 8.: Perform step 4
- Step 9.: Check data from the sensors

- Step 10.: Perform the desired operation based on sensors data
- Step 11.: Update the circuit status to the cloud
- Step 12.: Go To Step 4
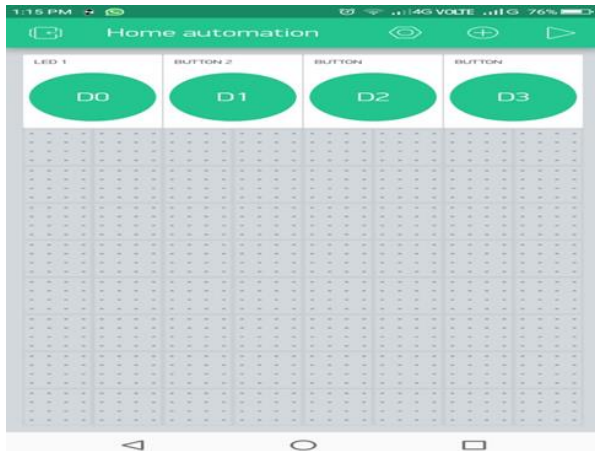- Step 13.: End

VI. BLYNK APPLICATION

Figure 2.1

In figure 2.1 we can add the buttons according to the appliances present in our home we can configure the buttons as well as increase its scale in future or according to our needs.
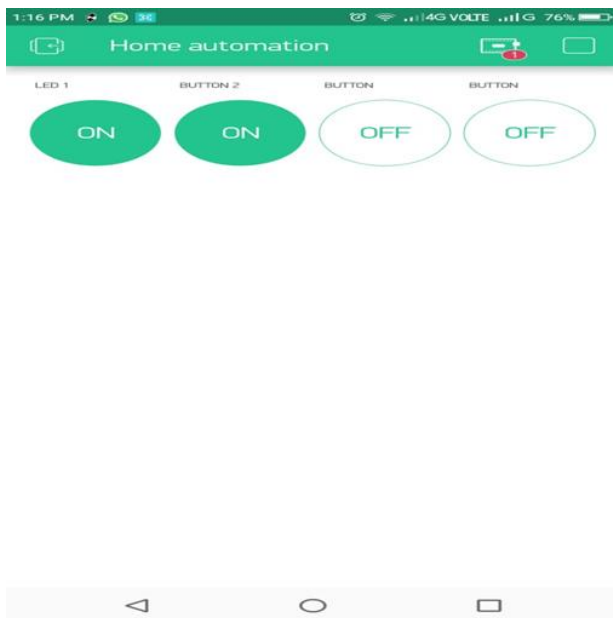

Figure 2.2

In figure 2.2 button 1 represents whether the system is

working or not and the rest of the buttons represents the various devices present in our home which we can control by using the app. Here it is not necessary to get connected on the same network as the application is connected to the cloud so we can control it remotely from anywhere.

CONCLUSION

The Cloud Based Room Controller using IOT and artificial intelligence has been successfully implemented and it is very handy and easy to use to integrate and use. The design system not only monitors the data and appliances but can also take decisions intelligently based on the conditions that we have set for the working. This will help the use to analyse , monitor and control various appliances so that the electrical energy also gets used in an efficient manner.

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