Home Automation System Using Internet of Things (IOT)

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ABSTRACT-The internet of things (IoT) is connecting the devices and tools to the internetnetwork to be controlled by websites and smart phone applications remotely, also, tocontroltoolsandinstrumentsbycodesandalgorithms structuresforartificialintelligenceissues.Incasewewa nttocreateadvancedsystemsusingWi-FiorEthernetconnectionisconnected to our tools, equipment, and devices controlling them by smart phoneapplications or internet websites. That's actually the simplified definition of IoT. Fartherthan just using the IoT as a smart home to operate lamps or other home-use devices, itcan be used asaappliance like lights turn off without any explicit command by the user
Keyword:IOT,HomeAutomation,sensors,LED.s ecurity system or an industrial-use system, more ideas can be done byusingIoTtechnology.

Ahuge industrial facilities or governmental institutions have muchoflamps.Employees sometimes forget to turn them off in the end of the day. This project suggestsa solution that can save energy by letting the security to control lighting of the buildingwith his smart home by Blynk application. The lamps can be controlled by switchesdistributedinthebuildingandBlynkapplicati onatthesametimewithacertainelectricalinstallation.

I.   INTRODUCTION

Aload controlled by computer systems hasmany advantages compared withmanualcontrolled loads. Nowadays there are many programs and applications help to controlthings better using codes in artificial intelligence projects. In order to save energy andmake loads monitored easily, this projectsuggests smart home project based on IoTtechnology. ThissmarthomeisanInternetofThings(IoT)projecttha

tcontrolsloadswithinternet connection via Wireless WIFI connection. A smart phone connected to internet withBlynkapplicationasacontrolpanel,andNodeMC Umicrocontrollerkitinotherside as a controller that receives control commands via WIFI signal. NodeMCU kit isbuilt with ESP8266 WIFI receiver that able to process and analyze WIFI signal to inputthemicrocontroller.

The WIFI receiver and microcontroller are built in one kit to be used as IoTproject. It's called NodeMCU. To connect the system to the Internet, needs a WiFireceiver. In ourcase we used ESP8266 that is connected as built-in in the NodeMCUboard that contains a firmware runs with the ESP8266. The firmware is a low-levelcontrol computer software. The NodeMCU is coded via Arduino Integrated DevelopmentEnvironment (IDE) with the Universal Serial Bus port (USB) to tell the NodeMCU whattodo,IwanttomaketheNodeMCUcontrolstwo-channelrelaykitbyBlynkhandphoneapplication

IOT or internet of things is an upcoming technology that allows us to controlhardware devices through the internet. Here we propose to use IOT inorder to controlhome appliances, thus automating modern homes through the internet. This system uses4-loadstodemonstrateashouseAppliancesControlling. Ouruser-friendlyinterfaceallowsausertoeasilycontroltheseho meappliancesthroughtheinternetWorldwide.Forthis system we use an NodeMCU (Node MicrocontrollUnit).This microcontroller isinterfaced with a Relay modem to get user commands over the internet. Relays are usedto switch loads.The entiresystem ispowered bya 5VAdaptor/Charger(Micro-type). Afterreceivingusercommandsovertheintern et,NodeMCUprocessestheseinstructionsto   operate

these loads accordingly and display the system status on an Smart PhoneDisplay. Thus, this system allows for efficient home automation over the internet. In thiswe have used the Blynk Community Application door controlling the HomeAppliance allovertheworld.TheMethodusedforcontrollingare SwipingthefiguresonSmartphone.

1.0   Literature Survey

Smart homes based on IoT technology are becoming more and more popular. Mainmoto of IoT is to connect hardware world to internet. Then, Web of Things (IoT)emerged to easily connect sensors to the web, get the data and exchange data on the webthat has been produced by the devices. We have gone thoroughly through number ofjournals,researchandconferencepapersandprojectr eportstothoroughlyunderstandtheconcept of IoT technology. Similarly, we have researched various IoT based projects thathave been designed and developed in the past. Some of the proposed and existing smarthomesplatformsareas follows.
The Smart Homes aims at reducing complexity of human face in his home due tolackoftime.Thisprojectisintendedtogenerateandpr ovidedifferentmodelswhicharebeen

1.1   Future Scope of Project

Day by day, the field of automation is blooming and these systems are having greatimpactonhumanbeings.Theprojectwhichistobei mplementedisahomeautomationusingEasyIOTWeb serverandWIFIandhasverygoodfuturedevelopment Inthecurrentsystemwebserverisinstalledonawindow sPCsothehomeappliancescanbe controlled using only by using the device on which webserver is installed.   This   can befurtherdevelopedinstallingwebserveroncloud. Advantageofinstallingwebserveronthecloudisthatho mecanbecontrolledbyusingany device which has WIFI 802.1 and a web browser. By visiting the IP address of thecloudthecontrol.

1.3 Objectives of project

● Thegoalofthisprojectistodevelopahomeautomat ionsystemthatgivestheusercompletecontrolover allremotelycontrollableaspectsofhisorherhome
● Theautomationsystemwillhavetheabilitytobeco ntrolledfromacentralhostPC, the Internet, and also remotely accessed via a Pocket PC with a WindowsMobilebasedapplication.

Problem Definition & Problem Statement
Today people are looking at ways and means to better their life-style using the latesttechnologies

that are available. Any new facility for home appliance that promises toenhance their life-style is grabbed by the consumers. The more such facilities andappliances are added, it becomes inevitable to have easy and convenient methods andmeans to control and operate these appliances. Conventional wall switches are located indifferent parts of a house and thus necessitates manual operations like to switch on or offthese switches to control various appliances. It gets virtually impossible to keep track ofappliancesthatarerunningandalsotomonitortheirPe rformances.AndAimistoBuildansystemwhichcontro lshomeapplianceswithlessefforts,likecontrolusingm obile,orvoicebasedcontrolled.

1.5 Overview of Home Automation System Overview

● Ahuge industrial facilities or governmental institutions have much oflamps.Employeessometimesforgettoturnthemoffi ntheendoftheday thisresearch suggest a solution that can save energy by letting the security tocontrollightingoffthebuildingwithhissmarthomeb yblynkapplication.
The lamps can be controlled by switches distributed in the building andblynk application .

II.   PROPOSED WORK
2.0 Methodology

The proposed system is an automation system which works on the input given by the user. These input commands from the user are in the form of voice commands. The system also has 2 sensors connected to it – DHT11 Temperature sensor and PIR Motion sensor. The voice commands are defined and processed in a C# programming code. If commands are independent of the use of any sensor, the respective output is reflected to the user in the form of speech output The DHT11 Temperature sensor senses the temperature of the room and returns a value to a variable in the Arduino IDE. When the user gives a voice command to retrieve the temperature, the flow of control is redirected from the C# code to the Arduino IDE from where the value of temperature is received in the C# code and reflected to the user in the form of voice output.The PIR Motion Sensor senses the motion around it and controls the respective light it has been connected to shown in Fig 1 and 2. This system works on multiple functionalities. Each one has its own details and specifics that need to be carefully checked before completing and using this project. The main functions and their specifics for this

system are listed below: B. Voice Operation This is one of the most important operation/working function of this project. This system takes input from the user in the form of voice commands and does the necessary processing and gives an output accordingly.
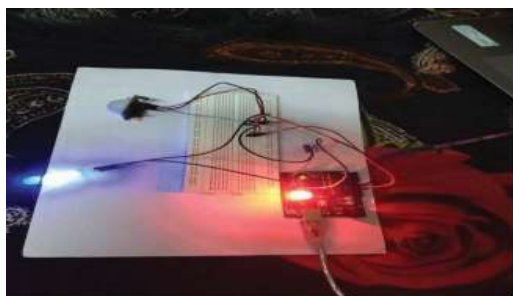
2.1 RESULT

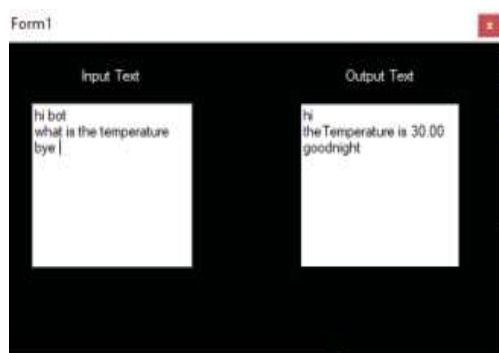Fig. 3 Actual Layout of Implemented System Working of Temperature sensor with voice commands

Fig. 4 Output Table for the Motion Sensor

The following table shows the readings taken by 3 users by the motion sensor. Readings 1-30 are taken by user 1. Readings 31-75 are taken by user 2. Readings 76 – 100 are taken by user 3. Start Time tell at what the motion has been performed. Delay Time refers to the time after which the led start to glow End Time refers to the time after which led stops to glow.

III. CONCLUSION

The final system created is capable of recognizing the voice commands and gives an appropriate response to the user. The form page created displays the input command as well as the response. IO commands like light on and light off work perfectly The PIR motion sensor senses motion and controls the light properly. The DHT11 sensor retrieves perfect temperature data of the room and this data is sent to respond back to the user via voice response.

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