IJAREEIE

e-ISSN: 2278-8875
p-ISSN: 2320-3765

International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

Volume 9, Issue 12, December 2020

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.122

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 7.122|

|| Volume 9, Issue 12, December 2020 ||

A Review on Home Automation using Arduino

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ABSTRACT: This paper is review on " Home Automation using Arduino" Home automation system is indeed a system that offers a mobile application to monitor it through the smartphone or tablet. It controls home appliances like lights, fans, air conditions, and smart security locks, Smart home is essentially how it looks: automating with such an easy touch of a button or a voice command the ability to manage things across the home etc .Bluetooth has always been a popular technology to be used in combination with mobile devices such as phones. Several operations were both simple and extremely low-cost, such as setting up a light to turn on and off at the time of your moment. Others need much more money and resources, including advanced spy cameras. Some people thought that technology is taking a really huge part of our lives. It does! we're living in a modern generation where smart and intelligent systems are necessary to be there wherever we are to make our lives easier and much better, for example, we cando many things faster, better, and more accurate.

KEYWORDS: Smart Home, Internet of Things(IOT), Smart Cities, Arduino, Mobile App

I. INTRODUCTION

Wireless communication and mobile technology are already well known or modified in modern surveillance systems such as surveillance, intruder control, access control, fire detection, etc . A smart home is one that is equipped with lighting, heating, and electronic devices that can be controlled remotely by the smartphone or via the internet. An blutooth based home automation system are focused on controlling the home electronic devices if you are inside or outside your home Home automation gives an individual ability to remotely or automatically control things in a home. A home appliance is a device or instrument designed to perform a specific function, especially an electrical device, such as a refrigerator, for home purpose.Words appliance and devices are used interchangeably. Automation is todays invention, in which things are being controll by automatically, and usually basic tasks of turning ON&OFF certain devices and beyond, either remotely or in close proximity [Automation lowers the human judgment to the lowest degree possible but does not completely remove it. this paper is about controlling home appliances smartly using new technology or Android enabled Smartphone. These applications can either be created according to the need of the user or pre-developed apps can be use.Assume a system where from the office desk, the user could view the status of the devices and decides to take control by tuning his TV set to his favourite channel, turns on & off to cooling system, say the AC,& switches on or off to some lights. This user could walk back at home and finds a very comfortable, pleasant home. Recent developments in technology permits the use of Bluetooth and Wi-Fi have enabled or disable different devices to have capabilities of connecting or disonnecting with each other Using a WIFI shield to act such as s Micro web server for Arduino removes the need of wired connections between a Arduino board and computer which reduces cost and starts it to work like standalone device. The Wi-Fi shield needs connection to the internet from a wireless router or wireless hotspot and this would act as the

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 7.122|

|| Volume 9, Issue 12, December 2020 ||

gateway for the Arduino to communicate with internet. With this in mind, an internet based home automation system for remote control of home appliances are designed.

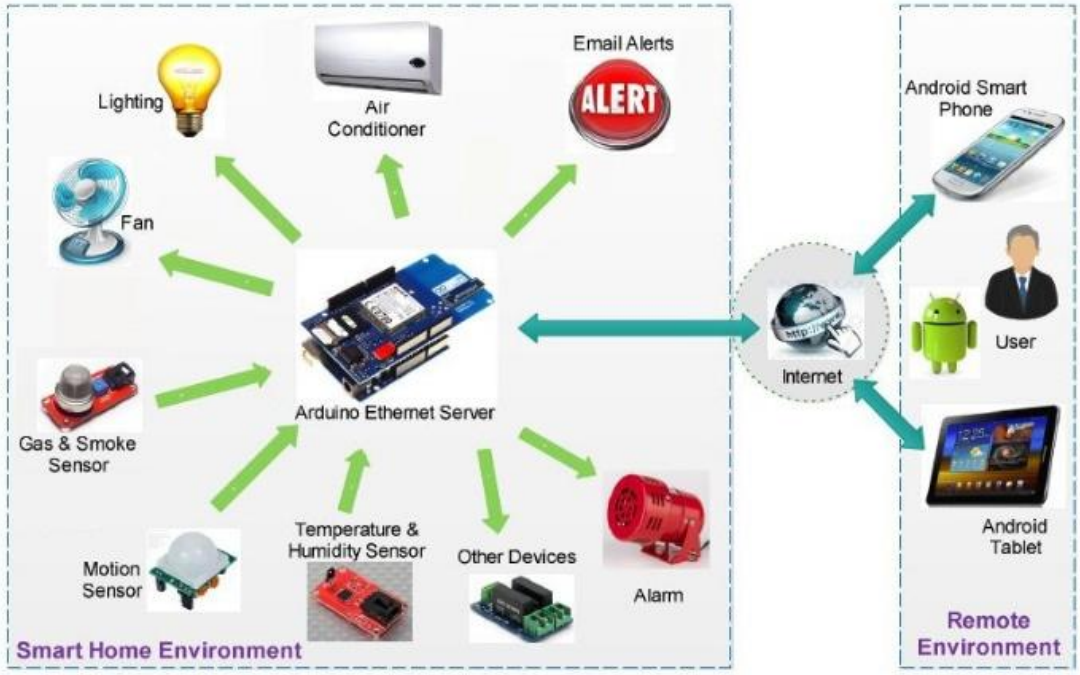

Fig.1. Home Automation System Structural Diagram

II LITERATURE SURVEY

[1]1Nikita Baidya , 2Prem Kumar S 1Final Year UG Student, B.Tech ECE, DR.B.R.Ambedkar Institute of Technology, Port Blair 2Technical Analyst, Sovtech, Dbrait Campus, Port Blair. This article is fully based on low cost and reliable home control monitoring system for accessing and controlling devices and appliances remotely using Android based Smart phone application. While using this technology the system improves the living standard at home, reduces human effort, energy efficient and time saving and thus make a smart home .And also it was very helpful for providing support to disabled people and fulfil their needs in home and thus they leads a normal life. The proposed systems consist of android mobile, Arduino Uno board, Wi-Fi module and a relay circuit. We are using Wi-Fi technology to monitor the device because of its accuracy, high range and instant connectivity. This module controls the home appliances with a very ease of installation and it is user friendly

[2] Muhammad asadullah[1] Ahsan raza[2]Department of electrical engineering, national university of computer and emerging sciences, peshawar, Pakistan In this paper an overview of current and emerging home automation systems is discussed. Nowadays most home automation systems consist of a smartphone and microcontroller. A smart phone application is used to control and monitor the home appliances using different type of communication techniques. In this paper the working principle of different type of wireless communication techniques such as zigbee, wi-fi, bluetooth, enocean and gsm are studied and their features are compared with each other so the users can choose their own choice of technology to build home automation system. Moreover in this research work the survey of different home automation systems is discussed and their advantages and drawbacks are also highlighted.

[3] Ms. Akanksha Rajendra Surve1, Mr.Sampat Vaidya PG Research Student, Department of Masters in Computer Application, Bharti Vidyapeeth Institute of Managemnet and Information Technology,Mumbai University , Cbd Belapur,India The purpose of this research paper is to controlled all the home appliances through smart phone. The user can increase or decrease the speed of fan,turnon or off light and many more appliances at home through smart phoneor tablet. So this is implemented using Raspberry pi, and relay . The devices are controlledthrough WIFI or GSM

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III. PROPOSED SYSTEM DEVELOPEMENT

1. Arduino Uno:-

Arduino Uno is a microcontroller chip dependS on Atmega328(datasheet) with 14 computerized I/o pins, in which 6 pins can be utilized as yields, 6 pins are utilized as simple information sources .It has 16 MHz clay resonator , USB association, a power jack and a reset button. Microcontroller contains 32kB of ISP flash memory, 2kB RAM & 1kB EEPROM. Board provides serial communication capability via UART, SPI & 12C.Because of well design in form of arduino it is easy to understand. In Arduino we use high level of programming languages like C language, C++ language ect. It is easier to understand and user friendly language. It has more advantage like multitasking, automation, time domain etc. Arduino Uno fig3 (a) is given below.

Fig 3(a)- Arduino Uno

2. Bluetooth Module:-

HC-05 Bluetooth module is used to connect microcontroller with android applications. Bluetooth receive information from user and send to microcontroller (Arduino Uno). It is simple to use Bluetooth of Serial Port Protocol(SSP), it designed as wireless serial connection setup. Bluetooth of serial port module is Advanced Bluetooth v2.0+Enhanced data rate at 3Mbps modulation with 2.4 GHz radio receiver with BB(base band). Bluetooth of Rx and Tx pins are connected to arduino pins of Tx and Rx respectively . HC-05 module is a simple to utilize Bluetooth SPP (Serial Port Protocol) module, intended for straight forward remote sequential association setup. It utilizes a CSR Blue canter 04-External single chip Bluetooth framework with a CMOS innovation and with (Adaptive Frequency Hopping Feature)AFH . It contains a impression of little like 12.7mmx27mm.The figure 3(b) of Bluetooth HC-05 module is given below

Fig 3(b) Bluetooth HC-05.

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3. Relay Drivers:-

Relay is an electromagnetic switch which is use for defer two circuits electrically & connect magnetically. When arduino transmit signal then relay driver receive signal and start its work. They are frequently used to interface an electronic circuit (working at low voltage) to an electrical circuit which works at extremely high voltage. For instance, a hand-off can make a 5V DC battery circuit to switch 230V AC mains circuit. By this way a little sensor circuit can drive, say, a fan or an electric knob. A transfer switch can be separated into two sections: information and yield. Info area has a loop which creates attractive type of field when a low voltage from an electronic circuit is connected to it. This voltage is known as working voltage. Generally utilized transfers are accessible in various arrangement of working voltages like 6V, 9V, 12v, 24V and so on. In basic hand-off there are three type of contactors: 1st is ordinarily shut (NC), 2nd is regularly open (NO) & 3rd is normal (COM). At no info express, COM is associated with NC. At point when working voltage is connected to transfer curl gets charged and COM changes contact to NO. Diverse transfer setups are accessible like SPDT and DPDT which have distinctive number of change over contacts. By utilizing legitimate blend of contactors, electrical circuit can be turned on & off. Relay circuit shown in fig3(c).

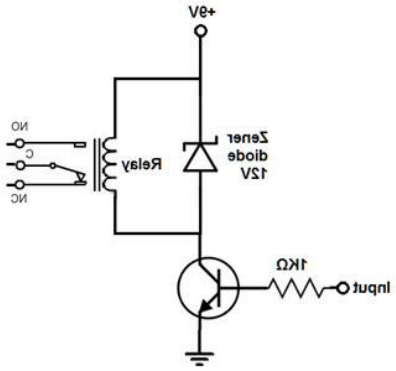

Fig 3(c) Relay circuit diagram

4.Relay Module

Relay module are separate hardware device which is use fora remote device switching. By using it you can remotely control devices over a network or the Internet. Devices can be remotely powered by a a commands on or off coming from Clockwatch Enterprise delivered over a local or wide area network. You can control computers, peripherals or other powered devices which is acrossed office or across world.Relay module can be used to sense external On&Off conditions and to control a variety of external devices. PC interface connection are made through serial port.Relay module houses two SPDT relays and one wide voltage range, optically isolated input. These are brought out to screw-type terminal blocks for an easy field wiring. Individual LED's on front panel monitor input and two relay lines. Module is powered with an AC adapter.

The figure 3(d) of relay is given below.

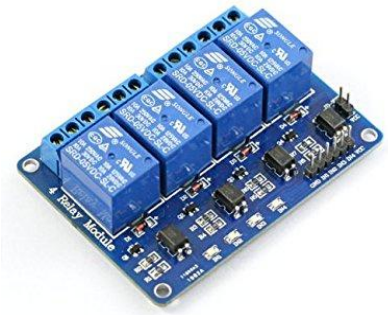

Fig 3(d) Relay module

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Architecture of the system

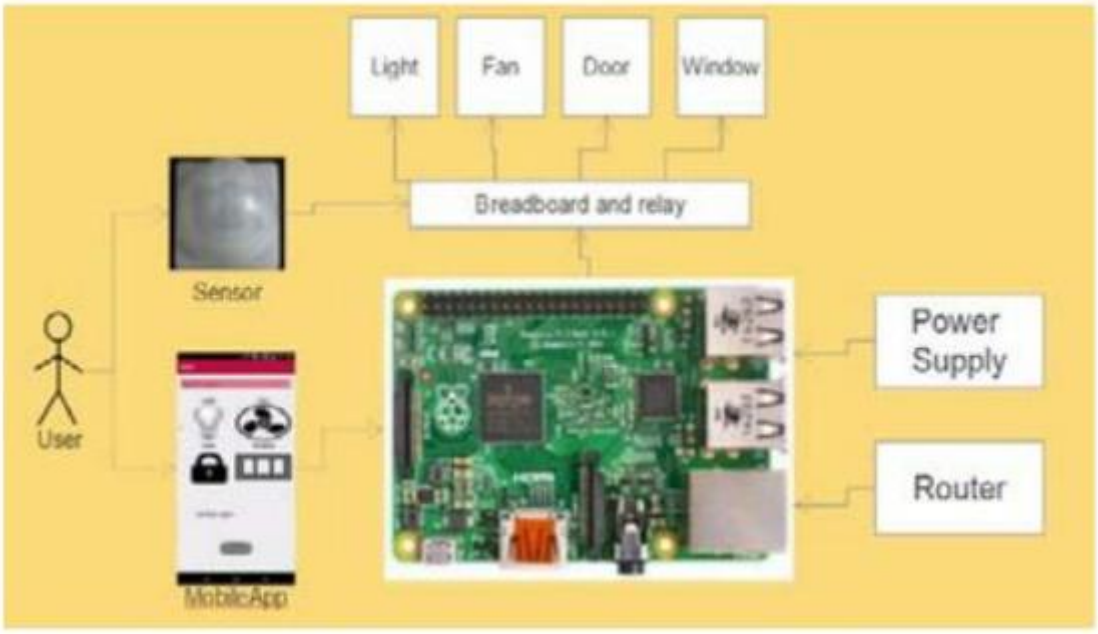

Figure 2. Architecture of the system

IV.CONCLUSION

It can be concluded from above discussion that Home automation is a special kind of device which controls home appliances with using extra effort.In this paper, we demonstrated how home automation is made, discussed about methodology & what its applications. In the future, on new technology can be included which reduces the efforts of humen which is being researched, we also talked about it. And we have created a that type of device whichare compact in size, low cost, & more capacity, long life & more distant signal receivers . The need of this research paper is to create a device which saves t electricity and improves human life style.

REFERENCES

[1]1Nikita Baidya , 2Prem Kumar' A Review Paper on Home Automation" 1Final Year UG Student, B.Tech ECE, DR.B.R.Ambedkar Institute of Technology, Port Blair 2Technical Analyst, Sovtech, Dbrait Campus, Port Blair

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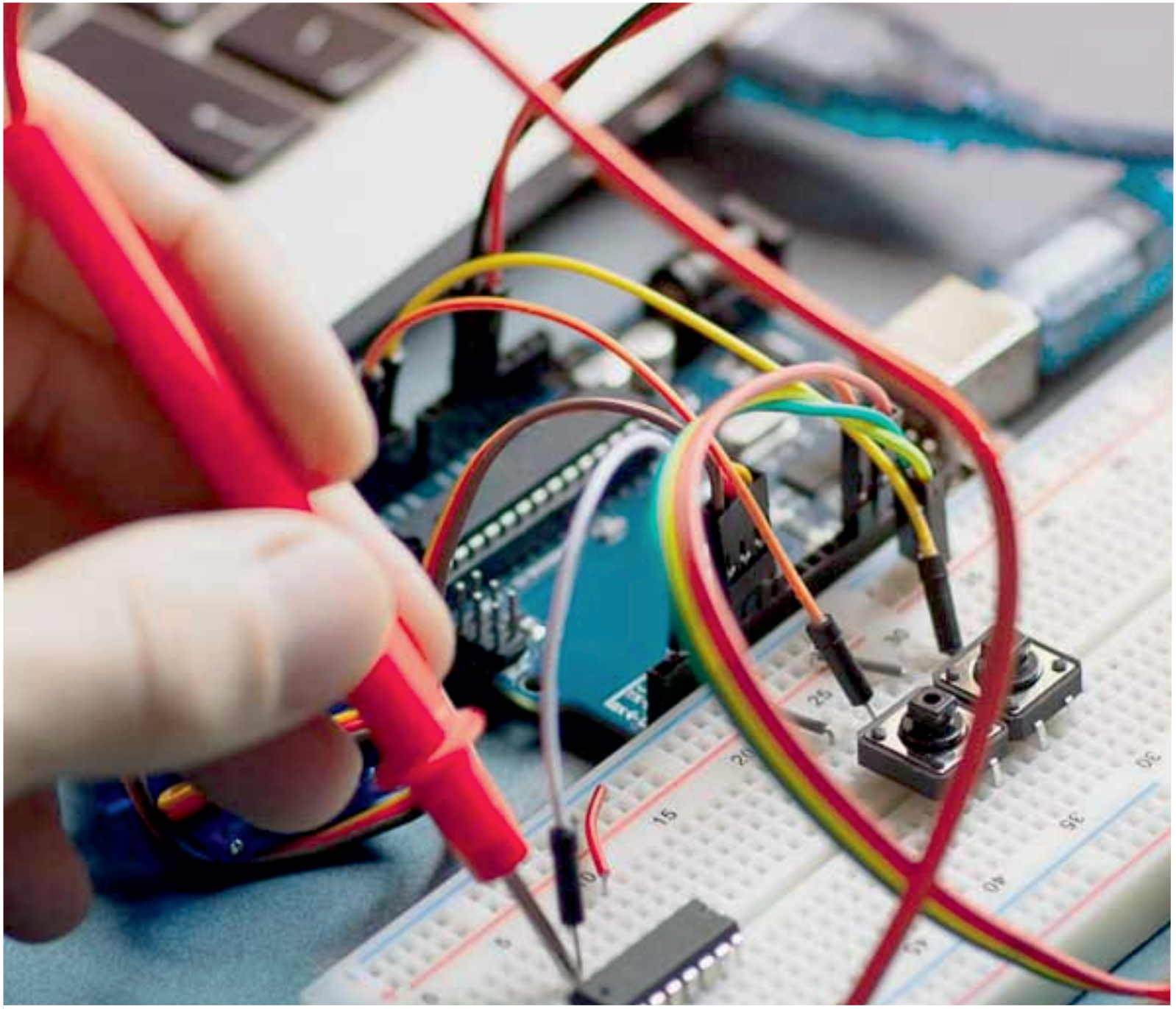
[3] Ms. Akanksha Rajendra Surve1, Mr.Sampat Vaidya PG Research Student, Department of Masters in Computer Application, Bharti Vidyapeeth Institute of Managemnet and Information Technology,Mumbai University , Cbd Belapur,India

[4]. B. Murali krishna, Narasimaha Nayak, Ravi kishore Reddy, B.Rakesh,P. Manoj kumar, N.Sandhya, "Bluetooth based Wireless home automation system using FPGA" , Journal of Theoretical and Applied Information Technology,31st July 2015,Vol-77 No.3.

[5]Smitha.M, T. Ayesha Rumana, Sutha.P, "Hand gesture based home automation for visually challenged", International journal of innovations in engineering research and technology, Volume 2, Issue 4, Apr.-2015.

[6]Rozita Teymourzadef, Salah Addin Ahmed, Kok Wai Chan,Mok VeeHoong,"Smart GSMBasedHome AutomationSystem",2013, IEEEConferenceon Systems,Process & Control,Kuala Lumpur,Malaysia, pp.306-309



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