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Monitoring and Controlling Home Appliances Using Whatsapp Messenger

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ABSTRACT: Even though to its low cost and ease of use, home automation has become more and more popular in recent years thanks to connectivity via smart phones and tablets. It involves the automation of domestic or household tasks.The Raspberry Pi is a little computer that was released in 2012. It is now an increasingly common product with wide availability that may be used for home automation. In order to improve comfort, connive security, and energy efficiency, home automation may include a central controller that controls the lighting in the house, HAVC (Heating, Ventilation, and Air Conditioning), security locks of gates, doors, and other system. This paper's goal is to create a home automation application using WhatsApp. Python has been used to develop programming for RPi operation.This article Introduce an remotely sensible system that controls the home appliances by using Android Application. A New Methodologies are introduced to control the home appliances remotely using android applications. In this method all home appliances are monitor and controlled by social media network like WhatsApp. A Sophisticated network called IoT used to interconnect the home appliances such as lights, fans and AC machines.

KEYWORDS: HAVC, Fans, Home Automation, Lights, mobile, Raspberry pi3, WhatsApp, Wi-Fi.

I. INTRODUCTION

A home automation system is nothing more than the fusion of electrical appliances. Building automation is one of the methods utilized in home automation, along with the management of domestic tasks including lighting, home entertainment, irrigation, and yard watering. Because to its low cost and ease of use through smartphone, home automation has seen a significant rise in popularity in recent years. Home automation and the "Internet of Things" are closely related concepts [1]. The Internet of Things (IoT) is a current internet development that gives common "things" devices the ability to transmit and receive data through communication[2]. There will be close to 50 billion internet-enabled devices available by the year 2025,according to estimates. Devices and sensors that can communicate without the need for device connection are used in home automation systems.

Now-a-days, automation has become popular in various environments. In general, the automation techniques are conventionally implemented by using microcontroller. Taking the consideration of the throughputs and the efficiencies of Microcontrollers, it is quite understandable that, microcontrollers alone cannot handle the automation processes by running multiple programs simultaneously with effective speeds. Keeping in view of the above crises, the optimum alternative has been the Raspberry Pi for implementing the home appliances along with surveillance, based on its reliability[3]. Several projects have been proposed in the recent past regarding the automation of home appliances.In this proposed work, the Raspberry Pi-3 has been interfaced with WhatsApp application using libraries and hence the home appliances are made to control remotely through mobile phone installed with WhatsApp[4]. This collaboration of WhatsApp and Raspberry Pi-3 has produced an efficient set of results and it is relatively secured when compared to social networking sites. The Raspberry Pi is a single board computer which contains GPIO and USB ports[5]. Using these ports, the appliances can be efficiently controlled and for tuning the functionalities of the devices can be made with the help of sensors and cameras. Raspberry Pi can be used for multiple purposes, based on the requirement. Social networkingbased home automation systems have the low installation and running costs[6]. Social networkingbased homeautomation system alsohas been used to implement home automation with various capabilities to monitor

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alarms(power,temperature, motion,fireanddooralarms,etc.). Imagine that being able tocontrol your entire home from your smartphone. That future is now a reality with this new Whats App-Based Home Automation system[7]. Here we are using a mobile phone with WhatsApp installed in it. For ensuring the functionality, a web interface has been developed using the Raspberry Pi, as a web server for operating andcontrolling the home appliances through any Wi-Fi accessible mobile device with WhatsApp feature. The entire system can be designed with the help of Raspberrypi.

II. LITERATURE SURVEY

In the existing literature for home automation, there are various definitions accessible. Home automation using+6 a Raspberry Pi as a Sensor Web node In this paper, a Raspberry Pi-based Sensor Web node implementation for the Internet of Things (IoT) is suggested (RPi)[8]. The Raspberry Pi is a little computer that can be customized, is fairly priced, and can be programmed. It has a network for communication and a lot of accessories. Device control, monitoring, and alerting were not possible before to the development of IOT technologies.The IoT technology offers various benefits including cost, security, Safety and improve comfort. Rest Web services are used in this study to implement communication between a remote user and their home equipment. An innovative, freestanding, functional, and affordable home controlling and monitoring system is used to address the difficulties with flexibility and functionality[9]. Programming the devices is done using open source software. Raspberry Pi's experimental performance and results have been displayed. In terms of flexibility and scalability, the suggested solution outperforms the presently existing home automation systems.The algorithm for the "Raspberry Pi based Interactive Home Automation System through E-mail" developed created in a way that it could read the subject of an email, or, to make it simpler, a home application could've been controlled through email by reading the subject. The fundamental application has been put into place and effectively utilized. When home automation is performed using the web, more room is required for web server storage[10]. If it is SMS-based, DTMF call drop is a significant issue. The proposed solution using the Raspberry Pi addresses both of these problems. ZigBee and ARM-Based Smart Home System The controller in this system continuously monitors on a variety of sensors. When the sensor's value crosses the set threshold value, a brief message is automatically transmitted to the user through the system. By sending text messages (SMS) to the system, the manager can control the gadget. On the display, real-time system information is obtained.The central controller was a Samsung S3C2440 microprocessor with an ARM9 control unit. Chipcon's CC2430 ZigBee Network module and GSM module are used for wireless connectivity and message sending and receiving, respectively. ATMega32 was the main controller for the AVR Processor.Remote control of household appliances and sensors is possible using a smartphone or the Internet. To interact with the client via the REST interface, a web server is developed. A,B,C and are D are the four AVR processor ports. Out of the four, the user has access to ports A, C, and D's 6 pin. For an in-circuit connection, Port B is connectedto Ethernet. Smart Home Automation System Utilizing GSM The GSM Modem is employed by home automation to control domestic appliances. Conditional System, light, and security are text message-controlled (SMS).The main microcontroller for household appliances is the PIC16F887[11]. The PIC16F887 is attached to a GSM modem to enable communication between the user and the controller. GSM communication has utilized the AT command, and On the user's mobile phone, the device's status is shown, including whether it's switched on or off. Software. Raspberry Pi is a small computer board which having a large number of input and output peripherals [12]. Raspberry Pi is not only a processing node in Wireless Sensor Networks (WSN).It is nothing but an small computer And it can be acts as ancontroller.What is WhatsApp?WhatsApp is an instant messaging app that allows you to send and receive text messages, images, videos, voice clips,etc. from your smartphone. It is free and works on all mobile phones. You don't need a data plan or Wi-Fi connection, as it works over your cellular phone network.How can WhatsApp be used for home automation?You can use the WhatsApp app to monitor and control home appliances from your smartphone. This paper will show you how to use easy step-by-step instructions. WhatsApp uses a secure internet connection to talk to your home automation devices and receives the data.So in this project we can see that by interfacing with Raspberry Pi we can control all the home automation devices using what sup messenger.

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III. EXISTING SYSTEM

A home automation system is nothing more than the fusion of electronic devices. Building automation is one of the techniques applied in home automation, along with the administration of domestic tasks like home entertainment systems, irrigation systems, and lighting control systems. The ease of use and low cost of home automation via cellphones have dramatically increased its appeal in recent years. The phrase "Internet of Things" is used here. The Internet of Things (IoT) is a current internet development in which ordinary "things" objects have communication features that enable them to transmit and receive information. The existing home automation system is developed based

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on Arduino and Bluetooth,which can be monitored in specific range of distance. This system will run all the appliances with the Bluetooth technology. The system employs an embedded based on Arduino microcontroller.In this we are using an Android Application for controlling and Monitoring homeappliances. This article suggests using a Raspberry Pi to construct a Sensor node as part of the Internet of Things (IOT) (RPi). The Raspberry Pi is a small, programmable computer that can be modified, fairly cost, and connected with a network for communication. In this work, RESTful Web services are used to implement communication between the home devices as well as the remote user.

DIS-ADVANTAGES:

- Limited to Short distance
- slower compared to other wireless technology like WI-FI
- Less reliable Communication

IV. PROPOSED SYSTEM

This paper explains about the controlling of home appliances through WhatsApp by using communication protocolinterfaces with raspberry pi as the processing unit. Raspberry pi-3 is loaded with a memory card, for the purposes ofdata storage respectively. WhatsApp libraries are installed in raspberry pi-3 for establishing a link through WhatsApp .this enables the remote control of raspberry pi-3, where, commanding can be done from any part of the world to activate or deactivate the home appliances. hence,compact commands such as“switch on fan”,“switch on light”,switch off all”etc.can be used for communicating the automation system from remote places through WhatsApp and the acknowledgements can be received from raspberry pi-3, once the operation are performed based on the given commands.mainly the home automation system can be designed for physically handicapped persons and adults.

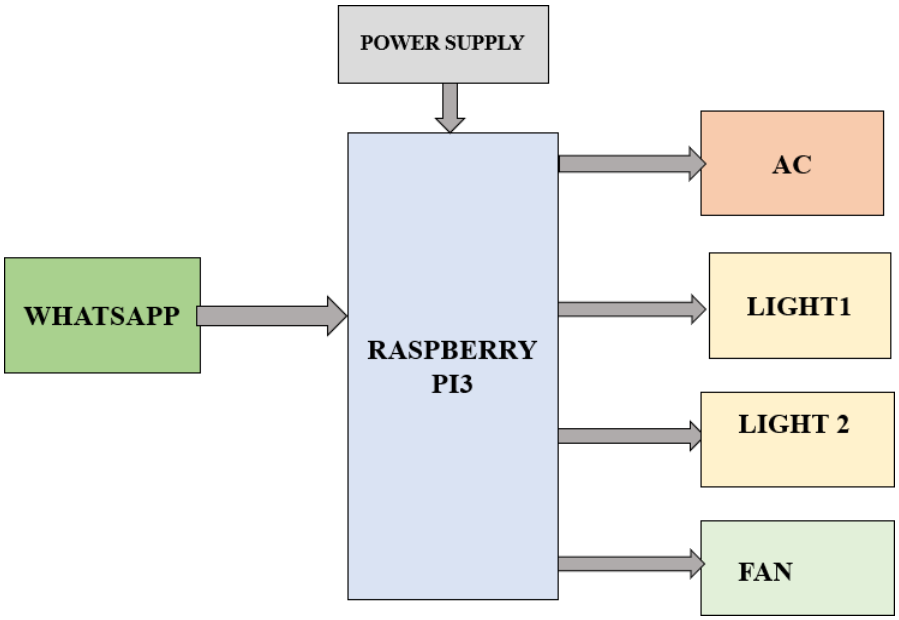

Fig.1.:Block Diagram of Proposed System

4.1HARDWARE DESCRIPTION

In this project we are using raspberry pi, led and dc motor for fan. the raspberry pi consists of 40 pins. in that we are connected the gpio 29 pin with anode of led and the cathode of led will be connected to the ground pin of raspberry pi. And the gpio 28 pin is connected to the positive terminal of adc motor and negative terminal is connected to the another ground pin of raspberry pi. Here we are using motor for fan .

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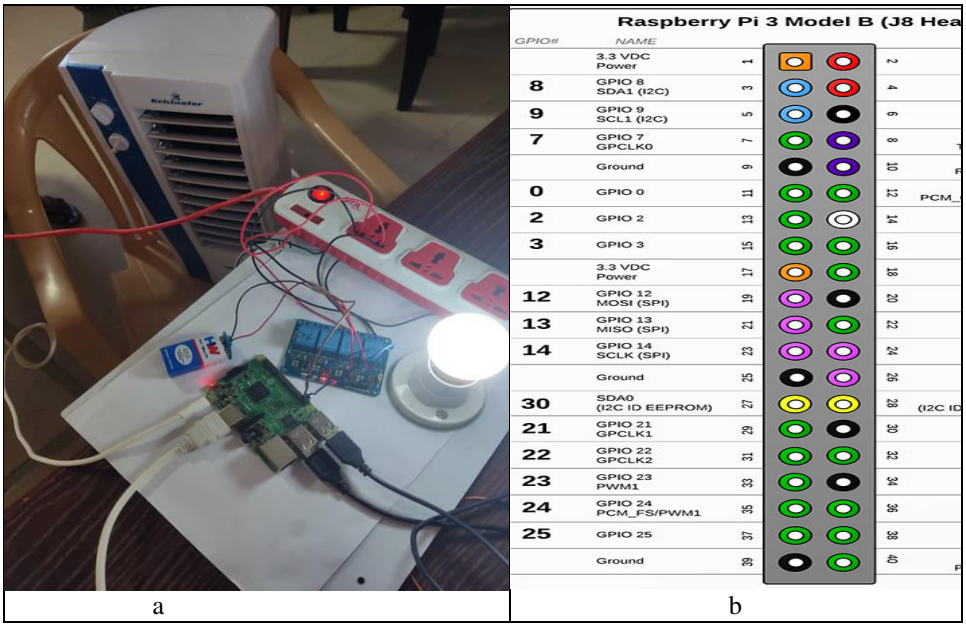


a b

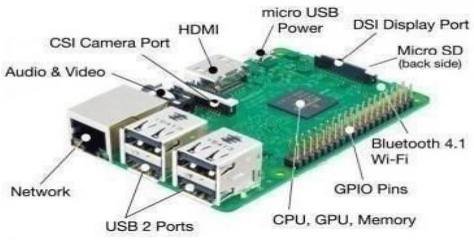
Fig 2: (a)Hardware Implementation(b)Pin Description of Raspberry pi

V. HARDWARE COMPONENTS

Raspberry pi3

Raspberry pi3 is a series of small single-board computers (SBC is a complete computer built on a single circuit board,with microprocessors, memory, input/output and otherfeatures required of a functional computer) developed by the Raspberry Pi foundation as shown in Figure3.1.

Fig3:Raspberry Pi



All models feature a broad com system on chip (SoC) with an integrated ARM compatible CPU and on-chip graphics processing unit (GPU). It promotes Python programminglanguages.

The Raspberry Pi 3 is a single-board computer developed by the Raspberry Pi Foundation. Raspberry Pi (allmodels)has a powerful way to interact with the real world, it is known as General Purpose Input Output pins(GPIO) on one side of the board. Raspberry Pi models after Model3 have forty(40) GPIOpins.In the older version of RaspberryPi models, there were 26 GPIOpins,which were increased by 40 in all the latest models.

Thisboardconsistsofa,

- 802.11nWirelessLAN
- BluetoothLowEnergy
- ItconsistsofGBofRAM,
- 4USBports
- fullHDMIsupport.
- 1.2Ghz64-bitquad-coreARMprocessor
- Full-sizeHDMICSI(CameraSerialInterface)cameraportforconnectingacamera

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FLOWCHART:

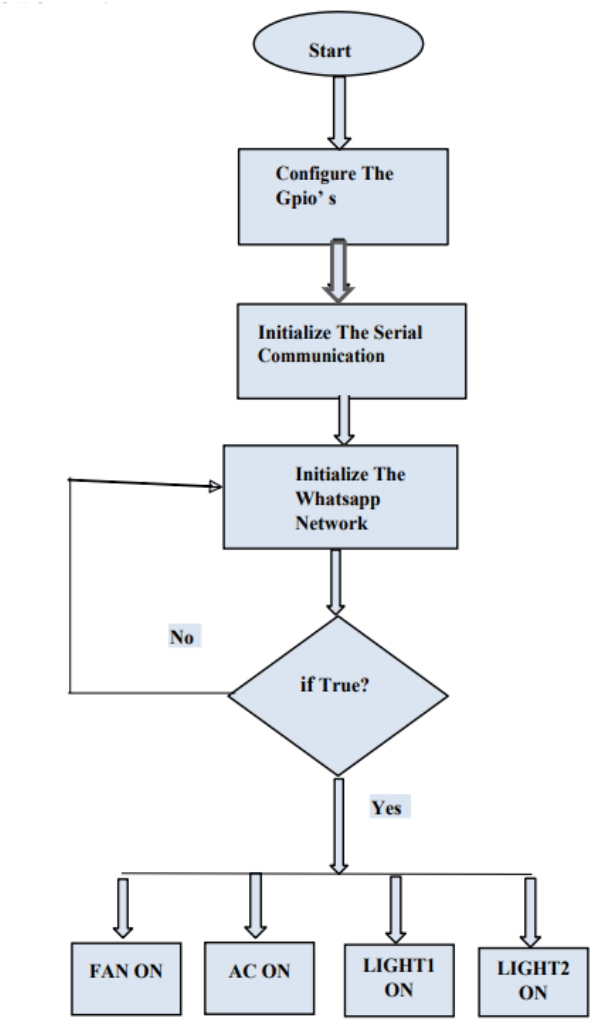

Fig 4:Flowchart of Proposed System

Applications

- Wall switches and bulbs are controlled via lighting control. For a particular room at a particular moment, we can adjust the lighting schedule
- It is possible to regulate the room's heating and cooling based on a timetable.Using local meteorological information in real time, sprinkler control systems and lawn irrigation systems provide water regulation.
- The ability to scan store groceries and notify you when an item is close to expire is provided by smart appliances like refrigerators.
- Security systems include window sensors, motion detectors, video cameras, and recording devices linked to mobile devices via the cloud to view your home's security status in real time.

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VI. RESULT

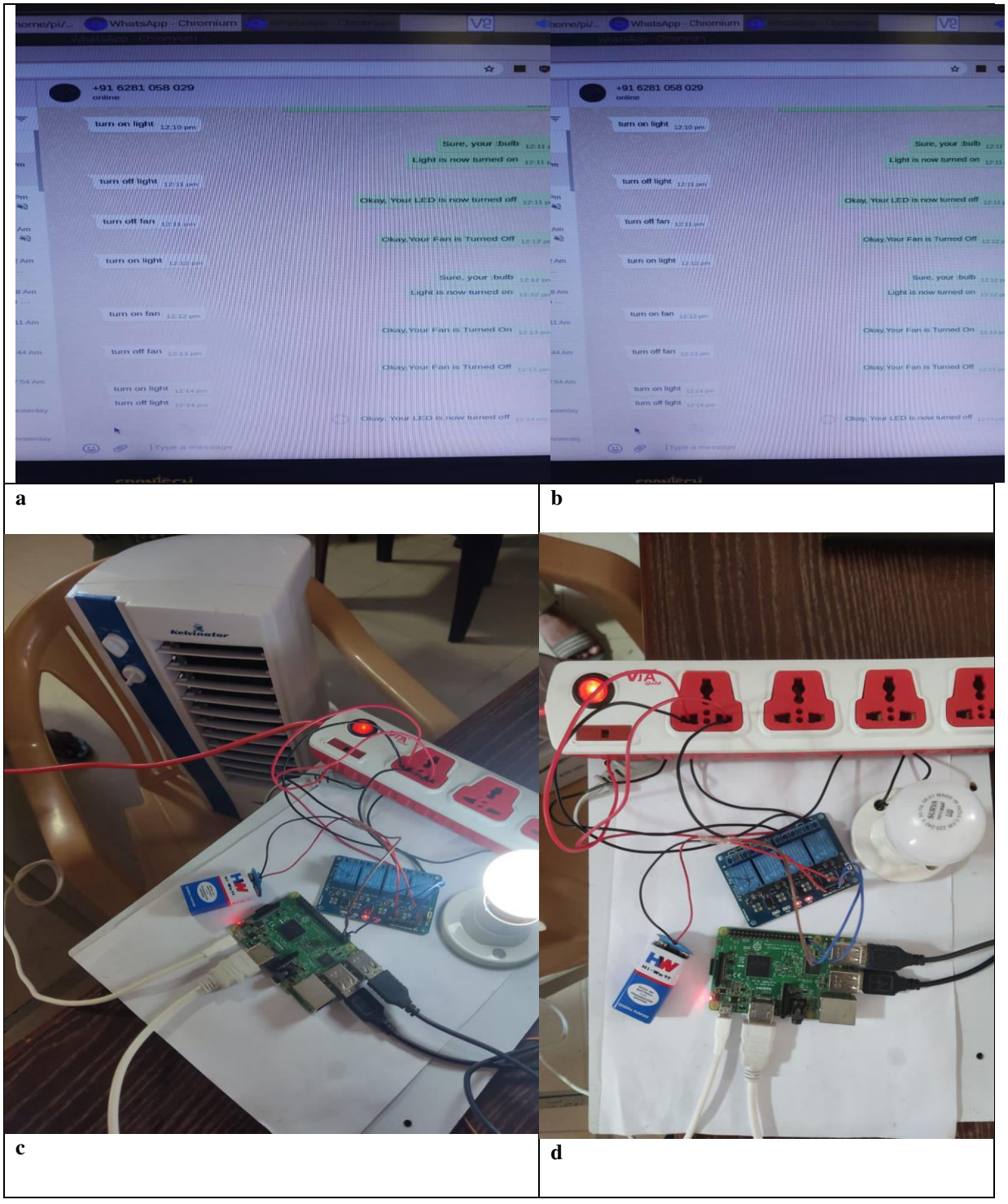

Fig 5: (a) commands for turn on light(b)commands for turn off light(c)light is turned on(d)light is turned off

In the WhatsApp based home automation system, we can control devices like light, fan, TV, etc. these are the results which we are obtaining from our project by giving the commands.in above figure 5a,b,c,d represents the turn on light and turn off light by giving commands like, “turn on light” and “turn off light”.

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VII. CONCLUSION

This project presents smart way of monitoring the home appliances. In this automation, due to over clocking and future expansion capabilities, Raspberry Pi has been proved to be an easy and economically efficient platform for implementing thehome automation system and also in reducing the human intervention. The current system supports efficient power usage, as well as, remote controlling of the home appliances. The system gives an accurate results and proper Communication between mobile phone and home appliances. Main purpose of home automation system is to provide ease to people to control different home appliances with the help of the android application present in their mobile phones and to save electricity, time and money. This project covers most important feature, in which it could provide the complete smart home environment. Our project mainly focuses on smart locker and security systems which are employed using Raspberry Pi module. By building a system in such environment, it could play a lead role in real time scenario today.

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