

**Review Paper on “Raspberry pi and wifi based home automation server”**A.A.Pawar¹, J.S.Rangole²,¹PG student,Vidya Prtisthan's COE,India²Vidya Prtisthan's COE, India

Abstract: The aim of this work is to develop an embedded referring the presented paper on “Bluetooth Communication using touch screen interface with Raspberry Pi” and “Appliances Control Using Ethernet and Raspberry PI”. Considering their results we have designed a system which employs server/client architecture; switching commands for the appliances which are connected to the client can be received and displayed at either end. We access the device using the web page and the switches provide on the web page help us control the information The data containing information about the control commands are transferred between the end points of communication using Transmission Control Protocol (TCP). This type of control system gives the liberty for control of appliances from remote locations connected through Ethernet. A novel embedded system has been designed, implemented on Raspberry Pi and a small-scale prototype is developed and tested.

Keywords—Ethernet, Appliance Automation, Raspberry Pi

I.INTRODUCTION

Earlier there was a simple manual way of handling the appliances. However, with the advancement of technology came new ways of controlling the appliances like automation. Now a days everybody wants an affordable and secure way to control their home from any smart mobile device or Internet connection. At the touch of a button we can have access to a large amount of information due to capability of computers and the Internet. Remote access is a wonderful feature that came in to being because of high speed internet.

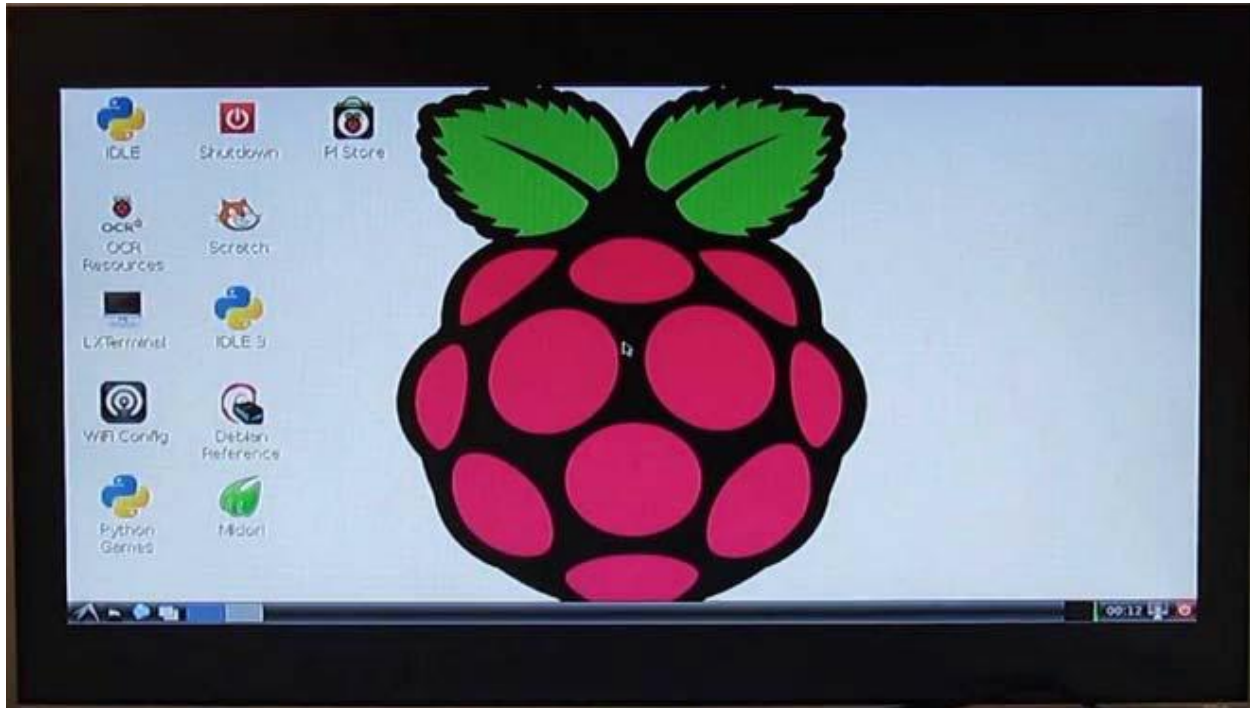
The main objective of proposed system is to provide a technology oriented and low cost system to make a advanced home for those who stay away from their home and have got low budget for security of their house.

This project uses Raspberry Pi as the base. Home appliances are connected to Raspberry Pi through relays. Power Supply is provided using USB cord cable which is connected to the PC. A web page is designed using Html. The raspberry pi itself behaves as a computer. For this we have used Python coding for the booting process and also the main coding of relays is also done using it. Relays are used as electric switches for controlling multiple devices. It is accessed using the Ethernet port which is present on it. Putty configuration helps us to obtain the IP address of the raspberry pi board. We can access that using the web page through which if we put IP address of raspberry pi we can have live feed plus we can control the appliances. Ethernet is used because it can be used for providing high speed in transmission of data and it can also be used in long distance communication. It provides high security as it has its own IP address. According to [2], a system was developed which provides a superior and user friendly interface (TFT touch screen and display) reducing the complexity in operation of controlling the appliances. The Raspberry Pi is controlled by a modified version of Linux optimized for the ARM architecture. The display contains a GUI which gives us various fields for data entry via an onscreen keyboard. Also, various fields were provided to display data obtained from a remote host.

II. METHODOLOGY**i.STEPS TO INSTALL RASPBIAN OS**

In order to install Raspbian OS,first next out of box software(NOOBS) has to be installed.

- 1.First step is to allocate the drive for installing OS
- 2.SD adaptor can also be used for this purpose
- 3.Download WINDISK 32 utility from source forge project which is a zip file
- 4.Extract and run the zip file
- 5.Select the file and click run as administrator
- 6.Select the image file which was extracted above
- 7.Select the drive letter of the SD card in the device box
- 8.Click write and wait for write process to complete
- 9.Exit the image and eject the SD card



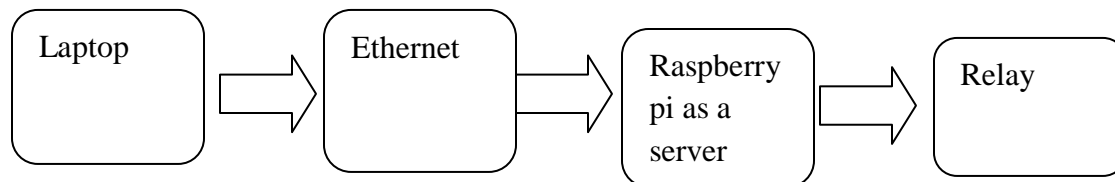
ii.STEPS FOR THE PuTTY CONFIGURATION

1. Obtain a copy of PuTTY pre-configured for use at Columbia from the PuTTY download page.
2. Save the installer file to your download directory or desktop.

Important: Exit all applications before you begin the installation process.

3. Double-click on the file PuTTY-install.exe to begin the installation.
4. At the **Choose Destination** screen, Click **Next** to accept the recommended default destination location for installing PuTTY.
5. Click **Next** on the **Select Program Folder** screen to select PuTTY as the recommended Program Folder name (**PuTTY** should already be displayed in the Program Folders text box).
6. Click **Finish** on the final screen to complete the installation.

III. SYSTEM BLOCK DIAGRAM



According to our work, we are using Raspberry Pi and Ethernet as the main important components of our project. Raspberry Pi is the advance version of ARM11 processor. Using putty configuration it is interfaced on computer and commands are written using Python. We are using latest version of Raspberry Pi that is Model B because it provides us with Ethernet interface. Relays are provided for the connection of the appliances and their control.

Thus, first of all we design web page using HTML which includes the information of the appliance we are going to control. Now we use this web page to have an access to the other Ethernet. Once we give an input through this web page other Ethernet has its own IP address through which we access it; gives it to further relay and the appliance works according to input. Simple principle behind this is automation.

IV. SYSTEM DESIGN

- **SOFTWARE**

HTML: HTML is a specific type of universal language used for decorating a web page. HTML stands for Hypertext Markup Language. Hypertext is the text that has been used up with extra specifications such as formatting, Image multimedia etc. Markup is a process of adding the extra symbols..HTML has its own syntax and rules. HTML is an universal language used for classifying the functions of different sections of a document. It indicates which part of document is title, which is authors name and address, which part should be emphasized and which part should include an image and so on. HTML features: It uses various tags like frametag, Header Tag. There are format type instructions that are taken into consideration like <head>, <title>, <body> etc. Button tag is also used.

PYTHON: Python is a high level programming language. Its design philosophy provides code readability, and its syntax allows programmers to express concept in fewer lines of code than would be possible in languages such as C. It features a dynamic type system and automatic memory management and has a large and comprehensive standard library. There are various instructions that we use and run using the putty configurations the platform. Also it can be used for booting up the raspbian operating system. Mainly available as an open source.

- **HARDWARE**

Raspberry Pi: On this board we have developed a appliance control code to check the accessibility of the raspberry pi board with the PC.

Requirements for setting up Raspberry Pi: Sr.No.	Item	Minimum specification & notes
1	SD Card	Minimum size 4GB; class 4
2	Keyboard and Mouse	Any standard USB keyboard and mouse should work.
3	Ethernet cable	Used for Networking. Makes updating new softwares for Raspberry Pi easier.
4	Power Adapter	To give supply to the Raspberry Pi board

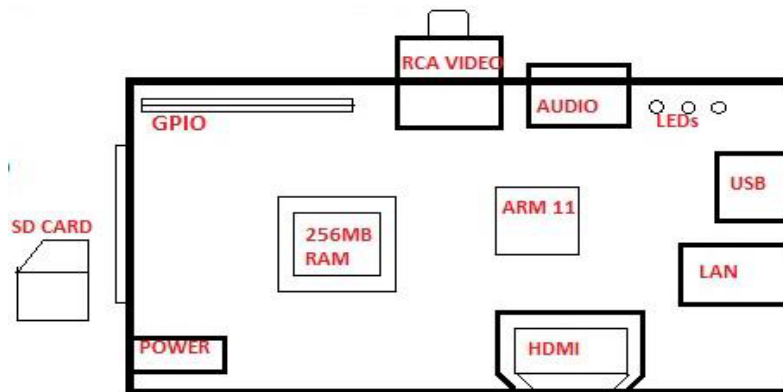


Fig. Raspberry Pi board

- **WEB PAGE DESIGN**



CONCLUSION

In this highly developing era, where directly or indirectly, everything is dependent on computation and information technology, Raspberry Pi proves to be a smart, economic and efficient platform for implementing the home automation. This paper provides a basic application of home automation using Raspberry Pi which can be easily implemented and used efficiently. The code provided is generic and flexible in a user friendly manner and can be extended for any future applications like power control, surveillance, etc, easily. Moreover, this technique is better than other home automation methods in several ways. For example, in home automation through DTMF the call tariff is a huge disadvantage, which is not the case in proposed method.

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