Controlling of Electrical Devices Using Mobility and Web Connectivity

S. Praveena, Student, Department of CSE, Vels University, Chennai.

P. Sheela Gowr, Assistant Professor, Department of CSE, Vels University, Chennai. E-mail:psheelagowr85@gmail.com

M. Latha, Assistant Professor, Department of CSE, Vels University, Chennai. E-mail:lathasrec@gmail.com

K.S. Archana, Assistant Professor, Department of CSE, Vels University, Chennai. E-mail:ksarchanaan@gmail.com

U.V. Anbazhagu, Assistant Professor, Department of CSE, Vels University, Chennai. E-mail:anbuveera@gmail.com

Abstract--- The aim of the project to innovate a system analyzing to our title "controlling of electrical devices using mobility and web connectivity" using mobile application with raspberry pi and Ethernet automation using embedded. Technology revolution has made an environment more easier and even more secure, with the initiate of the" raspberry pi" to the present environment provides enormous customizations to turn a regular environment into a smarter and efficient environment. The status of device can be accessible through a web page and the system functions can be operate able, controllable, and changeable through switches/routers provided on the web page.TCP help to transfer data containing information about control command between end points of communication. This system of control system gives the liberty for the control of appliances from remote locations connected through Ethernet. A novel embedded system has been created and with the help of raspberry pi and an initial prototype is verified.

Keyterms--- GSM, Raspberry Pi, GPIO Pins.

I. Introduction

Environment is to control of any electrical devices in house ect. (Office, any organization). There are different types of automation environment system available, these systems are particularly created and purchased for various purposes. In fact, "one of the major problems in the area is that these different systems are neither interoperable nor interconnected**".** There are number of issues where involves when comes to design a environment automation system so device can perform easier and provide a user to interface friendly on the setup, monitored and controlled. For these years, The internet has been widely use for the processes such as "surfing", "searching", "learning", "chatting**",** downloading and installing an application. By the revolution in developments of new technologies, monitoring, controlling services by the rapid development of new technologies, monitoring, and controlling services have been continued to help with web connectivity as a key providing interaction with machinery and devices. Interaction with machinery and devices. the application can be used in private sectors, medical field, education field, corporate and other sophisticated automated system, which make unauthorized entry non free. The ultimate idea for this software innovation is to gain more time and best performance and security issues to strengthen, they have implemented the raspberry and pi method as their initial start to implement low technology budget system and make best and have minimum amount for security of their electrical device. Which are connected to Raspberry Pithrough relays. They use electronic switches like relay for accessing N number of devices (or) different devices too. This processed is done with the help of ethernet ports which are in build on it. Usage of Ethernet provides high speed of data transmission and also used for longer distance communication and it has own IP address. WebPages are created and developed by hyper text markup language, over here raspberry act as a computer. PHP and Mysql queries used for coding and booting process, also relay coding through the same queries. Relays is a device which use as the controller for various devices in single device by the help of ethernet port for the Configuration guided us to get the ip address of the raspberry pi board. We can control the web page by which we can have lived monitoring and able to operate the devices and electronic gadgets by feeding ip address of rasperberry pi.

II. Related Works

GSM Used in Home Automation

This concept a novel stands for minimum amount and flexible GSM, Zig bee home automation based system. The complete system believed on an 8 bit micro controller nothing but PIC. The equipment surrounded the micro controller and GSM is" heart of the system";. these equipments are connected with the transceiver of zigbee and its

communicated with each node contain inner, Home related GSM controller facilitate for the data follow between user and micro controller. Electrical distribution board take care of Control of lights and geyser

A Touch Screen Interface has been Used Bluetooth Communication (Raspberry Pi)

Raspberry pi with Bluetooth brings a less amount, stand alone device which transmits data which has corresponding touch screen displays provider to Interface user by Raspberry pi at less low budget computer with single board .which was operated by higher version of "derbianlinux" specialized for the "ARM architecture";.

The screen (which is used to view) consist with a graphical user interface which is gives (or) devices different fields for entering data, through keyboard that displayed on screen ,the screen is mapped to the raspberry by "HDMI"**.** Html is used to feed data .one's button is pressed page of GUI has been implemented through java script. The user feed the data at opposite side end is producing the acknowledgement is telecast (or) viewed in the GUI. One's the given data are verified (or) mapped with the server end, the output values are is played."Cyclic redundancy check", for achieving data.

Home Automation System (via. JAVA)

An ultimate aim of a" java based automation system" was to monitor and maintain home appliances by internet domain. The servers used in home are embedded system board in personal computer which was originated from the stand alone embedded system that has been used in it.

The household electronic gadgets are fixed on the in and out terminals of embedded system board and their status are transferred to the server. The software engine which is used for controlling in monitoring is based on the java server pages, java beans and interview c combinations.

A household electronic gadget are operated using internet across the world unless it will be accessed by internet, It is used to monitored and controlled by embedded system. The electronic goods at home are connected on the basis of embedded system .the control code on the E-board works the electronic goods and communicate with java -based code server in home. With the help of advance technique in wide range capabilities. It is not very complicated to communicate with the relevant network with the help of internet. But heir was a drawback too is noting they cannot have direct communicate with device in the network, as the device generally consume less energy communication protocol, such as zigbee. They are different technique and process to equip android device.

III. Architecture Diagram

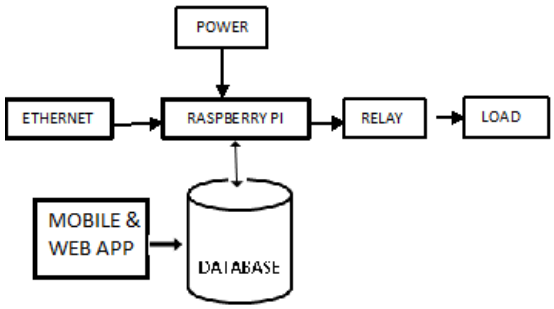

Figure 1: Architecture Diagram

User Interface

The application used to see the user interacts, is nothing but user interface application user interface is seen at almost all the places where technology particularly digital technology is exists (or) found through the personal computer usage has increased and similar regret in social awareness of heavy machines. The period user interface is frequently "Pictorial User Interface", while control panel and machinery control are designed for industrial base discussion more generally lead to physical concept machine interfaces.

User Interface is the one of the software are created such a way that is fulfill to provide the better result from the software. User interface provides fundamental platform for human system communication. User interface can be picture oriented way, text-depend, media based (like sound),mathematical based upon the underlying combination of software and hardware.

Raspberry PI

The raspberry was a less rated credit card sized system that insert into a television, display with mouse & keyboard uses to program the language of computer .it is originated from one of the European country that is nothing but United Kingdom, main purpose of this invention is to stimulate the basic teaching of computer science to kids. It is a single board development.

The create is initial around a broad cum , "BCM2835"soc, which contains a "ARM1176jzf-s 700"MegaHertz processor, vide core of **"**GPU IV" & 512" megabytes of ram . The create of this doesn't contain a built in memory storage device, were as depending on Memory card for booting and storage longer period. The board is mainly used to run Linux Kernel concept OS .model B 512MB RAM contains 2 usb port and 10/100ethernet controller.

The raspberry pi doesn't have clock of real time then operating system refer and get help from the network time server, better interact with user about the time information at the time of boot to access the time and date . Real time clock has dc current storage for back up and it is easily mingled with 12c interface. Raspberry pi was a less budget initial system that would really help the school aged children's to learn spur internet in computing.

GPIO Pins

The purpose in and out "General Pins", ruled by the user at run time. GPIO Pin have not mentioned it purpose and it go like unused by default. Example: ALC260 realtex chip has eight GPIO Pins was not used by default. Few integrators may go with first GPIO in the "ALC20" power on the amplifier the hand carrying system, inside speaker and additional head phone slot.

Relay Circuit

Relay is nothing but a controller switches those works on the principle of electromagnetic, over here it is used to control the action of air conditioner. That is normally works in 220v /30 amps, that nothing but 6000 watts transformer is implement to function the relay. Relay just needs very few watts to perform (or) function.

IV. Conclusion

This system is user friendly and gives user the better space to interface compare with other system automation. We have included mobile device to access the automation system. The novel architecture for control system automation is initiated followed by new technology for communication. In modern digitalized world we are taken to more to the mobile oriented consumer, similar devices can be used for the control of automation of their homes.

References

[1] Bromley, K., Perry, M. and Webb, G. *Trends in smart home systems, connectivity and services*. On line: www. nextwave. org. uk, 2003.

[2] Al-Ali, A.R. and Al-Rousan, M. Java-based home automation system. *IEEE Transactions on Consumer Electronics* **50** (2) (2004) 498-504.

[3] Sriskanthan, N., Tan, F. and Karande, A. Bluetooth based home automation system. *Microprocessors and micro systems* 26 (6) (2002) 281-289.

[4] Coskun, I. and Ardam, H. A remote controller for home and office appliances by telephone. *IEEE Transactions on Consumer Electronics* **44** (4) (1998) 1291-1297.

[5] Saito, T., Tomoda, I., Takabatake, Y., Arni, J. and Teramoto, K. Home gateway architecture and its implementation. *IEEE Transactions on Consumer Electronics* **46** (4) (2000) 1161-1166.

[6] Liang, N.S., Fu, L.C. and Wu, C.L. An integrated, flexible, and Internet-based control architecture for home automation system in the Internet era. In *IEEE International Conference on Robotics and Automation*, 2002, 1101-1106.

[7] Erol, Y., Balik, H.H., Inal, S. and Karabulut, D. Safe and secure PIC based remote control application for intelligent home. *IJCSNS* **7** (5) (2007) 179.

[8] Ahmad, A.W., Jan, N., Iqbal, S. and Lee, C. Implementation of ZigBee-GSM based home security monitoring and remote control system. In *IEEE 54th International Midwest Symposium on Circuits and Systems (MWSCAS)*, 2011, 1-4.

[9] Das, C.K., Sanaullah, M., Sarower, H.M.G. and Hassan, M.M. Development of a cell phone based remote control system: an effective switching system for controlling home and office appliances. *International Journal of Electrical & Computer Sciences IJECS* **9** (10) (2009) 37-43.

[10] Gill, K., Yang, S.H., Yao, F. and Lu, X. A zigbee-based home automation system. *IEEE Transactions on Consumer Electronics*, **55** (2) (2009).
[11] Haartsen, J. Bluetooth-The universal radio interface for ad hoc, wireless connectivity. *Ericsson review* **3** (1) (1998) 110-117.
[12] Haartsen, J.C. and Mattisson, S. Bluetooth-a new low-power radio interface providing short-range connectivity. *Proceedings of the IEEE*, 2000, **88** (10) 1651-1661.
[13] Bray, J. and Sturman, C.F. *Bluetooth 1.1: connect without cables.* pearson Education, 2001.
[14] Frodigh, M., Johansson, P. and Larsson P. Wireless ad hoc networking: the art of networking without a network. *Ericsson review* **4** (4) (2000).
[15] Huang, A.S. and Rudolph, L. *Bluetooth essentials for programmers*. Cambridge University Press, 2007.
[16] Mitchell, G. The Raspberry Pi single-board computer will revolutionise computer science teaching [For & Against]. *Engineering & Technology* (2012).