DESIGN AND IMPLEMENTATION OF BLOOD BANK MONITORING SYSTEM USING ATMEGA 328

[1]W.Priya , PG student, M.E Embedded systems Technolgies, V R S College of Engineering and Technology,Villupuram.

[2]S. ArunPandiyan , Assistant Professor, V R S College of Engineering and Technology,Villupuram.

[3]S.Manimaran , Assistant Professor, V R S College of Engineering and Technology,Villupuram.

Abstract:

Blood is a saver of all existing lives in case of emergency needs. The task of "Automated Blood Bank" is to collect the information from the donors, to monitor the Blood group database and to send the required Blood during the need of recipient in case of emergency. We want to build a network of people who can help each other during an emergency. By using low cost and low power Raspberry Pi kit. It requires Micro USB of 5V and 2A power supply only. Entire communication takes place via SMS (Short Messaging Service) which is compatible among all mobile types without internet. This server timely updates the information regarding the donors. Donor will be prompted to entire an individual details like name, phone number, blood group. "Automated Blood Bank" is an project that brings voluntary blood donors and those in need of blood on to a common platform. Automated Blood Bank tries to assist victims/patients/those in want of blood. It is an endeavor to achieve dead set these people in want of blood and connect them to those willing to donate. The proposed work explores to find blood donors by using GSM based Smart Card CPU - Raspberry Pi B+ Kit. The vision is to be "The hope of every Indian in search of a voluntary blood donor".

Keywords: Raspberry Pi, Blood Bank, Embedded Systems, Blood Donors, GSM Based Smart Card CPU.

1. INTRODUCTION

Every year the nation requires about 4 Crore units of blood, out of which only a meager 40 Lakh units of blood are available. There are multiple blood banks around the world, however none of them offer the capability for a direct contact between the donor and recipient. This is often a serious disadvantage notably in cases wherever there is associate degree pressing would like of blood. This project aims to beat this communication barrier by providing an immediate link between the donor and therefore the recipient by victimization low price and low power Raspberry Pi B+ kit. It requires Micro USB of 5V and 2A power supply only. All communication takes place via SMS (Short Messaging Service) which is compatible with almost all mobile types. "Automated Blood Bank" proposes to bring voluntary blood donors and those in need of blood on to a common platform. The proposed work aims at servicing the persons who seek donors who are willing to donate blood and also provide it in the time frame required. Every year the state needs regarding four Crore units of blood, out of that solely a meager forty Lakh units of blood square measure out there. Every two seconds somebody desires blood. More than thirty eight thousand blood donations

area unit required a day. A complete of thirty million blood parts area units transfused annually. More than one million new individuals are unit diagnosed with cancer annually. Several of them can would need blood, typically daily, throughout their therapy treatment.

2. RELATED WORK

One automotive accident victim will need as several as hundred units of blood. All the on top of wants are met by the planned work. Automated Blood Bank tries to help victims/patients/those in need of blood. The proposed work explores to find blood donors by using GSM based Smart Card CPU - Raspberry Pi B+ Kit. The credit-card sized laptop is capable of the many of the items that consumer desktop laptop will, like spreadsheets, word-processing and games.
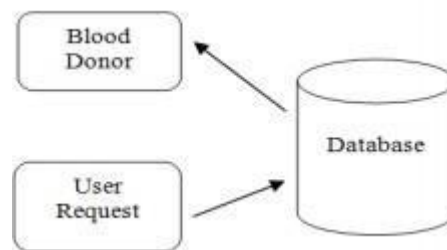

Fig.1.System Overview

It additionally plays high-definition video. It will run many flavors of UNIX operating system and is getting used to show children everywhere the plant the way to program. The secret sauce that makes this computer so tiny and powerful is that the Broadcom BCM2835, a System-on-Chip that contains associate degree ARMl176JZFS with floating purpose, running at 700MHz, and a Video core four GPU. It means that if the user plug the Raspberry Pi into HDTV, people could watch Blue Ray quality video, using H.264 at 40MBits/s. The new Model B+ also has a 10/100 Ethernet port so the user can surf the web (or serve web pages) from wherever they are using the Pi. The system volume no longer lives on an SD card but instead a micro SD card, so it is even easier to organize, run and rectify many totally different operating systems on an equivalent hardware. This means no more large SD cards and no more deceptively difficult to handle adapters Most Linux distributions for the Pi will happily live on a 2GB micro SD card but larger cards are supported. Figure 1 shows the Raspberry Pi B+ Kit diagram.

3. PROPOSED SYSTEM

Automated Blood Bank brings voluntary blood donors and those in need of blood on to a common platform. Through this application, individuals look for donors who are willing to gift blood, furthermore as give the timeliest support to those in frantic want of it. The mission is to fulfill every blood request in the country with a promising web portal and motivated individuals who are willing to donate blood. The vision is to be "The hope of every Indian in search of a voluntary blood donor". The motto - "Donate blood to save the most precious human life". Ibrahim. M and M. Youssef (2012), 'CellSense: An Accurate Energy-Efficient GSM Positioning System Vehicular Technology. Raspbian Wheezy: Raspbian wheezy is an open

source operating system based on Debian optimized for the raspberry pi hardware. It is Linux kernel based operating system which uses on the light weight ARMv6 instruction set that a typical Broadcom processor understand. Apache2: It is also known as "Apache HTTP Server" which allows the online distribution of website service using Hyper Text Transfer Protocol (HTTP). It is wide widespread net server for various operating systems like Linux, Unix, Windows, Solaris, Novell NetWare, Mac OS X, OS/2 etc. Apache2 version was utilized in this project for making net server.
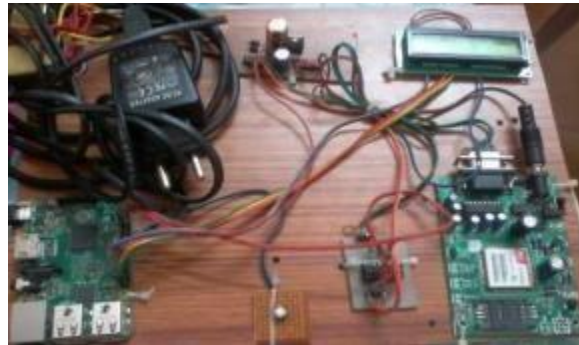

Fig.2.Structure

The PHP hypertext preprocessor (PHP) is a server- side scripting language designed for web development. PHP code is integrated by a web server with a PHP processor module which generates the resulting web page. PHP is largely used for developing net primarily based code applications and conjointly to manage database, dynamic content, session chase, even build entire e-commerce sites. PHP5 version was utilized in this project. It support standard SQL and compiles on variety of platform. MySQL is open source, free to download and use. Power consumption - The Pi attracts concerning five to seven watts of electricity. This is often be concerning one tenth of what a comparable life-sized box can use. Since servers are running perpetually night and day, the electrical savings will extremely add up. It has been calculated that the basic Pi kit (Pi board, case, and power supply) will pay for itself with about one year's worth of electricity savings if it's left to run 24x7x365. It has been decided to use the CanaKit Basic Kit (ASIN # BOODG9D6IK) which is very affordable and good quality. No moving components - There are also no fans and alternative things to fret regarding. A Class 10 SD card is typically the simplest playacting compared to social class cards, however this can mainly only affect boot time where ever there is the foremost 110. Karan Punjabi, Pooja Bolaj, Pratibha Mantur, and Sneha Wali (2014), 'Bus Locator via SMS Using Android Application.

4. ANALYSIS

Blood cannot be factory made - it will solely return from generous donors. Type O-negative blood (red cells) can be transfused to patients of all blood sorts. It is forever in great demand and sometimes in brief offer. Type AB- positive plasma can be transfused to patients of all different blood sorts. AB plasma is additionally typically in brief offer. Facts concerning the blood donation method. Donating blood could be a safe method. A sterile needle is employed one time for every donor and so discarded. Blood donation may be an easy straightforward four-step process: registration, case history, donation and refreshments. Every blood donor is given a mini-physical, checking the donor's temperature, pressure, pulse and Hb to guarantee

it is safe for he donor to administer blood. The actual blood donatIOn usually takes less than 10-12 minutes. The whole method, from the time arrives to the time to go away, takes concerning Associate in Nursing hour and 15 min. The average adult has concerning 10 units of blood in his body. Roughly 1 unit is given throughout a donation. A healthy donor might give red blood cells each 56 days, or double red cells each 112 days. A healthy donor might give platelets as few as 7 days apart, however a most of 24 times a year. All given blood is tested for HIV, hepatitis B and C, syphilis and different infectious diseases before it can be transfused to patients. The blood requirement is fulfilled by mainly three components Raspberry Pi, GSM, MAX 232. The main heart of the project is Raspberry Pi. In this we install a program in python language. MAX 232 acts as a interface between raspberry Pi and GSM. When we install a SIM in GSM it selects the network and starts working within a second.For DONOR registration we wrote a syntax *REG<Bloodgroup>$ and sent to a mobile number. The GSM number will send an acknowledgement to the sender as a delivery report. If a person requires blood he will send a message to the same GSM number. The syntax is *<Blood group>$ and all the required blood group donors get messages from the GSM number and they will call the requestor if they are ready to donate.If any mistake is present in the requestor or donor messages then it automatically send a text to that number and represent the correct format.

CONCLUSION

The proposed system can be used to reduce time span between donor and patient. The system consists of android application, raspberry pi and GSM modem. There is direct communication between donor and recipient through SMS so in case of emergency this system plays important role. Results shows different screens of the android applications where user needs to enter blood requirements. The above process is done with the help of power supply. Without power supply it doesn't work. When we turn ON power we have to run the program and then switch on the push button switch. So that we can observe the operation and we can able to see the working by 16*2 LCD display.

REFERENCES

[1] T.Gayatri Devi, G.Vijay Kumar,"Automated Blood Donating And Managing System Using Raspberry Pi B+",SSRG International Journal of Computer Trends and Technology (IJCTT) - Special Issue – April 2017.

[2] M. Geetha Pratyusha , P.V.V.N.D.P. Sunil , K. Tejaswi , P. Kanakaraja , Y.Ramya Sree ,"Raspberry-Pi Based Embedded Blood Donating Application", International Journal of Innovative Research in Science, Engineering and Technology, Vol. 5, Issue 4, April 2016.

[3] Miss. Pooja a. Taywade, prof. Ajay p. Thakare , "a survey on implementation of sms (short messaging service)based automated blood bank using raspberry pi for rural areas", international journal of pure and applied research in engineering and technology, Volume 4 (9): 628-635, IJPRET, 2016.

[4] Prof. Snigdha , Varsha Anabhavane , Pratiksha lokhande , Siddhi Kasar , Pranita More ,"Android Blood Bank", International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 11, November 2015.

[5] K.SRILEKHA1, SHRUTHI DASARI ,"Blood Bank System using RPI", International Journal of Scientific Engineering and Technology Research,Pages-5424- 5427,Volume-05,Issue-27,Vol.05,September-2016.

[6] K. Sravani, B Sujatha, "Design and Implementation of Blood Bank Monitoring System Using Raspberry Pi", International Journal of Innovative Research in Computer and Communication Engineering, Vol. 5, Issue 5, May 2017.

[7] Pavitra h v, Dr. G.F. ALI AHAMMED, "Design of SMS based automated blood bank using embedded system", International Research Journal of Engineering and Technology (IRJET), Volume: 04 Issue: 07 | July -2017.