

Raspberry-Pi Based Embedded Blood Donating Application

M. Geetha Pratyusha¹, P.V.V.N.D.P. Sunil², K. Tejaswi³, P. Kanakaraja⁴, Y.Ramya Sree⁵

B. Tech Student, Department of E.C.E, D.M.S.S.V.H College of Engineering, Machilipatnam, A.P, India^{1,3,5}

Assistant Professor, Department of E.C.E, D.M.S.S.V.H College of Engineering, Machilipatnam, A.P, India²

Assistant Professor, R &D Cell, USHA RAMA College of Engineering and Technology, Vijayawada, A.P, India⁴

ABSTRACT: The paper “Raspberry-Pi Based Embedded Blood Donating Application” proposed to bring the voluntary student blood donors to one place. The mission of this paper is to fulfil every blood request by using an android application “student blood donor”. Our aim to propose this paper is to reduce the time span between the donor and recipient. By using Raspberry pi 2 and GSM modem SIM900A, we collect all the data base of the voluntary students blood donor information from educational institution and fetch the given data as per message request from recipient. The fetched blood donor data is sent to the recipient and also with addition an IP Address is attached to the message which allows the recipient to download an app and get all the information of the student. The vision of this paper is “To provide a better service of every person who is in search of blood”

KEYWORDS: Raspberry pi 2, GSM Modem, Android Application, Blood Donors.

I. INTRODUCTION

Every year the nation requires about 5 crore units of blood, out of which only 80 lakhs units of blood is available. We need blood for every two seconds. More than forty two thousand blood donations are needed every day. Although there are many blood banks, android applications, social media to help, but the time span between the donor and recipient in emergency situations became a barrier to communicate which is leading to death of the victim. Our proposed design requires micro USB of 5V and 2A power supply. All communication takes place via SMS which is compatible with all most all mobile devices. The list of the voluntary donor students is sent via SMS as per the recipient request or by opening the IP link, the “student blood bank” application can be downloaded in android mobile and view the requested data. Our paper gives better service in a very short span of time, who is in search of donors to provide immediate help. Every day more than fifty two thousand of blood donation units is required. In a year, complete of forty two million blood parts area transfused. One single car accident victim needs several hundred units of blood. Embedded Blood Donating Application tries to help victims/patients who are in search of blood.

II. RELATED WORK

A) *Virtual blood bank project:* This project is mainly implemented using web applications and java. This system allows finding donors using their respective address from hospitals.

B) *Location based Blood Bank using cloud storage:* This model is based on a mobile app linked to a cloud server. Donors can register themselves on this app and their details are stored in the cloud storage. In case of an emergency these details can be used by anyone with the app on their phone to locate the donors.

C) *Emergency Blood Bank directories using www.bloodbanker.com:* This website holds the details of blood banks and hospitals in each state in the USA. The website can be used to locate the nearest blood bank or hospital. It is a widely used service and was the first of its kind.

III. CONTRIBUTION

In this paper we put forth a system to assist seekers by the hospitals to give the details of educational institutions which support student’s blood service force. Although blood banks provide blood packets from their sector. If in case the rare blood groups are needed, then it can be found from the database of institutions. This reduces the time span by opening a link using the internet and finds the nearby donor easily. Thus by supporting student’s blood service force by educational institutions, availability of donors increases. This will reduce the duration of time span for the donor to reach recipient.

IV. METHODOLOGY

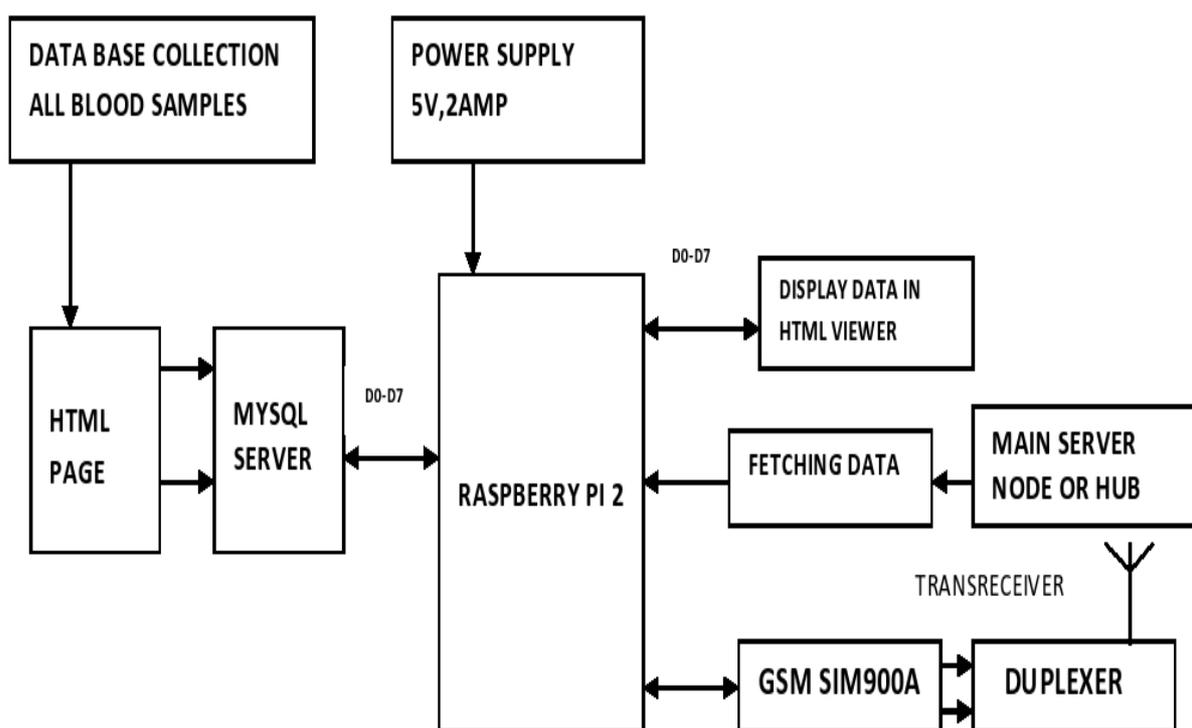


Figure 1 shows the Methodology of the Proposed Design

A. Raspberry pi 2 Model B

The Raspberry-Pi is a series of credit card-sized single-board computers developed in the United Kingdom by the Raspberry Pi Foundation with the intention of promoting the teaching of basic computer science in schools and developing countries. The Raspberry Pi 2 is based on the Broadcom BCM2836 system on a chip (SoC), which includes an ARM cortex v7 900mhz processor, Video Core IV GPU, and was originally shipped with 256 megabytes of RAM. As of 8 June 2015, about five to six million Raspberry Pi’s have been sold. The Raspberry Pi 2, was released in February 2015.

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Figure 2 shows the Raspberry pi 2

B. GSM modem SIM 900A:-

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages. Mobile services based on GSM technology were first launched in Finland in 1991.. The SIM900A is a complete Dual-band GSM/GPRS module in a SMT type which is designed especially for Chinese market, allowing you to benefit from small dimensions and cost-effective solutions. Featuring an industry-standard interface, the SIM900A delivers GSM/GPRS 900/1800MHz performance for voice, SMS, Data, and Fax in a small form factor and with low power consumption. With a tiny configuration of 24mm x 24mm x 3 mm, SIM900A can fit almost all the space requirements in your applications, especially for slim and compact demand of design.

c. Detailed explaining about the functioning of Proposed Design

“Raspberry-Pi Based Embedded Blood Donating Application” brings the voluntary student’s blood donors to a common platform with the help of educational institutions. These institutions which supports student’s blood service had to share their idea to the hospitals and also to the common people for the getting an awareness of using this system. The mission of this project is to fulfil every blood request in a short span of time via SMS or with a promising web portal which leads to the android application. The vision of this paper is “the provide a better service of every person who is in search of blood”. The motto-“Give blood, Give life”.

Noobs is an open source operating system based on the Raspbian optimized for Raspberry pi hardware. It is Linux kernel based operating system which uses ARMV7-A instruction set with the Broadcom BCM2836

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processore.Apache2: It is also known as “Apache HTTP Server” which allows the online distribution of website service using Hyper Text Transfer Protocol (HTTP).Apache2 is used in this project for making net server.

PHP5: PHP hyper text pre process is a server-side scripting language designed for the web development. PHP is integrated by web server with a PHP processor module generates the resulting webpage.PHP5 Version is utilized in this project. It supports the standard SQL (Structured Query Language) is a special purpose programming language designed for managing data held in a RDBMS. MYSQL is open source RDBMS and free to download and use. VSFTPD: VSFTPD (Very Secure FTP Daemon) is a FTP server which is used to transfer website from computer to Raspberry pi 2. It is free open source software compatible to UNIX like systems including Linux. It is secure and configurable FTP server.

V. RESULT

Figure 3 shows the complete process of the proposed design. Figure 3(a) shows whenever urgent blood is requires immediately SMS request is sent to the respective college administration contact number. in return they provide a link to download their app. Figure 3(b) shows to download the apk link.

Figure 3(c) is the downloaded application “student blood bank” fetches the data and sends to the requested recipient along with an IP address. Figure 3(d), 3(e) shows the main image and the content in the android app. Figure 3(f), 3(g), 3(h) provides the required start for the given content and also the data base of the voluntary student list for the following blood groups.

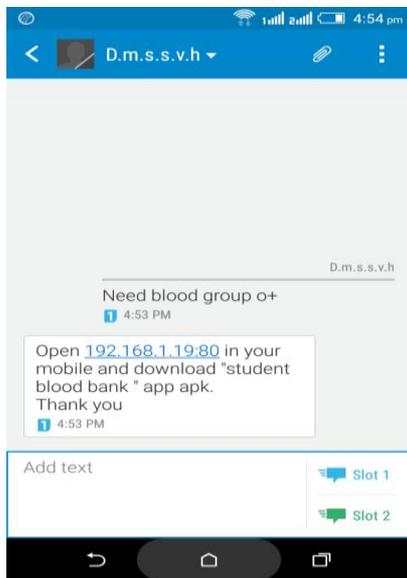


Figure 3(a)

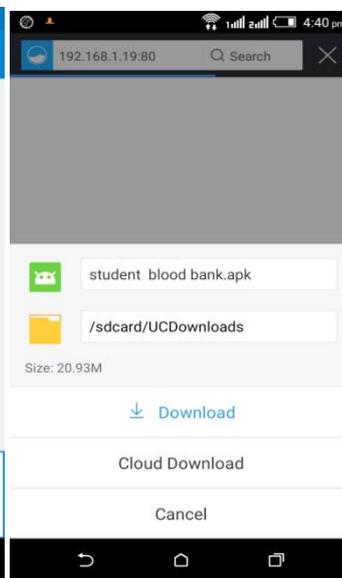


Figure 3(b)

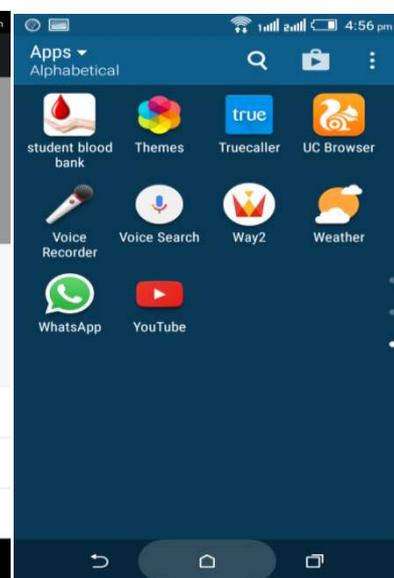


figure 3(c)

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Figure 3(d)

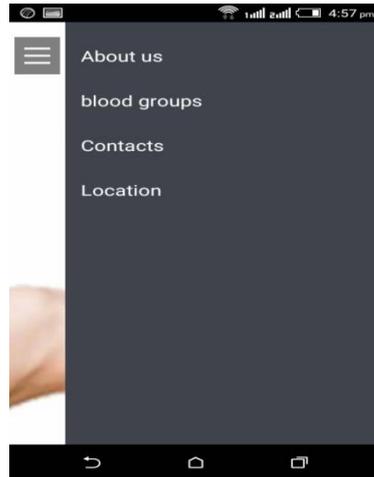
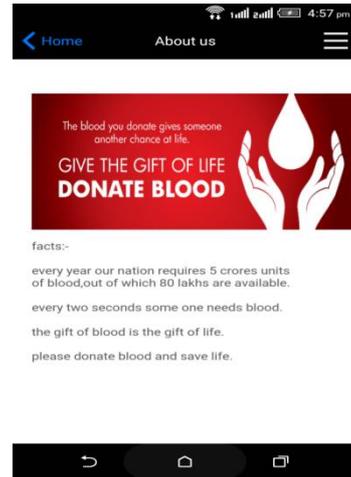


Figure 3 (e)



Figures 3(f)

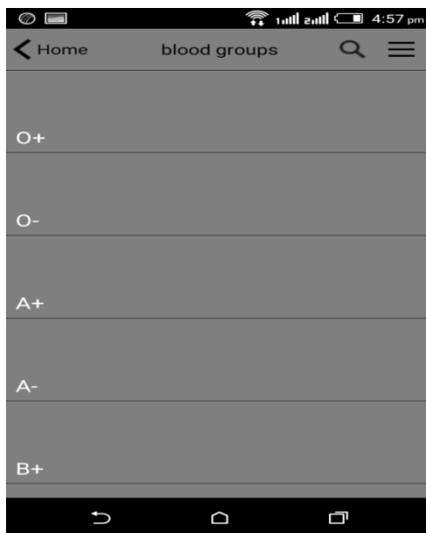


Figure 3(g)



Figure 3 (f)

Figure 3 shows the Results of the complete process of the proposed design

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VI. CONCLUSION

The project that we are designing is about the issue raised on blood donation. Although the blood donating ways are increased, due to the unavailability in a very short span of time the death of the victim is possible. This project is a venture to resolve this problem. Educational institutions supporting the student's blood force collecting all the data of the voluntary blood donors and passing according to the message request and also updating the android application will bring a vast change in the place of necessity of the Blood. This system can overcome the death rate and increase the availability of blood donors in a short span of time.

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BIOGRAPHY



Geetha pratyusha Miriyala is pursuing B.Tech in the faculty of Electronics and Communication Engineering from D.M.S S.V.H College of Engineering, Machilipatnam, Andhra Pradesh, India. She had published a paper "Smart Intelligent Security System for Women" in an international journal of Electronics and Communication Engineering & Technology. Her area of research is Embedded Systems.



P.V.VN.D.P Sunil, received his B.Tech degree from D.M.S.S.V.H College of Engineering, affiliated to Nagarjuna University Machilipatnam, Andhra Pradesh, India. His Mtech Degree received from Jawaharlal Nehru Technological University College of Engineering, Hyderabad. He is a member of IETE. He had published 5 papers in various international journals. He is presently working as Assistant Professor in ECE Department, at D.M.S.S.V.H College of Engineering, Machilipatnam. His research areas include Embedded Systems and VLSI Designs.



Tejaswi Kondapalli is pursuing B.Tech in the faculty of Electronics and Communication Engineering from D.M.S S.V.H College of Engineering, Machilipatnam, Andhra Pradesh, India. She had published a paper "Smart Intelligent Security System for Women" in an international journal of Electronics and Communication Engineering & Technology. Her area of research is Embedded Systems.

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Kanakaraja Pamarthi currently working as Assistant Professor (R&D CELL) in USHARAMA College of Engineering and Technology. He has 6 Years working experience On Embedded Designing & Programming Concepts IN R&D LAB. He is Technical EMBEDDED DESIGNING concepts Adviser for many Engineering and Polytechnic (DIPLOMA) Students. He also published papers in various international journals. He is a Regular Contributor in EFY (Electronic for You) International Technical magazine. His area of research is Embedded Designing.



Ramya Sree Yadlapalli is pursuing B.Tech in the faculty of Electronics and Communication Engineering from D.M.S S.V.H College of Engineering, Machilipatnam, Andhra Pradesh, India. She had published a paper “Smart Intelligent Security System for Women” in an international journal of Electronics and Communication Engineering & Technology. Her area of research is Embedded Systems.