SMART BLOOD BANKING SERVER USING RASPBERRY PI

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Abstract: Automated Blood Bank is an associate work that brings voluntary blood donors and those in need of blood on to acommon platform. The mission is to fulfill every blood request inthe country with a promising android application and motivated individuals who are willing to donate blood. The proposed workaims to overcome this communication barrier by providing a directlink between the donor and the recipient by using low cost andlow power Raspberry Pi B+ kit. It requires Micro USB of 5V and2A power supply only. Entire communication takes place via SMS(Short Messaging Service) which is compatible among all mobile types. "Automated Blood Bank" is a project that brings voluntary blood donors and those in need of blood on to a common platform. This project aims at servicing the persons who seek donors who are willing to donate blood and also provide it in the time frame required. 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 connects 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, GSM Modem, Android Application, Blood Donors.

I. INTRODUCTION

Automated online blood bank database: A number of online blood bank databases are available; however none of them offer the capability for a direct contact between the donor and recipient. This is a major drawback particularly in cases where there is an urgent need of blood [1]. Our project aims to overcome this communication barrier by providing a direct call routing technique using Asterisk hardware. A blood bank database is created by collection of details from various sources like Blood banks, NSS, NGO's, hospitals and through web interface. The data collected will be maintained in a central server. This central server will be associated with a Toll free number that can beused to connect to it. The willingness of donor and the closeness of the donor to the place from where the call is coming are also accounted for in defining this algorithm. Based on the algorithm the most eligible donor is found out. From the server the call from the required person is routed to the eligible donor's number. Such a system considerably cuts down on the overheads involved in referring to an online database and then calling the donors and verifying their willingness at a time when there is a critical need for the blood [2].

II. PROPOSED SYSTEM

All communication takes place via SMS (Short Messaging Service) which is compatible with almost all mobile types. "Automated BloodBank" proposes to bring voluntary blood donorsand those in need of blood on to a commonplatform. This project is originated on anandroid APP; this will help to find the donors. Blood donor will participate in donor list using APP. Suppose if any need in blood; will get the donor list in this APP. Here in this APP, only 3Blood group (A+, B+, O+) Data base is established. The recent interested donor number will be available in the data base. This project uses GSM modem interfaced to the controller i.e.Raspberry pi B+. GSM is interfaced through the MAX232 to the Controller[4].
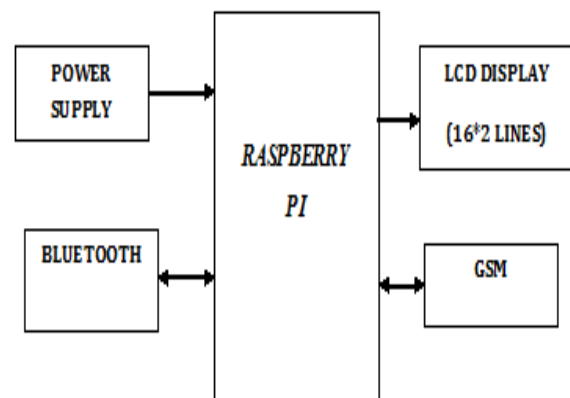

Figure 1: Shows the Block Diagram.

This project uses regulated 5V, 500mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer [5].

III. HARDWARE SYSTEM

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 [7]. The Raspberry Pi 2 is based on the Broadcom BCM2836 system on a chip(SoC), which includes an ARM cortexv7 900mhz processor, Video Core IV GPU, and was originally shipped with 256 mega bytes of RAM. As of 8 June 2015, about five to six million Raspberry Pi's have been sold. The Raspberry Pi was released in February 2015[8].

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 [9]. 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 asmall form factor and with low power consumption. With a tiny configuration of 24mm x 24mm x 3 mm, SIM900A can fital most all the space requirements in your applications, especially for slim and compact demand of design.

Fig 3: GPRS module

IV. METHODOLOGY

"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 fulfill 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 "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 basedoperating system which uses ARMV7-A instruction set with the Broadcom BCM2836 processor [10].When there is urgent need for blood, it may not be possible for people to connect to the internet to look into the online blood database systems that are already in existence. If people adopt this model, the caller is immediately connected to the donor. Consider a SMS based database system is in which whenever a SMS is send to prospective senders, based on the demand. Here there will be a significant delay in the recipient side in viewing the SMS and then responding to it.
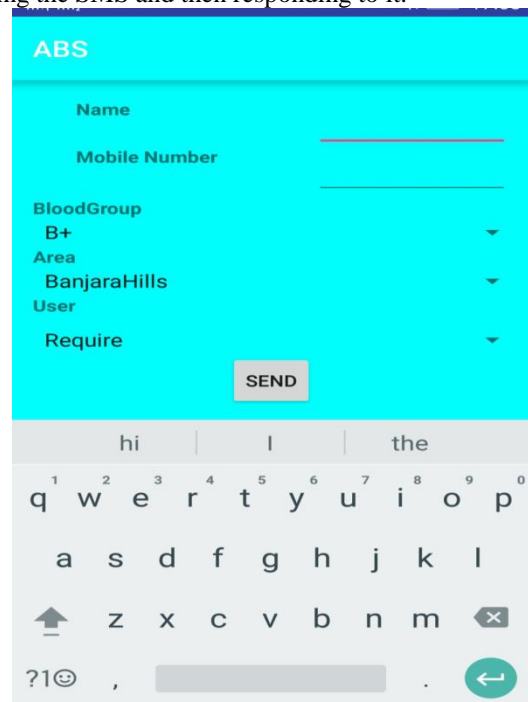
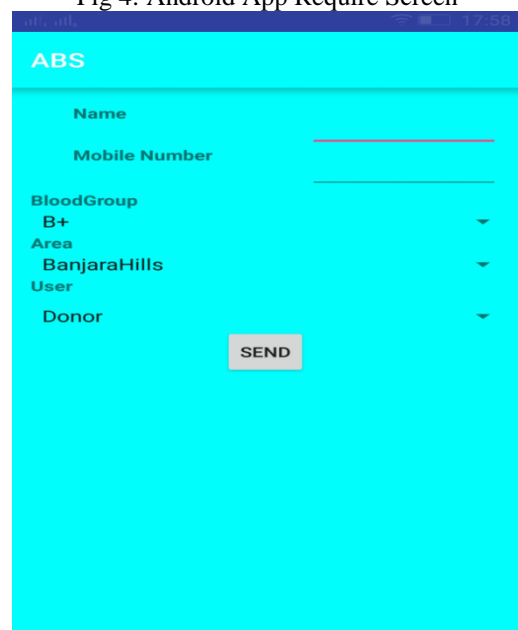

Fig 4: Android App Require Screen

Fig 5: Android App Donor Screen

V. CONCLUSION

Blood is the primary necessity of life. There are different scenarios available for searching blood donors. This proposed system will be one step ahead from the other blood donation systems. Blood recipient can contact the blood donor directly by using this system

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