

DESIGN AND IMPLEMENTATION OF E-BLOOD BANK

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Abstract – This paper is to survive the people from the blood requirement. Up to now we have an android app to find the nearby blood bank. But it takes more time to fill the details and these are operated only with internet. But lot of people don't know how to operate the smart phones and even though if they know to operate we cannot assure that internet will be available all the time. In order to overcome the past drawbacks in this project and SMS based accessing is done which is easy to access by all the mobile types. The paper "Design and Implementation of E-blood bank" proposed to bring voluntary blood donors information in position. . Every year nation needs four crore units of blood. Every two seconds some body desires blood. A complete of thirty million blood parts area units transfused annually. More than one million new individuals diagnosed with cancer annually. Several of them need blood daily, throughout their treatment. Automotive accident victim needs several units of blood. Present Blood banks may not provide the blood in time and may not provide the needed blood group. In this project I am going to implement direct communication between donor and acceptor by using GSM based smart card CPU- raspberry pi 3 via short message services which is compatible for all mobile types and providing a GPS link to the both acceptor and donor to find the position. The vision of this paper is "To provide a better service of every person who is in search of blood".

Keywords: Raspberry Pi, E-Blood bank, GSM Modem, Donor, recipient, SMS.

I. INTRODUCTION

Per annum the need of blood is drastically increasing, even though we are rich in technology but fails to bring communication between the donor and recipient on to the same platform. Per annum we require around 50million blood units but we have only a scanty 5million blood units are available. This is a main drawback particularly in case of emergency blood requirement .The main goal of this project is to liaison donor and recipientsin required time frame. Accidents cannot be predicted. So, blood may be required at any minute. In present scenario both blood donors and blood banks are available but cannot capable to reach their information to the needy people.in the given time. A high-efficient, easily available and scalable system has to be developed to bridge the gap between the donors and the recipients and to reduce the time required to search for blood donors

Factors to be considered for blood donation:

A donor should be a person who is between 18-60 years of age and not addicted to drugs and not Contacted jaundice in the previous three years. And whose hemoglobin count is above 12.5 g/dl and weight should not be less than 45 kgs. Body temperature and blood pressure must be normal at the time of donation. Donor must be free from all the diseases and make sure that has not taken any medicine in the last 48 hours.

II. LITERATURE SURVEY

Javed Akhtar and M.R Alony used concept of cloud computing which is on demand services. They introduced mobile SMS based blood bank management system for rural area which is direct connect to cloud server located in another location. They proposed system an efficient blood bank management system using a cloud computing concept with mobile SMS facilities should be developed, with the aim of ensuring that every patient has access to an adequate quantity of safe blood in a centralized manner. Anitha Julian and Bala senthil Murugan L proposed Automated Blood bank is an associate work that brings voluntary blood donors and those in need of a blood on to a common platform. The mission is to full fill every blood request in the country with a promising android application and motivated individuals who are willing to donate blood. The proposed work aims at servicing the persons who seek

donors who are willing to donate blood and also provide in the timeframe. Keiran Healy Princeton University proposed article which is a comparative study of blood collection regims in Europe. Regimes are found to affect donation rates and donor profiles. The analysis contributes to an institutional perspective on altruism and highlights the need to attend to the socially embedded nature of altruistic as well as self interested action. Clemen Teena, K.Shanker and S.Kannan provided reliable security measures, which protects data and the package from accidental of deliberate threats that could cause unauthorized modifications, disclosure of destruction of the data and protection of the information system by the use of password. It provides an automated registration of donor code for each type of blood. Set up forms records all the information of blood groups and its donor, recipient and quantity. Bing Nan LI, student member of IEEE: Ming Chui Dong; Vai Mang I member IEEE suggested barcode technology in blood bank automation system in the following, the label paradigm of codabar in Macao blood Transfusion center (CTS-Macau) is examined through the comparison with ISBT 28, an international barcode and labeling standard for blood and blood products. And then it tried to exemplify the supersedure of codabar by ISBT 128 via the implementation of barcode labeling system at CTS-Macau.

III. EXISTED AND PROPOSED SYSTEMS

At present, the public can only know about the blood donation events through conventional media means such as radio, newspaper and television advertisements. There is no information about blood donating programs on any one portal. The current system that is using by the blood bank is manual system. With the manual system, there are problems in managing the donor's records. The records of the donor might not be kept safely and there might be missing of donor's records due to human error or disasters. Besides that, error might occur when the staff keeps more than one record for the same donor. There is no centralized database of volunteer donors. So it becomes, really tedious for a person to search blood in case of emergency. The only option is manually search and match donors and then make phone calls to every donor. There is no centralized database used to keep the donor's record. Each bank is having their own records of donor. If a donor makes donation in different hospital, no previous records can be traced except if the donor

brings **along** the donation certificate. The existing systems are blood banks which are organized by hospitals, non-profit organizations and online blood bank sites. These provide services to the people to who need the blood. The main disadvantage of blood bank is delay in time where the time frame is needed and no confirmation about needed blood group. Maintenance is required to store the blood in blood bank. If needed blood group is available but may not available required amount of quantity. The main disadvantage of the online blood bank sites is delay in time and may not available network connection for all the people. Some people may not have smart phones and internet connection. Some people don't know how to check the sites and some have no idea about online blood bank sites.

The proposed system main object is overcome the problems of the existing system. This project is very efficient and is to implement and also cost effective. This system provides the direct communication link between the victim and donor persons via short message service using GSM and GPS based raspberry pi3 kit. The processor used is BCM2837 is very fast 1.5GHz where the time frame is needed. If we place the kit in hospital area and also place a poster of SMS format and GSM number to guide the people to how to send the SMS to GSM SIM card which is used in kit.

The design and implementation consists of two sections as

- 5.1. Hardware design
- 5.2. Software design

The hardware design consists of Raspberry Pi3 processor package, GSM modem, GPS. All these hardware" s are interfaced with each other. We're developed a coding in Python in IDE of python programming. Additionally we're making use of RTOS to manage the whole project and to provide a outcome in actual time.

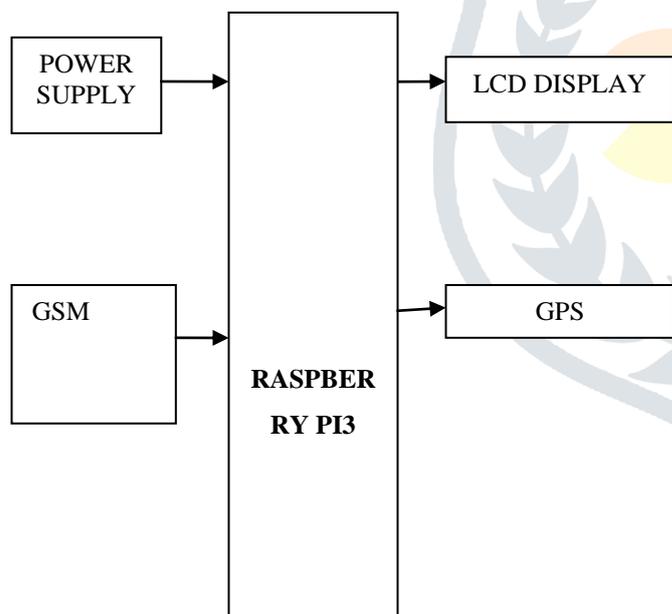


Figure1: Block diagram of implemented system

Power Supply:

This section is meant for supplying Power to all the sections mentioned above. It basically consists of a Transformer to step down the 230V ac to 12V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification the obtained rippled dc is filtered using a capacitor Filter. A positive voltage regulator is used to regulate the obtained dc voltage. Micro USB socket 5V, 2A is connected to kit.

GSM :

(Global system for mobile communication) is an open digital cellular technology used for transmitting mobile voice and data services.

GPS:

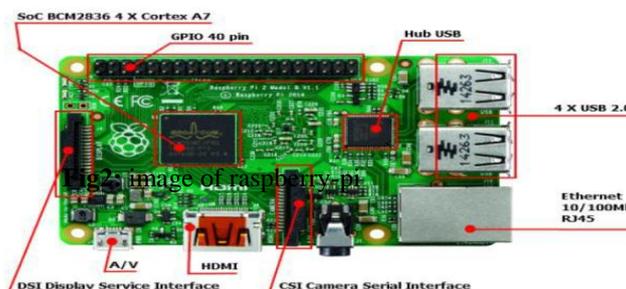
GPS (Global Positioning System) is a U.S space-based radio navigation system that provides reliable positioning, navigation and timing services to civilian users on a continuous worldwide basis freely available to all.

LCD Display:

This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information.

Raspberry Pi 3 :

It look like a credit card but it perform as a mini computer. it used for many things that desktop PC does like video word processing, spread sheets, home automation server, parent detectors to weather stations, tweeting houses of birds with



Here I use GSM module in which SIM is placed which act as an toll free number and GSM module is used to interface with an computer to transfer the information whenever the person who requires particular blood group sends SMS to the toll free number. So here the input is SMS.

Then GSM module transmit this request to the Raspberry Pi3 which act as an minicomputer in this it act as a server or data base .Whenever the message is received the information is displayed in LCD through GPIO. Then the Raspberry Pi3 respond to the request and it start searching in blood groups and related numbers, by using relay the raspberry pi3 simultaneously communicate with GSM module and GPS. If blood group is present it send that particular blood donors information to the person who requested for blood through GSM module via SMS output is also SMS and then it send the recipient details to donors with GPS link

Flexibility for operating:

Here I use GSM ,it give flexibility for every one because it is an SMS based input and output so easy to communicate by all the citizens who need blood in emergency technology.

SOFTWARE DESIGN:

A. Python:

Python is a widely used general-purpose, high-level programming language. Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code than would be possible in languages such as C. Python supports multiple programming paradigms, including object-oriented, imperative and functionalprogramming or procedural styles. It is a scripting Language and it's executing the code line by line.

B. Raspbian wheezy:

The Raspbian wheezy is another important software part which deals with the Raspberry Pi. Raspbian wheezy is an unofficial port of Debian Wheezy arm of with compilation settings adjusted to produce code that uses hardware floating point, the "hard float" ABI and will run on the Raspberry Pi. Raspbian is a free operating system based on Debian optimized for the Raspberry Pi hardware. There are various languages used for web design that have developed over the life time of World Wide Web. Generally web pages are designed using HTML or Hyper Text Markup Language. HTML pages are used for data communication between the client and the server. In the embedded web server, web pages

are selected as the media of interaction. Here we are developed a PHP page. The PHP Hypertext Pre-processor (PHP) is a programming language that allows web developers to create dynamic content that interacts with databases

RESULTS

Procedure for requesting sms for blood:

- i. Send SMS to blood bank number. And the SMS format for sending is *num, blood group(*957327****,AB)
- ii. The processor sort out the blood groups and numbers. That will be displayed on LCD.
- iii. The sort out numbers are sent to recipients and also seekers request also send to the donors with GPS link



Figure3: Blood seeker number on LCD

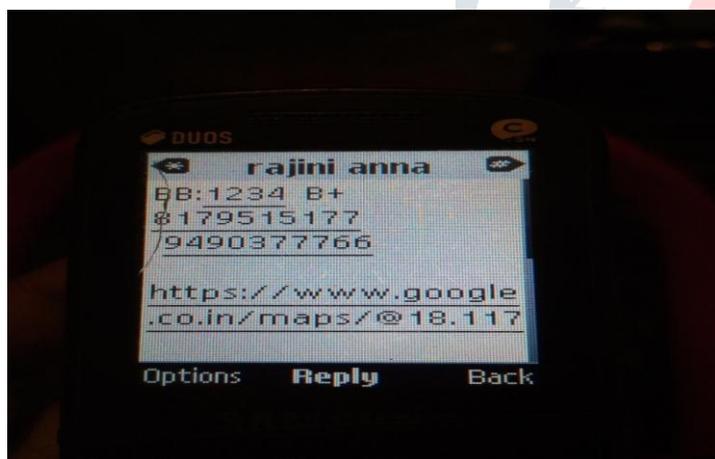


Figure4: Donors numbers on LCD

V.CONCLUSION

Technology is introducing new innovations day by Day, thus abate the time required to do things. The Proposed system can be used to reduce the time required to deliver required blood to the needy in Cases of emergency. It also provides them with the Facilities of communicating with the nearby donors in emergency. The database is a vital aspect of the System. The database of the blood banks and the hospitals must be checked for consistency on regular basis for smooth running of the system. Blood is the primary necessity of life. There are different scenarios available for searching blood donors. This project will be a one step ahead from the other blood donation systems. Blood donors can contact the blood recipient directly by using this system.

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