

“A REVIEW ON IMPLEMENTATION OF SMS (SHORT MESSAGING SERVICE) BASED AUTOMATED BLOOD BANK USING RASPBERRY PI FOR RURAL AREAS”

Miss. Pooja A. Taywade
M.E. -2ND Year
Department of Electronics and Telecommunication
Sipna College Of Engineering And Technology,
Amravati, Maharashtra, India.
e-mail: taywadepooja@gmail.com

Prof. Ajay .P. Thakare
Professor and Head
Department of Electronics and Telecommunication
Sipna College Of Engineering And Technology,
Amravati, Maharashtra, India.
e-mail:apthakare40@rediffmail.com

Abstract- A blood bank is bank of blood or blood components gathered as a result of blood donation or collection, stored and preserved for later use in blood transfusion. Automated Blood Bank using Raspberry Pi is an associate work that brings voluntary blood donors and those in need of blood on to a common platform. The term "blood bank" refers to a division of a hospital where the storage of blood product occurs and where proper testing is performed. Automated Blood Bank tries to help victims/patients/those in need of blood. It is an endeavour to achieve dead set these people in want of blood and connects them to those eager to donate. The mission is to fulfil every blood request in the rural areas with a promising SMS application and motivated individuals who are eager to donate blood.

Keywords- Raspberry Pi, Blood bank, Blood donors, Blood acceptors.

I. INTRODUCTION

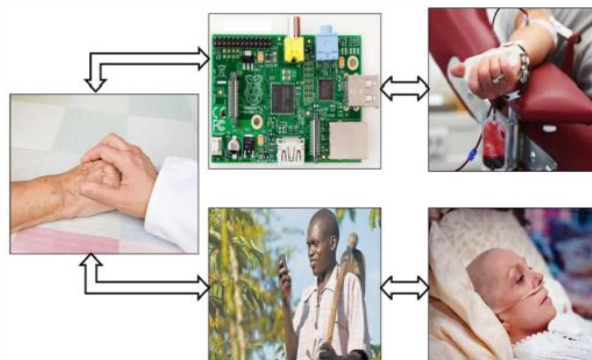
Human blood is meagre, valuable and much in demand. Every year the nation requires about 4 Crore units of blood, out of which only a meager 40 Lakh units of blood are available. Blood donation is one of the most significant contributions that a person can make towards the society. It is not harmful for an adult person to donate blood. The body of the donor can regenerate the blood within few days. It poses no threat to the metabolism of the body. The patient needs blood or his or her group of blood whenever necessary. It is another important thing. Blood has four groups. These groups are A, B, AB and O shown in the following chart. The required group must be the same while transplanting otherwise the transplantation will go in vain and even the patient may expire. The man with the O-group blood is called the universal donor because the people having others can accept it. On the converse, the man with AB group of blood is called the universal receiver because

he can accept all groups of blood. Blood can be stored for a limited period of time that is why the blood banks need a steady and constant collection.

Blood Type	Donate Blood To	Receive Blood From
A+	A+ AB+	A+ A- O+ O-
O+	O+ A+ B+ AB+	O+ O-
B+	B+ AB+	B+ B- O+ O-
AB+	AB+	Everyone
A-	A+ A- AB+ AB-	A- O-
O-	Everyone	O-
B-	B+ B- AB+ AB-	B- O-
AB-	AB+ AB-	AB- A- B- O-

There are multiple blood banks around the India, however none of them offer the capability for a direct contact between the donor and recipient. This is often a serious disadvantage remarkably in cases wherever there is associate degree pressing would like of blood.

Fig. shows the pictorial representation.



Terms used in blood bank management system as follow:

- 1) Blood donors : Person who wants to donate the blood.
- 2) Seekers(patient) : Person who wants the blood from the blood bank due to various reasons like accidents, surgeries, delivery and many.
- 3) Blood bank : staff people which are working in the blood bank which includes staff member, operator, head of pathological department.

II. LITERATURE REVIEW

Blood banks are laboratory centers that are responsible for the collection, processing, typing, safety and storage of blood for research and medical purposes. Most blood collected for medical use is transfused into patients who need blood because of trauma, for surgery or as therapeutic treatment of diseases, such as sickle cell disease and anemia and as a result of chemotherapy. In all, 23 million units of blood are transfused annually, according to the report of American Association of Blood Banks (AABB). Automated blood bank system plays a very important role in the blood bank because blood is the requirement of everyone. Many authors confer about the beneficiaries of the blood bank management information system. Many researchers have developed the blood bank management information system. Some of them are summarised below.

Javed Akhtar Khan and M. R. Alony[1] used concept of Cloud Computing which is on demand services. Many times, we do not clarify to the donor at the time of donation that there is service charge for blood units. As a result, when the donor needs blood, it comes as a rude shock and he makes allegations of the 'sale' of blood. At that moment, the situation becomes embarrassing because we hesitate to accept that we follow a cost recovery system which is a part of the business. In this research paper, they introduce mobile SMS based blood bank management system for rural area which is direct connect to cloud server located in other location. Because in rural area blood bank management system not have a sufficient facilities for storing a blood in long time. They collect some of information about the blood bank management system located in city and rural area. They find some of the hospital have its own blood bank unit with each and all technical facilities in city but this transmission is poor in rural area. Some of the country maintain a online blood bank system like in Srilanka [2] this project have combination of three sub modules which is blood module, patient module, donor module. In this project blood bank staff has authorized access permission to cloud computing as a highly available computing environment where secure services and data are delivered on-demand to authenticated devices Currently there are three primary categories of cloud computing service:

- (i) Infrastructure as a service (IaaS) : Computing infrastructure, such as servers, storage, and network, delivered as a cloud service, typically through virtualization.
- (ii) Platform as a service (PaaS) : Platforms that can be used to develop and deploy applications.
- (iii) Software as a service (SaaS) : Software deployed as a hosted service and accessed over the Internet.

Blood module can manage the types, quantity and expiry dates for each category of blood that stored in blood transfusion unit. With reference article [1] India total blood collection in 7.5 million units yearly, 2% of blood is discarded (minimum) due to various reasons. If we deduct 2% of discarded blood, the total usable whole blood or red cells will be 6460,000 units in India. For blood components, let us take a conservative estimate that only 25% blood is separated into components. In that situation, we will have about 1,365,000 components for patients. Now to find out the total revenue generation across the country. In this article author present a one major Problem every year our nation requires about 4 Crore units of blood [3], out of which only ameagre 5 Lakh units of blood are available. It is not that, people do not want to donate blood. Often they are unaware of the need and also they do not have a proper facility to enquire about it. As a result, needy people end up going through a lot of pain. India has many blood banks, all-functioning in a decentralized fashion. In the current system, individual hospitals have their own blood banks and there is no interaction between blood banks. The management is adhoc with no semblance of organisation or standard operating procedures. Donors cannot access blood from blood banks other than the bank where they have donated blood.3.2 Present System All the blood banks are attached to hospitals and there is no stand-alone blood bank.

Anitha Julian and Bala Senthil Murugan L[2] proposed Automated Blood Bank is an associate work that brings voluntary blood donors and those in need of blood on to a common platform. The mission is to fulfill 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 it in the time frame required.

Kieran Healy, Princeton University[7] proposed article which is a comparative study of blood collection regimes in Europe. Regimes are found to affect donation rates and donor profiles. When the Red Cross collects blood, donation is tied to religious activity and other volunteering, unlike state and blood bank systems. This study argues that collection regimes produce their donor populations by providing differing opportunities for donations. 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.

Blood bank management system using unified process methodology presents a complete blood bank management information system. The analysis and design of the blood

bank management information system has been done using Unified Modeling Language (UML). The UML is a language for visualizing, specifying constructing, documenting the artifacts of a software intensive system as well as other non-software systems. Implementation has been done using Model View Controller (MVC) architecture and Microsoft Visual Studio. Database server is used which is NET framework and Oracle 8i. Whole development Unified Process (UP) methodology has been followed.

The blood donation system in java is designed for blood bank management system. It is planned to collect blood from many donors in short from various sources and distribute that blood to needy people. The basic want is to provide blood donation service to the city and major task of blood bank system is to provide blood to help people. This blood bank system project uses asp.net project which manages all kind of information related to blood. The blood bank system project report contain information related to blood like

- 1) Blood bank
- 2) Date of donation of blood
- 3) Validity of blood
- 4) Available blood group

To do all this we require high quality software to manage those jobs. At any point of time the people who are in need of blood can reach the donors through this search facility.

A. Clemen Teena, K. Sankar and S. Kannan[12] provides reliable security measures, which protect data and the package from accidental or deliberate threats that could cause unauthorized modifications, disclosures or 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 etc. Here, we can add edit and search records information according to the requirement of donor or recipient. This application is specially built in such a way that it should suits for all type of blood banks in future.

III. CONCLUSION

Most of the blood donors are unpaid volunteers who donate blood for a community supply. In poorer area, supply of blood is limited and donors usually give blood when family or friends require a transfusion (directed donation). The purpose of this review paper is to understand different aspects proposed by the researchers related to the blood bank system/blood bank management systems. The purpose of this literature review was to view the trends in studies related to the blood bank within the past years has changed and is still changing. Most of the research found was on the blood and its components. Blood donation is one of the most significant contributions that a person can make

towards the society. This field of analysis is very important as at its center is a concern with helping people.

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Miss. Pooja A. Taywade is currently pursuing M.E from Sipna College of Engineering, Amravati (India). She has completed his B.E.in Electronics And Telecommunication from the same institute in 2014. Her areas of interest are digital electronics and communication.



Prof. Ajay P. Thakare, graduated from Govt. COE, Pune and received Master's Degree in 1996 in Electronics Engineering from SGBAU, Amravati University, India. He has 22 years of teaching experience & currently working as Professor and Head in the Department of Electronics & Telecommunication at Sipna College of Engineering & Technology, Amravati (India). He worked as Assistant Professor and Section Head of Communication Tech.

Department in the Defense Engineering College Debre Zeit, Addis Ababa, East Africa for over 3 & 1/2 years. His main research interests include Signal processing; Electromagnetic, Smart Antenna, Microwave Communication. He is pursuing research in the area of feed network for antenna beam formation. He is a Fellow-member of IE (I), IETE, ISTE and IEEE (USA). He has over 30 publications to his credit in National and International Journals & Conferences.