

“Bleed For Hope” The Blood Donation System

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Abstract: Emergency situations, such as accidents, create an immediate and critical need for specific blood types. In addition, advances in medicine have also increased the need of blood for various treatments and surgeries. In short, blood is a saver of all existing lives. So in such emergency cases, it is difficult for hospital staff to collect blood in case of shortage of blood without having appropriate resources. Our system solves this problem. This project is to build a web-based, online blood donation management system. This system provides an online platform for quick access to the required donor. Hence the life at threat can be saved by this optimization technique. The Blood Donation management system is to create an e-Information about the donor who wants to donate blood. Through this application any person who is interested in donating the blood can register himself. Moreover if any general consumer wants to make request blood online he can also take the help of this site. Admin is the main authority who can do addition, deletion, and modification if required.

Keywords: Blood, Donation, Donors, Blood Bank, Patients, Healthcare, Organization, Hospital

1. INTRODUCTION

The Blood donation is a vital component of modern healthcare systems, serving as a lifeline for countless individuals in need. This selfless act of donating blood is not only an act of compassion but also a testament to the strength of human solidarity. The blood donation system, an intricate and finely tuned network, plays a pivotal role in ensuring that this life-saving resource is readily available to meet the demands of patients in hospitals and medical facilities across the world. In this comprehensive exploration, we will delve deep into the intricacies of the blood donation system, shedding light on its various components, the critical role it plays in saving lives, and the challenges it faces in maintaining a stable supply of this precious resource.

At its core, the blood donation system revolves around the simple yet profound concept of voluntarily giving one's own blood to assist those in dire need. This act of kindness has the power to bridge the gap between

life and death, offering hope to patients grappling with critical medical conditions, trauma, and various ailments. The invaluable nature of blood, with its unique ability to carry oxygen, vital nutrients, and immunity-boosting elements throughout the body, underscores the significance of a well-functioning blood donation system.

The blood donation system encompasses a wide array of individuals, organizations, and medical professionals, all working in harmony to facilitate the collection, processing, testing, storage, and distribution of blood and its components. Blood banks, hospitals, government agencies, non-profit organizations, and a dedicated cadre of donors are the pillars upon which this system stands. Blood donors, whether they are first-time volunteers or regular contributors, are the lifeblood of this system. Their willingness to step forward and donate blood, often without any expectation of recognition or reward, exemplifies the humanitarian spirit that propels the blood donation system forward.

In addition to the voluntary donors, there are numerous healthcare professionals who play an indispensable role in ensuring that the donated blood is safe and effective for transfusion.

Phlebotomists, nurses, and laboratory technicians are responsible for collecting blood samples, conducting rigorous testing, and meticulously preparing it for use. Furthermore, healthcare providers such as surgeons, anesthesiologists, and physicians rely on this system to have a readily available supply of blood and blood products to perform life-saving procedures

LITERATURE REVIEW

The current blood bank storage system is focused on files. This ensures that data and knowledge about blood, donors, and recipients are stored in documents and archives. Data and information processing becomes difficult and time-consuming as a result of this. All tests of blood donation and transfusion are recorded on physical papers as well. This makes information helpless to blunders and human errors

which in turn puts human lives in peril. Another underlying problem with this framework is destitute productivity. The sheer time-consuming method of recovering blood, be it donor or recipient information takes a lot of effort. The information retrieval being such a time-consuming process makes it very hard for hospitals to save lives at crucial times. Information Security & Information backup is another additional point to consider as the papers and records are effortlessly stolen or misplaced. This makes it an untrustworthy framework. The goal behind our project has been to provide a platform that has all the information regarding blood donation, registered donors, which may in turn help in providing fast blood delivery. We have put our efforts into researching all about blood management systems and practices and have used the knowledge in making our project the best of what it could be. Every blood donation management system is required to accomplish some basic tasks. It has to have a mechanism for information exchange to be made available for donors, receptors, and other stakeholders. It must also ensure that the information regarding the blood inventory status of different stakeholders such as blood banks, hospitals are made available. It was important for us to find the faults in the existing system so that we can find the solutions to the flaws and implement them in our project.

Existing System:

Researches have composed on the concept of blood bank administration frameworks with nearly all of them lauding computerization as an instrument to accomplish productivity and viability in this region though not looking at a few issues the framework may confront due to restrictions or abuse of functionalities. We looked at some of the systems we could discover. “Benefits of Management information system in Blood Bank” portrays the benefits of administration data framework in the blood banks. The paper is fundamentally centered on the blood bank administration data framework. It examines the recipients of the blood bank administration data framework. In “The Optimization of Blood Donor Information and Management System by Technopedia” by, they have proposed a proficient and solid blood donor data and management system based on GIS coordinates in an android portable application. The benefits given by the proposed system is

necessary and profitable to the human being segment. “Blood Bank Management Information System in India” presents the audit of fundamental highlights, merits, and demerits given by the existing web-based Data Framework for Blood Banks. This ponder depicts the comparison of the different existing framework. The existing system has almost everything when it comes to people donating blood at normal times. The users can view the information of the donors registered along with their name, address, contact information. The existing system shows blood donors in a vast spread area. Hospitals are contacting donors only when there is demand in need of blood. In spite of the obtainability of the potential blood donors but 10% of the general Indian population donates blood. Advancement in natural science has increased the blood demand and it's found that blood donors usually don't come to grasp the requirement for blood. These causes inspire us to grow a stronger system that will assist the present blood donation system.

Limitations of Previous Systems:

In the previous systems searching for donors in a given area was a constraint. Availability of blood in major cities was not a huge problem as it is was agricultural and village areas. Data connection isn't economically viable to poor citizens. It is not always easy for hospitals and patients to contact the registered donors during emergency situations as the donors might not be in a situation to lift the call. There is no proper centralized database for registered donors.

MODULES

Blood Type

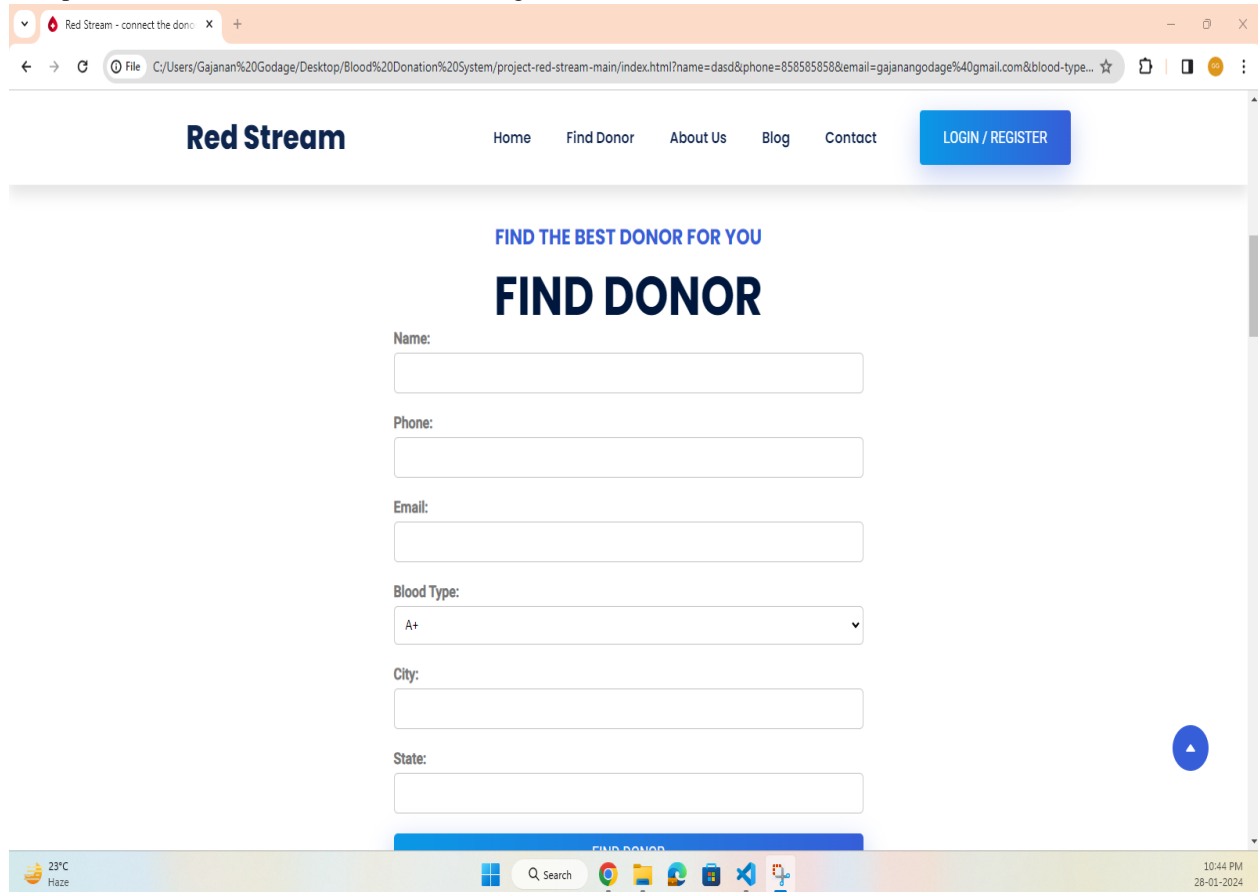
Our website has this functionality to let the users and needy search for the specific type of blood they are looking for. Here we are passing the POST request where initially the search form along with the donor list gets executed by fetching details from the search and the Dreg categories from the database. Then validation takes place by purifying the post request with the Dreg data, if the request is valid then the filtered data from Dreg gets placed in a dictionary and return to the page through rendering.

Area Wise Search

We have also integrated a search bar for people looking for blood nearby. This we have done considering the fact that a lot of people need blood

urgently and have no time to wait for it. With this functionality, they can search and acquire blood near them and save precious time. It's a similar parallel process/request which travels along with POST request as a common request for blood and area-wise searching match where algorithm makes sure whether two parameters has been filled or not through the

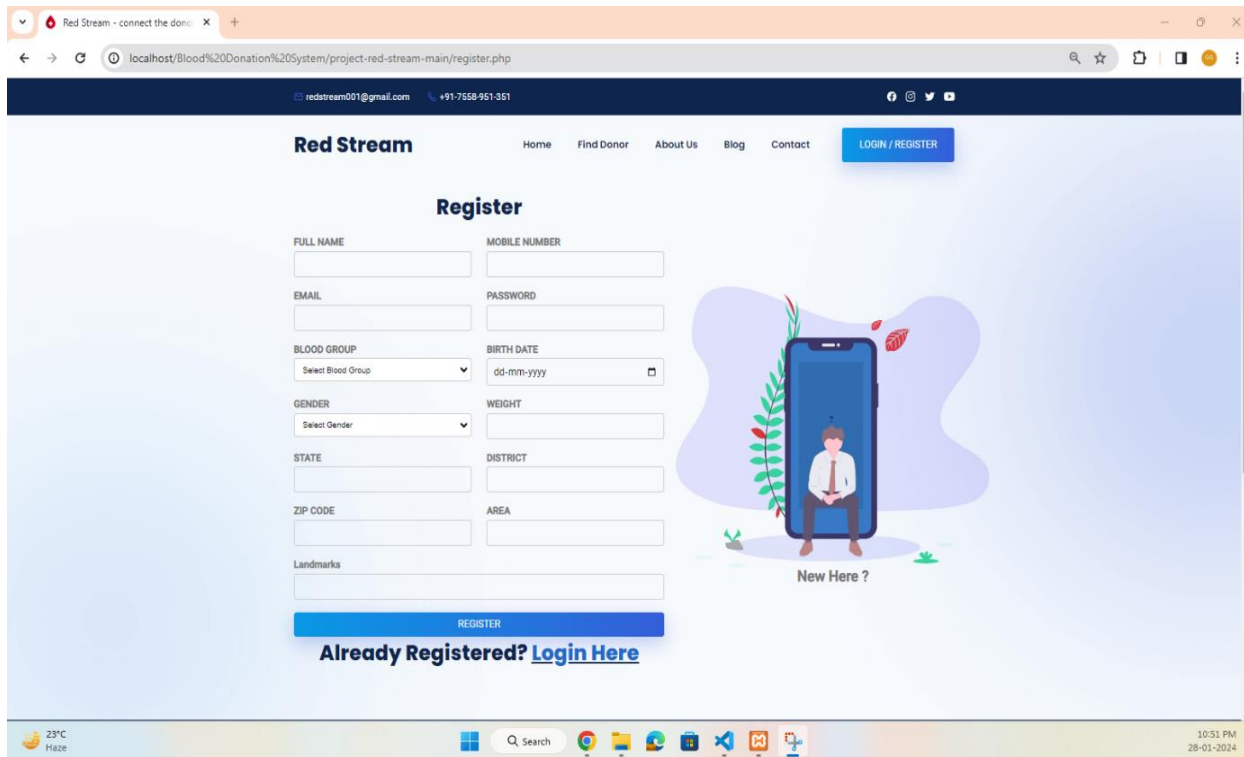
model library parameters which is one of the most powerful validators. If both values entered match the data of Dreg in the database, then the search gets executed precisely. The interface of the blood donation management system implementing the area wise search.



Donor Registration Form

Donors can be divided into returning donors, who donate on an almost regular basis, and walk-in donors, who are entering the system occasionally or for the first time. We have integrated a form for donor parties to register themselves as donors. The form will ask the name, gender, date of birth, number, email, address, last donate month, health information etcetera. We have applied all types of constraints in the form so that false or wrong information is cast aside. Same post request is used initially data gets filled into the parameters through validation and must and should

fields, later as usual data gets connected and stored in Dreg category of the database if all the valid and verify conditions of the library models has been satisfied. After the successful render summarized data gets visible on the screen. Here POST requests have been used mostly as the POST carrier request in the message body provides the most secured way of transferring data from client to HTTP protocol by -never caching process -requests do not remain in the browser -these requests can't be bookmarked -it has no restrictions on data length.



OTHER USES/SCOPE OF WEBSITE

Our website receives useful data related to blood donation and reception in an integrated manner and helps in making intense situations better. In terms of coordination and fast reaction (that gets to be most imperative to spare the most extreme number of casualties) amid incidents, our framework with analytics will be able to bring the right citizens to the right place at the right time to offer assistance. Our website can also be used in camps as it asks for data to understand eligibility (initially based on the last donation date and minimum gap between two consecutive donations eligibility will be derived, later other medical conditions will be considered by attending doctors in health camps) for donation. In the future, if during any checkup or treatment some infection or any such medical condition is detected then the concerned MP (medical practitioner) will update us and we will update our website accordingly. In our future work, we plan to explore the generic mathematical model along with different donor groups using data mining tools and analytics. We are also focusing on implementing an application based on the website that will further help with connectivity to wider masses.

CONCLUSION

The proposed system provides a web-based application that is acutely useful for emergency services. It will come very useful in urgent times by providing donors information filtered by area and blood type. It allows the donors to communicate with other donors using our ChatBot API to inform them about emergencies. The system consists of a well-maintained database to keep all the registered records. It also provides news and information about the ongoing coronavirus pandemic. In the end, it provided us the knowledge regarding the latest technology required to build a web-based application. During the building of this project, it provided us an awareness of how blood donation can save lives. This inspired us to donate blood at regular times and also motivate and persuade our fellow citizens to donate blood. A database has been set up to store historical data related to donation and reception of blood and also to store data from camps so as to take future decisions based on concrete analytical results.

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