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PLASMA DONOR CLOUD APPLICATION

ABSTRACT

A plasma is a liquid portion of the blood, over 55% of human blood is plasma. Plasma is used to treat various infectious diseases and it is one of the oldest methods known as plasma therapy. Plasma therapy is a process where blood is donated by recovered patients in order to establish antibodies that fights the infection. In this project plasma donor application is being developed by using AWS services. The services used are AWS Lambda, API gateway, DynamoDB, AWS Elastic Compute Cloud with the help of these AWS services, it eliminates the need of configuring the servers and reduces the infrastructural costs associated with it and helps to achieve serverless computing. For instance, during COVID 19 crisis the requirement for plasma increased drastically as there were no vaccination found in order to treat the infected patients, with plasma therapy the recovery rates where high but the donor count was very low and in such situations it was very important to get the information about the plasma donors. Saving the donor information and notifying about the current donors would be a helping hand as it can save time and help the users to track down the necessary information about the donors.

INTRODUCTION

Conventionally, when a patient needs blood, he/she has to contact a blood bank or a compatible blood group of a donor in their circle, family, and friends. However, it is difficult to find suitable donor within a limited group of people in a given time. In addition, there is no guarantee that blood banks will have compatible blood group in stock. There is also steady increase in blood donation requests posts in social networking sites (like Facebook, twitter, Instagram, etc.) requesting for donation. Ease of access, requirements of blood, and the blood donation statistics are taken into consideration while researching the topic. There is a steady need for blood and blood components (red blood cells, blood plasma, platelets). Every minute of every day someone is in need for blood, however as e.g., in Canada , only 1 in 60 Canadians gave blood last year, when almost 1 of every 2 Canadians is eligible to donate. 52% of Canadians say they or a family member have needed blood or blood products. The blood donation rate in high-income countries is 33.1 donations per 1,000 people; 11.7 donations in middle-income countries and 4.6 donations in low-income countries . As a result, finding blood donor is becoming very difficult in almost every country.

There are some blood donor finder applications such as Blood app by Red Cross which allows the donor to book appointment with blood banks and also can find local blood drives and donation centers quickly and easily. However, there is no direct communication between the donor and that clinic in need of a specific blood type. As a result, this app is more beneficial for donors but not for clinics to find needed blood type directly and promptly. Blood Donor Finder application by Neologix allows users in need for blood to find nearest donors. Although this application helps finding donors, but the ease of communication with those donors is not prompt and it requires man power as the requester (patient or clinic) has to contact each donor individually. Also, there is no application that provides a proper communication channel to notify donors about the blood donation requirements. PLASMA DONOR application can resolve these issues by connecting patients promptly with a large pool of donors in the same region via an authorized clinic. When a patient needs a blood donation, the clinic (where the patient is admitted) can use the application to contact the blood donors in the vicinity or nearby city based on their location. The registered donors will get notification about the blood donation needed at a specific clinic where they can go and donate.

LITERATURE REVIEW

Rishab Chakrabarti , Prof. S. M. Chitalkar:

"Lifesaver E-Blood Donation App Using Cloud", 2020: Reduction in the errors of blood bank using most eligible donor method. Direct Communication Between donor and the person in need of blood During the Emergency situation. However, this paper has the drawback that the user-provided information is still unconfirmed.

A. Meiyappan, K. Loga Vignesh, R. Prasanna, T. Sakthivel- "D'WORLD: Blood Donation App Using Android", 2019: When the giver gives the blood, it will naturally evacuate the contributor detail for next three months. It additionally confirms with the Department of Health and Welfare to guarantee the benefactor medical case history. However, this has the drawback that in order to utilize this program, the user must have a device running the Android operating system and a live internet connection.

P. C. P. C. A. V. I. M. Yan - "Building a chatbot with serverless computing" IBM Watson research center, 2016: Author conducted a survey of existing serverless platform in this paper from source projects, industry, academia, use cases, and key characteristics and has described the challenges and the open problems associated with it. Authors work presented a hands-on experience of serverless technologies using different services from different cloud provides such as Amazon, Google, IBM, Microsoft Azure.

Ashlesha C.Adsul, V. K.Bhosale, R. M. Autee-

"Automated blood bank system using Raspberry PI", 2018: When there is urgent need for blood then If this model is adopted the caller is immediately connected to the donor. However, dealing with the phone users is a drawback.

FahimHalil, Ibrahim Cebe, Jawab Rasheed, Farzad Kiani,

mHealth – Blood donation application using android smartphone: mHealth is new horizons for health that offers healthcare services by utilizing the mobile devices and communication technologies. In health care services, blood donation is a complex process and consumes time to find some donor who has the compatibility of blood group with the patient. We developed android based blood donation application as mHealth solutions to establish a connection between the requester and donor at anytime and anywhere. The objective of this application is to provide the information about the requested blood and number of available donors around those localities. It assists the requester to broadcast the message.

Al-Ali - "Android Based Health Application in Cloud Computing for Blood Bank", 2018: Accessibility and availability are the criteria on which an application is designed for its success in the IT market. The drawback of this is that it necessitates precise and readily available patient records.

Sultan Turhan - "An Android Application for Volunteer Blood Donors", 2015: This application helps health care centers to provide the blood as quick as possible when their stocks are insufficient. The application sends periodically actual location information of available donors to main system and the blood requests to the donors. However, this has the drawback that, in the event that blood supplies are inadequate, the only source of blood supply will be the voluntary blood donations made by visitors to the health center.

Catassi, C. A., Petersen, E. L - "The Blood Inventory Control SystemHelping Blood Bank Management Through Computerized Inventory Control", Transfusion, Vol. 7, No. 60, 196: In this article, Catassi and Petersen described computerized blood bank inventory. The purpose is to control the distribution of blood bank and hospital. It is possible to monitor daily blood status.

Aishwarya, R Gowri – "Developing a Plasma donor application using Function-as-a service in AWS": A plasma is a liquid portion of the blood, over55% of human blood is plasma. Plasma is used to treat various infectious diseases and itis one of the oldest methods known as plasma therapy. Plasma therapy is a process where blood is donated by recovered patients in order to establish antibodies that fights the infection. In this project plasma donor application is being developed by using AWS services. The services used are AWS Lambda, API gateway, DynamoDB, AWS Elastic Compute Cloud with the help of these AWS services, it eliminates the need of configuring the servers and reduces the infrastructural costs associated

with it and helps to achieve serverless computing.

CONCLUSION

The efficient way of finding plasma donor for the infected people is implemented using the plasma donor website that is hosted on Aws platform. To ensure the smooth functioning of the website operations. I have hosted the website in aws platform to make sure the operations are running successfully Aws lambda function is used and to deploy the application AWS EC2 service is used.

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future (hemovigilance). Transfusion Medicine Reviews. 2009;23(3):205–220. [PubMed]

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