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Developing Plasma Donor Application Using Cloud Application

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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 IBM cloud 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..

KEYWORDS: COVID 19, IBM cloud services, human blood , plasma

I. INTRODUCTION

There are more software technologies including languages and framework are used to develop our plasma-donor web application known as **"PLASMA DONOR APPLICATION".** These technologies including HTML, CSS along with PYTHON and IBM CLOUD for database are used. The python is computer programming language often used to create websites and software, automate task and conduct the data analysis. Python is a general-purpose language, meaning it can be used to create a variety of different programs and isn't specialized for any specific problem.
Plasma is the liquid portion of blood. About 55% our blood is plasma, and the remaining 45% are red blood cells, white blood cells and platelets that are suspended in the plasma. Plasma is about 92% water. Plasma is commonly given to trauma, burn and shock patients, as well as people with severe liver disease or multiple clotting factor deficiencies. It helps boost the patient's blood volume, which can prevent shock, and helps with blood clotting.In a plasma-only donation, the liquid portion of the donor's blood is separated from the cells. Blood is drawn from one arm and sent through a high-tech machine that collects the plasma. The donor's red blood cells and platelets are then returned to the donor along with some saline. The process is safe and only takes a few minutes longer than donating whole blood. Many of them need plasma if we donate plasma to others it will be useful for others and us also.

II. OBJECTIVE

This system proposed here aims at connecting the donors & the patients by an online application. By using this application, the users can either raise a request for plasma donation or requirement. This system is used if anyone needs a Plasma Donor. This system comprises of Admin and User where both can request for a Plasma. In this system there is something called an active user, which means the user is an Active member of the App and has recovered from Covid 19, only such people are recommended here for Plasma Donation. Both parties can Accept or Reject the request

III. LITERATURE REVIEW

[1] In this paper, the author has carried out analysis based on the opportunities presented by server less computing. They emphasis that server less services are more affordable approach for many network services and it is more user friendly as server less approach will relieve the customers from the intricacies of deployment. These services will help to improve the new business opportunities.

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[2] Author conducted a survey of existing server less 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 hand son experience of server less technologies using different services from different cloud provides such as Amazon, Google, IBM, Microsoft Azure.
[3] In this paper three demonstrators for IBM Blue mix Open Whisk was presented. They exhibit even-based programming triggered by weather forecast data, speech utterances and Apple WatchOS2 application data. And also demonstrated a chat bot using IBM Blue mix Open Whisk that calls on the IBM Watson services which include dates, weather, alarm services, news and music tutor
[4] In this paper server less OS was designed. It comprises of components such as 1. desegregation model that leverages desegregation for abstraction but it will enable resources to move fluidly between servers for the performance. 2. The second key component is cloud orchestration layer which helps to manage fine-grained resource placement and allocation throughout the application lifetime with the help of global and local decision making 3. And the third component is an isolation capability which enforces data and resource isolation.
[5] In this paper an efficient resource management system for server less computing framework was proposed which aims to enhance resource with a focus on memory allocation among the containers and the design which was added on top of an open-source server less platform, open Lambda and it is based on allocation workloads and server less functions memory needs events are triggered.

Problem statement Definition:

This system aims at connecting the donors & the patients by an online application. By using this application, the users can either raise a request for plasma donation or requirement. Similar to blood donors there also exist plasma donors where there exists problems like in case of emergency needs the most important life saver necessity is plasma , Plasma Banks are the main providers of plasma who receives blood from various donors, monitors the plasma groups database of emergencies and makes them available to the hospital whenever needed. The major problem faced by the main plasma providers and the need is the availability of donors at the right time. We hereby took a step forward to build a system to create a network of people who can help each other in need. We propose an application where the plasma banks can timely update the plasma Stock availability and donor and register themselves to the donor and we find user plasma availability nearby him/her. The urgent time of a plasma requirement, users can quickly check for plasma banks, hospitals or donors as per requirement matching a particular or related and reach out to them through the App.

IV. PROPOSED SOLUTION

This proposed system aims at connecting the donors & the patients by an online application. By using this application, the users can either raise a request for plasma donation or requirements. The basic solution is to create a centralized system to keep a track on the upcoming as well as past Plasma Donation Events. The recommendation solution is as follows:

Application contains two roles:

- ADMIN:
- USER:
- If the user wants to donate or receive they have to register with their personal details.
- After successful registration of user.
- A successful registration email is send to the user. After successful registration user will be directed to home page. They will be asked to press whether they will be donor or receiver.
- If the user is donor then he/she will fill the donation interest form which includes their Name, blood group details, location, last time donated date , phone number, email id .After filling the donation form he/she will redirected to page in which he/she can download the e certificate.
- If the user is receiver then he/she can see the list of donors available and they can raise their request and contact donor directly.

Admin:

- Admin can login using their credentials.

- Admin can edit the request.
- Admin can delete the request. • Admin can add volunteers.

V. PROBLEM SOLUTION FIT

Uniqueness:-

A User Interface is simple for users to understand. We can use the application anywhere anytime. The user immediately need the plasma for their treatment but the plasma is not available in nearby hospitals, then user can use this application to raise request and directly contact the donor , request them to donate the plasma. Hospitals can also raise request donors for donation. Somebody wants to donate blood and plasma but they don't know the way to donate then they use this application which will simple to use and it will save lives of many people. Today many of them have mobile phones they can install this application and use it to save the lives of people.

Social Impact / Customer Satisfaction:-

We are living in a modern world and everything can be accessed online. Even though there are many application there is no proper application for plasma donation . Many of them wish to donate blood and plasma but they are unaware about donation and how they can donate. This application provides opportunity to those who want to donate plasma. Donation of plasma are happening in many places many of them come forward to donate but it is not available at right time for use. Sometimes there is a shortage of plasma of particular type. Additional facilities that we need is to access the patients information quickly before plasma transfusion. To solve this issue software applications are employed with Cloud computing and Internet of Things tool which enable features such as information retrieval and continuous data tracking with analytics. This application avoids circulating of wrong information. A single platform for maintaining genuine information and increase the trust of participants involved int his activity. It increases the number of donors.

VI. SCALABILIY OF THE SOLUTION

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

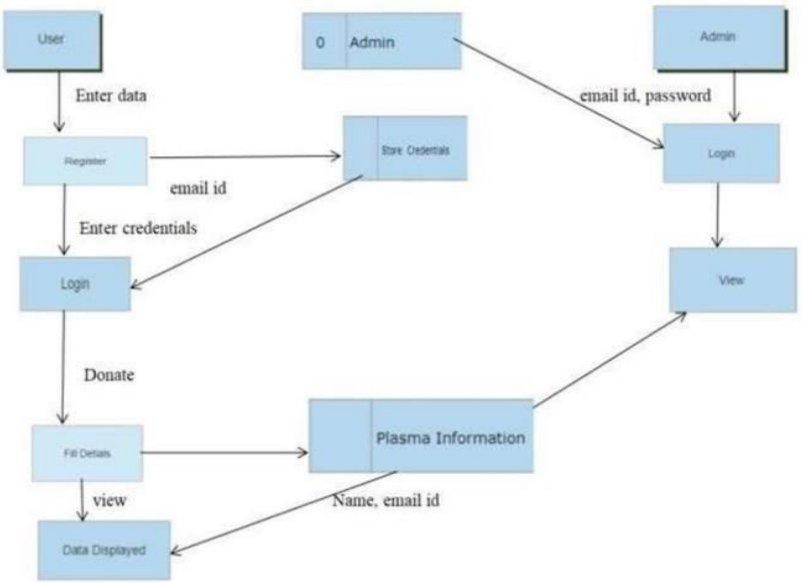

Fig :1 Data Flow Diagrams

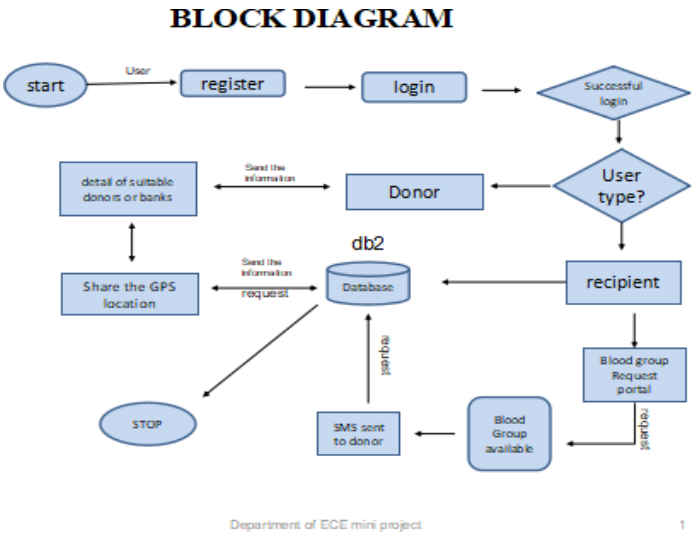

Fig 2: Architecture

Report Form

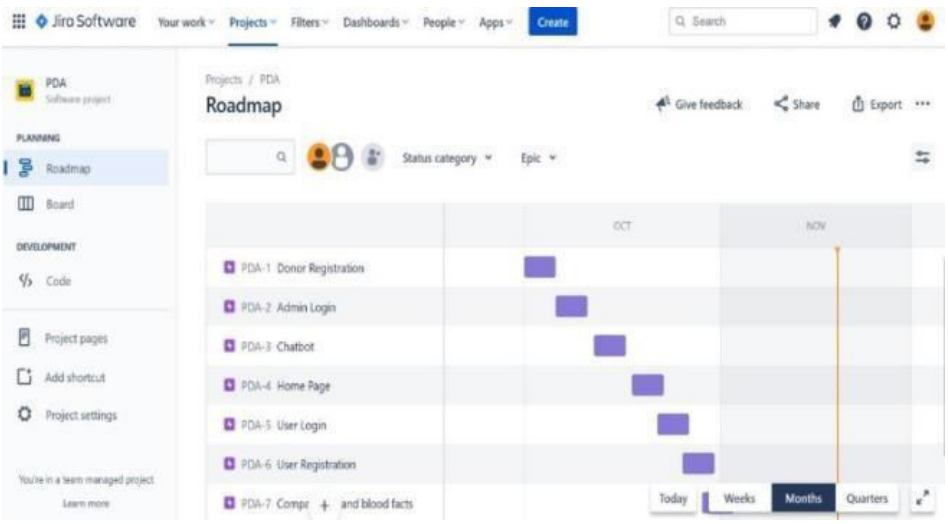

Fig 3: Report form

Testing:

Authentication Module:

Sign Up New user or donor can create an account to use in the blood/plasma donor application and create a password for account verification and create an identity. Sign in Donor Sign In to the account for viewing or editing location details and any other personal information. Account Verification If donor changes their password or if they forget the password then we have to verify their account using mail verification.

Service Provider Module

- Add New Donor User can be able to register to add donor details.
- List All Donor User can be able to view all Donor who all use our Plasma Donor Application.
- Edit Customer Plan Details User can be able to edit the existing Donor details as the Donor wish.

VII. RESULTS

Performance Metrices :

Formal code metrics - Such as Lines of Code (LOC), code complexity, Instruction Path Length, etc. In modern development environments, these are considered less useful.
Developer productivity metrics—Such as active days, assignment scope, efficiency and code churn. These metrics can help you understand how much time and work developers are investing in a software project.
Agile process metrics—Such as lead time, cycle time and velocity. They measure the progress of a dev team in producing working, shipping-quality software features.
Operational metrics—Such as Mean Time Between Failures (MTBF) and Mean Time to Recover (MTTR). This checks how software is running in production and how effective operations staff are at Maintaining it.
Test metrics—Such as code coverage, percent of automated tests, and defects in
production. This measures how comprehensively a system is tested, which should be correlated with software quality.
Customer satisfaction—Such as Net Promoter Score (NPS), Customer Effort Score (CES) and Customer Satisfaction Score (CSAT). The ultimate measurement of how customers experience the software and their interaction with the software vendor.

Advantages & disadvantages:

Advantages

- It is a user-friendly web application to help people who are affected by COVID19 by donating plasma from patients who have recovered and help them recover faster.
- The traditional methods of finding plasma, sometimes may not be available in this case the donor can use this website to donate plasma can simply upload their covid19 traced certificate and can donate the plasma to the blood bank, the blood bank can apply for the donor and once the donor has accepted the request, the blood bank can add the units they need and the hospital can also send the request to the blood bank that urgently needs the plasma for the patient and can take the plasma from the blood bank
- It is a useful website to find compatible plasma donors who can receive plasma request posts in their local area. Clinics can use this web application to maintain the plasma donation activity.
- It is reliable and safe application and keep track of total plasma donations

Disadvantages

- Absence and lack of integration between plasma centers
- The app user will not be able to insert or view details if the server goes down.

VIII. CONCLUSION

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

Future Enhancements

Upgrading the UI that is more user-friendly which will help many users to access the website and also ensures that many plasma donors can be added into the community.
Using elastic load balance, it helps to handle multiple requests at the same time which will maintain the uptime of the website with negligible downtime.

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