Literature Survey

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Team ID	PNT2022TMID37833
Project Name	PLASMA DONOR APPLICATION
Maximum Marks	

Abstract:

When the world is struck by deadly diseases, there is a high risk of mass death of populations across the world. These diseases give no enough time for the surgeons to find medicine and so there is a need to find a quick remedy to reduce mass death of people to such illness. One of the best methods, which is highly effective is the donation of blood plasma of cured individuals to sick persons. This can possibly cure the illness of the infected person. Plasma donation was one of the best methods which was adopted to cure people during the recent global pandemic, COVID-19. The recovery rates were high during these times when death was ultimately increasing as no medicine was found across the globe. Another issue was that no cured patient came forward to donate blood plasma, so the infected ones were highly worried as they can't find anyone to help them. So, we are in need of an application that stores donor details, tracks and informs them upon request from a patient.

Introduction:

Plasma donation, also known as apheresis, can help save lives. It is a relatively safe procedure, but there can be minor side effects. Plasma is the liquid part of the blood. It contains proteins and antibodies that are crucial for clotting and immunity. Around 55% of the blood is plasma. Plasma donation involves drawing blood, extracting the plasma, and returning what is left of the blood to the person, all through a single needle that remains in the arm throughout the process. Plasma is in high demand, as it helps treat cancer and other health issues. In May 2020, the Food and Drug Administration (FDA) asked people who had recovered from COVID- 19 to donate plasma. Experts believe that the plasma may contain antibodies for SARS-CoV- 2, the virus behind the disease. Receiving plasma with these antibodies could help a person fight off the infection. People with AB blood have a universal type of plasma, which means that a person with any blood type can receive this plasma safely. This is different from having the universal blood type, which is O negative. The American Red Cross urge people with AB

blood to donate plasma. A person can do this every 28 days, or up to 13 times a year. Research shows that plasma donation is safe, and the National Institutes of Health (NIH) emphasize that there is no risk of getting the wrong blood back. Also, the FDA and other health authorities regulate the equipment and procedure of plasma donation. However, a person who donates plasma may experience minor adverse effects, and as with any other procedure involving a puncture, certain risks are involved.

So, it is highly necessary and equally important to create an application to maintain the donors list and details to contact and track them during emergency situations. When talking about an application, it needs to be easy to handle and user friendly. Software like Python-Flask, and Docker are used in this application.

Realtime Software:

FLASK: There is a recent transformation into the development of multi-platform languages and frameworks. Flask is a small framework by most standards, small enough to be called a "microframework." It is small enough that once you become familiar with it, you will likely be able to read and understand all of its source code. But being small does not mean that it does less than other frameworks. Flask was designed as an extensible framework from the ground up; it provides a solid core with the basic services, while extensions provide the rest. Because you can pick and choose the extension packages that you want, you end up with a lean stack that has no bloat and does exactly what you need. Flask has two main dependencies. The routing, debugging, and Web Server Gateway Interface (WSGI) subsystems come from Werkzeug, while template support is provided by Jinja2. Werkzeug and Jinja2 are authored by the core developer of Flask. There is no native support in Flask for accessing databases, validating web forms, authenticating users, or other high-level tasks. These and many other key services most web applications need are available through extensions that integrate with the core packages. As a developer, you have the power to cherry-pick the extensions that work best for your project or even write your own if you feel inclined to. This is in contrast with a larger framework, where most choices have been made for you and are hard or sometimes impossible to change.

DOCKER & KUBERNETES: Docker is an open-source engine that automates the deployment of applications into containers. It was written by the team at Docker, Inc (formerly dot Cloud Inc, an early player in the Platform-as-a-Service (PAAS) market), and released by them under the

Apache 2.0 license. Docker adds an application deployment engine on top of a virtualized container execution environment. It is designed to provide a lightweight and fast environment in which to run your code as well as an efficient workflow to get that code from your laptop to your test environment and then into production. Docker is incredibly simple. Indeed, you can get started with Docker on a minimal host running nothing but a compatible Linux kernel and a Docker binary.

Kubernetes, or k8s for short, is an open-source container orchestrator. Originally developed by the engineers at Google, Kubernetes solves many problems involved with running a

microservice architecture in production. Kubernetes automatically takes care of scaling, self-healing, load-balancing, rolling updates, and other tasks that used to be done manually by DevOps engineers. Since Kubernetes was open-sourced and managed by Cloud Native Computing Foundation in 2014, the development community has embraced its benefits to orchestrate container-based systems

These Software help the application to gain a run-time structure and assist with all internal features of the app.

Cloud base & Registries:

"Cloud Computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction." Cloud makes hardware resources readily available and quick to configure, which shortens the time required for developers to show a working version of their products. Also, cloud allows the reuse of the same resources for multiple successive projects, which is more cost-efficient.

IBM Cloud is an open cloud computing platform that combines platform as a service (PaaS) with infrastructure as a service (IaaS), and includes a catalog of diverse cloud services, which can be used to rapidly build and deploy business applications or infrastructure. As a PaaS, it provides developers access to IBM software for integration, security, transactions, and other key functions, and software from IBM Business Partners. The application types can range from web, mobile, big data, and smart devices to the Internet of Things. As an IaaS, it allows developers fine-grained control over the infrastructure on which their apps are deployed.

 Developers can deploy high-performance, bare-metal servers, virtual servers, containers, and cloud storage, in IBM Cloud data center locations around the world.

IBM Cloud Object Storage, with its global presence and flexible resiliency options, supports exponential data growth for our cloud-native workloads with best-in-class cost optimization, robust data security, and data governance with ease of use. Built-in data lifecycle operations also make it easy to observe and manage our critical workloads. IBM COS offers a wide range of services, as well as integrations across the wider IBM portfolio, to help customers with hybrid cloud data migrations and modernization.

IBM Db2 is the trusted database used on here to provide a data-intensive app and services with low-latency, extreme availability, and elastic scalability. Easily deploy, develop and run on the database accessible to everyone, everywhere.

IBM Container Registry enables you to store and distribute Docker images in a managed, private registry. It stores and distributes container images in a fully managed private registry. Push private images to conveniently run them in the IBM Cloud Kubernetes Service and other runtime environments. Images are checked for security issues so it is easy to make informed decisions about the deployments. These Cloud facilities help to store the data readily available in the application.

Web Design:

A web app is basically a website that is specifically optimized for use on a smartphone. The site content can be anything from a standard small business brochure site to a mortgage calculator to a daily calorie tracker—the content is irrelevant. The defining characteristics of a web app are that the user interface (UI) is built with web standard technologies, it is available at a URL (public, private, or perhaps behind a login), and it is optimized for the characteristics of a mobile device. A web app is not installed on the phone, it is not available in the Android Market, and it is not written with Java.

When we are browsing the web, the pages you are viewing are just text documents sitting on someone else's computer. The text in a typical web page is wrapped in HTML tags, which tell our browser about the structure of the document. With this information, the browser can decide how to display the information in a way that makes sense.

The browsers render certain HTML elements with distinct styles (for example, headings are large and bold, paragraphs are followed by a blank line, and so forth). These styles are very basic and are primarily intended to help the reader understand the structure and meaning of the document. To go beyond this simple structure-based rendering, we use Cascading Style Sheets (CSS). CSS is a stylesheet language that you use to define the visual presentation of an HTML document. We can use CSS to define simple things like the text color, size, and style (bold, italic, etc.), or complex things like page layout, gradients, opacity, and much more.

JavaScript is a scripting language that we can add to an HTML page to make it more interactive and convenient for the user. For example, we can write some JavaScript that will inspect the values typed in a form to make sure they are valid. Or, we can have JavaScript show or hide elements of a page depending on where the user clicks. JavaScript can even contact the web server to execute database changes without refreshing the current web page. All these scripts and codes are helpful in designing the web view of the Plasma Donor Application.

Awareness for Plasma Donation:

At times of pandemic, people should come forward to donate their blood plasma voluntarily to arrest the spread of disease and provide the cure that they have experienced. Our app will feature awareness videos and articles and will provide rewards for first time donors and regular donors. All These Humanitarian deeds are to be carried on regularly to maintain social well hood and supportive society. There are many incidents to be pointed out citing plasma donation during the past in Covid-19 Pandemic.

One such incident where India's first Covid-19 plasma donor shares her story, urges other patients to do the same. Members of an Indian Islamic organization are volunteering to donate blood for plasma therapy after their congregation sparked dozens of Covid-19 clusters across the country.

All these articles are mentioned to encourage the donation of plasma in our application.

References:

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All rights reserved. Printed in the United States of America. Published by O'Reilly Media, Inc., 1005 Gravenstein Highway North, Sebastopol, CA 95472.

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6)Essentials of Application Development on IBM Cloud December 2017 Third Edition (December 2017) by Ahmed Azraq Hala A. Aziz Uzma Siddiqui.

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India Today Web Desk New Delhi, April 25, 2020

UPDATED: April 25, 2020 19:15 IST

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BBC Hindi, Delhi Published 28 April 2020.