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Organshare : Efficient System For End-To-End Organ Donation And Management

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Abstract: ***The Organ Donation Management System (ODMS) is a web-based platform designed to streamline the organ donation process for hospitals, clinics, and health centers. Developed using PHP, the system aims to improve donor registration, management, and communication by providing a user-friendly interface. Key features include user authentication, donor and hospital profile management, search functionality, and notifications. The system allows individuals to register as organ donors, with their applications processed and monitored by administrators. Four types of users (administrator, doctor, medical assistant, and staff) manage donor records, with the administrator having the authority to generate donation reports. Built using Structured System Analysis and Design (SSADM), the ODMS is a three-tier architecture comprising the client, business, and database layers. The goal is to make organ donation more accessible, efficient, and transparent, ultimately saving more lives through organ transplantation.***

I. INTRODUCTION

Organs are specialized structures made up of different tissues that work together to perform specific functions in the body. Examples include the heart, lungs, liver, kidneys, and brain. Each organ plays a unique role in maintaining health and supporting life. Organs vary in size and complexity, with some consisting of few cell types, while others contain multiple tissue layers. The study of organs and their functions is vital in biology and medicine, contributing to advances in our understanding of the human body.

- Kidneys - The most commonly transplanted organ, as people can live with just one functioning kidney.
- Liver - The liver is the largest internal organ in the body and can be transplanted in whole or in part.
- Lungs - Lungs are typically transplanted as a pair and can help people with severe lung diseases such as COPD or cystic fibrosis.
- Heart - A heart transplant is typically done for people with severe heart failure or other heart diseases.
- Pancreas - A pancreas transplant is typically done for people with type 1 diabetes or other diseases affecting the pancreas.
- Intestines - Intestinal transplants are rare and typically done for people with diseases affecting the small intestine.

In addition to these organs, tissues such as corneas, skin, bone, tendons, and heart valves can also be donated. The decision to donate organs and tissues is a personal one, and individuals
can choose which organs and tissues they would like to donate.

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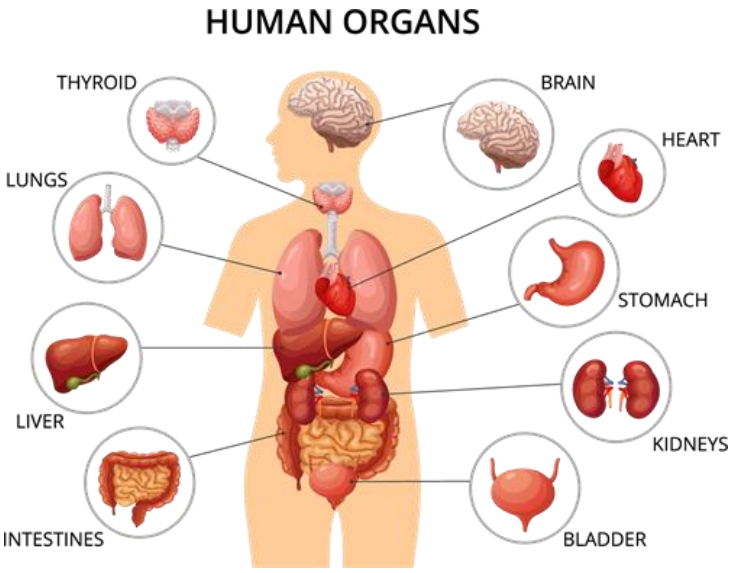

Organ Donation

Organ donation involves giving organs or tissues to someone in need due to illness or injury. It can occur after death (deceased donation) or while the donor is alive (living donation). Deceased donation happens after brain death, while living donation typically involves kidneys or part of the liver.

II SOFTWARE ANALYSIS

- PHP 5
- MySQL
- WAMP Server 2.0
- Macromedia Dreamviewer 8 IDE

PHP 8.1

The PHP Hypertext Preprocessor (PHP) is a programming language that allows web developers to create dynamic content that interacts with databases. PHP is basically used for developing web-based software applications. This tutorial helps you to build your base with PHP.

MySQL

MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database. MySQL is open-source and free software under the GNU license. It is supported by Oracle Company

WAMP Server 2.0

WAMP Server 2.0 is a local development environment for Windows that bundles Apache, MySQL, and PHP, enabling developers to build, test, and run dynamic websites on their local machine. It simplifies the process of setting up a server environment for PHP-based applications without the need for external hosting.

- Apache is the web server that handles HTTP requests.
- MySQL is the database management system used for storing application data.
- PHP is the server-side scripting language used to create dynamic web pages.

WAMP 2.0 was released around 2008, and while it's still functional, it's considered outdated. You might want to consider using more recent versions of WAMP or alternatives like XAMPP or MAMP, which offer enhanced compatibility, newer versions of the software, and more modern features.

MySQL NOTEBOOK

. A **MySQL notebook** is typically a term used to refer to an environment or tool where you can write and execute MySQL queries, manage databases, and interact with your MySQL server in a more organized and convenient way. These tools are

useful for developers, database administrators, and data analysts to perform tasks such as querying, debugging, and managing databases.

There are several tools and environments that can function as "notebooks" for MySQL, providing an interactive way to work with MySQL databases

III EXISTING SYSTEM

The existing system for organ donation and transplantation involves a complex process with various stakeholders, regulations, and logistical challenges. It is usually coordinated by government or non-profit organizations. Potential donors can register through national donor registries or driver's license programs. Upon a donor's death, their organs are evaluated for suitability, and a compatible recipient is identified based on factors like blood type and medical history. Once a match is found, the transplant surgery is scheduled.

However, the system faces challenges such as organ shortages, long wait times, and transportation issues. Efforts to improve the process include using technology for better coordination and efficiency, such as:

Manual Systems: Traditional paper-based methods to track and coordinate organ donations.

Electronic Medical Records (EMRs): Secure digital records to protect patient information.

Online Registration: Protected platforms for donor sign-ups, with advanced security features.

Secure Communication: Encrypted platforms for safe information exchange during the transplant process.

Privacy Compliance: Adherence to regulations like HIPAA (U.S.) and GDPR (EU) to safeguard personal data.

Organ Sharing Networks: Expanded networks to distribute organs more efficiently.

Living Donor Programs: Allowing individuals to donate organs while alive to reduce shortages.

PROPOSED SYSTEM

The Proposed System is a web-based Application which uses FIFO approach to select an organ donor for each genuine patient requiring a transplant and if there is an emergency case then the priority is given to that patient. Blockchain technology could provide a useful tool to resolve these issues, providing an efficient, secure, distributed, trackable, and immutable framework to promote organ allocation and donation.

The **OrganShare** system would have the following key features:

1. **Secure Medical Records**: All donor and recipient records would be stored on a secure blockchain, ensuring data integrity and privacy.
2. **Decentralized Organ Registry**: A decentralized registry would allow authorized healthcare providers to quickly identify available organs for transplantation.
3. **Smart Contracts**: Automated smart contracts would streamline donor registration, organ allocation, and transportation, reducing errors and delays.
4. **Real-time Tracking**: The system would offer real-time tracking of organ donations and transplants, ensuring up-to-date information for healthcare providers.
5. **Privacy and Security**: Advanced encryption, access control, and blockchain technology would ensure the security and privacy of sensitive data.

IV. MODULES

- **ADMIN**
- **USER**
- **DOCTOR**

Admin

- Add Doctor
- View Doctor
- Manage Organ Need Request
- Assign Doctor for organ request
- Manage Organ Donation
- Assign Doctor for Organ Collection
- Manage hospital Location
- View User Details

User

- Add Organ Donation
    - Get SMS OTP
- View My Donation
- Add Organ Request
- View My Organ Request Status
- Assign Doctor for organ request
- My Profile

Doctor

- New Organ Request
- Update Request Status
    - Pending
    - Available
    - Unavailable
- Organ Collection
    - Verify OTP

Admin Features

1. **Add Doctor**: Add doctors for hospitals and create login credentials for them.
2. **View Doctor**: Manage and update doctor details as needed.
3. **Manage Organ Need Requests**: Handle and approve organ requests from hospitals and users.
4. **Assign Doctor for Organ Requests**: Assign doctors to users requesting or donating organs.
5. **Manage Organ Donation**: Oversee organ arrivals and manage their allocation to hospitals and users.
6. **Assign Doctor for Organ Collection**: Assign doctors for collecting organs and ensuring proper storage.
7. **Manage Hospital Locations**: Handle hospital registration, unique IDs, and location management.
8. **View User Details**: Access and manage user and doctor information.
9.

User Features

1. **Add Organ Details**: Register as a donor, provide organ details, and verify via OTP.
2. **View My Donation**: Review and update donation details.
3. **Add Organ Request**: Request needed organs through a hospital.
4. **View Organ Request Status**: Track the approval status of organ requests.
5. **Assign Doctor for Organ Request**: Connect with the assigned doctor for requests.
6. **My Profile**: Manage personal and hospital-related details.

ARCHITECTURE DIAGRAM

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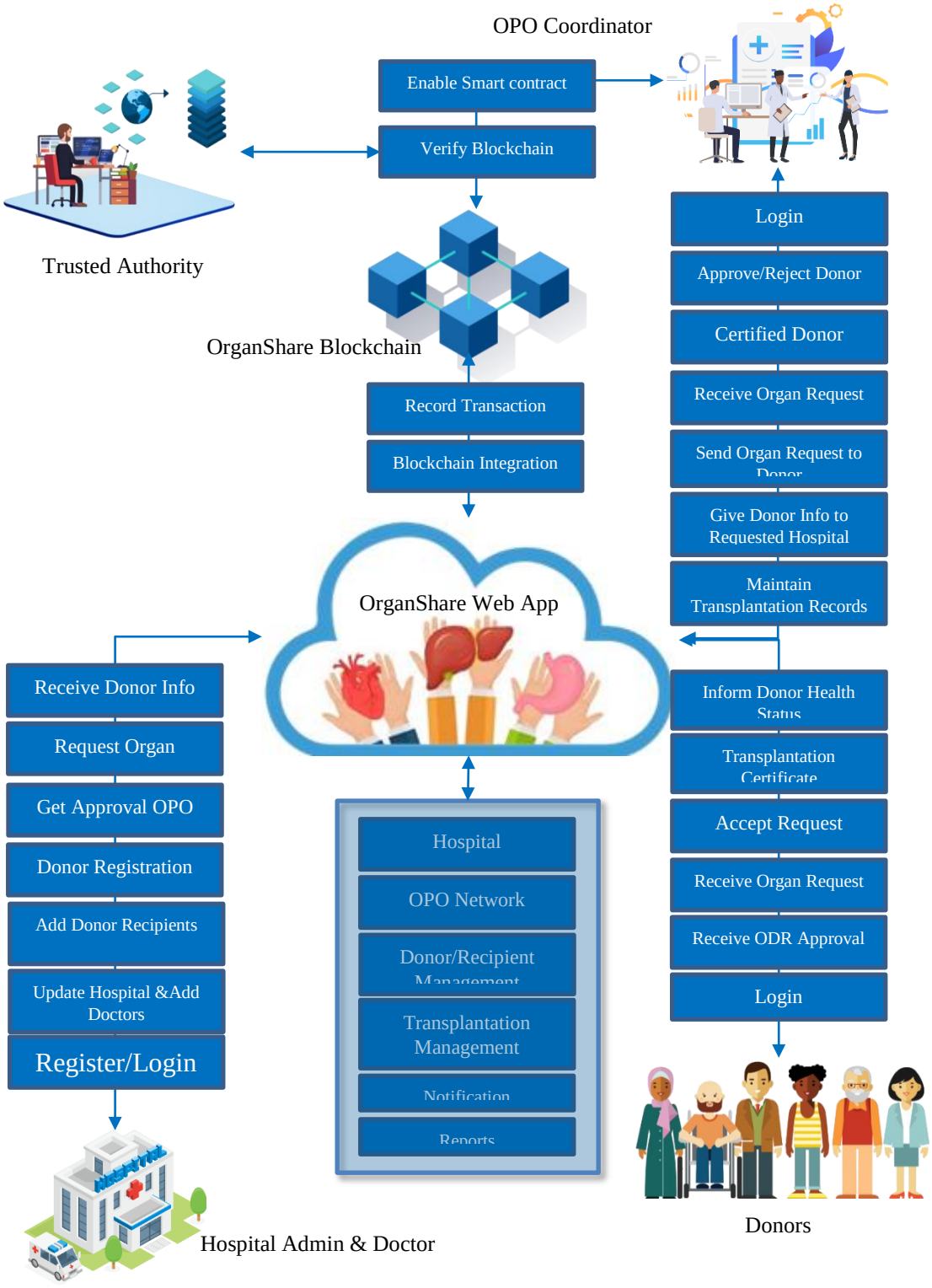

V. RESULT

1. **User Registration**
   - **Input**: Valid registration info (name, email, password, contact).

- **Expected**: Account created, user redirected to login page.

2. **Organ Donation Request**
   - **Input**: Valid donation request with organ info and medical history.
   - **Expected**: Request stored in blockchain, donor notified.
3. **Organ Allocation**
   - **Input**: Valid recipient request with medical history, compatibility, and priority.
   - **Expected**: Organ matched with suitable recipient, recipient notified.
4. **Reporting**
   - **Input**: Admin generates a report on organ data.
   - **Expected**: Accurate report generated, available for viewing/downloading.
5. **Security**
   - **Input**: Unauthorized access attempt (fake credentials).
   - **Expected**: Access blocked, incident logged, sensitive data protected.

VI. CONCLUSION

OrganShare is a secure, efficient blockchain-based system for managing organ donation and allocation. It enables donors and recipients to register, submit requests, and receive notifications while ensuring data accuracy and transparency through blockchain and smart contracts. Built with Python, MySQL, and JSON, the scalable platform efficiently handles high volumes of requests. Testing confirms the system's functionality, security, and efficiency, with only minor defects identified for future improvement. OrganShare has the potential to transform organ donation by making the process fairer, more transparent, and impactful in saving lives.

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