Organ Donation Management System

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Abstract: *Organ donation is a critical and sensitive aspect of healthcare. The management of donor and recipient information, as well as the matching process, is crucial for the success of organ transplantation. This paper presents the design and implementation of an Organ Donation Management System using modern web technologies to streamline and improve the efficiency of the process.*

Index Terms: *Organ Donation, Management System, Web Application, Healthcare, Node.js, React.js*

I. INTRODUTION

Organ donation saves thousands of lives each year. However, the process involves complex logistics, including the management of donor and recipient data and the matching process. Current systems often lack the efficiency and transparency required to handle these challenges effectively. This project proposes a comprehensive Organ Donation Management System leveraging React.js for the client-side and Node.js with Express.js for the server-side.

II. SYSTEM ARCHITECTURE

2.1 Overview

The system consists of two main components: the client-side and the server-side. The client-side is built using React.js, providing a dynamic and responsive user interface. The server-side is developed using Node.js with Express.js, handling the backend logic and database interactions.

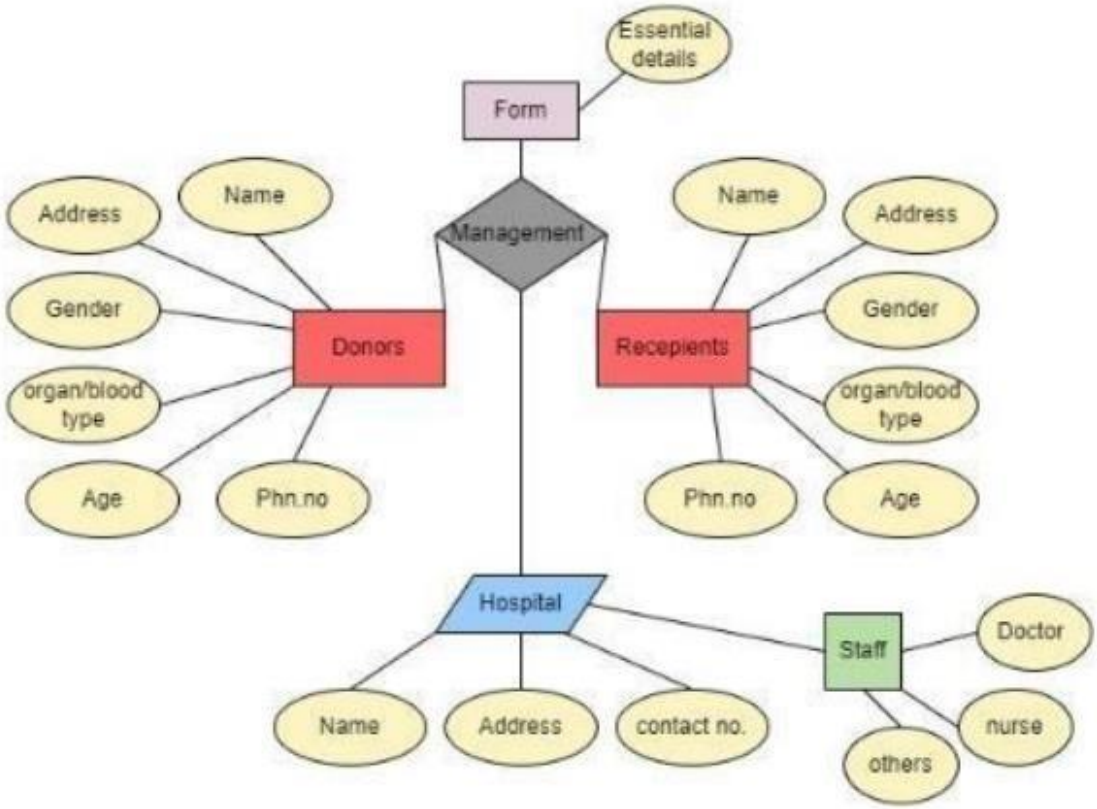

Fig. 1 E-R diagram of organ donation management

2.2 Client-Side

The client-side application interacts with users, offering interfaces for donor and recipient registration and displaying matching results. It communicates with the server-side via RESTful APIs.

Key Files:

- server.js: Entry point for the server application.
- routes/: Defines API endpoints.
- models/: Contains database schemas.
- controller/: Business logic and data processing.
- middleware/: Middleware functions for request processing.

III. METHODOLOGY

3.1 Requirement Analysis

A detailed analysis of user requirements was conducted, focusing on data security, user authentication, and matching algorithms.

3.2 Design

The system is designed using a modular approach, ensuring scalability and maintainability. React.js is utilized for its component-based architecture, and Node.js is chosen for its event-driven, non-blocking I/O operations.

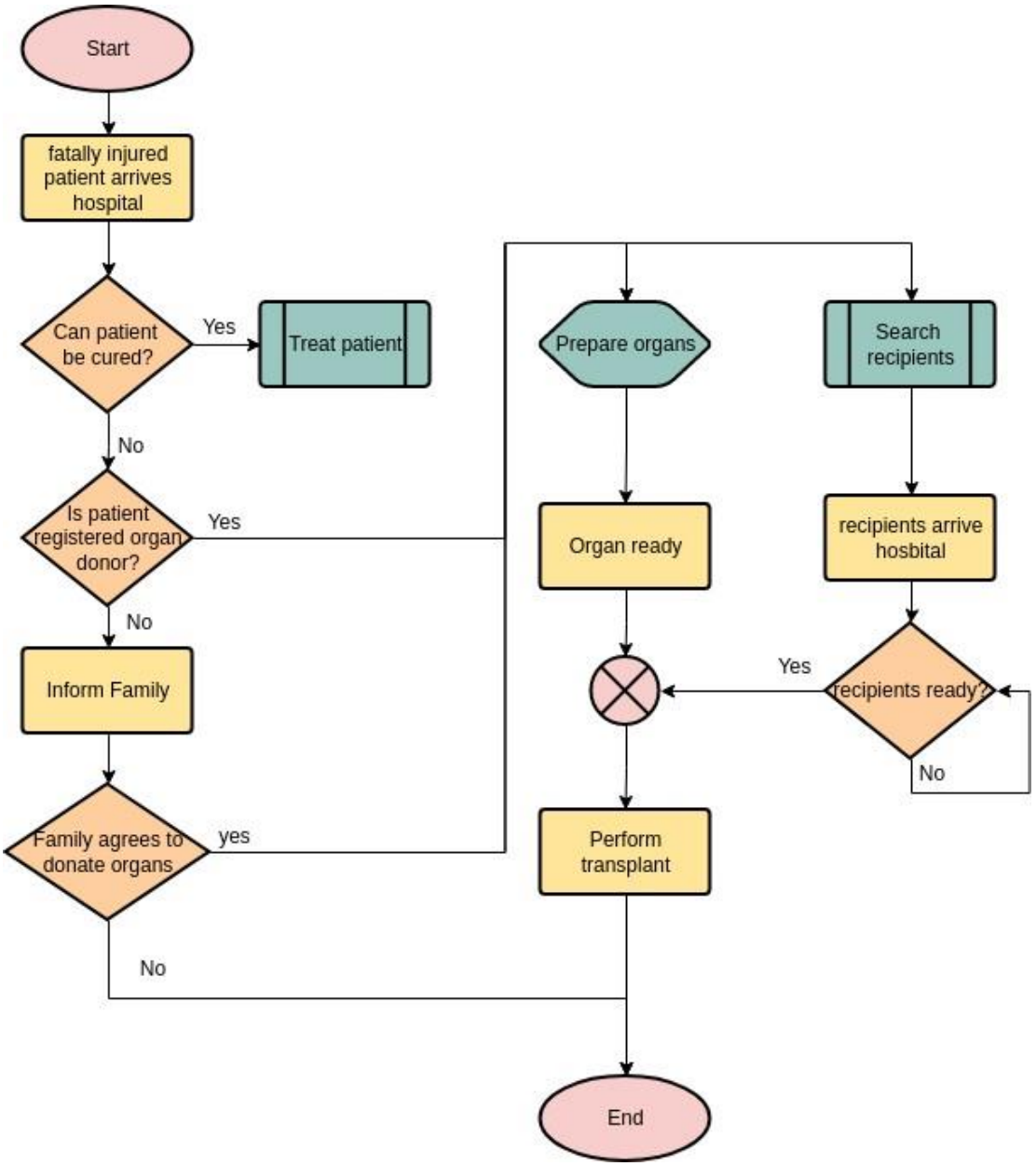

Fig. 2 Flow daigram

3.3 Implementation

3.3.1 Client-Side Implementation

React components are developed to handle user interfaces, including forms for donor and recipient registration and dashboards for displaying matching results.

3.3.2 Server-Side Implementation

Express.js is used to create RESTful APIs, and Mongoose is used for MongoDB interactions, ensuring efficient data management.

IV RESULT

The system effectively manages donor and recipient data, providing a seamless user interface. The matching algorithm pairs donors with recipients based on various criteria, demonstrating the system's effectiveness in a simulated environment.

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