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PROJECT AND TEAM INFORMATION

Project Title

(Try to choose a catchy title. Max 20 words).

RamSetu: Bridging Healthcare

Student / Team Information

Team Name: Team # (Mentor needs to assign)	Techzy
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PROPOSAL DESCRIPTION (15 pts)

Motivation

(Describe the problem you want to solve and why it is important. Max 300 words).

The project is called **RamSetu** because it represents creating a crucial bridge between lives that need and lives that can give. Just as the ancient Ram Setu bridged two far-off lands, this system seeks to bridge patients in need of organ transplants with donors who are willing to give. It is a bridge of hope that brings lives closer and gives a second chance at life.

Bridge of Life: Patients die not because organs are not available, but because of the delay in finding the right match. This project solves the issue by acting as a digital bridge between organ donors and patients, ensuring the right donor is matched with the right patient at the right time.

Efficient Emergency Support: In emergency situations, even minor delays can prove fatal. The system facilitates rapid retrieval and precise matching of donor-patient information through a structured database. This reduces waiting times, minimizes errors, and facilitates quicker medical decisions.

Through RamSetu, we seek to integrate trust, speed, and security to address a real-world healthcare problem. The project illustrates how database management systems can be used effectively to save lives and enhance organ donation networks.

State of the Art / Current solution

(Describe how the problem is solved today (if it is). Max 200 words).

Currently, organ donation and transplantation are regulated by government programs, NGOs, and specialized registries. In India, donor registration and awareness are facilitated by platforms such as **JEEVASARTHAKATHE** (Karnataka) and the **MOHAN** Foundation, but they primarily function regionally and do not have real-time digital matching in emergency situations.

Internationally, systems such as **UNOS** (USA) and **OrganMatch** (Australia) provide centralized registries with sophisticated algorithms to match organs and manage waiting lists. Certain AI-based and blockchain-based solutions are also being developed to enhance matching accuracy, transparency, and security.

Even with these developments, current solutions are typically fragmented, organ-specific, or not optimized for rapid emergency response. There remains a strong need for a single, user-friendly, and secure digital bridge that can instantly connect verified donors and patients, minimize delays, and save lives in emergency situations.

Project Goals and Milestones

(Describe the project general goals. Include initial milestones as well any other milestones. Max 300 words).

The main goal of RamSetu is to develop a secure web application that serves as a bridge between organ donors and patients in need, with proper monitoring and validation by administrators. The project will focus on a robust database design that stores, organizes, and retrieves sensitive medical data efficiently while ensuring transparency and reliability in emergency situations.

General Goals:

Donor Side: Donors can register through secure login and email verification. All necessary details such as medical history, required pre-donation tests, and address will be collected. While the system records these details, final verification of medical reports and addresses will be done manually by the admin.

Patient Side: Patients will register their organ requirements along with supporting certificates from doctors. These documents will be uploaded into the system and verified manually by the admin to confirm authenticity before patients are matched with donors.

Admin Side: Administrators will have the authority to validate donor and patient records, approve registrations, and monitor the overall process. They will ensure that medical, address, and doctor certificates are checked before approval.

Milestones:

Milestone 1: Database schema design for donor, patient, and admin entities with strong relational integrity.

Milestone 2: Secure authentication system with login, logout, and email verification.

Milestone 3: Donor module completion with medical details and address entry.

Milestone 4: Patient module completion with doctor certificate uploads and need specifications.

Milestone 5: Admin dashboard for manual verification of donor/patient details and approval.

Milestone 6: Matching system using the database to connect verified patients with suitable donors.

Project Approach

(Describe how you plan to articulate and design a solution. Including platforms and technologies that you will use. Max 300 words).

The approach for *RamSetu* is to develop a secure and reliable web application using **HTML, CSS, and JavaScript** for the frontend, **Python (Flask/Django)** for the backend, and **MySQL** as the database. The application will be divided into three modules: donor, patient, and admin.

On the **frontend**, HTML, CSS, and JavaScript will be used to create a clean, responsive interface for donors and patients. This will include registration, login/logout, and form submissions for medical details, test reports, and certificates.

On the **backend**, Python with Flask (or Django) will handle server-side logic, authentication, and secure data transfer. Email verification will be integrated for secure registration. The backend will also manage file uploads (doctor certificates, test reports) and link them to respective records in the database.

For the **database**, MySQL will be used to design relational schemas for donors, patients, admins, and verification records. Proper relationships, constraints, and queries will ensure quick retrieval, reliable verification, and accurate donor-patient matching.

Admins will manually verify documents (doctor certificates, addresses, and tests) before approving donor and patient accounts. Once verified, the database will support efficient matching during emergencies. This approach highlights both **database management principles** and a **practical life-saving healthcare solution**.

Project Outcome / Deliverables

(Describe what are the outcomes / deliverables of the project. Max 200 words).

The RamSetu project will deliver a secure web application that connects verified organ donors with patients in need, ensuring timely support during emergencies.

Key Deliverables:

User Modules: Donors can register with medical details, test reports, and address proof; patients can register with verified doctor certificates. Both include secure login/logout and email verification.

Admin Module: Admins manually verify documents, approve/reject accounts, and manage donor-patient matching.

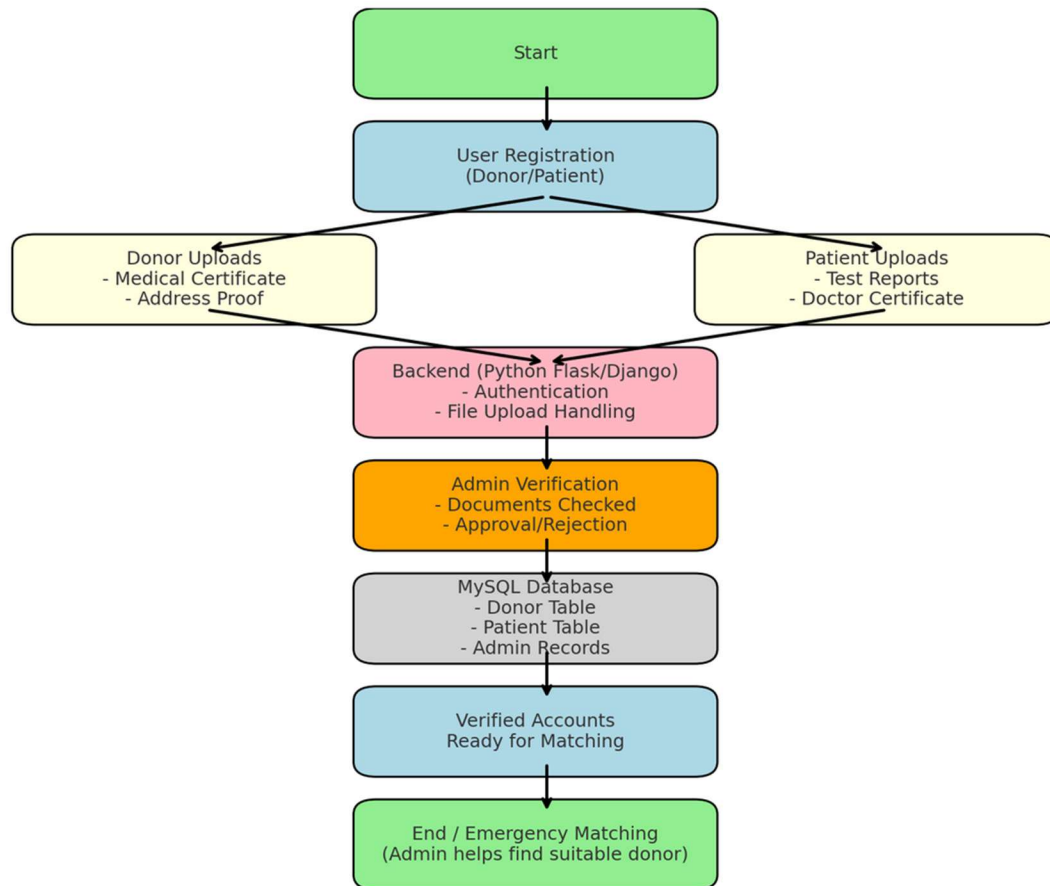
Database (MySQL): Structured schema to store donor, patient, and admin details with efficient queries for quick retrieval.

System Features: Reliable data, reduced delays in emergencies, and scalable use across hospitals.

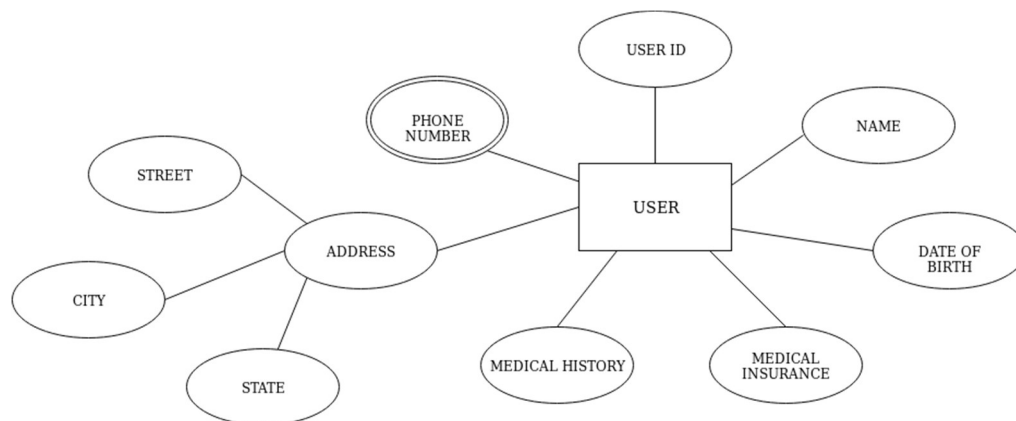
The outcome is a DBMS-based healthcare bridge that improves trust, efficiency, and life-saving coordination.

System Architecture (High Level Diagram)

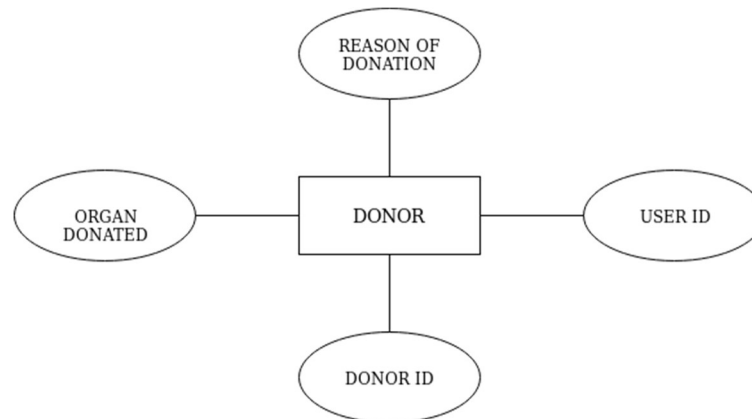
(Provide an overview of the system, identifying its main components and interfaces in the form of a diagram using a tool of your choice).



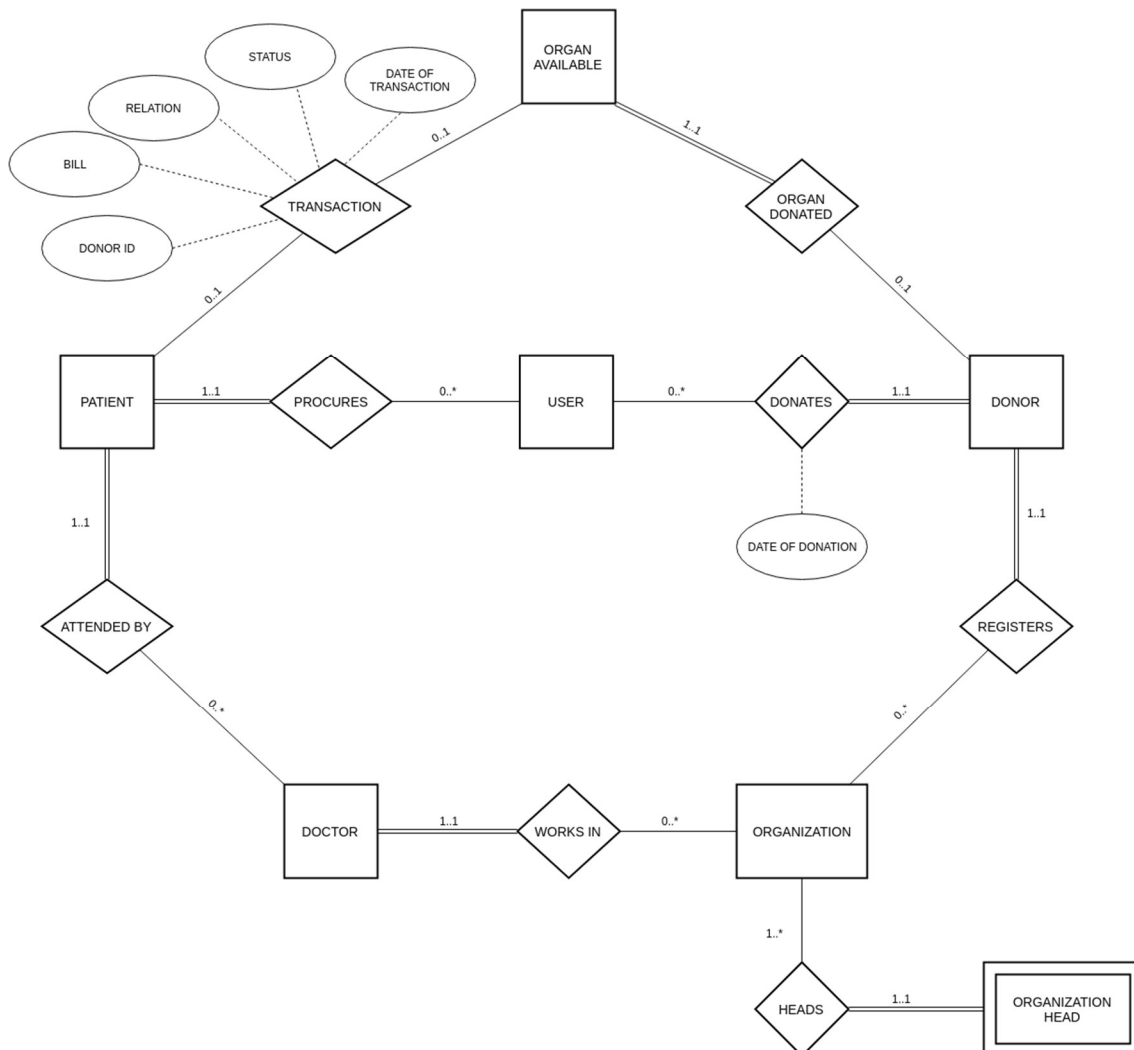
RamSetu Architecture



Patient's ER diagram



Donar's ER diagram



RamSetu's ER diagram

Assumptions

(Describe the assumptions (if any) you are making to solve the problem. Max 100 words)

Donors and patients provide accurate personal, medical, and contact details during registration.

Uploaded documents (test reports, doctor certificates, address proof) are genuine at the time of submission.

Final verification of documents will be done manually by the admin.

Users have stable internet access to use the platform.

Hospitals and doctors cooperate in validating patient needs.

The database remains secure and can handle multiple concurrent requests.

References

(Provide a list of resources or references you utilized for the completion of this deliverable. You may provide links).

- ➔ L. Lin and X. Lizhen, "The Research of Key Technology in Flash-Based DBMS," *2009 Sixth Web Information Systems and Applications Conference*, Xuzhou, China, 2009, pp. 15-18, doi: 10.1109/WISA.2009.30.
- ➔ M. Kandekar and R. Ingle, "Performance Analysis of Local Database Management Systems for Mobile Applications," *2013 International Conference on Cloud & Ubiquitous Computing & Emerging Technologies*, Pune, India, 2013, pp. 236-239, doi: 10.1109/CUBE.2013.51.
- ➔ C. Győrödi, R. Győrödi, G. Pecherle and A. Olah, "A comparative study: MongoDB vs. MySQL," *2015 13th International Conference on Engineering of Modern Electric Systems (EMES)*, Oradea, Romania, 2015, pp. 1-6, doi: 10.1109/EMES.2015.7158433.
- ➔ S. Palanisamy and P. SuvithaVani, "A survey on RDBMS and NoSQL Databases MySQL vs MongoDB," *2020 International Conference on Computer Communication and Informatics (ICCCI)*, Coimbatore, India, 2020, pp. 1-7, doi: 10.1109/ICCCI48352.2020.9104047.