

DBMS PROJECT

Organ Donar-Recipient System

By:

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About:

The Organ Donation and Transplant Management System is a comprehensive database solution designed to efficiently manage and coordinate the intricate processes involved in organ donation, storage, transportation, compatibility testing, and transplantation. This system is intended to support hospitals, surgeons, medical staff, and organ donation coordinators by providing a centralized, structured digital platform for handling sensitive and life-saving data.

Traditionally, organ donation and transplant coordination involves multiple stakeholders working across various institutions, often relying on disparate record-keeping methods. To eliminate inefficiencies and reduce the risk of errors, this system digitally models the relationships between donors, recipients, hospitals, medical procedures, and transplant events, ensuring reliable and timely decision-making.

The system enables:

- Tracking of organ availability, storage duration, and transport status.
- Recording donor and recipient health information, consents, and medical tests.
- Conducting compatibility checks and monitoring transplant outcomes.
- Managing hospital staff, surgeons, and inter-hospital collaboration.

The main objective is to streamline the organ transplant process by connecting and organizing all key data entities, ensuring compliance with medical protocols, and improving the chances of successful transplants through accurate and timely data flow.

ENTITIES USED:

- **Hospital:** Represents a medical institution responsible for storing organs, registering donors and recipients, and hosting surgeries.
- **Donor:** Refers to an individual who donates one or more organs. Each donor is linked to a hospital and categorized as a living or deceased donor.

- **DonorConsent:** Captures consent details from a donor or their family/legal representative regarding organ donation, including the date and type of consent.
- **Recipient:** Represents a person registered to receive an organ. Recipients are linked to a hospital and categorized based on urgency level.
- **RecipientMedicalHistory:** Stores medical conditions and diagnosis records associated with a recipient, along with notes and diagnosis dates.
- **Organ:** Represents each organ unit available for transplant, along with its type, status, associated donor, and the hospital where it is stored.
- **OrganCompatibilityTest:** Records the compatibility testing results between a recipient and a donor organ, including test outcomes and notes.
- **OrganTransport:** Captures the movement of organs between hospitals, including transport date, mode, and status.
- **Transplant:** Represents the surgical transplant event involving an organ, recipient, and donor, along with outcome and performing surgeon information.
- **Surgeon:** Refers to a medical professional performing transplants. Surgeons are linked to a hospital and described by specialization and experience.
- **MedicalStaff:** Represents support staff like nurses, technicians, etc., associated with a hospital.
- **TestRecords:** Captures diagnostic or medical tests performed on either donors or recipients, including test names, dates, and results.

RELATIONSHIPS:

1. **Hospital ↔ Donor**
 - One Hospital can register multiple Donors. (One-to-Many)
 - One Donor is associated with exactly one Hospital. (Many-to-One)
2. **Hospital ↔ Recipient**
 - One Hospital can register multiple Recipients. (One-to-Many)

- One Recipient is registered under one Hospital. (Many-to-One)
3. **Donor ↔ DonorConsent**
 - One Donor can have multiple DonorConsent entries over time. (One-to-Many)
 - One DonorConsent entry belongs to one Donor. (Many-to-One)
 4. **Recipient ↔ RecipientMedicalHistory**
 - One Recipient can have multiple medical conditions recorded. (One-to-Many)
 - One RecipientMedicalHistory entry belongs to one Recipient. (Many-to-One)
 5. **Donor ↔ Organ**
 - One Donor can donate multiple Organs. (One-to-Many)
 - One Organ comes from one Donor. (Many-to-One)
 6. **Organ ↔ OrganCompatibilityTest**
 - One Organ can be tested for compatibility with multiple Recipients. (One-to-Many)
 - One CompatibilityTest is linked to one Organ. (Many-to-One)
 7. **Recipient ↔ OrganCompatibilityTest**
 - One Recipient can be tested against multiple Organs. (One-to-Many)
 - One CompatibilityTest is conducted for one Recipient. (Many-to-One)
 8. **Organ ↔ OrganTransport**
 - One Organ can have multiple transport records (e.g., during transfers). (One-to-Many)
 - One Transport record is associated with one Organ. (Many-to-One)
 9. **Organ ↔ Transplant**
 - One Organ is used in at most one Transplant. (One-to-One or Zero-to-One)
 - One Transplant involves one Organ. (One-to-One)
 10. **Surgeon ↔ Transplant**
 - One Surgeon can perform multiple Transplants. (One-to-Many)
 - One Transplant is performed by one Surgeon. (Many-to-One)