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Plasma Bank Management System

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MINI WORLD DESCRIPTION

We have chosen PLASMA BANK MANAGEMENT for our mini-world. This will include information about plasma donors, blood type and receivers. We also have staff members and inventory as part of the mini-world.

GOALS

The project aims to store and maintain information and data related to plasma donors, blood types and ways to help them manage in an organised way.

The project aims to simplify the process of plasma donation in the times of pandemic and to ensure easy access to patients who are in need while maintaining transparency in the system.

USERS & USES

The users of the database can be the staff of government and private hospitals. This can also be used by government agencies to ensure effective and corruption free distribution of blood plasma.

Staff of hospitals can use the database for organised management and to see availability of blood plasma of specific type. Donors can also use this database to keep account of donations they have made.

DATABASE REQUIREMENTS

Entity types and Attributes

- **Donor**
    1. Donor ID [Key Attribute]
    2. Name [Composite Attribute]

3. Plasma blood type
4. DOB
5. Age [Derived Attribute (from DOB)]
6. Sex
7. Previous Donation Date [Multi-valued Attribute]
8. Phone Number
9. Address [Composite Attribute]

- **Plasma**
    1. Plasma Bag number [Key Attribute]
    2. Blood Type
    3. Blood Amount
- **Receiver**
    1. Receiver ID [Key Attribute]
    2. Name [Composite Attribute]
    3. Plasma blood type
    4. Plasma blood quantity required
    5. DOB
    6. Age [Derived Attribute (from DOB)]
    7. Sex
    8. Date of receipt
    9. Address [Composite Attribute]
- **Plasma Inventory**
    1. Description [Key Attribute]
    2. Orders
    3. Quantity
    4. Blood type
- **Staff**
    1. Employ ID [Key Attribute]
    2. Name [Composite Attribute]
    3. Address [Composite Attribute]
    4. Phone number
    5. Salary

Weak Entities

- **Companion**- comes along with the donor but is not part of the donor or receiver network. Attributes include related_donors.
- **Payment Transaction**- stores the data about payment received from plasma recipients. Attributes include transaction_id, payment_time, payment_amount and bank_details.

Relationships

- Plasma donor **DONATES** plasma [1-n type]
- Plasma donor **REGISTERS** with staff [m-n type]
- Staff **MANAGES** plasma inventory [m-n type]
- Receiver **INTERACTS** with staff [m-n type]
- Receiver **RECEIVES** plasma [1-n type]
- Staff **MANAGES** to **STORE** plasma **DONATED** by donors in plasma inventory which is later **RECEIVED** by receiver

Subclass

A subclass of receivers is-

- **Regular donors** : The donors that donate blood to the bank in fixed intervals of time.
- **Non regular donors** : The donors that are either one time donors or don't donate frequently.

FUNCTIONAL REQUIREMENTS

Modification

- **Insertion Functions**
    1. Add Donor- adds a new donor who donates for first time
    2. Add Receiver- stores new receivers
    3. Add Plasma- stores information in inventory about new donation
- **Update Functions**
    1. Change plasma cost- modify and update as per needs and requirements
    2. Modify and update attribute values of receiver or donor
    3. Update the time of last donation by donor id new donations are made
- **Delete Functions**
    1. Delete the data of any staff that no longer works at the blood bank

Retrieval

- **Selection** => **SELECT** all data tuples of people who need plasma of a specific blood group
- **Projection** => Blood groups with total number of donors >= 20
- **Aggregate** => Total **SUM** of money made by the bank
- **Search** => **SEARCH** by names of donors and receivers

Analysis

- Total plasma blood type donated by donors to see what amount of different blood types has been taken. This will help in analysing which blood types have the most abundance.
- Total plasma donated by different genders to analyse if there are more male donors or more female donors.