# CS 5200 Blood Donation System Requirement Analysis Prototype

## *Functional Dependency and Corresponding Explanation*

1. `Admin`: unique volunteerID, username and password

   I would say volunteerID could be an auto-increment surrogate key, and the username must be unique.

   $\underline{volunteerID} \rightarrow (username, password)$.

   ```
   CREATE TABLE ADMIN (
       volunteerID INTEGER AUTO_INCREMENT PRIMARY
   KEY,
       username VarChar(25),
       psswrd VarChar(30)
   );
   ```

2. `Blood_Group`: unique bloodGroupID, blood type

   $\underline{bloodGroupID} \rightarrow (bloodType)$;

```
CREATE TABLE BLOOD_GROUP (
    bloodGroupID INTEGER AUTO_INCREMENT PRIMARY
KEY,
    bloodType VarChar(20)
);
```

3. `Donor`: unique donorID, name, address, phone, gender, age, and other details like email, blood type, medical history

   $\underline{donorID} \rightarrow (name, address, phone, email, gender, age, bloodtype, medicalhistory)$ ;

```
CREATE TABLE DONOR (
    donorID INTEGER AUTO_INCREMENT PRIMARY KEY,
    name VarChar(25),
    gender VarChar(15),
    age INTEGER,
    address VarChar(46), # USPS
    phone VarChar(30),
    email VarChar(31), # AI says 31 chars meet 95%
requirement
    bloodType VarChar(20),
    medicalHistory VarChar(150),
    FOREIGN KEY (bloodType) REFERENCES
(BLOOD_GROUP)
);
```

4. `Blood_Group_Receiver`: weak entity, patientID refers to `PATIENT` table, BloodType, received.

   $\underline{patientID} \rightarrow (bloodType, received)$;

```
CREATE TABLE DONOR (
    patientID INTEGER PRIMARY KEY,
    bloodType VarChar(20),
    received INTEGER DEFAULT 0,
    FOREIGN KEY (patientID) REFERENCES (PATIENT),
    FOREIGN KEY (bloodType) REFERENCES
(BLOOD_GROUP)
);
```

5. `Blood_Bag`: unique bagID, a dateOfIssue (the date blood had been donated) and a dateOfUse

   $\underline{bagID} \rightarrow (dateOfIssue, dateOfUse, bloodType, available)$;

```
CREATE TABLE BLOOD_BAG (
    bagID INTEGER AUTO_INCREMENT PRIMARY KEY,
    dateOfIssue DATETIME,
    dateOfUse DATETIME,
    bloodType VarChar(20),
    available INTEGER DEFAULT 1,
    FOREIGN KEY (bloodType) REFERENCES
(BLOOD_GROUP)
);
```

6. `Inventory`: Unique ID, address

   $\underline{inventoryID} \rightarrow (address, bagID)$;

```
CREATE TABLE INVENTORY (
    inventoryID INTEGER AUTO_INCREMENT PRIMARY
KEY,
    address VarChar(46),
    bagID INTEGER,
    FOREIGN KEY (bagID) REFERENCES (BLOOD_BAG)
);
```

7. `Hospital`: Unique hospitalID, name, address

   $\underline{hospitalID} \rightarrow (name, address)$;

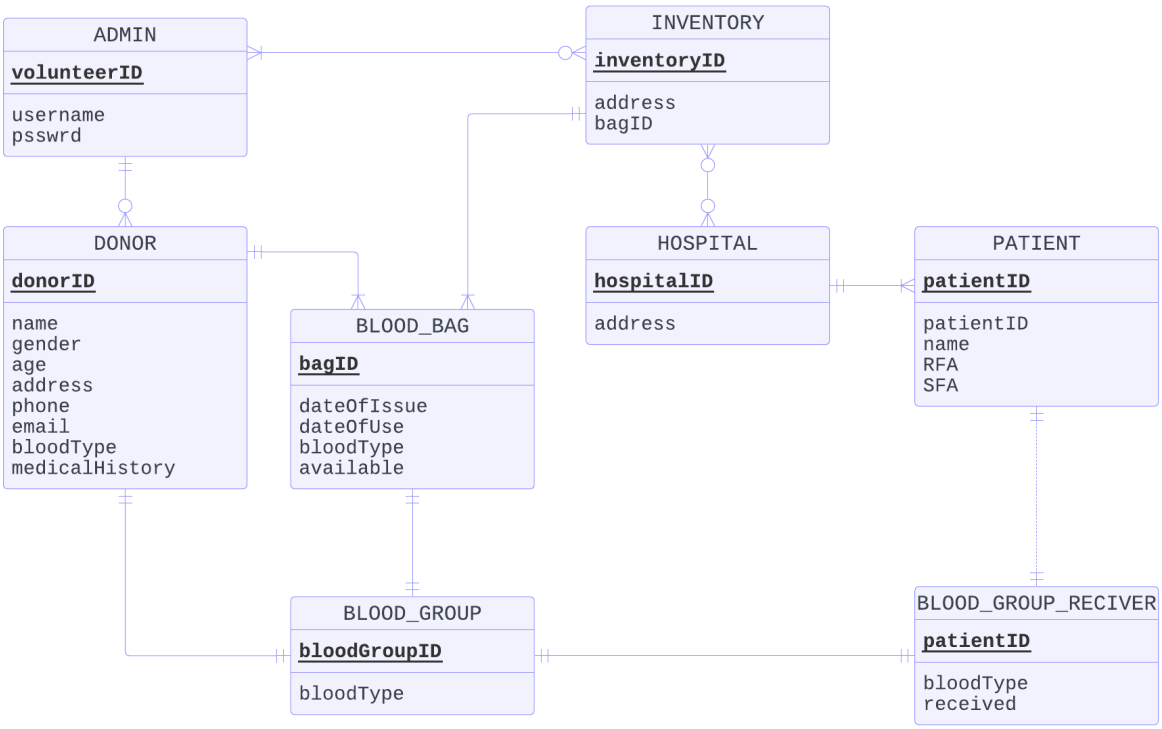
   ```
   CREATE TABLE HOSPITAL (
       hospitalID INTEGER AUTO_INCREMENT PRIMARY KEY,
       name VarChar(50),
       address VarChar(46)
   );
   ```

8. `Patient`: unique patientID, his name, and the reason for admission along with the severity for admission

   $\underline{patientID} \rightarrow (name, RFA, SFA, hospitalID)$;

   ```
   CREATE TABLE PATIENT (
       patientID INTEGER AUTO_INCREMENT PRIMARY KEY,
       name VarChar(70), # avg length for US names
       RFA VarChar(46),
       SFA INTEGER,
       hospitalID INTEGER,
       FOREIGN KEY (hospitalID) REFERENCES (HOSPITAL)
   );
   ```

## *ER-Diagram*


ADMIN
volunteerID
username
psswrd
INVENTORY
inventoryID
address
bagID
DONOR
donorID
name
gender
age
address
phone
email
bloodType
medicalHistory
BLOOD_BAG
bagID
dateOfIssue
dateOfUse
bloodType
available
HOSPITAL
hospitalID
address
PATIENT
patientID
patientID
name
RFA
SFA
BLOOD_GROUP
bloodGroupID
bloodType
BLOOD_GROUP_RECIVER
patientID
bloodType
received