**TABLES**

IDENTITY(IDNo,Name,Surname,Sex,FatherName,MotherName,BirthPlace,Birthdate,MaritalStatus,Religion,Province,District,Street,MaidenName)

**Explanation of IDENTITY Table**

**\***ID information is kept by IDENTITY table. We can use this ID information for data mining. For example; according to province, which register population, finding rate of blood donation. IDENTITY table has a column which name is MaidenName.This column is defined nullable because male and unmarried women have not a MaidenName so this column must not fill sometimes.

DONOR(DonorID,Email,Job,EducationalStatus,Height,Weight, *IDNo,BloodID*)

**Explanation of DONOR Table**

\*General Donor information is kept by DONOR table. Donor may not want to give some personal information. Therefore, we did nullable some columns such as; Email, Job, EducationalStatus, Height. We do not nullable a Weight column because a healthy individual must be least 50 kg for blood donation so this column must fill with value. Also we do unique the Email column because one person has a only one email address so email identify another columns. If primary key fails, email column behave as primary key. Name of this column is Alternate Key(AK).

ADDRESS\_DONOR(*DonorID,AddressID*)

**Explanation of ADDRESS\_DONOR Table**

\*DONOR\_TABLE table is used for relationship between DONOR table and ADDRESS tables at many to many relationships. There are columns which are foreign keys. We show this table at logical diagram.

ADDRESS(AddressID,AddressProvince, AddressDistrict,AddressStreet,BuildingNumber,ApartmentNumber)

**Explanation of ADDRESS Table**

\*Address information is kept by ADDRESS TABLE. If building is private, there is not generally apartment number so ApartmentNumber is defined nullable.

PHONE(PhoneID, MobileNumber, HomePhoneNumber, *DonorID,RelativeID,BloodCenterID*)

**Explanation of PHONE Table**

\*Phone numbers are kept by PHONE table. One person or one institution can has only one mobile phone so MobileNumber column is defined UNIQUE(so Alternate key). However, Home number can use a lot of people. For example, every persons can give same home number thanks to persons, which live at same home, so HomeNumber column is not a UNIQUE.

RELATIVE\_DONOR(*RelativeID,DonorID*)

**Explanation of RELATIVE\_DONOR Table**

\*RELATIVE\_DONOR table is used for relationship between RELATIVE and DONOR tables at many to many relationships. There are columns which are foreign keys. We show this table at logical diagram.

RELATIVE(RelativeID,RelativeName,RelativeSurname,RelativeSex ,RelativeEmail,*BloodID*)

**Explanation of RELATIVE Table**

\*Relative means that friend, cognate, etc. Relative personal information is kept by RELATIVE table. One of the purpose of adding this table is that blood donation is generalized. How to generalize blood donation? Donor gives a one or more relative information and blood center sends automatically message “xxx blood donated. Do you want to blood donate and save a someone of life?” so blood donation will be generalized at near future. This is only one example. Keeping relative information is important for blood donation.

BLOODCENTER(BloodCenterID,BldCenterName ,*AddressID*)

**Explanation of BLOODCENTER Table**

**\***Blood center information is kept by BLOODCENTER table.

BLOOD(BloodID,BloodType)

**Explanation of BLOOD Table**

\*Blood information is kept by BLOOD table. One donor can donate only one-unit blood so we don’t need to keep donation amount because it is never change.

BLOODCENTER\_BLOOD(*BloodCenterID,BloodID*,UnitStock)

**Explanation of BLOODCENTER\_BLOOD Table**

\* Information of blood stocks is kept by BLOODCENTER\_BLOOD.

PHLEBOTOMIST(PhlebotomistID, PhlebotomistName, PhlebotomistSurname,*BloodCenterID*)

**Explanation of PHLEBOTOMIST Table**

\*Phlebotomists are people trained to draw blood from a patient for clinical or medical testing, transfusions, donations, or research. Information about Phlebotomists is kept by PHLEBOTOMIST table.

DONOR\_BLOODCENTER(*DonorID,BloodCenterID*, *PhlebotomistID*,Date)

**Explanation of DONOR\_BLOODCENTER Table**

\*This table gives information about blood donation to us. We learn about blood donation that which date, how many times, by whom. Why is it important this information for ours? For example, according to count of blood donation, Blood center can be given prize to donor so blood donation will be encourage.

DISEASE (DiseaseID,DiseaseName, IncubationPeriod,DayOfConvalescence)

**Explanation of DISEASE Table**

\*Disease information is kept by DISEASE table. This information helps to Phlebotomists for learning availability of blood donation of person.

DONOR\_DISEASE(*DonorID*,*DiseaseID*,Status,AbilityOfBloodDonation)

**Explanation of DONOR\_DISEASE Table**

I will explain some columns at this table. Status column keep that how many times does person will be available for blood donation. Value of Status depends on decision of Phlebotomists. AbilityOfBloodDonation column has two selections which are true or false. If Phlebotomists selects the true, person can donate blood or person cannot donate blood for a certain period of time(status). If Phlebotomists selects the false, person never donate blood so this person will come again blood center, he/she turn back from blood center without any process.

**RELATIONSHIPS**

**MAXIMUM CARDINALITY**

**IDENTITY- DONOR 🡪 One to One relationships**

**DONOR-DONOR\_DISEASE🡪 One to Many relationships**

**DISEASE- DONOR\_DISEASE🡪One to Many relationships**

**DONOR-PHONE🡪 One to Many relationships**

**DONOR-BLOOD🡪 Many to One relationships**

**DONOR- ADDRESS🡪 Many to Many relationships**

**DONOR- RELATIVE🡪 Many to Many**

**DONOR- DONOR\_BLOODCENTER🡪One to Many relationships**

**PHLEBOTOMIST- DONOR\_BLOODCENTER🡪 One to Many relationships**

**BLOODCENTER- DONOR\_BLOODCENTER🡪One to many relationships**

**PHLEBOTOMIST- BLOODCENTER🡪 Many to One relationships**

**BLOOD- BLOODCENTER\_BLOOD🡪 One to Many relationships**

**BLOODCENTER- BLOODCENTER\_BLOOD🡪One to Many relationships**

**RELATIVE-BLOOD🡪 Many to One relationships**

**ADDRESS-BLOODCENTER🡪 One to One relationships**

**PHONE-BLOODCENTER🡪 Many to One**

**RELATIVE -PHONE🡪One to Many**

**MINUMUM CARDINALITY**

**IDENTITY- DONOR 🡪 Mandatory to Mandatory relationships**

**DONOR-DONOR\_DISEASE🡪 Mandatory to Optional relationships**

**DISEASE- DONOR\_DISEASE🡪 Mandatory to Mandatory relationships**

**DONOR-PHONE🡪 Optional to Optional relationships**

**DONOR-BLOOD🡪 Mandatory to Mandatory relationships**

**DONOR- ADDRESS🡪 Mandatory to Optional relationships**

**DONOR- RELATIVE🡪 Mandatory to Optional**

**DONOR- DONOR\_BLOODCENTER🡪 Mandatory to Mandatory relationships**

**PHLEBOTOMIST- DONOR\_BLOODCENTER🡪 Mandatory to Mandatory relationships**

**BLOODCENTER- DONOR\_BLOODCENTER🡪 Mandatory to Mandatory relationships**

**PHLEBOTOMIST- BLOODCENTER🡪 Mandatory to Mandatory relationships**

**BLOOD- BLOODCENTER\_BLOOD🡪 Mandatory to Mandatory relationships**

**BLOODCENTER- BLOODCENTER\_BLOOD🡪 Mandatory to Optional relationships**

**RELATIVE-BLOOD🡪 Mandatory to Mandatory relationships**

**ADDRESS-BLOODCENTER🡪 Mandatory to Mandatory relationships**

**PHONE-BLOODCENTER🡪 Optional to Optional relationships**

**RELATIVE -PHONE🡪 Optional to Optional relationships**

**FUNCTIONAL DEPENDENCIES**

**1-) IDENTITY**

IDNo🡪(Name,Surname,Sex,FatherName,MotherName,BirthPlace,Birthdate,MaritalStatus,Religion,Province,District,Street,MaidenName)

2-) **DONOR**

DonorID🡪(Email,Job,EducationalStatus,Height,Weight,IDNo,BloodID)

**3-)ADDRESS**

AddressID🡪(AddressProvince, AddressDistrict,AddressStreet,BuildingNumber,ApartmentNumber)

**4-)PHONE**

PhoneID🡪(MobileNumber, HomePhoneNumber, DonorID,RelativeID,BloodCenterID)

**5-)RELATIVE**

RelativeID🡪(RelativeName,RelativeSurname,RelativeSex ,RelativeEmail,BloodID)

**6-)BLOODCENTER**

BloodCenterID🡪(BldCenterName ,AddressID)

**7-)BLOOD**

BloodID🡪(BloodType)

**8-)BLOODCENTER\_BLOOD**

(BloodCenterID,BloodID)🡪UnitStock

**9-)PHLEBOTOMIST**

PhlebotomistID🡪 (PhlebotomistName, PhlebotomistSurname,BloodCenterID*)*

**10-)DONOR\_BLOODCENTER**

(DonorID,BloodCenterID, PhlebotomistID)🡪Date

**11-)DISEASE**

DiseaseID🡪(DiseaseName, IncubationPeriod,DayOfConvalescence)

**12-)DONOR\_DISEASE**

(DonorID,DiseaseID)🡪(Status,AbilityOfBloodDonation)

**REFRENTIAL ENTEGRITY CONSTRAINT**

1-) IDENTITY.IDNo must exist in DONOR.IDNo

2-) DONOR.BloodID must exist in BLOOD.BloodID

3-) DONOR.DonorID must exist in DONOR\_DISEASE.DonorID

4-) DISEASE.DiseaseID must exist in DONOR\_DISEASE.DiseaseID

5-) DONOR.DonorID must exist in PHONE.DonorID

6-) RELATIVE.RelativeID must exist in PHONE.RelativeID

7-) BLOODCENTER.BloodCenterID must exist in PHONE.BloodCenterID

8-) PHLEBOTOMIST.BloodCenterID must exist in BLOODCENTER.BloodCenterID

9-) BLOODCENTER.AddressID must exist in ADDRESS.AddressID

10-) BLOODCENTER\_BLOOD.BloodID must exist in BLOOD.BloodID

11-) BLOODCENTER\_BLOOD.BloodCenterID must exist in BLOODCENTER. BloodCenterID

12-) RELATIVE.BloodID must exist in BLOOD.BloodID

13-) DONOR\_BLOODCENTER. PhlebotomistID must exist in PHLEBOTOMIST. PhlebotomistID

14-) DONOR\_BLOODCENTER.BloodCenterID must exist in BLOODCENTER. BloodCenterID

15-) DONOR\_BLOODCENTER.DonorID must exist in DONOR.DonorID

16-) DONOR.DonorID must exist in ADDRESS\_DONOR.DonorID

17-) ADDRESS.AddressID must exist in ADDRESS\_DONOR. AddressID

18-) RELATIVE\_DONOR.RelativeID must exist in RELATIVE. RelativeID

19-) RELATIVE\_DONOR.DonorID must exist in DONOR.DonorID