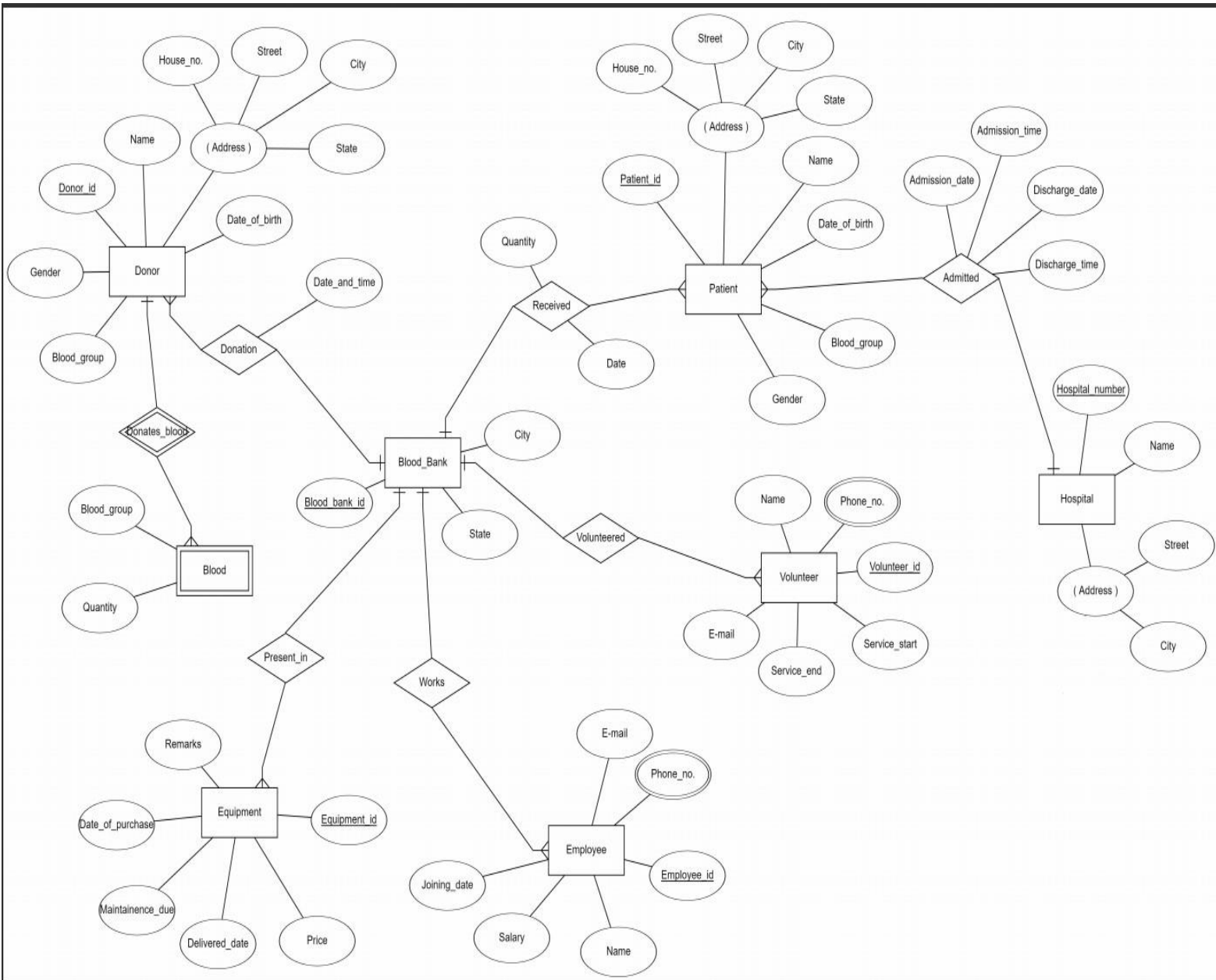
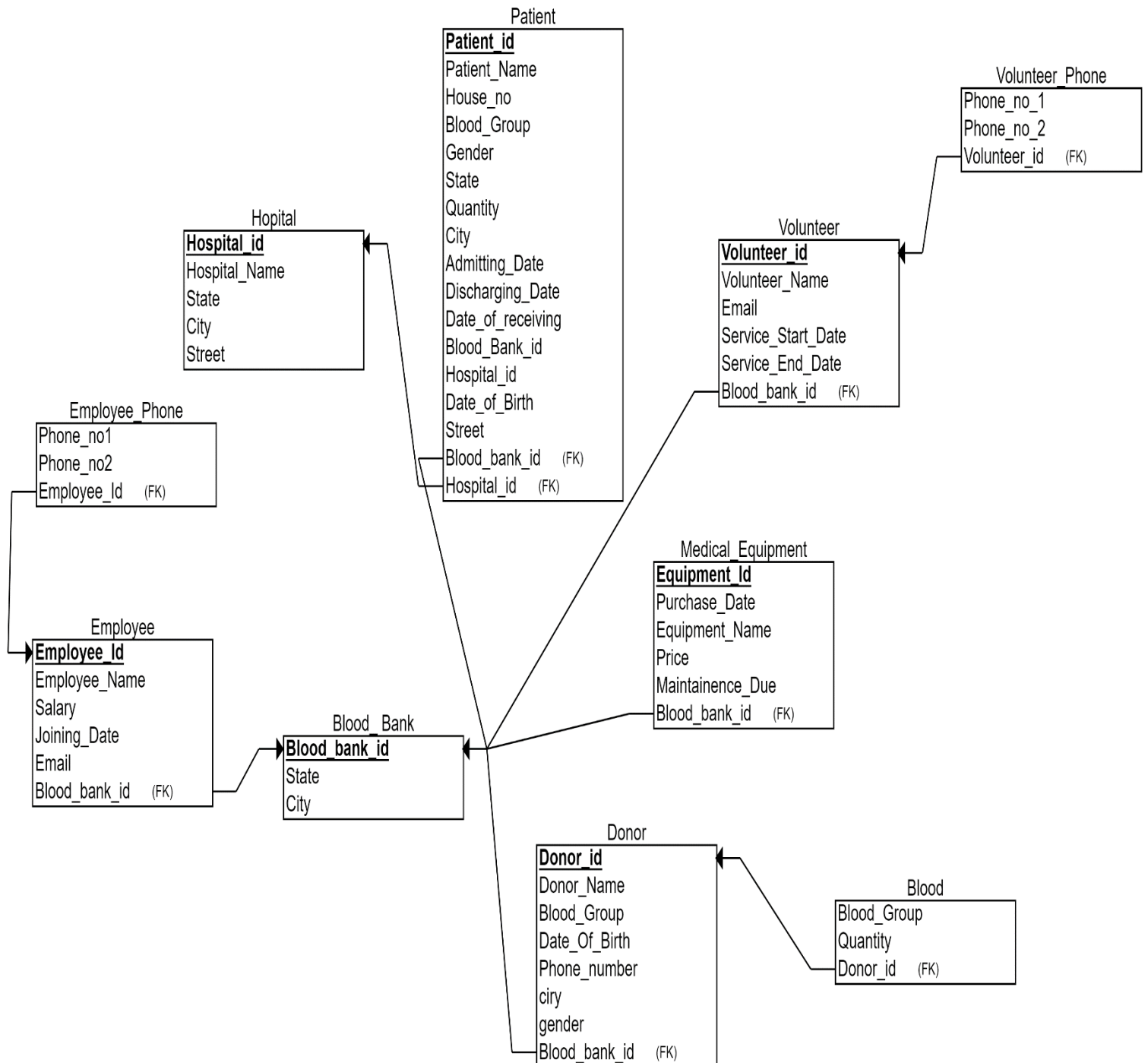


# ER Diagram for Blood bank database



# Relational Schema Diagram



## **Dependencies and Normalization**

### **BloodBank**

- There exists one functional dependency  $\{\text{Blood\_bank\_ID} \rightarrow \text{State,city}\}$  ,
- Both are fully functional dependent on the  $\text{Blood\_bank\_ID}$ .
- The table is in BCNF.

### **Blood**

- The functional dependencies are  $\{\text{Donor\_id,blood\_group,quantity} \rightarrow \text{blood\_group,quantity}\}$  .
- The table is in 3NF.

### **Donor**

- The functional dependencies are
- $\{\text{Donor\_ID} \rightarrow \text{Donor\_Name,gender,Blood\_group,Date\_of\_birth,city,phone\_no,blood\_bank\_id}\}$  .
- There exists full functional dependency.
- Hence table is in 3NF.

### **Employee**

- The functional dependencies are  $\{\text{EmployeeID} \rightarrow \text{Email}\}$  ,  $\{\text{EmployeeID} \rightarrow \text{Name}\}$ ,  $\{\text{EmployeeID} \rightarrow \text{Salary}\}$ ,  $\{\text{EmployeeID} \rightarrow \text{Joining\_date}\}$
- $\{\text{EmployeeID} \rightarrow \text{Blood\_bank\_id}\}$ .
- Since all the attributes depend on primary key and has no transitive dependency, the table is in 3NF.

### **Employee Phone**

- The functional dependencies are  $\{\text{EmployeeID ,Phone\_no} \rightarrow \text{phone\_no}\}$ ,
- The attributes depend only on primary key.
- Therefore, the table is in 3NF.

### **Hospital**

- The functional dependencies are  $\{\text{HospitalID} \rightarrow \text{Hospital\_name,street,city}\}$  .
- There exists fully functional dependency.
- Therefore, the table is in 3NF.

## **Patient**

- The functional dependencies are  
 $\{\text{PatientID} \rightarrow \text{patient\_name}, \text{date\_of\_birth}, \text{blood\_group}, \text{gender}, \text{address}, \text{quantity}, \text{blood\_bank\_id}\}$ ,  
 $\{\text{patient\_ID}, \text{hospital\_id} \rightarrow \text{Date\_of\_receiving}, \text{admission time}, \text{discharge\_time}\}$
- Table is in 3NF.

## **Volunteer**

- The functional dependencies are  $\{\text{VolunteerID} \rightarrow \text{Volunteer\_Name}\}$ ,  $\{\text{VolunteerID} \rightarrow \text{service\_start}, \text{service\_end}\}$ ,  $\{\text{VolunteerID} \rightarrow \text{email}\}$ ,
- $\{\text{VolunteerID} \rightarrow \text{Blood\_bank\_id}\}$ .
- There exists partial dependency and transitive dependency.
- Therefore, the table is in 3NF.

## **Volunteer Phone**

- The functional dependencies are  
 $\{\text{VolunteerID}, \text{phone\_no1}, \text{phone\_no2} \rightarrow \text{phone\_no1}, \text{phone\_no2}\}$
- The table is in 3NF.

## **Medical Equipment**

- The functional dependencies are  
 $\{\text{Equipment\_ID} \rightarrow \text{Blood\_bank\_id}\}$ ,  $\{\text{Equipment\_ID} \rightarrow \text{Equipment\_name}, \text{date\_of\_purchase}, \text{maintainance\_due}\}$ ,
- $\{\text{Equipment\_ID} \rightarrow \text{price}, \text{remarks}\}$
- The table is in 3NF.

- There are Different donors whose information is maintained.
- Each Donor can donate blood to many people.
- Each Receiver can take blood from different donors.
- The Receivers information is also maintained amount of blood etc.

## **Sql to Create Tables**

### **Defining Tables**

#### **Blood\_Bank**

```
create table blood_bank(
    state varchar(10),
    city varchar(10),
    blood_bank_id varchar(10) primary key
);
```

#### **Donor**

```
create table donor (
    donor_name varchar(20),
    donor_id varchar(10) primary key,
    gender varchar(10),
    blood_group varchar(10),
    date_of_birth date,
    donation_date_time timestamp,
    city varchar(10),
    phone_number varchar(10),
    blood_bank_id varchar(10),
```

```
foreign key(blood_bank_id) references blood_bank(blood_bank_id)
);
```

## **Blood**

```
create table blood (
    blood_group varchar(10),
    quantity_mL integer,
    donor_id varchar(10),
    primary key(donor_id,blood_group,quantity_mL),
    foreign key(donor_id) references donor(donor_id)
);
```

## **Employee**

```
create table Employee (
    Employee_id int primary key,
    E_mail varchar(30),
    Phone_no number,
    Employee_Name varchar(30),
    Salary int,
    Joining_date date,
    blood_bank_id varchar(10),
    foreign key (blood_bank_id) references blood_bank(blood_bank_id)
);
```

## **Employee\_Phone**

```
create table Employee_Phone
(
    Phone_No varchar(11),
    employee_id int,
    primary key(Phone_no,Employee_id),
    foreign key(employee_id) references Employee(employee_id)
);
```

## **Hospital**

```
create table hospital
(
    hospital_id int primary key,
    hospital_name varchar(30),
    street varchar(20),
    city varchar(40));
);
```

## **Patient**

```
create table Patient
(
    patient_id int primary key,
    Patient_Name varchar(30),
    Date_of_birth date,
    blood_group varchar(5),
    Gender varchar(5),
    house_no int,
    Street varchar(30),
    city varchar (30),
    State varchar(30),
    quantity int,
    date_of_receiving date,
    blood_bank_id varchar(10),
    admission_time timestamp,
    discharge_time timestamp,
    hospital_id int, foreign key (blood_bank_id) references
Blood_bank(blood_bank_id),
    foreign key(hospital_id) references hospital(hospital_id)
);
```

## **Volunteer**

```
create table Volunteer_Phone_no
(
    Phone_no_1 varchar(11),
    Phone_no_2 varchar(11),
    Volunteer_id int,
    primary key(Volunteer_id,Phone_no_1),
    foreign key (Volunteer_id) references Volunteer(Volunteer_id)
);
```

### **Volunteer Phone**

```
create table Volunteer_Phone_no(
    Phone_no_1 varchar(11),
    Phone_no_2 varchar(11),
    Volunteer_id int,
    primary key(Volunteer_id,Phone_no_1),
    foreign key (Volunteer_id) references Volunteer(Volunteer_id));
```

### **Medical Equipment**

```
create table equipment(
    Remarks varchar(10),
    Date_of_purchase date,
    Maintainance_due varchar(10),
    equipment_id varchar(4) primary key,
    blood_bank_id varchar(10),
    eqpmnt_name varchar(40),
    price integer,
    foreign key(blood_bank_id) references blood_bank(blood_bank_id));
```



## Inserting Values

### Inserting Into blood bank

```
insert into blood_bank values('AndhraPradesh','Vishakapatnam','v1');
insert into blood_bank values('AndhraPradesh','Guntur','G1');
insert into blood_bank values('AndhraPradesh','Warangal','w1');
insert into blood_bank values('AndhraPradesh','Rajamudhry','r1');
insert into blood_bank values('AndhraPradesh','Khammam','kh1');
insert into blood_bank values('AndhraPradesh','Secunderabad','s1');
```

### Inserting Into Medical Equipment

```
insert into Medical_equipment values('working','2002-08-23','600','eq1','v1','Hematology Analyzer','137648');
insert into Medical_equipment values('working','1999-08-24','2000','eq2','G1','Centrifuge machine','74738');
insert into Medical_equipment values('working','2000-08-25','211','eq3','r1','Rh view box','37479');
insert into Medical_equipment values('working','2007-10-23','255','eq4','kh1','Storage Refrigerator','74844');
insert into Medical_equipment values('working','2012-11-23','456','eq5','s1','Plasma Expressor','87654');
insert into Medical_equipment values('working','2013-07-23','655','eq6','w1','Storage Refrigerator','7648');
```

### Inserting Into Donor

```
insert into donor values('Allu','d101','M','B+','2000-11-12','2021-03-10 00:02:23','Vishakapatnam','534567891','v1');
insert into donor values('sahithi','d102','F','B-','2000-10-12','2021-03-10 00:03:23','Warangal','544567891','v1');
insert into donor values('john','d103','M','AB-','2000-09-12','2021-02-10 00:04:12','Ongole','235567891','G1');
insert into donor values('Pavan','d104','M','A+','2001-11-22','2021-02-10 11:01:23','Madras','234567591','kh1');
insert into donor values('syam','d105','F','O-','2000-01-12','2021-01-10
```

```
00:05:23','Pali','124567891','w1');
insert into donor values('latha','d106','F','AB+','2002-11-12','2021-04-10
05:01:23','Thalli','345567891','s1');
insert into donor values('Somal','d107','M','A+','2005-11-14','2021-1-10
15:01:23','Kolkata','569567891','r1');
insert into donor values('Bittu','d108','M','B+','2000-10-12','2021-02-10
12:01:23','Khammam','784567891','s1');
insert into donor values('Bhaskar','d109','F','O+','2012-11-12','2021-03-10
23:01:23','Vizag','268367891','w1');
```

## **Inserting Into Blood**

```
insert into blood values('B+',100,'d101');
insert into blood values('B-',200,'d102');
insert into blood values('AB-',300,'d103');
insert into blood values('A+',100,'d104');
insert into blood values('O-',200,'d105');
insert into blood values('AB+',300,'d106');
insert into blood values('A+',100,'d107');
insert into blood values('B+',200,'d108');
insert into blood values('O+',300,'d109');
```

## **Inserting Into Employee**

```
insert into Employee values(2001,'rahul@gmail.com','Rahul',50000,'2000-08-
23','v1');
insert into Employee values(2002,'ramesh@gmail.com','Ramesh',40000,'2000-07-
23','r1');
insert into Employee values(2003,'Sultan@gmail.com','Sultan',48000,'2000-08-
13','G1');
insert into Employee values(2004,'Mani@gmail.com','Mani',79000,'2001-08-
23','kh1');
insert into Employee values(2005,'Mayank@gmail.com','Mayank',56000,'2020-08-
23','w1');
insert into Employee values(2006,'Harshit@gmail.com','Harshit',44000,'2000-08-
17','w1');
insert into Employee values(2007,'Ravi@gmail.com','Ravi',23000,'2002-08-23','v1');
insert into Employee values(2008,'Vanshi@gmail.com','Vanshika',100000,'2000-05-
10','r1');
```

### **Inserting Into Employee\_Phone**

```
insert into Employee_Phone values('9375938',2001);
insert into Employee_Phone values('9587497',2002);
insert into Employee_Phone values('9938788',2003);
insert into Employee_Phone values('9656644',2004);
insert into Employee_Phone values('9423955',2005);
insert into Employee_Phone values('9987732',2006);
insert into Employee_Phone values('9123224',2007);
insert into Employee_Phone values('9098087',2008);
insert into Employee_Phone values('9324423',2005);
```

### **Inserting Into Hospital**

```
insert into Hospital values(101,'Lifeline','Ramnagar','Vishakapatnam');
insert into Hospital values(102,'SaveIn','APJColony','Secundarabad');
insert into Hospital values(103,'AIIMS','GandhiNagar','Rajamudhry');
insert into Hospital values(104,'Rohini','Hanamkonda1','Warangal');
insert into Hospital values(105,'JeevanJyoti','Hanamkonda2','Guntur');
insert into Hospital values(106,'OneBlood','KakatiyaColony','Khammam');
```

### **Inserting Into Patient**

```
insert into patient values(1,'Prudvi','1984-06-21','O+','M','4','st21','Vishakapatnam','AndhraPradesh',500,'2016-07-14','v1','2016-07-14 18:30:00',NULL,101);
insert into patient values(2,'kamesh','1981-07-13','AB+','M','12','14avenue','Vishakapatnam','AndhraPradesh',350,'2014-08-08','v1','2014-08-08 10:12:00','2014-08-11 14:50:00',101);
insert into patient values(3,'Vidya','1991-04-24','A+','F','19','19thSt','Secunderabad','AndhraPradesh',260,'2015-11-19','s1','2015-11-19 14:30:00','2015-11-26 16:25:00',102);
insert into patient values(4,'Lohith','1968-11-09','B+','M','6','18thSt','Secunderabad','AndhraPradesh',750,'2016-07-16','s1','2016-07-16 19:44:00',NULL,102);
insert into patient values(5,'Ritika','1994-12-16','A+','F','10','Ramnagar','Warangal','AndhraPradesh',400,'2015-09-11','w1','2015-09-11 11:16:00','2015-09-22',104);
insert into patient values(6,'Rakhi','1978-09-13','AB-','F','11','ShivNagar','Warangal','AndhraPradesh',325,'2016-07-15','w1','2016-07-15 06:54:00',NULL,104);
insert into patient values(7,'Sai Pavan','1972-02-
```

```

29,'O+','M','17','Karimnagar','Rajamudhry','AndhraPradesh',
600,'2014-10-01','r1','2014-10-01 11:45:00','2014-10-09',103);
insert into patient values(8,'Rajesh','1995-03-
06','AB+','M','20','St06','Rajamudhry','AndhraPradesh',
650,'2016-07-16','r1','2016-07-16 17:13:00',NULL,103);
insert into patient values(9,'Avinash','1967-05-
29','A+','F','18','Station_Road','Guntur','AndhraPradesh',
250,'2015-10-25','G1','2015-10-25 09:19:00','2015-10-28 09:44:00',105);
insert into patient values(10,'Nikhila','1968-02-
18','AB+','F','01','PostOfficeRoad','Guntur','AndhraPradesh',
600,'2016-07-15','G1','2016-07-15 12:08:00',NULL,105);
insert into patient values(11,'Somal','1977-01-
14','B+','M','19','St11','Khammam','AndhraPradesh',
550,'2015-12-16','kh1','2015-12-15 15:19:00','2015-12-24 22:10:00',106);
insert into patient values(12,'Karun','1979-06-
19','O+','M','13','St14','Khammam','AndhraPradesh',
440,'2014-08-24','kh1','2014-08-24 19:23:00','2014-08-29 20:35:00',106);

```

## **Inserting Into Volunteer**

```

insert into Volunteer values(101,'Abhi','2014-01-12',NULL,'ab@gmail.com','v1');
insert into Volunteer values(102,'Anil','2014-02-24',NULL,'ani@gmail.com','v1');
insert into Volunteer values(103,'Aadarsh','2015-01-
12',NULL,'aad@gmail.com','w1');
insert into Volunteer values(104,'virat','2015-01-12',NULL,'vi@gmail.com','w1');
insert into Volunteer values(105,'divillers','2014-01-12',NULL,'di@gmail.com','G1');
insert into Volunteer values(106,'prabhas','2014-01-
12',NULL,'pra@gmail.com','G1');
insert into Volunteer values(107,'srihari','2016-01-12',NULL,'sri@gmail.com','kh1');
insert into Volunteer values(108,'sricharan','2016-01-
12',NULL,'srich@gmail.com','kh1');
insert into Volunteer values(109,'shami','2017-01-12',NULL,'sh@gmail.com','r1');
insert into Volunteer values(110,'chahal','2017-01-12',NULL,'cha@gmail.com','r1');
insert into Volunteer values(111,'siraj','2018-01-12',NULL,'si@gmail.com','s1');
insert into Volunteer values(112,'gayle','2018-01-12',NULL,'ga@gmail.com','s1');

```

## **Inserting Into Volunteer Phone**

```

insert into Volunteer_Phone values('9722344567','9698521478',101);
insert into Volunteer_Phone values('9123654789','9369852147',101);

```

```
insert into Volunteer_Phone values('9823654789','9969852147',102);
insert into Volunteer_Phone values('9723654789','9769852147',102);
insert into Volunteer_Phone values('9623654785','9669852145',103);
insert into Volunteer_Phone values('9123654782','9369852142',103);
insert into Volunteer_Phone values('9523654789','9369852145',104);
insert into Volunteer_Phone values('9163654789','9369852146',104);
insert into Volunteer_Phone values('9177654789','9369852149',105);
insert into Volunteer_Phone values('9103654789','9369852141',105);
insert into Volunteer_Phone values('9193654789','9369852117',106);
insert into Volunteer_Phone values('9133654789','9369852167',106);
insert into Volunteer_Phone values('9711928998','9698527478',107);
insert into Volunteer_Phone values('9123854789','9369856147',108);
```