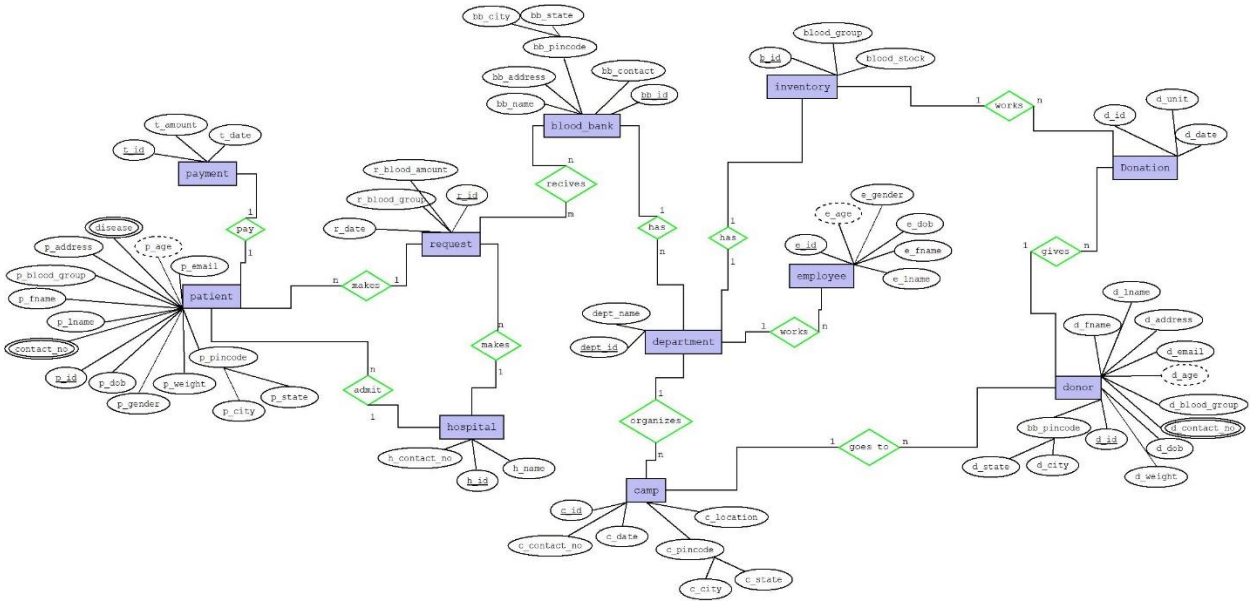
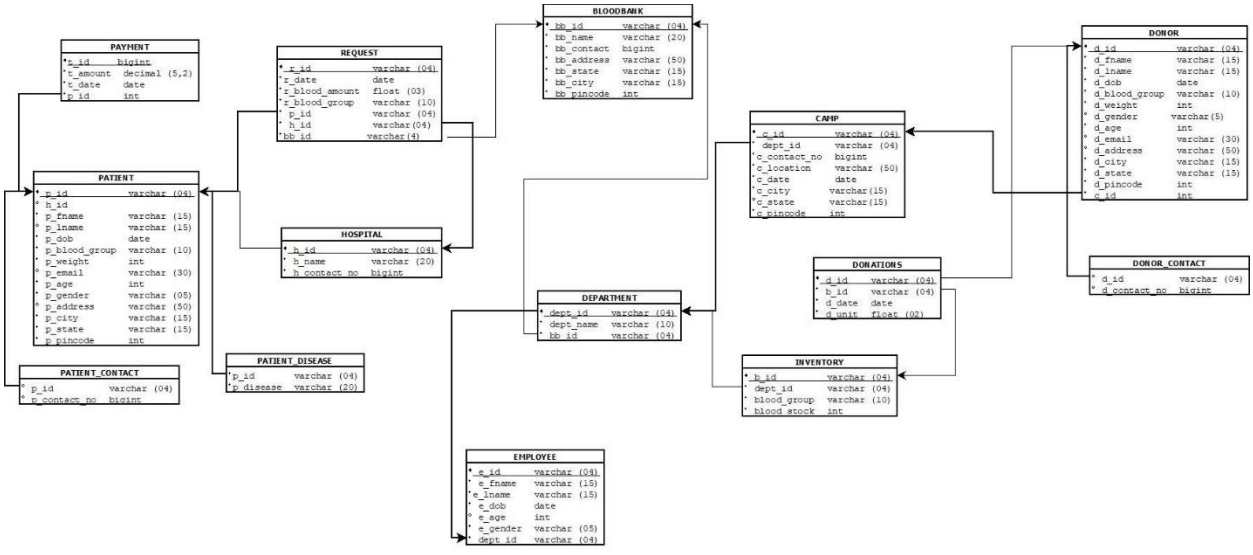
ERD :



Relational Schema :



Normalization:

1) BLOODBANK

(bb_id, bb_name, bb_contact, bb_address, bb_state, bb_city, bb_pincode)

{ bb_id } -> bb_name

{ bb_id } -> bb_contact

{ bb_id } -> bb_address

{ bb_pincode } -> bb_state

{ bb_pincode } -> bb_city

Candidate Key:- { bb_id, bb_pincode }

Prime Attribute:- bb_id, pincode

Non-Prime Attribute:- bb_name, bb_contact, bb_address,bb_state, bb_city

Normalization to 3NF and BCNF form.

Reason: It is in 2NF but bb_pincode is not unique. Thus it cannot be a prime attribute. So bb_id and bb_pincode together can be declared as super key, thus uniquely identifying bb_city and bb_state.

{ bb_id } -> bb_name

{ bb_id } -> bb_contact

{ bb_id } -> bb_address

{ bb_id, bb_pincode } -> bb_state

{ bb_id, bb_pincode } -> bb_city

2) Request

(r_id, p_id, h_id, bb_id, r_date, r_blood_amount, r_blood_group)

{ r_id } -> r_date

{ r_id } -> h_id

{ r_id } -> p_id

{ r_id } -> bb_id

{ r_id } -> r_blood_amount

{ r_id } -> r_blood_group

Candidate Key:- { r_id }

Prime Attribute:- r_id

Non-Prime Attribute:- p_id, h_id, bb_id, r_date, r_blood_amount, r_blood_group

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

3) PATIENT

(p_id, h_id, p_fname, p_lname, p_dob, p_blood_group, p_weight, p_address, p_email,

p_age, p_gender, p_city, p_state, p_pincode)

{ p_id } -> p_fname

{ p_id } -> p_lname

{ p_id } -> p_dob

{ p_id } -> p_blood_group

{ p_id } -> p_weight

{ p_id } -> p_addresss

{ p_id } -> p_email

{ p_id } -> p_age

{ p_id } -> p_gender

{ p_pincode } -> p_city

{ p_pincode } -> p_state

{ p_id } -> h_id

Candidate Key:- { p_id, p_pincode }

Prime Attribute:- p_id, p_pincode

Non-Prime Attribute:- r_id, h_id, p_fname, p_lname, p_dob, p_blood_group, p_weight, p_address, p_email, p_age, p_gender, p_city, p_state

Normalization to 3NF and BCNF form.

Reason: It is in 2NF but p_pincode is not unique. Thus it cannot be prime attribute. So p_id and p_pincode together can be declared as super key, thus uniquely identifying p_city and p_state.

{ p_id } -> p_fname

{ p_id } -> p_lname

{ p_id } -> p_dob

{ p_id } -> p_blood_group

{ p_id } -> p_weight

{ p_id } -> p_addresss

{ p_id } -> p_email

{ p_id } -> p_age

{ p_id } -> p_gender

{ p_id } -> h_id

{ p_id, p_pincode } -> p_city

{ p_id, p_pincode } -> p_state

4) PATIENT_CONTACT

(p_id, p_contact_no)

{ p_id } -> p_contact_no

Candidate Key:- { p_id }

Prime Attribute:- { p_id }

Non-Prime Attribute:- { p_contact_no }

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

5) PATIENT_DISEASE

(p_id, p_disease)

{ p_id } -> p_disease

Candidate Key:- { p_id }

Prime Attribute:- p_id

Non-Prime Attribute:- p_disease

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

6) HOSPITAL

(h_id, h_contact_no, h_name)

{ h_id } -> h_contact_no

{ h_id } -> h_name

Candidate Key:- { h_id }

Prime Attribute:- h_id

Non-Prime Attribute:- h_contact_no, h_name

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

7) PAYMENT

(t_id, t_amount, t_date, p_id)

{ t_id } -> t_amount

{ t_id } -> t_date

{ t_id } -> p_id

Candidate Key:- { t_id }

Prime Attribute:- t_id

Non-Prime Attribute:- t_amount, t_date, p_id

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

8) DEPARTMENT

(dept_id, dept_name, bb_id)

{ dept_id } -> dept_name

Candidate Key:- { dept_id }

Prime Attribute:- dept_id

Non-Prime Attribute:- dept_name

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

9) EMPLOYEE

(e_id, e_fname, e_lname, e_dob, e_age, e_gender, dept_id)

{ e_id } -> e_fname {

e_id } -> e_lname

{ e_id } -> e_dob

{ e_id } -> e_age

{ e_id } -> e_gender

{ e_id } -> dept_id

Candidate Key:- { e_id }

Prime Attribute:- e_id

Non-Prime Attribute:- e_fname, e_lname, e_dob, e_age, e_gender, dept_id **Table is in**

3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

10) CAMP

(c_id, dept_id, c_contact_no, c_location, c_date, c_city, c_state, c_pincode)

{ c_id } -> dept_id

{ c_id } -> c_contact_no

{ c_id } -> c_location

{ c_id } -> c_date

{ c_pincode } -> c_city

{ c_pincode } -> c_state

Candidate Key:- { c_id, c_pincode }

Prime Attribute:- c_id, c_pincode

Non-Prime Attribute:- dept_id, c_contact_no, c_location, c_date, c_city, c_state

Normalization to 3NF and BCNF form.

Reason: It is in 2NF but c_pincode is not unique. Thus it cannot be prime attribute. So c_id and c_pincode together can be declared as super key, thus uniquely identifying c_city and c_state.

{ c_id } -> dept_id

{ c_id } -> c_contact_no

{ c_id } -> c_location

{ c_id } -> c_date

{ c_id, c_pincode } -> c_city

{ c_id, c_pincode } -> c_state

11) INVENTORY

(b_id, dept_id, blood_group, blood_stock)

{ b_id } -> dept_id

{ b_id } -> blood_group

{ b_id } -> blood_stock

Candidate Key:- { b_id }

Prime Attribute:- b_id

Non-Prime Attribute:- dept_id, blood_group, blood_stock

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

12) DONOR

(d_id, d_fname, d_lname, d_dob, d_blood_group, d_weight, d_address, d_email,

d_age, d_city, d_state, d_pincode, c_id)

{ d_id } -> d_fname {

d_id } -> d_lname

{ d_id } -> d_dob

{ d_id } -> d_blood_group

{ d_id } -> d_weight

{ d_id } -> d_address

{ d_id } -> d_email

{ d_id } -> d_age

{ d_pincode } -> d_city

{ d_pincode } -> d_state

{ d_id } -> c_id

Candidate Key:- { d_id, d_pincode }

Prime Attribute:- d_id, d_pincode

Non-Prime Attribute:- d_fname, d_lname, d_dob, d_blood_group, d_weight, d_address, d_email, d_age, d_city, d_state, c_id

Normalization to 3NF and BCNF form.

Reason: It is in 2NF but d_pincode is not unique. Thus it cannot be prime attribute. So d_id and d_pincode together can be declared as super key, thus uniquely identifying d_city and d_state.

{ d_id } -> d_fname {

d_id } -> d_lname

{ d_id } -> d_dob

{ d_id } -> d_blood_group

{ d_id } -> d_weight

{ d_id } -> d_address

{ d_id } -> d_email

{ d_id } -> d_age

{ d_id } -> c_id

{ d_id, d_pincode } -> d_city

{ d_id, d_pincode } -> d_state

13) DONOR_CONTACT

(d_id, d_contact_no)

{ d_id } -> d_contact_no

Candidate Key:- { d_id }

Prime Attribute:- d_id

Non-Prime Attribute:- d_contact_no

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.

14) DONATIONS

(d_id, b_id, d_date, d_stock)

{ d_id, b_id } -> d_date

{ d_id, b_id } -> d_stock

Candidate Key:- { d_id, b_id }

Prime Attribute:- d_id, b_id

Non-Prime Attribute:- d_date, d_stock

Table is in 3NF and BCNF form.

Reason: It is in 2NF and there is no transitive dependency for non-prime attributes.