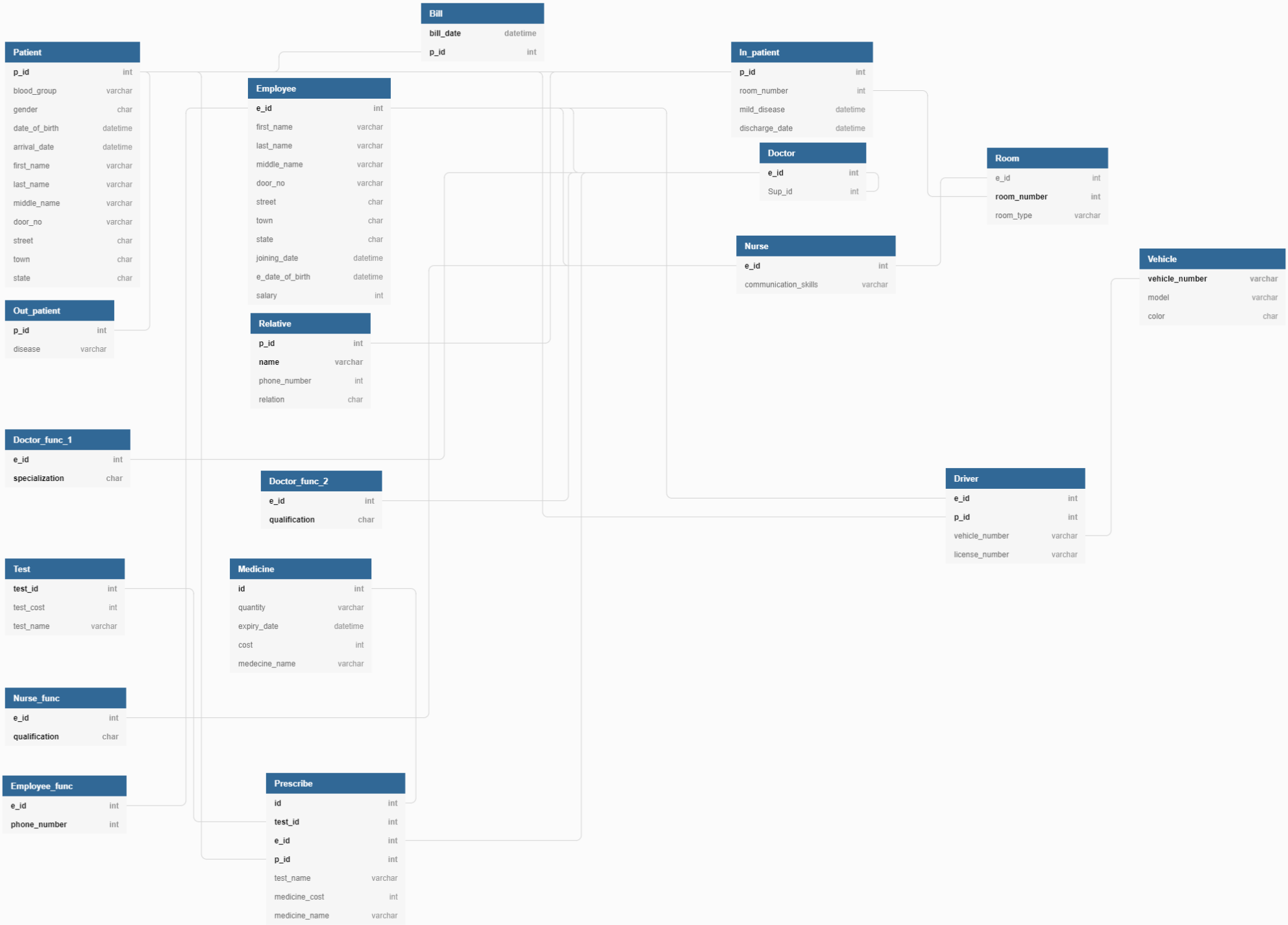
Relational Model

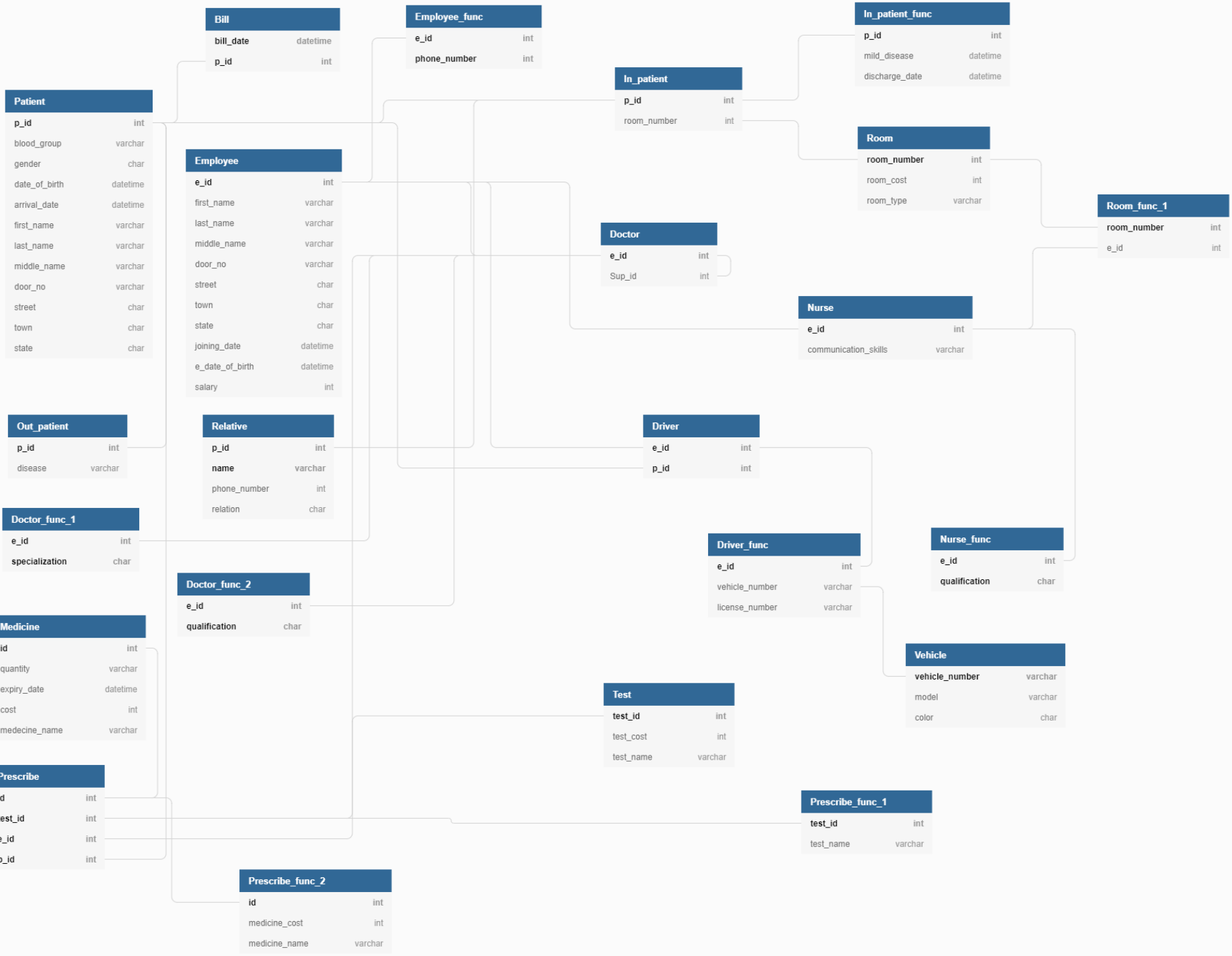
1. Firstly, all the entities in the ER diagram are converted into relations having same name of the respective entity.
2. All the entities having composite attributes are the components of the attribute becomes a separate attribute.
3. All the multi varied attributes of the entities individually form a separate relation having the primary key of the entity as foreign key and also multi varied attribute becomes part of primary key.
4. The 4-ary relation forms a separate relation having all the primary keys of participating entities as foreign keys for the table and included some attributes of the those entities.
5. The relationship attribute of Drive is included in relation Driver.

NOTE: The obtained relational model is already in 1NF (As the multi varied attributes and composite attributes are as described in 1NF and no nested relations)



2NF

1. In the Driver relation as attributes license-number and vehicle number doesn't depend upon patient id we can make a separate relation Driver_func having details of employee id and vehicle and in the Driver relation we keep only employee and patient id.
2. In Prescribe relation also similarly new two relations are formed and respective attributes are stored keeping only foreign keys in Prescribe relation.
3. In In_patient relation two non-prime attributes depend on p_id so a separate relation In_patient_func is made keeping p_id and room number in In_patient.


Bill
bill_date datetime
p_id int
Employee_func
e_id int
phone_number int
In_patient_func
p_id int
mild_disease datetime
discharge_date datetime
In_patient
p_id int
room_number int
Patient
p_id int
blood_group varchar
gender char
date_of_birth datetime
arrival_date datetime
first_name varchar
last_name varchar
middle_name varchar
door_no varchar
street char
town char
state char
Employee
e_id int
first_name varchar
last_name varchar
middle_name varchar
door_no varchar
street char
town char
state char
joining_date datetime
e_date_of_birth datetime
salary int
Room
room_number int
room_cost int
room_type varchar
Room_func_1
room_number int
e_id int
Doctor
e_id int
Sup_id int
Nurse
e_id int
communication_skills varchar
Out_patient
p_id int
disease varchar
Relative
p_id int
name varchar
phone_number int
relation char
Driver
e_id int
p_id int
Doctor_func_1
e_id int
specialization char
Driver_func
e_id int
vehicle_number varchar
license_number varchar
Nurse_func
e_id int
qualification char
Doctor_func_2
e_id int
qualification char
Medicine
id int
quantity varchar
expiry_date datetime
cost int
medecine_name varchar
Vehicle
vehicle_number varchar
model varchar
color char
Test
test_id int
test_cost int
test_name varchar
Prescribe
id int
test_id int
e_id int
p_id int
Prescribe_func_1
test_id int
test_name varchar
Prescribe_func_2
id int
medicine_cost int
medicine_name varchar
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3NF

1. In the Room relation the room cost of the particular room number can be derived from room type as particular room type have unique cost. So, we can create another relation Room_func keeping details of room type and cost and in Room relation we can keep only room number and type.