DBMS Project – G4_9

Car Dealership Database

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1) Relational Schema :

Car Dealership

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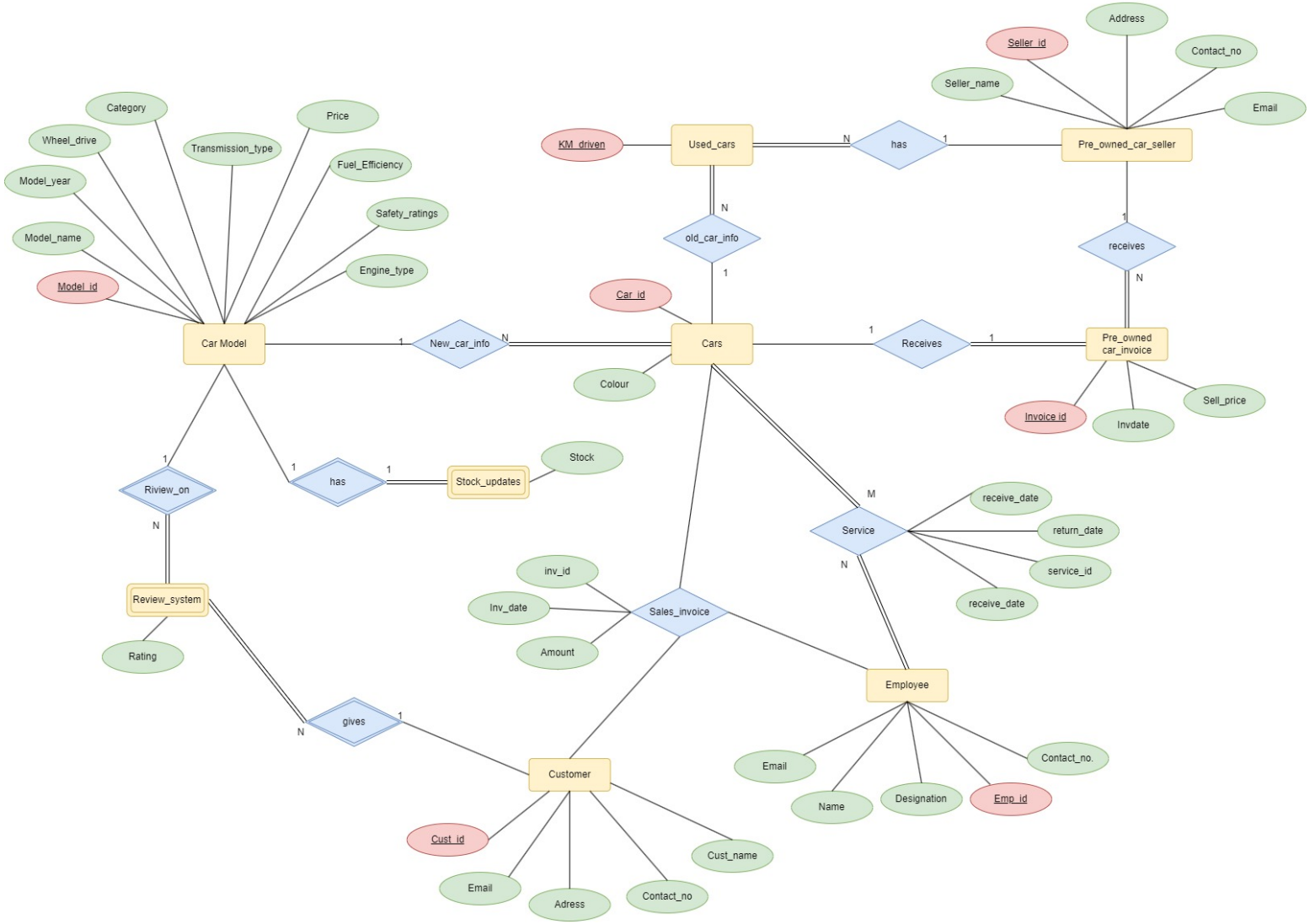
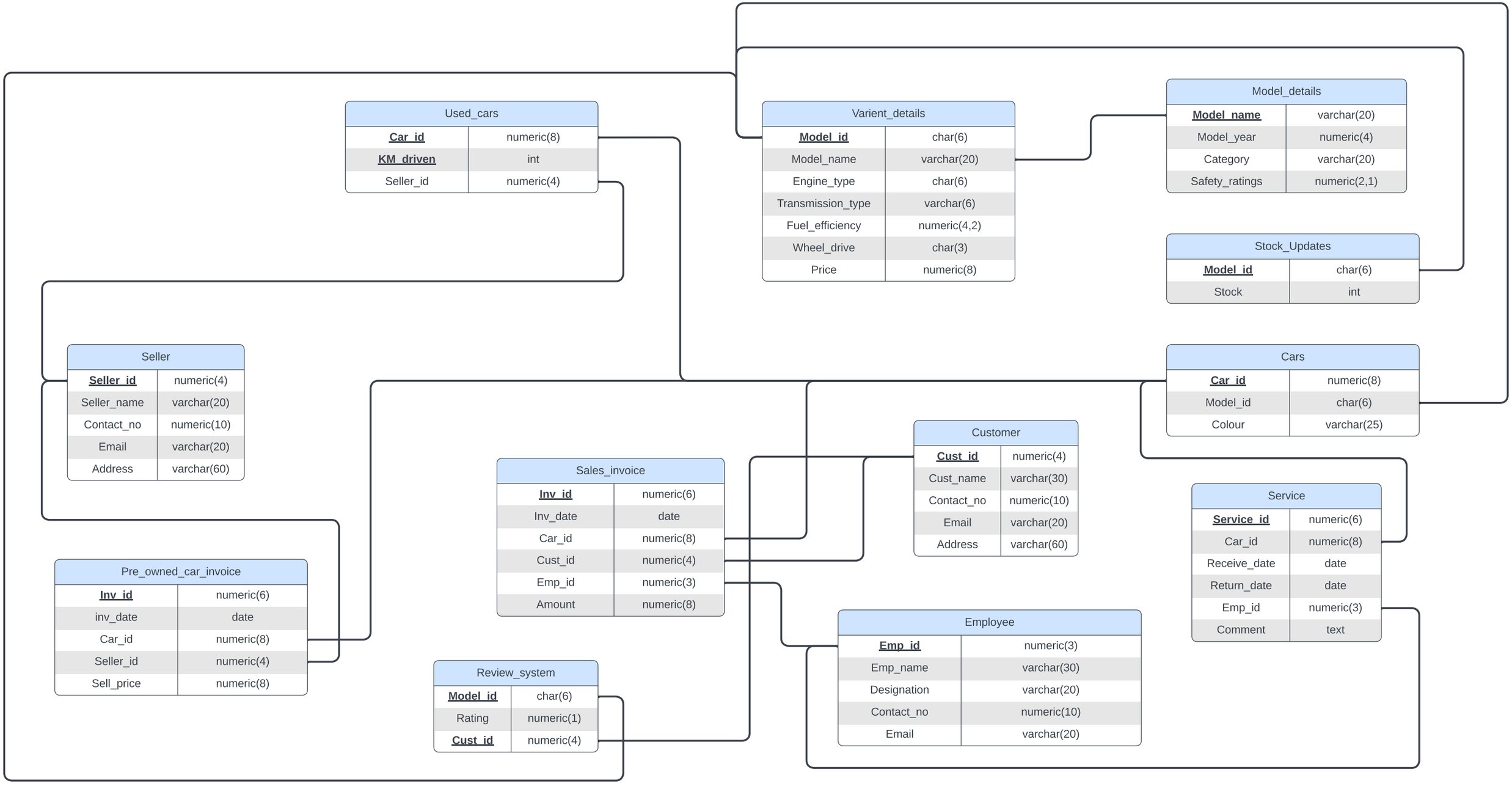


Car Dealership schema



2) Minimal FD set and proof of BCNF :

1) **Car_model (model_id , model_name , model_year , category , transmission _type , engine_type ,wheel_drive , price , fuel_efficiency , safety_ratings)**

Minimal FDs :

model_id -> { model_name , transmission _type , engine_type ,wheel_drive , price , fuel_efficiency }

model_name -> { model_year , category , safety_ratings }

Key : model_id

Type : 2NF . So , we have to bring it into BCNF form ,

FD model_name -> { model_year , category , safety_ratings } violates BCNF requirement.

Now , $model\_name^{+}$ = { model_name , model_year , category , safety_ratings }

We have to new relations ,

1)model_details (model_name , model_year , category , safety_ratings)

minimal FDs :

model_name -> { model_year , category , safety_ratings }

Key : model_name

Type : BCNF (All attributes are directly dependent only on key)

2)variant_details (model_id , model_name , transmission _type , engine_type ,wheel_drive , price , fuel_efficiency)
minimal FDs :

model_id -> { model_name , transmission _type , engine_type ,wheel_drive , price , fuel_efficiency }

Key : model_id

Type : BCNF (All attributes are directly dependent only on key)

2) Used_cars (car_id , KM_driven , seller_id)

Minimal FDs :

{ car_id , KM_driven } -> Seller_id

Key : { car_id, KM_driven }

Type : BCNF (All attributes are directly dependent only on key)

3) Cars (car_id ,model_id , colour)

Minimal FDs :

Car_id -> Model_id , Colour

Key : Car_id

Type : BCNF (All attributes are directly dependent only on key)

4) Stock_updates (model_id , stock)

Minimal FDs :

Model_id -> stock

Key : Model_id

Type : BCNF (All attributes are directly dependent only on key)

5) Customer (Cust_id , Cust_name , Contact_no , Email , Address)

Minimal FDs :

Cust_id -> Cust_name , Contact_no , Email , Address

Key : Cust_id

Type : BCNF (All attributes are directly dependent only on key)

6) **Employee (Emp_id ,Emp_name, Designation , Contact_no , Email)**

Minimal FDs :

Emp_id -> Emp_name, Designation , Contact_no , Email

Key : Emp_id

Type : BCNF (All attributes are directly dependent only on key)

7) **Seller (Seller_id , Seller_name , Contact_no , Email , Address)**

Minimal FDs :

Seller_id -> Seller_name , Contact_no , Email , Address

Key : Seller_id

Type : BCNF (All attributes are directly dependent only on key)

8) **Review_system (Model_id , Cust_id , Ratings)**

Minimal FDs :

Model_id , cust_id -> ratings

Key : { Model_id , Cust_id }

Type : BCNF (All attributes are directly dependent only on key)

9) **Pre_Owned_car_invoice(Inv_id ,inv_date , Car_id , Seller_id , Sell_price)**

Minimal FDs :

Inv_id -> inv_date , Car_id , Seller_id , Sell_price

Key : Inv_id

Type : BCNF (All attributes are directly dependent only on key)

10) Sales_Invoice (Old_inv_id , inv_date , Car_id , Cust_id , Emp_id , Amount)

Minimal FDs :

inv_id -> inv_date , Car_id , Cust_id , Emp_id , Amount

{ Car_id , emp_id , cust_id } -> inv_id , inv_date , Amount

Key : inv_id , { car_id, emp_id , cust_id }

Type : BCNF (All attributes are directly dependent only on key)

11) Service (service_id , Car_id Receive_date , Return_date , Emp_id , Comment)

Minimal FDs :

service_id -> Car_id , Receive_date , Return_date , Emp_id , Comment

{ car_id , emp_id } -> service_id , receive_date , return_date , comment

Key : service_id , { car_id , emp_id }

Type : BCNF (All attributes are directly dependent only on key)