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Stage IV
Elaboration: Database Design

BCNF Relations

Vehicle

VIN_Number	Department	Year	Make	Model	Vehicle_Type_Code	Type	Time_Line	Year_Incorporated

Vehicle_Types

Vehicle_Type_Code	Vehicle_Type	Engine	Anticipated_Mileage	Estimated_MPG	Initial_Cost	Incentives	Annual_Fuel_Cost	Maintenence_Cost	Repairs

Tire_Replacement	Battery_Replacement	Insurance	Lifetime_Cost	Annual_Cost	GHC_Emissions	Pollutants_Emissions

Variables

Vehicle_Type_Code	Fuel_Cost	GTE_Miles	GTE_Years	Maintenance_Per_Mile	Depreciation	Equal_Carbon_Emission

Each of the relations in our database are already in BCNF. Since there is only one key attribute, each other attribute is dependent only on it. Additionally, there are not any transitive functional dependencies that need to be removed. Lastly, there is no possibility of redundancy in the relations, so it is in BCNF.

3. VIEWS

Main view- has 3 main attributes that we will be using in our analysis: initial cost, fuel type, and field cost

```
CREATE VIEW mainview  AS
        SELECT fuel_cost, inital_cost, fuel_type, Vehicle_Type_Code
        FROM Vehicle_Types
```

Second view- We are planning to have a “click here to learn more” where it takes us to the information about the individual vehicle

```
CREATE VIEW vehicleInfo AS
        SELECT *
        FROM  Vehicle
        WHERE make=enteredMake AND model=enteredModel
```

4. SQL QUERIES

We are finding the vehicles that match the make and model of what the user has inputted. We then join the selected vehicles with the vehicle_type relation to get the relevant cost-benefit attributes for those vehicles

```
CREATE TABLE selectedVehicles (
        Make varchar(255)
        Model varchar(255)
        Vehicle_Type_Code(255)
)


INSERT INTO selectedVehicles(
        SELECT make=enteredMake and model=enteredModel
        FROM Vehicle
        GROUP BY Vehicle_Type_Code
)
SELECT  fuel_cost, inital_cost, fuel_type
FROM selectedVehicles v JOIN mainview m
ON v.Vehicle_Type_Code = m.Vehicle_Type_Code
```