UNIVERSITÉ DE LORRAINE | IUT Saint-Dié-des-Vosges

S2.04: Modeling and analysis

Database for a dealership

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Introduction

Reminder of the subject

The objective of this project is to create a database for a supermarket. The database should be able to manage products, customers, baskets, invoices, employees, departments, promotions and suppliers.

You can work on another problem if you have one or more numerical variables for mathematical analysis.

Analysis and research

Entity	Attributes	Associations
Concession	- Id_Concession - Ville - Adresse	1 Concession → 1 Stock 1 Concession → n Employé

Analysis and research

Entity	Attributes	Associations
Personne	- Id_Personne - Prénom - Nom - Adresse - Nb_Téléphone - Email	1 Personne → 0,1 Employé 1 Personne → 0,1 Client

Analysis and research

Entity	Attributes	Associations
Employé	- Id_Employé - Id_Personne - Id_Concession - Poste	1 Employé → 1 Concession 1 Employé → 1 Personne

Analysis and research

Entity	Attributes	Associations
Client	- Id_Client - Id_Personne - Type_Client	1 Client → 1 Personne 1 Client → 0,1 Opération

Analysis and research

Entity	Attributes	Associations
Stock	- Id_Stock - Id_Concession - Nombre_Véhicue	1 Stock → 1 Concession 1 Stock → n Véhicule

Analysis and research

Entity	Attributes	Associations
Véhicule	- Id_Véhicule - Id_Stock - Id_Modèle - Génération - Marque - Id_Fiche_Technique - Couleur - Finition - État - Kilométrage - Provenance - Prix	1 Véhicule → 1 Stock 1 Véhicule → 0,1 Opération 1 Véhicule → 1 Fiche_Technique 1 Véhicule → 1 Modèle 1 Véhicule → 1 Marque

Analysis and research

Entity	Attributes	Associations
Fiche_Technique	- Id_Fiche_Technique - Bloc_Moteur - Puissance_DIN - Couple - Énergie - Boite_De_Vitesse - ConsomationAu100 - CritAir	1 Fiche_Technique → n Véhicule

Analysis and research

Entity	Attributes	Associations
Marque	- Marque - Origine	1 Marque → n Modèle 1 Marque → n Véhicule

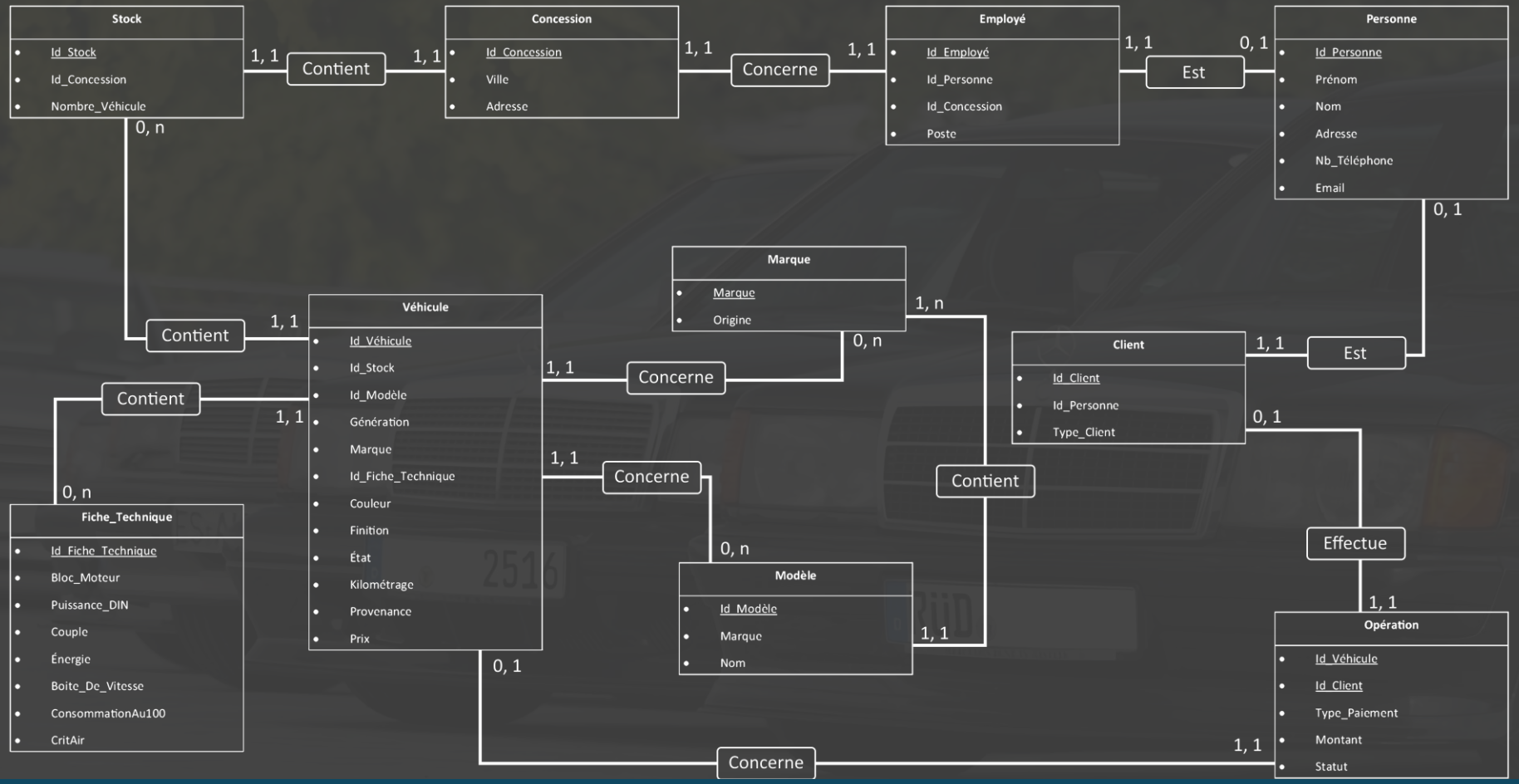
Analysis and research

Entity	Attributes	Associations
Modèle	- Id_Modèle - Marque - Nom	1 Modèle → n Véhicule 1 Modèle → 1 Marque

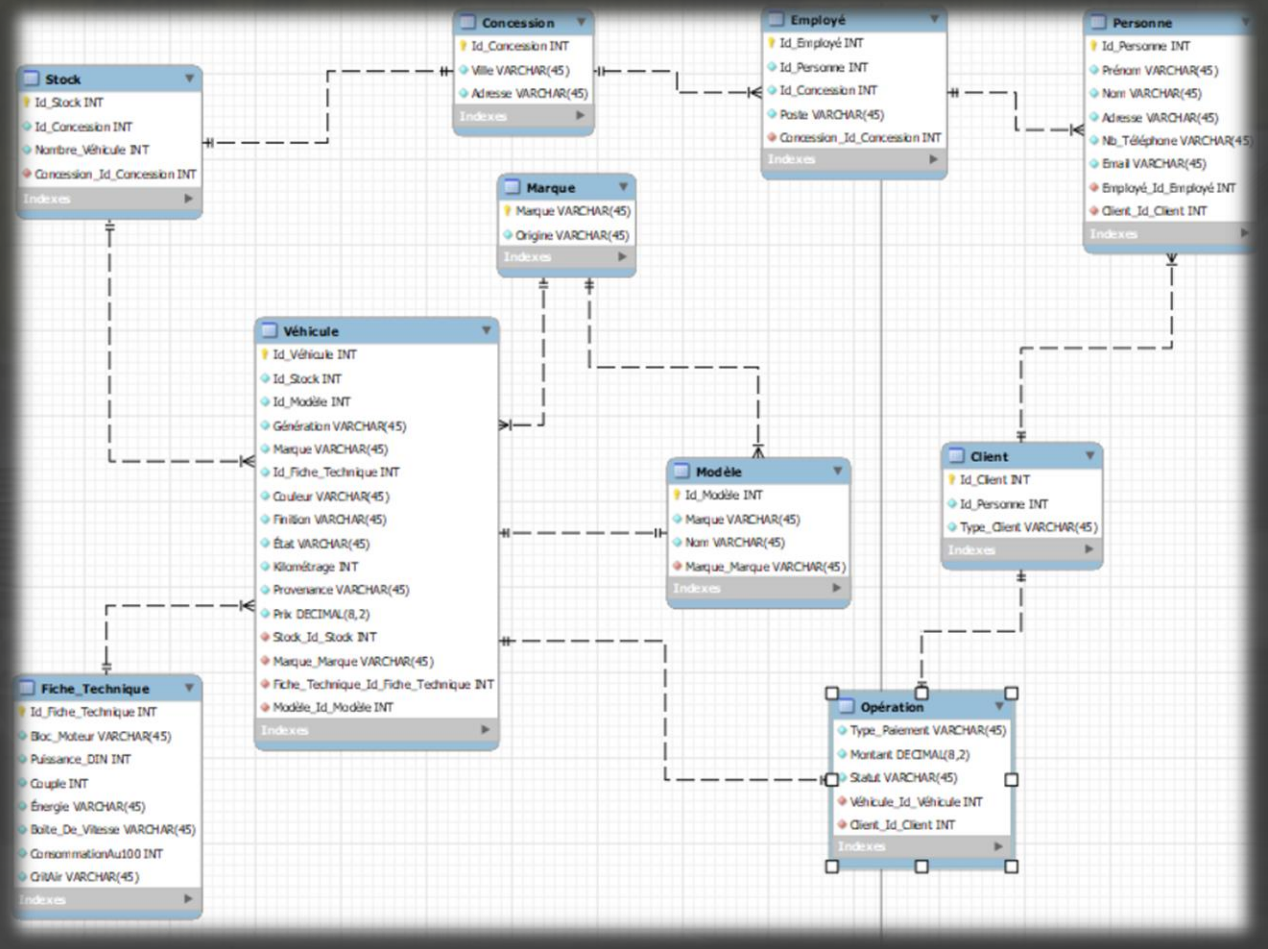
Analysis and research

Entity	Attributes	Associations
Opération	- Type_Paiement - Montant - Statut - Véhicule_Id_Véhicule - Client_Id_Client	1 Opération → 1 Véhicule 1 Opération → 1 Personne

E/A Model


Stock
Id_Stock
Id_Concession
Nombre_Véhicule
1, 1
Contient
1, 1
Concession
Id_Concession
Ville
Adresse
1, 1
Concerne
1, 1
Employé
Id_Employé
Id_Personne
Id_Concession
Poste
1, 1
Est
0, 1
Personne
Id_Personne
Prénom
Nom
Adresse
Nb_Téléphone
Email
0, n
0, 1
Contient
1, 1
Véhicule
Id_Véhicule
Id_Stock
Id_Modèle
Génération
Marque
Id_Fiche_Technique
Couleur
Finition
État
Kilométrage
Provenance
Prix
Marque
Marque
Origine
1, n
0, n
1, 1
Concerne
Contient
1, 1
0, n
Fiche_Technique
Id_Fiche_Technique
Bloc_Moteur
Puissance_DIN
Couple
Énergie
Boite_De_Vitesse
ConsommationAu100
CritAir
1, 1
Concerne
0, n
Modèle
Id_Modèle
Marque
Nom
1, 1
Contient
Client
Id_Client
Id_Personne
Type_Client
1, 1
Est
0, 1
Effectue
1, 1
Opération
Id_Véhicule
Id_Client
Type_Paiement
Montant
Statut
0, 1
Concerne
1, 1

Relationship Model



Database filling

```
INSERT INTO <table> (attribute1, attribute2)
VALUES (values1, values2);
```

Our databse:

- 5 Dealerships
- 60 People
- 40 Employees
- 20 Customers
- 5 Stocks
- 300 Vehicles
- 74 Datasheets
- 18 Brands
- 60 Models
- 18 Operations

Triggers

As soon as a vehicle is deleted or added, the number of vehicles in the Stock corresponding to the vehicle is updated. The update works if multiple vehicles are deleted or added at the same time. Two triggers were made: One for adding, one for deleting.

Triggers

A trigger has been added, which allows you to adjust the price if you increase the mileage of a vehicle in stock. Its price will increase with a ratio of 100 euros for 1 000 kilometers. However, this update will not be carried out if the final price of the vehicle falls below 5 000 euros. No vehicle must be priced below 5 000 euros except for vehicles added manually.

Triggers

If you want to delete a vehicle from the Vehicle table, but it is affected by an operation, the request will fail. A simple trigger has been implemented, which allows before trying to remove the vehicle from the Vehicle table, will first delete it in the Operation table.

Methods of analysis

Analysis with a discrete quantitative variable

We have chosen the power of the vehicles as an analysis variable. Thus, we have in X the values which represent the power, and in Y the quantity of vehicle which allows us to obtain this graph in stick.

Methods of analysis

Analysis with a continuous quantitative variable

For this analysis, we had to choose a continuous variable, so as an interval for the X axis. The variable chosen was the price where it was analyzed as an interval. The intervals are regular and of a size of 10 knowing that they represent the price in thousand euros.

Methods of analysis

Analysis with two discrete quantitative variables

We had to choose two singular variables for and process them, one for X and one for Y. We chose in the Fiche_Technique table the power for the X axis and the consumption for the Y axis because they are variables that do not represent an interval, and which are numerical which allows quantitative analysis.

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Conclusion