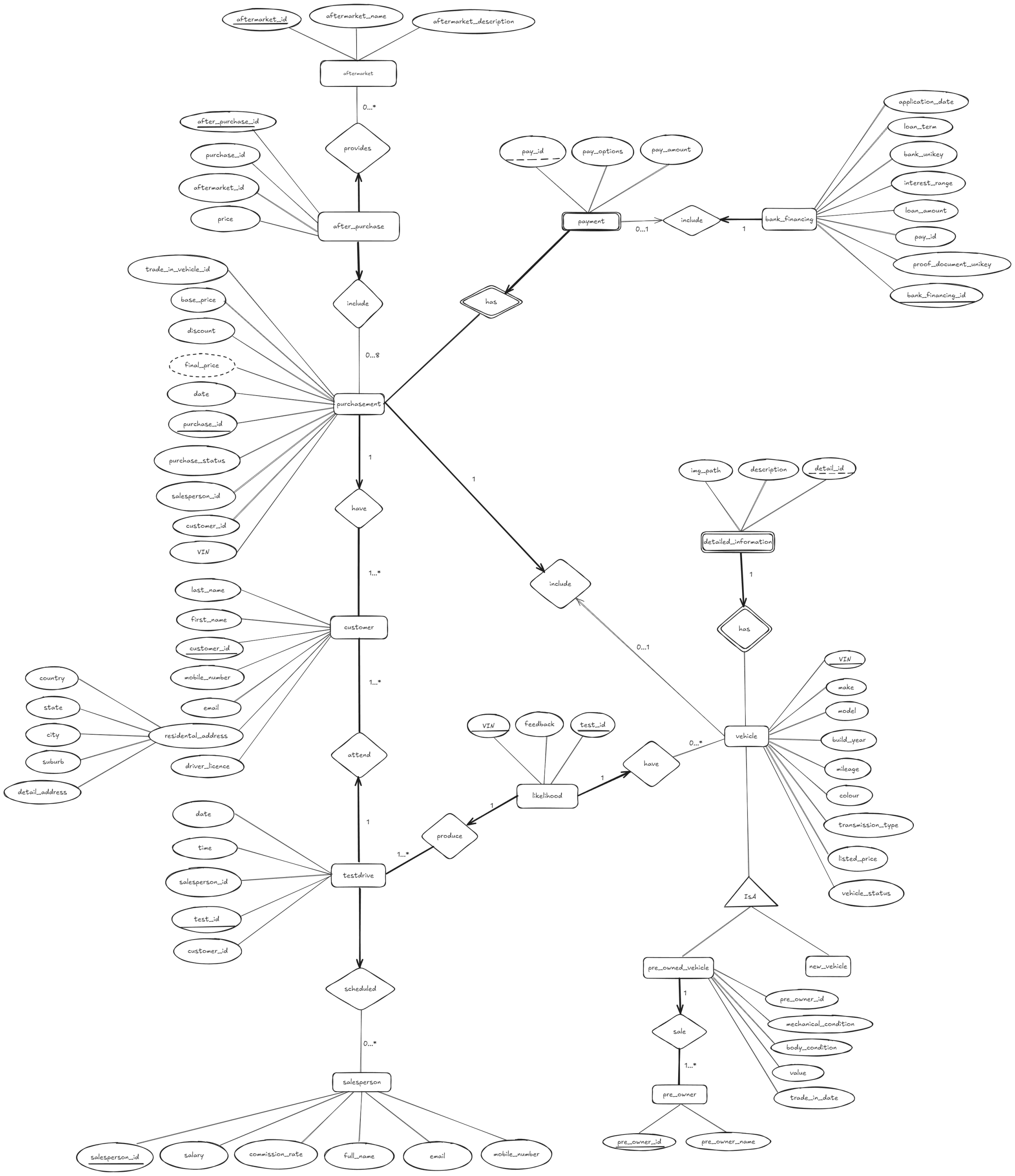
ER Diagram

1.The overview of the whole ER diagram



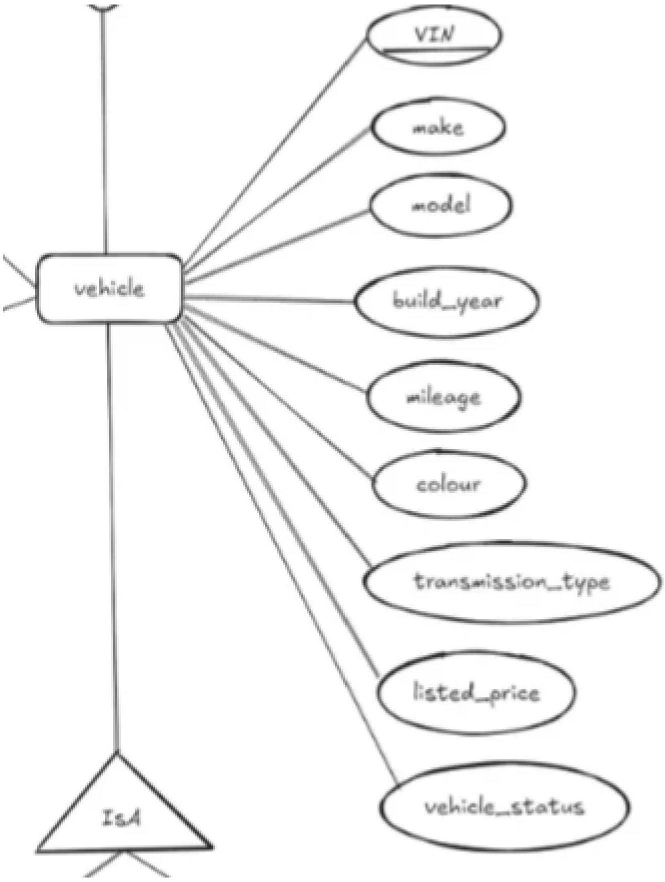
2.Details

Through the reading materials, we can extract serval entities and relationships between them.

- vehicle

The first one is vehicle, which has attribute as below

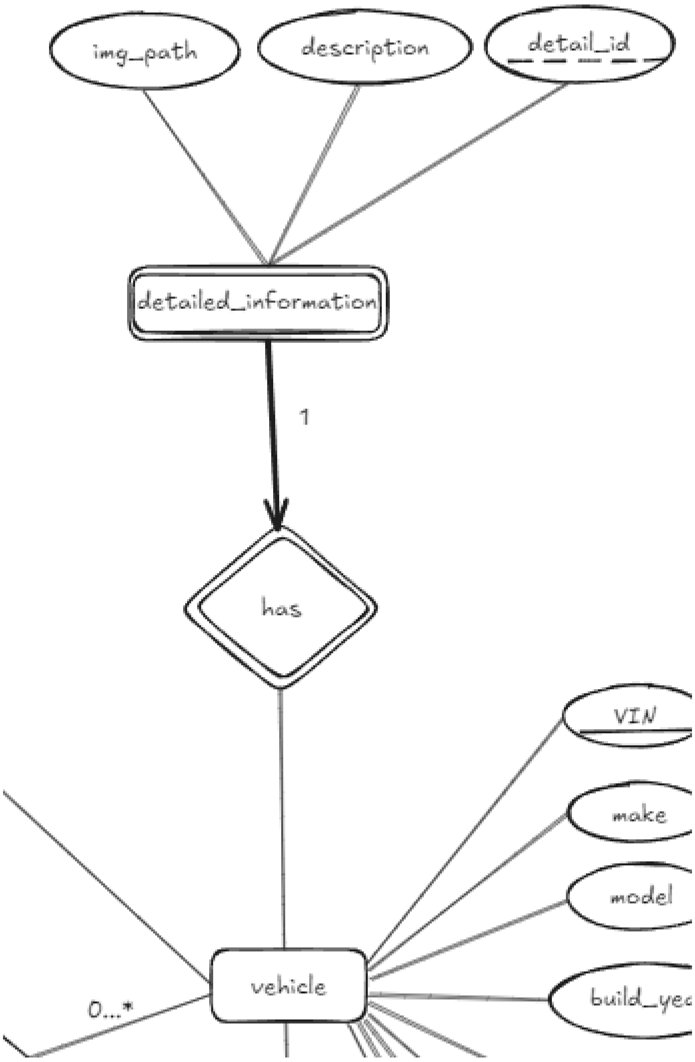
  - VIN：The identification of a vehicle, also can be the primary key.
  - detailed information: make, model, build year, mileage(also can be odometer reading), colour, transmission type and listed price.
  - vehicle_status: it can indicate whether the vehicle has been sold or for sale.



- detailed_information

As the reading materials, every vehicle is accompanied by its` own information. We defined it as a weak entity because it has no meaning without the vehicle.

- detail_id : identify each tuple.
- img_path : the url to the image, which can save the search time.
- description: the description to the image of a vehicle.



- pre_owned vehicle and new vehicle

According to the reading materials, there are 2 categorial or generalization of vehicle: new or previous owned by others.

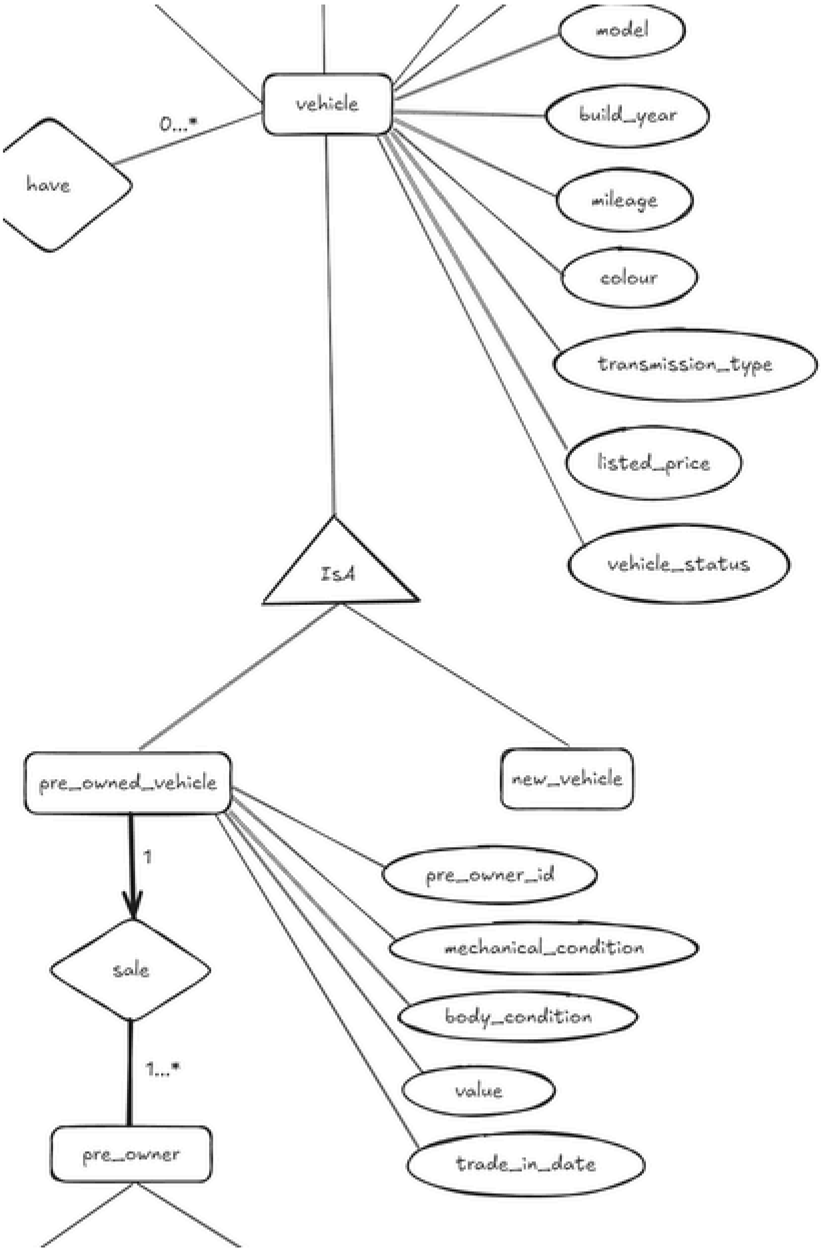
There are serval attributes according to the reading materials.

For pre_owned_vehicle, it has:

- pre_owner id : the identification of previous owner

- mechanical condition, body condition: which is the condition of the vehicle, recorded when the previous owner sale it to the SAG.
- value, trade_in_date : the date and value in trading.

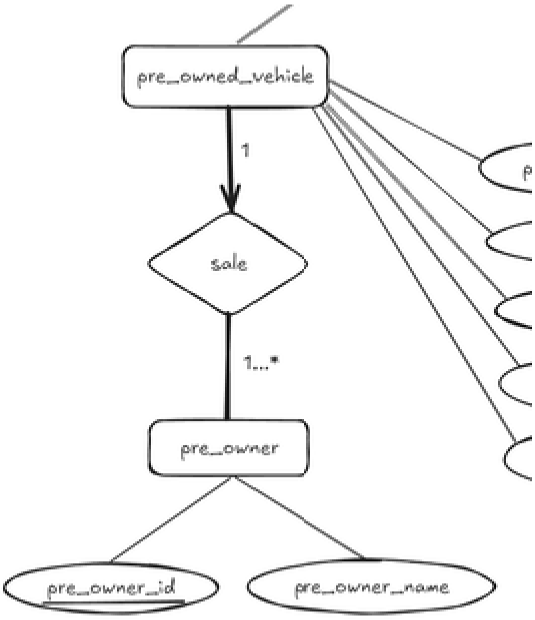
The new vehicle has no extra attributes, but for the scalability, we make it as a entity(maybe there will be more attributes in the future).



- previous owner

System will record the basic information of previous owner(id and name)

- The relationship between pre_owned_vehicle:
    - 1 previous owner can sale the at least 1 vehicle to SAG (if it is 0, the record will not be recorded in the system)
    - 1 vehicle can be sold by exactly 1 previous owner



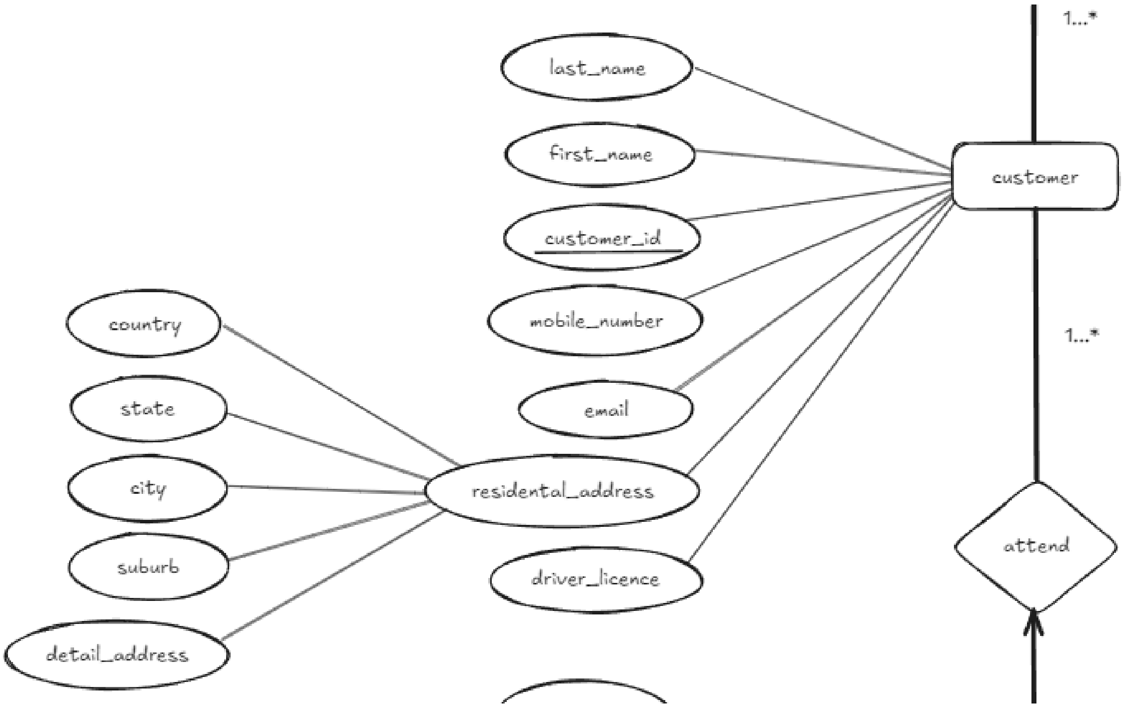
- customer

The customer also has serval attribute:

- last name, first name, customer_id, mobile_number, email, address(country...), driver_licence according to the reading material.

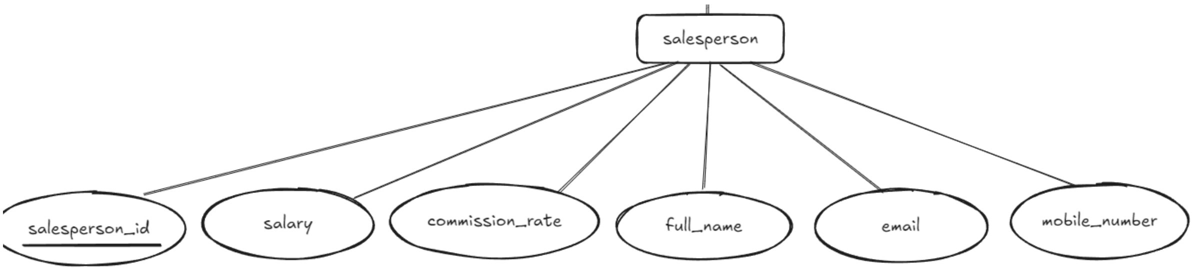
Noticed that the residential address contained of different attributes like country, state,city, suburb and detailed address.

Also, according to the reading material, the system will place the detailed information(like first name) empty until the customer have a purchase.



- salesperson

The salesperson have several attributes as below.



- testdrive

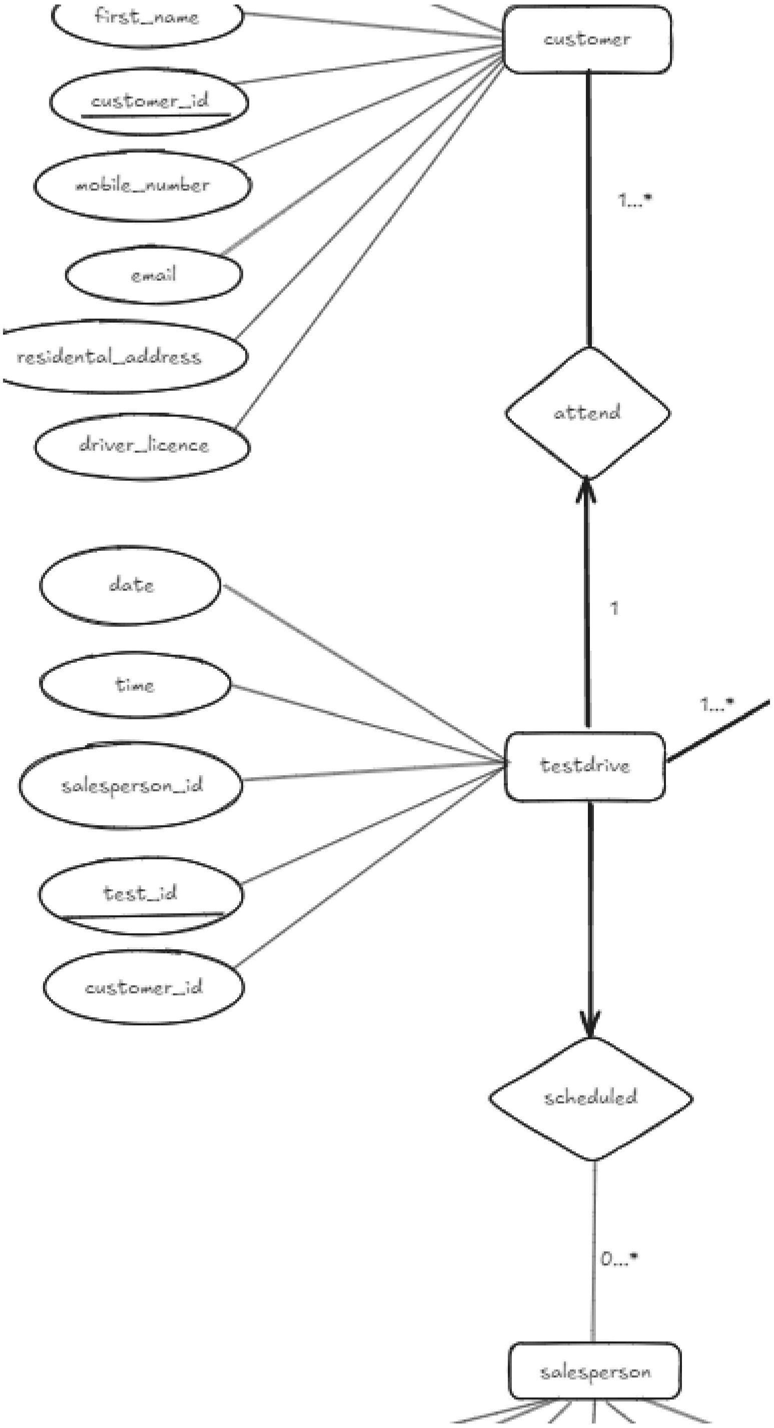
The entity testdrive has attribute:

- date, time : the date and time customer attend in a testdrive.
- salesperson_id : the salesperson who schedule the testdrive.
- test_id : primary key to identity the testdrive.
- customer_id : the customer who attend the testdrive.

1 customer can attend in serval testdrive, and a testdrive can be attended by a customer for one.

1 salesperson can schedule at least 0 (0..n) testdrive but a testdrive can be scheduled by exactly 1 salesperson.

Noticed that it is no VIN recorded in testdrive, but you can see it on likelihood.



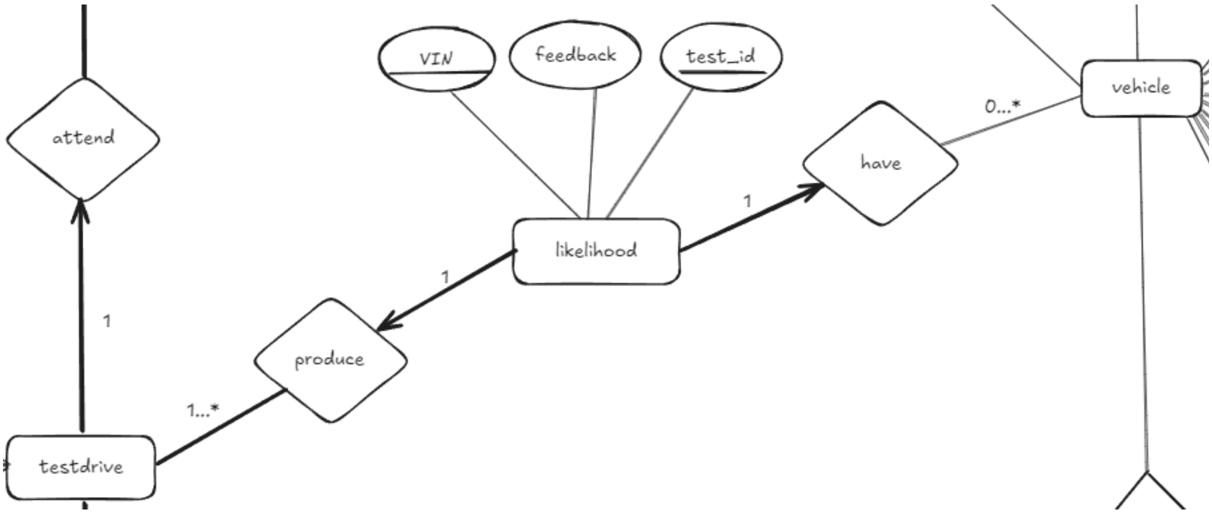
- likelihood

Entity likelihood record the each VIN in a testdrive and user feedback to them.

Noticed that we assumed that customer can try several vehicle in a `testdrive` events, so we can record the VIN,feedback from a customer in the likelihood entity.

1 testdrive can produces several likelihood based on how many vehicles customer have tried; 1 likelihood can only be produced by 1 testdrive.

1 likelihood can have exactly 1 vehicles but 1 vehicle can appear in 0 to n likelihood.



- purchasement

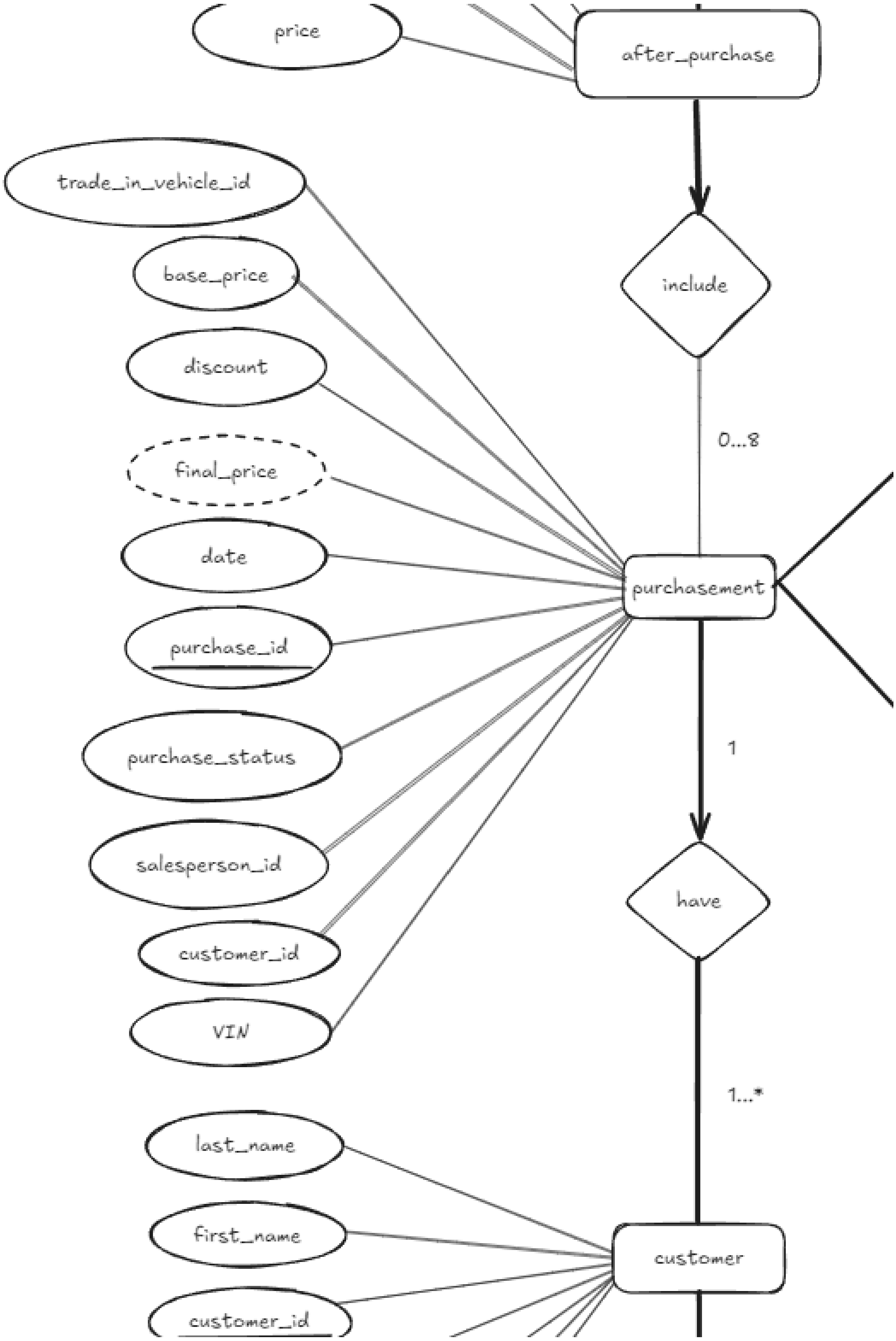
When a customer decide to have a purchase, the system will record the detailed information about it.

The attributes:

- purchase_id, date, base_price, discount : the basic information about the purchase.
- VIN : the vehicle that will be purchased.
- trade_in_vehicle_id : the vehicle that will be traded in.
- purchase_status : whether the purchase is completed.

- customer_id, salesperson_id : the customer and salesperson who involved in the purchase.
- final_price : the final_price of the purchase, which is a derived entity.

The customer can has 1 or more purchase and the purchase can only have 1 customer.

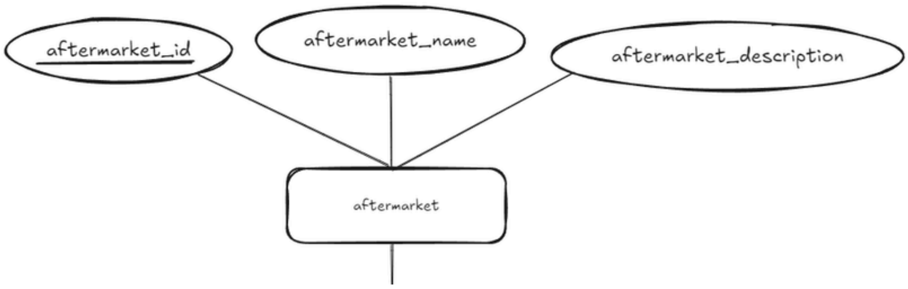


- aftermarket

The entity aftermarket is the detailed about aftermarket, including

  - aftermarket_id

- aftermarket_name
- aftermarket_description



- after_purchase

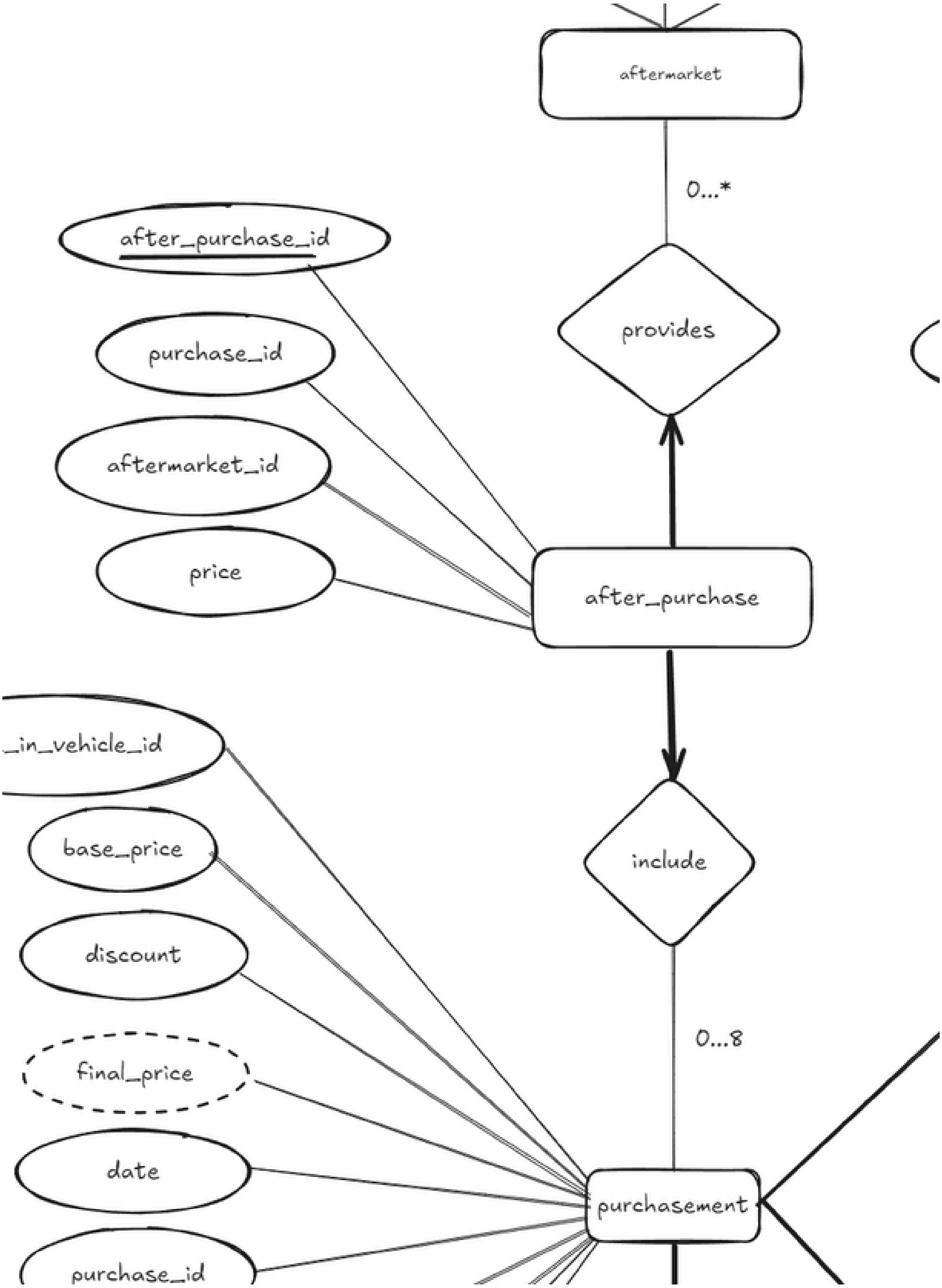
The entity `after_purchase` record the aftermarket options that has been chosen in a single purchase.

The attribute of it:

- after_purchase_id
- purchase_id : the purchase it belongs to.
- aftermarket_id : the aftermarket option it contains.
- price : the aftermarket price (because the reading material said the different vehicles have different price, we need to record it).

1 purchase contains 0 - 8 after_purchase option, and 1 after_purchase has exactly 1 purchase.

1 after purchase has exactly 1 aftermarket option, and 1 aftermarket option can appear in 0-n after_purchase

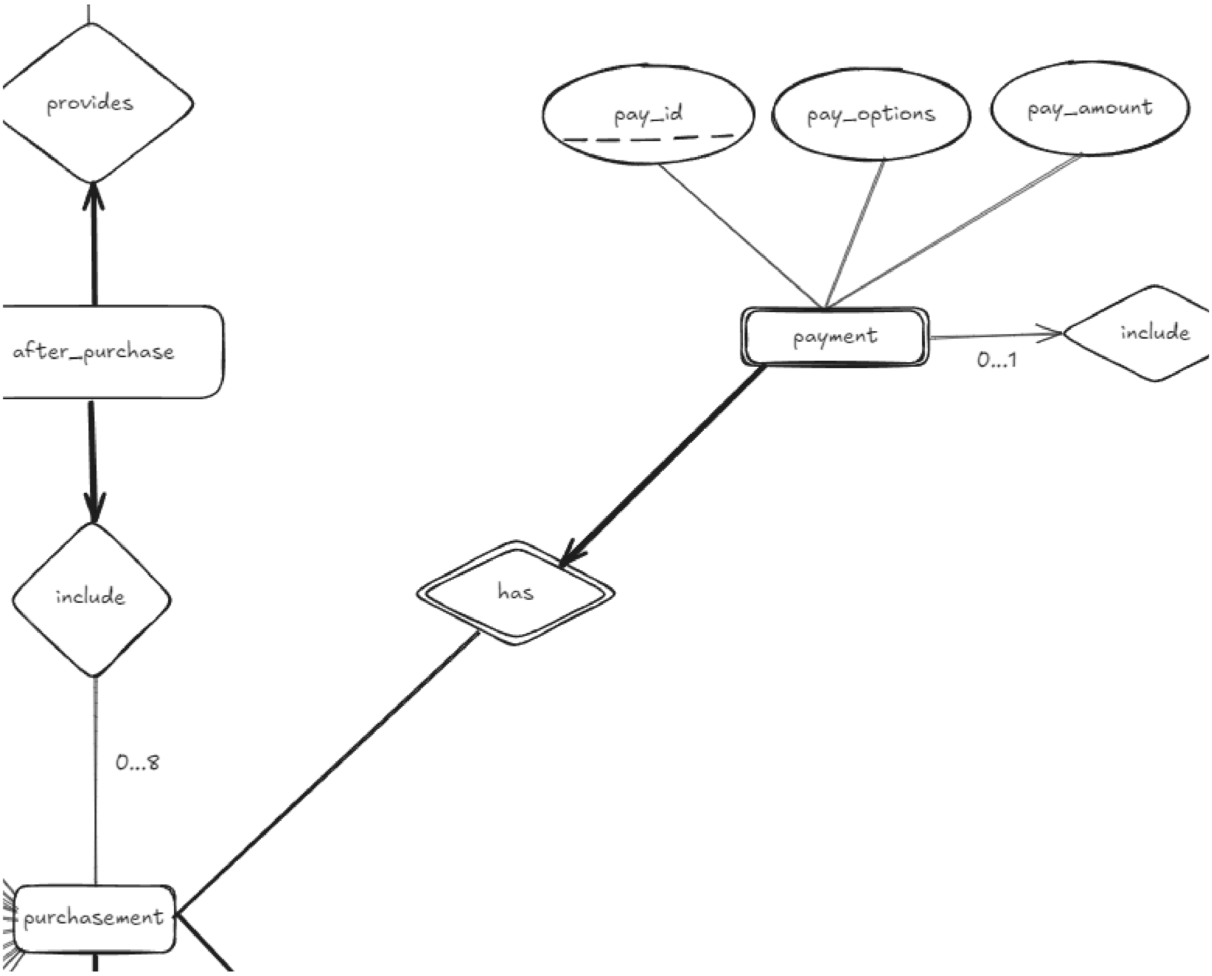

aftermarket
0...*
provides
after_purchase_id
purchase_id
aftermarket_id
price
after_purchase
_in_vehicle_id
base_price
discount
final_price
date
purchase_id
include
0...8
purchasement

- payment

payment is a weak entity of purchase, a purchase can be completed with serval payments.

The attribute:

- pay_id
- pay_options : customer how to pay for the payment.
- pay_amount : the amount of this single payment.



- bank_financing

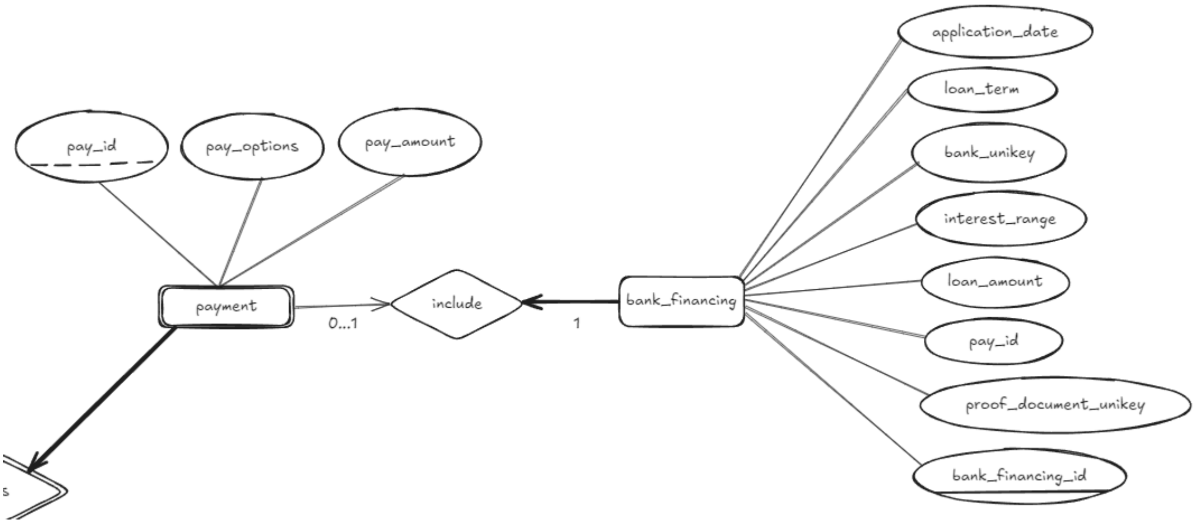
Payment may include bank_financing, which contains of serval attribute:

- application date : recording the date of applying the bank financing.
- loan_term, bank_unikey, interest_range, loan_amount, proof_document_unikey, bank_financing_id : the basic information of the bank financing.

- pay_id : the payment that bank financing for.

Noticed that the proof document maybe too large to store in database, we can just store the unikey, and verify it through bank system.

1 bank_financing can only support 1 payment, and 1 payment can include at most 1 bank financing.


pay_id
pay_options
pay_amount
payment
0...1
include
1
bank_financing
application_date
loan_term
bank_unikey
interest_range
loan_amount
pay_id
proof_document_unikey
bank_financing_id
s