2021-1
DB – PROJECT 2

20192134 김은원
컴퓨터 공학과

Functional Dependency

- Inventory_id -> inventory_address, inventory_vin
- Dealer_id-> d_phone, dealer_address, dealer_name
- Inventory_id , dealer_id , vin-> store_date
- Customer_id, dealer_id vin -> sale_date, price
- Vin, plant_name -> make_date
- Cusromer_id -> name, address, gender, salary, vin
- Plant_name -> plant_address , supply_name
- Vin -> model_name, brand_name, option, plant_id , dealer_id
- (Supplier_name -> supply_part Supply_name, plant_name -> supply date

BCNF로 만들기

- Inventory(inventory_id, inventory_address)

Inventory_id -> inventory_address, inventory_vin

bcnf 이다.

- Dealer(dealer_id,d_phone,dealer_address,dealer_name)

Dealer_id-> d_phone, dealer_address, dealer_name

Dealer는 bcnf 이다.

- Store(inventory_id, dealer_id, store_date, vin)

Inventory_id , dealer_id , vin-> store_date

Bcnf이다.

- Sale(customer_id, dealer_id, price, vin, sale_date)

Customer_id, dealer_id vin -> sale_date, price

Bcnf 이다.

- Make(vin, plant_name, make_date)

Vin, plant_name -> make_date

Bcnf 이다.

- Deliver(dealer_id, vin)

Vin -> model_name, brand_name, option, plant_id , dealer_id

Bcnf 이다.

BCNF로 만들기

- Customer(customer_id,name,address,gender,salary)
- Own(vin,customer_id)

Cusromer_id -> name, address, gender, salary, vin 이 므 로 Customer와 Own은 bcnf 이다

- Plant(plant_name,plant_address)

Plant_name -> plant_address , supply_name

이므로 plant는 bcnf 이다.

- Vehicles(vin,model_name,brand_name,option,plant_id)

Vin -> model_name, brand_name, option, plant_id , dealer_id 이므로 Vehicles은 bcnf 이다.

- Supplier(supplier_name,supply_part)

Supplier_name -> supply_part

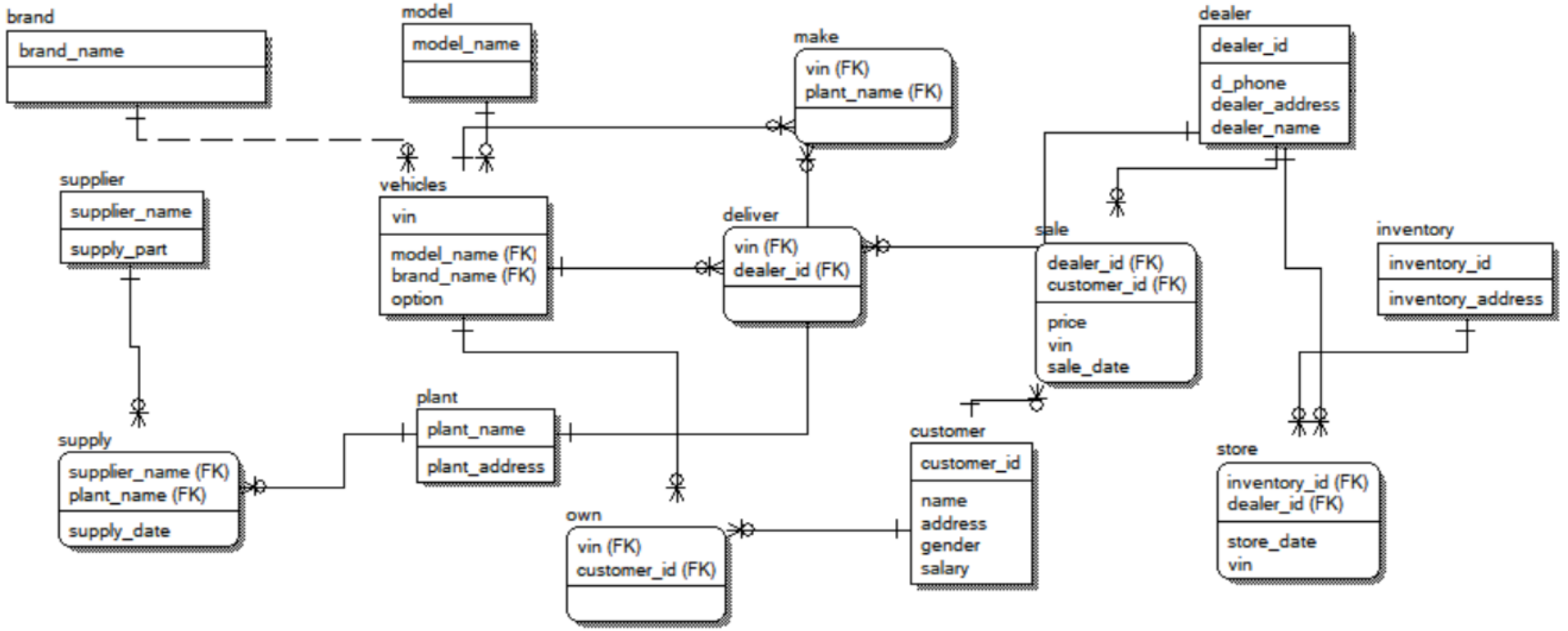
이므로 Supplier는 bcnf 이다

- Supply(supplier_name,plant_name,supply_date)

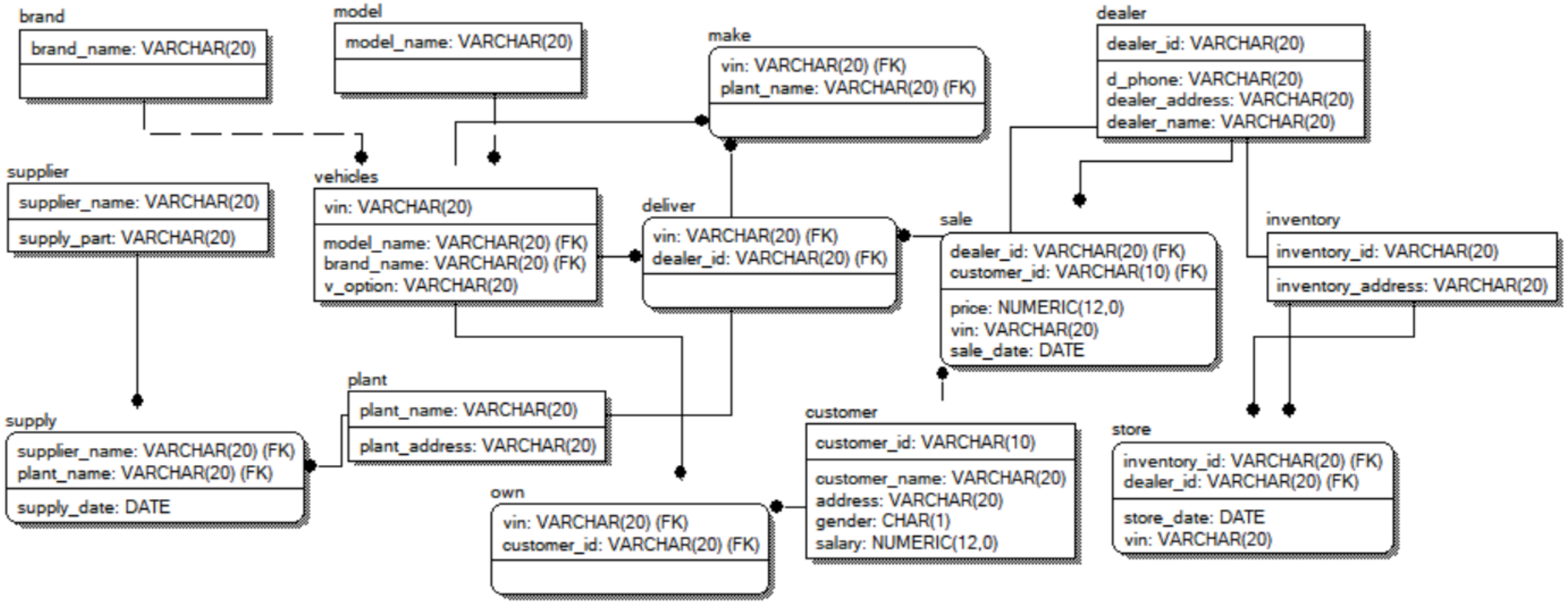
Supply_name, plant_name -> supply date

이므로 Supply는 BCNF 이다.

BCNF로 만든 logical Schema Diagram



Physical schema diagram



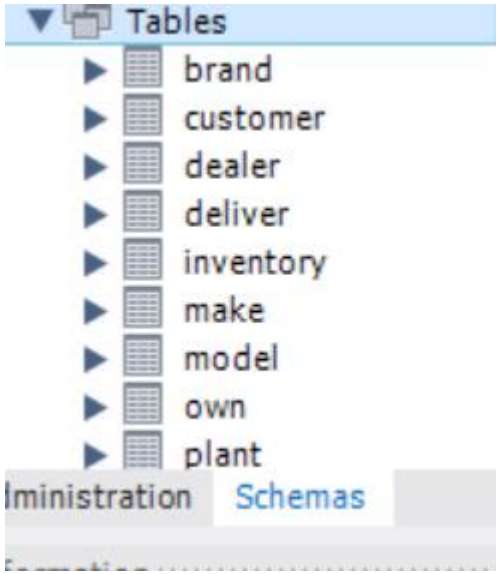
Txt파일을 열고 workbench와 연결한다.

- 20192134_start.txt 파일에는

Table을 만드는 creat문,

데이터를 만드는 insert문이 있다. 이 파일을 열어서 mysql 데이터베이스와 연결한다.

테이블과 데이터가 생기는 것을 볼 수 있다.



Workbench 를 통한 sql문 작성하기

(TYPE 1) Show the sales trends for a particular brand over the past k years.

K값과 특정브랜드 (b1~b15) 를 입력하면 차를 산 고객의 이름과 vin 이 나열된다.

```
------- SELECT QUERY TYPES -------

        1. TYPE 1
        2. TYPE 2
        3. TYPE 3
        4. TYPE 4
        5. TYPE 5
        6. TYPE 6
        7. TYPE 7
        0. QUIT
Choose Type: 1
(TYPE 1) Show the sales trends for a particular brand over the past k years.
 Which K? :1
Which brand?(ex: b1,b2..):b1
       customer_name                vin

                mark                v001
                risa                v016
              jisung                v003
              chenle                v004
              jaemin                v005
                jeno                v006
             haechan                v007
```

date(sale_date) >= date(subdate(now(), INTERVAL k year)) and date(sale_date) <= date(now())
K year 만큼 현재 시간에서 빼준 시간부터 현재시간까지의 날짜를 말한다.

```
select   customer_name,vehicles.vin

from sale, vehicles, customer

where date(sale_date) >= date(subdate(now(), INTERVAL k year)) and
date(sale_date) <= date(now()) and sale.vin=vehicles.vin and sale.customer_id
= customer.customer_id and brand_name='b1'
```

⇒ k=1
⇒ Brand=b1 일때

(TYPE 1-1) Then break these data out by gender of the buyer.

Type 1에서 작성된 내용이 입력한 gender값만 출력되게 한다.

```
Choose Type: 1
(TYPE 1) Show the sales trends for a particular brand over the past k years.
 Which K? :1
Which brand?(ex: b1,b2..):b1
       customer_name                  vin

                mark                  v001
                risa                  v016
              jisung                  v003
              chenle                  v004
              jaemin                  v005
                jeno                  v006
             haechan                  v007
1.type 1-1
2.type 1-2
Choose sub type(ex:1): 1
gender(man:1, woman : 0):1
       customer_name                  vin

              jisung                  v003
              chenle                  v004
              jaemin                  v005
```

남자는 1 여자는 0으로 위 결과는 남자만 출력된 결과값이다.

```
select   customer_name,vehicles.vin

from sale, vehicles, customer

where date(sale_date) >= date(subdate(now(), INTERVAL 1 year)) and
date(sale_date) <= date(now()) and

sale.vin=vehicles.vin and sale.customer_id = customer.customer_id and
brand_name='b1'

and customer.gender= '1'
```

Type 1-1 or type 1-2 를 선택함
(gender는 1을 입력하면 된다.)

(TYPE 1-2) Then by income range.
Type 1을 소득이 낮은 사람부터 나열한다.

```
Choose Type: 1
(TYPE 1) Show the sales trends for a particular brand over the past k years.
 Which K? :1
Which brand?(ex: b1,b2..):b1
       customer_name                  vin

                mark                  v001
                risa                  v016
              jisung                  v003
              chenle                  v004
              jaemin                  v005
                jeno                  v006
             haechan                  v007
1.type 1-1
2.type 1-2
Choose sub type(ex:1): 2
order by salary
       customer_name                   vin                salary

                mark                  v001                100000
                risa                  v016                100000
              jisung                  v003                100000
              chenle                  v004                100000
              jaemin                  v005                200000
                jeno                  v006                200000
             haechan                  v007                200000
```

```
select  customer_name,vehicles.vin,salary

from sale, vehicles, customer

where date(sale_date) >= date(subdate(now(), INTERVAL 1 year)) and date(sale_date)
<= date(now()) and

sale.vin=vehicles.vin and sale.customer_id = customer.customer_id and
brand_name='b1'

order by customer.salary asc
```

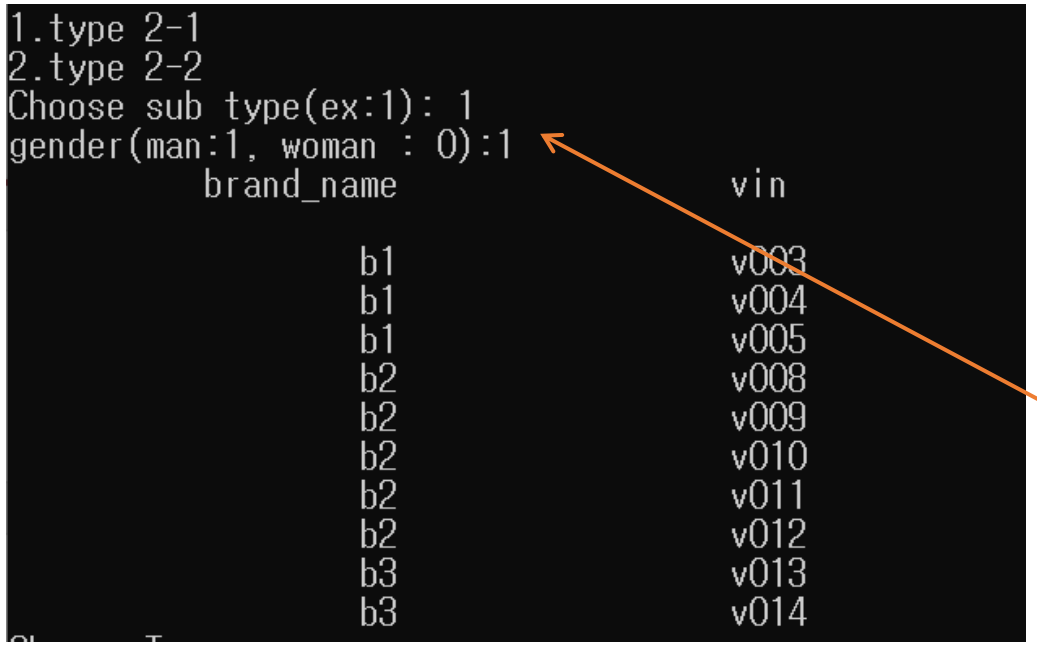
Type 1-1 or type 1-2 를 선택함
(salary는 2를 입력하면 된다.)

- (TYPE 2) Show sales trends for various brands over the past k months.
- K 년 동안 판매된 여러 브랜드를 판매된 자동차 vin과 함께 보여준다.

```
Choose Type: 2
Which K? :1
         brand_name                vin
                 b1               v001
                 b1               v016
                 b5               v002
                 b1               v003
                 b1               v004
                 b1               v005
                 b1               v006
                 b1               v007
                 b2               v008
                 b2               v009
                 b2               v010
                 b2               v011
                 b2               v012
                 b3               v013
                 b3               v014
                 b4               v015
```

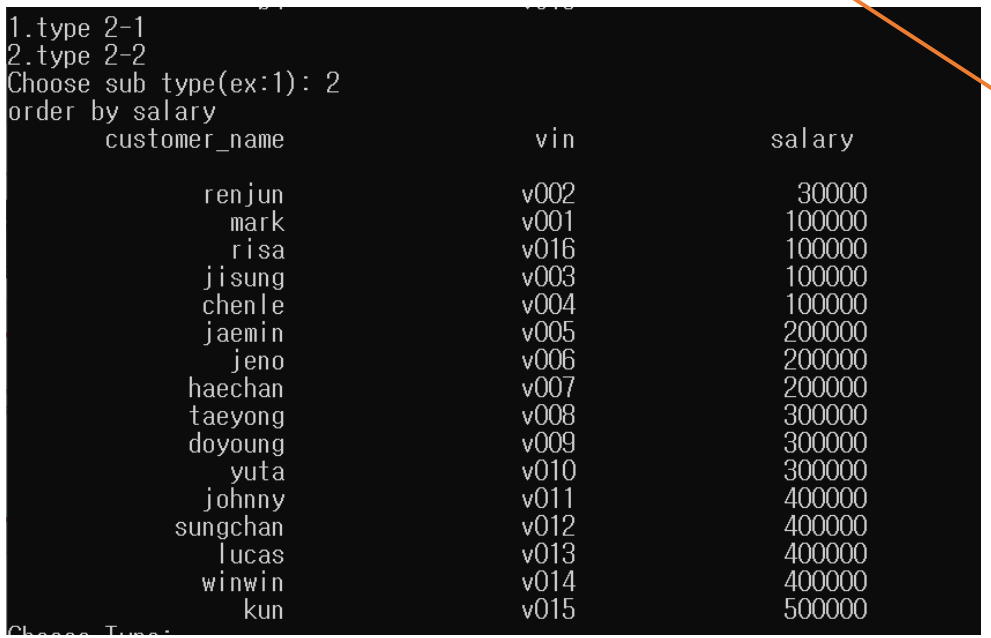
```
select brand_name , sale.vin

from sale, vehicles

where date(sale_date) >= date(subdate(now(), INTERVAL 1 year )) and
date(sale_date) <= date(now()) and

sale.vin=vehicles.vin
```

- (TYPE 2-1) Then break these data out by gender of the buyer
- Type 2를 입력된 성별로만 출력한다.




```
select brand_name ,sale.vin

from sale, vehicles, customer

where date(sale_date) >= date(subdate(now(), INTERVAL 1 year)) and
date(sale_date) <= date(now()) and

sale.vin=vehicles.vin and sale.customer_id = customer.customer_id and
customer.gender= '1'
```

- (TYPE 2-2) Then by income range.
- Type 2를 소득순으로 나열한다.
- 고객이름 , vin, salary가 출력된다.



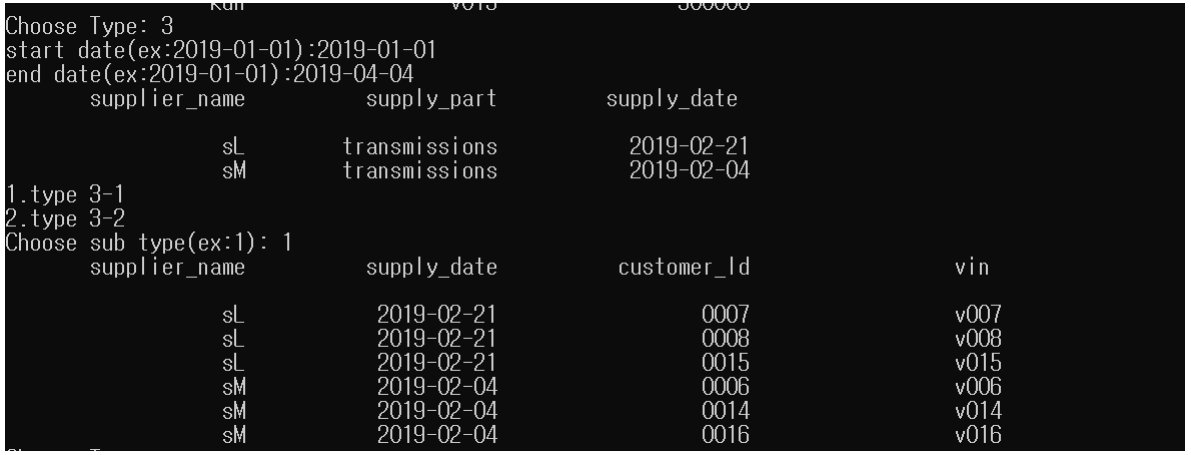

```
select brand_name, salary

from sale, vehicles, customer

where date(sale_date) >= date(subdate(now(), INTERVAL 1 year)) and
date(sale_date) <= date(now()) and

sale.vin=vehicles.vin and sale.customer_id = customer.customer_id

order by customer.salary asc
```

- (TYPE 3) Find that transmissions made by supplier (company name) between two given dates are defective.
- 입력한 두 날짜 사이에 공급된 transmissions 은 불량임
- 공급한 공급업체에서 자동차 공장에게 준 supply_date 당일자동차를 만든다고 가정한다.
- 공급업체 이름과 공급 부품, 공급 날짜가 출력된다.

```
Choose Type: 3
start date(ex:2019-01-01):2019-01-01
end date(ex:2019-01-01):2019-04-04
       supplier_name          supply_part         supply_date

                sL         transmissions           2019-02-21
                sM         transmissions           2019-02-04
1.type 3-1
2.type 3-2
Choose sub type(ex:1):
```

```
select supply.supplier_name,supply_part,supply_date
from supply, supplier
where supply.supplier_name= supplier.supplier_name
and supply_part='transmissions'
and date(supply_date)>= date('2019-01-01') and date(supply_date)<= date('2019-04-04')
```

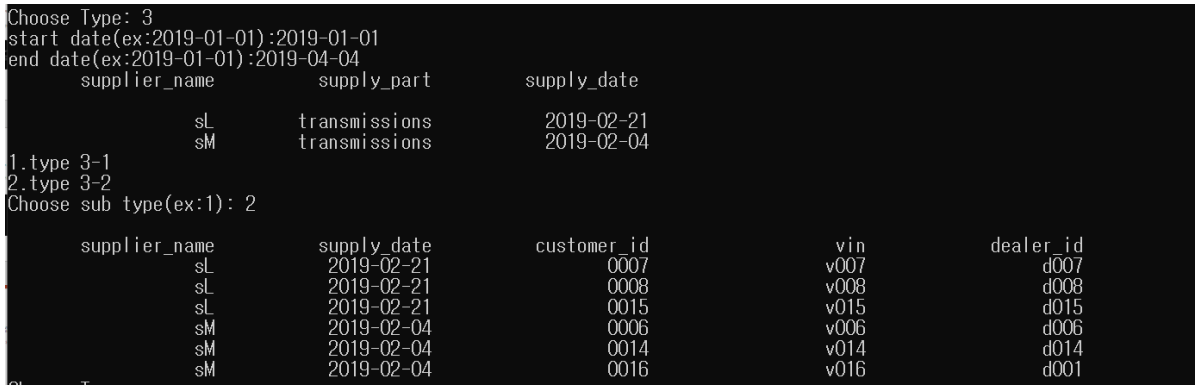
- (TYPE 3-1) Find the VIN of each car containing such a transmission and the customer to which it was sold.
- 불량인 차의 vin과 그 고객을 찾아라
- 주어진 기간 안에 transmission을 공급받은 공장이 만든 차를 찾는다.




```
select supply.supplier_name,supply_date , customer_id , own. vin
from supply, supplier, make ,own,vehicles
where supply.supplier_name= supplier.supplier_name
and supply_part='transmissions'
and date(supply_date)>= date('2019-01-01') and date(supply_date)<= date('2019-04-04')
and make.plant_name=supply.plant_name and  make.vin= vehicles.vin and vehicles.vin =own.vin
```

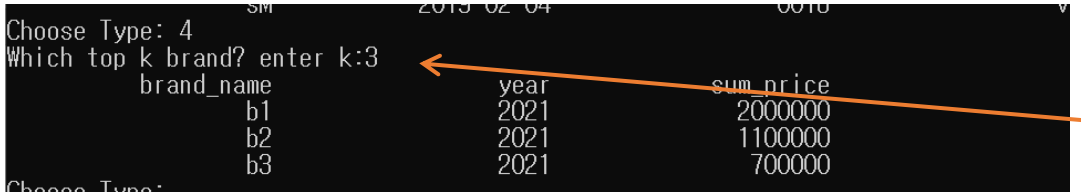
Supply_part 를 transmissions라고 설정한다.
예시에서는 2019-01-01 과 2019-04-04를 입력하였다.

- (TYPE 3-2) Find the dealer who sold the VIN and transmission for each vehicle containing these transmissions.
- Type 3에서 불량을 판매한 판매점을 찾는다.
- 공장의 이름과 공장의 날짜 고객의 id , vin , dealer_id가 출력된다.




```
select supply.supplier_name,supply_date , customer_id , own. vin ,dealer_id

from supply, supplier, make ,own,vehicles,deliver

where supply.supplier_name= supplier.supplier_name

and supply_part='transmissions'

and date(supply_date)>= date('2019-01-01') and date(supply_date)<=
date('2019-04-04')

and make.plant_name=supply.plant_name and  make.vin= vehicles.vin and
vehicles.vin =own.vin

and deliver.vin=make.vin
```

- (TYPE 4) Find the top k brands by dollar-amount sold by the year.
- 총 판매된 값이 가장 큰 브랜드를 년도로 출력한다.
- 판매된 값이 높은 순으로 출력된다.
- 브랜드 이름과 year 그리고 판매된 총가격이 출력된다.



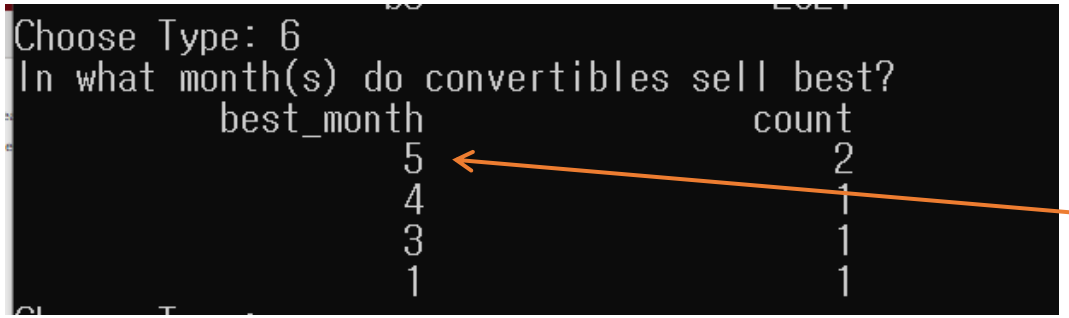

```
select brand_name, year(sale_date), count(price) as sum
from sale, vehicles
where sale.vin=vehicles.vin
group by brand_name
order by count(price) desc
limit 3
```

- (TYPE 5) Find the top k brands by unit sales by the year.
- 많이 팔린 브랜드 k 개 출력
- 브랜드 이름과 year 그리고 count 가 출력된다.


```
select brand_name, year(sale_date), count(price) as sum
from sale, vehicles
where sale.vin=vehicles.vin
group by brand_name
order by count(price) desc
limit 3
```

- (TYPE 6) In what month(s) do convertibles sell best?
- 가장 convertibles이 많이 팔린 달 순서대로 출력된다.
- Month와 count가 출력된다.

AA='convertible'이라고 가정한다.




```
select month(sale_date) as best_month,count(month(sale_date)) as count
from sale , vehicles
where sale.vin= vehicles.vin and vehicles.model_name='AA'
group by month(sale_date)
order by count(month(sale_date)) desc
```

- (TYPE 7) Find those dealers who keep a vehicle in inventory for the longest average time.
- 창고에 차를 가장 오래 두는 판매점을 찾는다.
- 판매점의 id와 보관된 시간을 출력한다.


```
select store.dealer_id , avg(date(sale_date)-date(store_date)) as inventory_time
from store, sale
where  store.vin= sale.vin
group by sale.dealer_id
order by avg(date(sale_date)-date(store_date)) desc
limit 1
```

판매된 날짜에서 보관한 날짜를 빼면 보관된 기간이 출력된다.

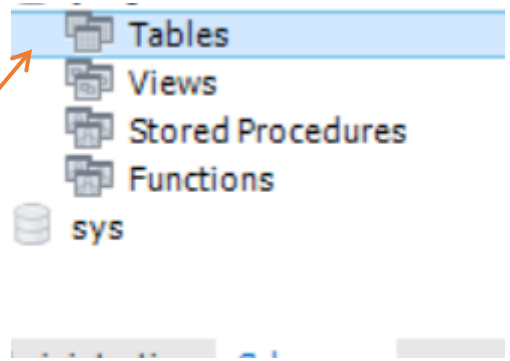
Type 0을 누르면 Quit으로 빠져나간다. (while문 이용)

20192134_end.txt파일이 열리고

Delete 로 튜플을 삭제하고

Drop으로 테이블을 삭제하여

데이터베이스의 저장된 모든 테이블이 삭제된다.




```
Choose Type: 0

C:₩
이(가) 종료되었습니다(코드: 0개).
이 창을 닫으려면 아무 키나 누르세요...
```

감사합니다

- 서강대학교
- 컴퓨터공학과
- 20192134 김은원
- kew5638@naver.com