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1.

a) This application aims to manages dealers, which can manage employees in different dealers and find an accurate car which a dealer kept.

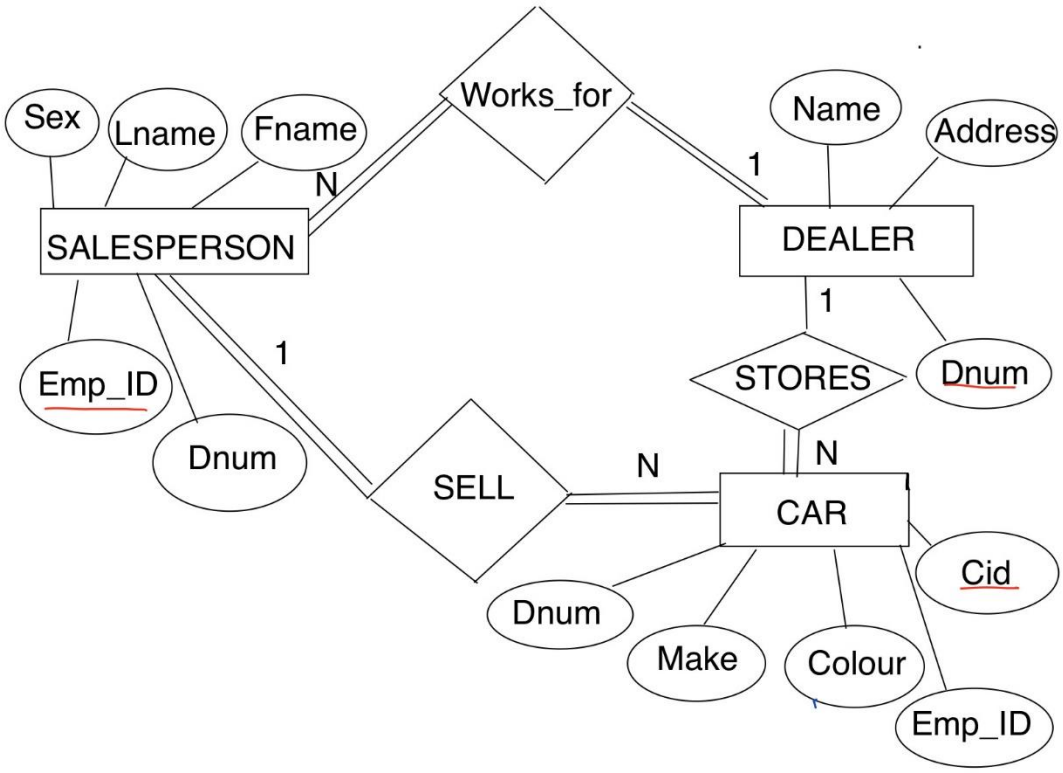
b) WORKS_FOR, a 1: N(one-to-many) relationship type between DEALER and SALESPERSON. Both participations are total. A dealer has many salesmen, but every salesperson works for one dealer.

c) MANAGES, a 1: 1(one-to-one) relationship type between DEALER and SALESPERSON. A dealer must have a manager at all times, which implies total participation. A dealer has only one manager, and one manager manages one dealer.

d) STORES, a 1: N(one-to-many) relationship type between DEALER and CAR. The participation of car is total. A dealer can store many cars. But every car is stored in one dealer.

e) SELL, a 1: N(one-to-many) relationship type between SALESPERSON and CAR. Both participations are total. A car can be sold by one salesperson, but one salesperson can sell many cars.

2.



3. relation data model

a) There are 3 tables, which are SALESPERSON, CAR and DEALER.

b) SALESPERSON has attributes which are Sex, Lname, Fname, Emp_ID.

CAR has attributes which are Make, Colour, Cid.

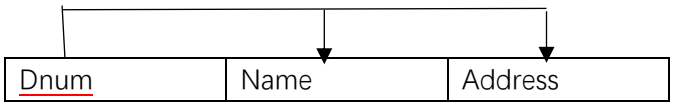
DEALER has attributes which are Name, Address, Num.

c) Each table exactly has at least 10 records.

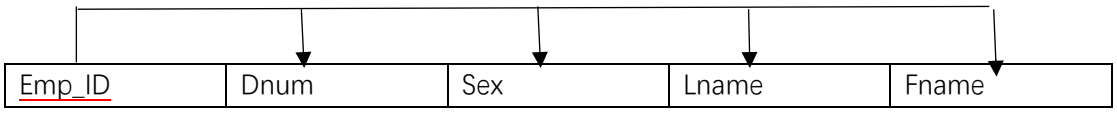
4.

3NF:

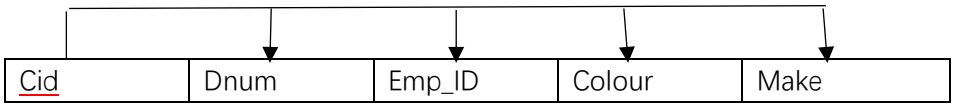
My forms are perfect 3NF before I normalize it, which do not have transitive dependency and partial dependency.



Dnum is the primary key as for the DEALER table.



In the SALESPERSON table, Emp_ID is the primary key, besides, Dnum is the foreign key which references to the DEALER TABLE.



In the CAR table, Cid is the primary key. Meanwhile, Dnum is the foreign key references to the DEALER table, Emp_ID is the foreign key references to the SALESPERSON table.

5.

I use serval INSERT to insert the record into table.

DELETE is used to delete a car according an accurate id.

UPDATE is used to update a car's information according to an accurate id.

I use serval SELECT combined with other queries.

LEFT JOIN AND GROW BY are used to display all the employee who works for different dealer, and display the num of cars which an employee has been sold.

VIEW query is used to show info to customers.

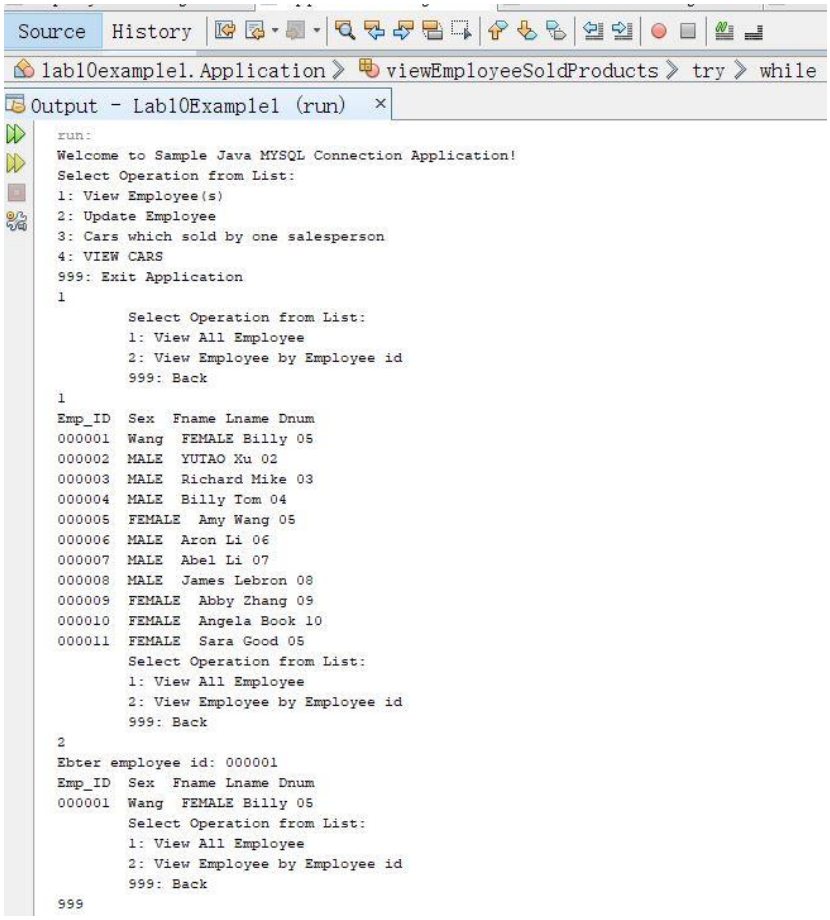
The procedure is used to display all the information of dealers.

The Trigger is treated as an Easter egg, which can make color of cars change.

3 and 4

I take some screenshots of my output on NetBeans. Besides, I also attach my source code in

the zip file.




```
Select Operation from List:
1: View Employee(s)
2: Update Employee
3: Cars which sold by one salesperson
4: VIEW CARS
999: Exit Application
2
Ebter employee id: 000002
Emp_ID   Sex   Fname   Lname   Dnum
000002   MALE   YUTAO   Xu   02
Enter Updated First Name: XU
Enter Updated Last Name: YUTAO
Enter Employee sex: FEMALE
Enter the dealer number of this employee: 05
Customer Updated!
Select Operation from List:
1: View Employee(s)
2: Update Employee
3: Cars which sold by one salesperson
4: VIEW CARS
999: Exit Application
1
        Select Operation from List:
        1: View All Employee
        2: View Employee by Employee id
        999: Back
2
Ebter employee id: 000002
Emp_ID  Sex  Fname Lname Dnum
000002  XU  FEMALE YUTAO 05
        Select Operation from List:
        1: View All Employee
        2: View Employee by Employee id
        999: Back
999
Select Operation from List:
1: View Employee(s)
2: Update Employee
3: Cars which sold by one salesperson
4: VIEW CARS
999: Exit Application
```

```
3
Ebter employee id: 000001
Fname   Lname   Emp_ID   Cid   Make   Colour
FEMALE   Billy   000001    00000001   Ford   white
FEMALE   Billy   000001    00000002   Ford   blue
Select Operation from List:
1: View Employee(s)
2: Update Employee
3: Cars which sold by one salesperson
4: VIEW CARS
999: Exit Application
4
        Select Operation from List:
        1: View All CAR
        2: View Car by CAR id
        999: Back
1
Cid  Make  Colour Dnum Emp_ID
00000001  Ford  white 01 000001
00000002  Ford  blue 02 000001
00000003  Ford  yellow 03 null
00000004  Ford  blue 04 null
00000006  Lincoln  blue 06 null
00000007  Ford  white 07 000004
00000008  Lincoln  black 08 000006
00000009  Lincoln  gray 09 null
00000010  Ford  black 10 000003
00000011  Lincoln  blue 01 null
00000012  Ford  white 02 000004
        Select Operation from List:
        1: View All CAR
        2: View Car by CAR id
        999: Back
2
Enter CAR ID: 00000007
Cid  Make  Colour Dnum Emp_ID
00000007  Ford  white 07 000004
        Select Operation from List:
        1: View All CAR
        2: View Car by CAR id
        999: Back
999
Select Operation from List:
1: View Employee(s)
2: Update Employee
3: Cars which sold by one salesperson
4: VIEW CARS
999: Exit Application
999
```

```
BUILD SUCCESSFUL (total time: 1 minute 26 seconds)
```