Normalization-:

Customer----1----Choose----*----Car

UNF:

Choose (<u>c_id</u>, c_name, c_phone, pickup_location, country, city, <u>reg_number</u>, car_name, year, color)

1NF:

c_phone is a multivalued attribute

Choose (<u>c_id</u>, c_name, c_phone, pickup_location, country, city, <u>reg_number</u>, car_name, year, color)

2NF:

(<u>c_id</u>, c_name, c_phone, pickup_location, country, city)

(<u>reg_number</u>, car_name, year, color)

3NF:

(<u>c_id</u>, c_name, c_phone)

(country, city)

(<u>reg_number</u>, car_name, year, color)

Table:

1. <u>c_id</u>, c_name, c_phone, pickup_location, **a_id**
2. <u>a_id</u>, country, city
3. <u>reg_number</u>, car_name, year, color, **c_id**

Customer----1----Calls----1----Driver

UNF:

Calls (<u>c_id</u>, c_name, c_phone, pickup_location, country, city, <u>d_licence</u>, d_name, d_phone, d_salary)

1NF:

c_phone and d_phone is a multivalued attribute.

Calls (<u>c_id</u>, c_name, c_phone, pickup_location, country, city, <u>d_licence</u>, d_name, d_phone, d_location, d_salary)

2NF:

(<u>c_id</u>, c_name, c_phone, pickup_location, country, city)

(<u>d_licence</u>, d_name, d_phone, d_location, d_salary)

3NF:

(<u>c_id</u>, c_name, c_phone, pickup_location)

(city, country)

(d_licence, d_name, d_phone, d_location, d_salary)

Table-:

1. <u>c_id</u>, c_name, c_phone, pickup_location, **a_id**
2. <u>a_id</u>, country, city
3. <u>d_licence</u>, d_name, d_phone, d_location, d_salary, **c_id**

Driver----1----Calls----*----Car

UNF:

drives (<u>d_licence</u>, d_name, d_phone, d_location, d_salary, <u>reg_number</u>, car_name, year, color)

1NF:

d_phone is a multivalued attribute

drives (<u>d_licence</u>, d_name, d_phone, d_location, d_salary, <u>reg_number</u>, car_name, year, color)

2NF:

(<u>d_licence</u>, d_name, d_phone, d_location, d_salary)

(<u>reg_number</u>, car_name, year, color)

3NF:

(<u>d_licence</u>, d_name, d_phone, d_location, d_salary)

(<u>reg_number</u>, car_name, year, color)

Table:

1. <u>d_licence</u>, d_name, d_phone, d_location, d_salary
2. <u>reg_number</u>, car_name, year, color, **d_licence**

Owner----1----Bought----*----Car

UNF:

Bought (<u>ow_id</u>, ow_name, ow_phone, ow_address, <u>reg_number</u>, car_name, year, color)

1NF:

ow_phone is a multivalued attribute

Bought (<u>ow_id</u>, ow_name, ow_phone, ow_address, <u>reg_number</u>, car_name, year, color)

2NF:

(<u>ow_id</u>, ow_name, ow_phone, ow_address)

(<u>reg_number</u>, car_name, year, color)

3NF:

(<u>ow_id</u>, ow_name, ow_phone, ow_address)

(<u>reg_number</u>, car_name, year, color)

Table:

1. <u>ow_id</u>, ow_name, ow_phone, ow_address
2. <u>reg_number</u>, car_name, year, color, **ow_id**

Owner----1----Select----1----Driver

UNF:

Select (<u>ow_id</u>, ow_name, ow_phone, ow_address, <u>d_licence</u>, d_name, d_phone, d_location, d_salary)

1NF:

ow_phone and d_phone are multivalued attributes

Select (<u>ow_id</u>, ow_name, ow_phone, ow_address, <u>d_licence</u>, d_name, d_phone, d_location, d_salary)

2NF:

(ow<u>_id</u>, ow_name, ow_phone, ow_address, <u>d_licence)</u>

(d<u>_licence</u>, d_name, d_phone, d_location, d_salary

3NF:

(<u>ow_id</u>, ow_name, ow_phone, ow_address, <u>d_licence)</u>

(<u>d_licence</u>, d_name, d_phone, d_location, d_salary)

Table:

1. <u>ow_id</u>, ow_name, ow_phone, ow_address
2. <u>d_licence</u>, d_name, d_phone, d_location, d_salary, **ow_id**

Owner----*----Register----1----Office

UNF:

Register (<u>ow_id</u>, ow_name, ow_phone, ow_address, <u>of_id</u>, of_name, of_phone, of_address)

1NF:

ow_phone and of_phone are multivalued attributes

Register(<u>ow_id</u>, ow_name, ow_phone, ow_address, <u>of_id</u>, of_name, of_phone, of_address)

2NF:

(<u>ow_id</u>, ow_name, ow_phone, ow_address)

(<u>of_id</u>, of_name, of_phone, of_address)

3NF:

(<u>ow_id</u>, ow_name, ow_phone, ow_address)

(<u>of_id,</u> of_name, of_phone, of_address)

Table:

1. <u>ow_id</u>, ow_name, ow_phone, ow_address, **of_id**
2. <u>of_id</u>, of_name, of_phone, of_address

Cars----1----Has----1----Insurance

UNF:

Has (<u>reg_number</u>, car_name, year, color, <u>i_number</u>, i_type, full_coverage, liability)

1NF:

There is no multivalued attribute

Has(<u>reg_number</u>, car_name, year, color, <u>i_number</u>, i_type, full_coverage, liability)

2NF:

(<u>reg_number</u>, car_name, year, color)

(<u>i_number</u>, i_type, full_coverage, liability)

3NF:

(<u>reg_number</u>, car_name, year, color)

(<u>i_number</u>)

(full_coverage, liability)

Table:

1. <u>reg_number</u>, car_name, year, color, **i_number**
2. <u>i_number</u>, **i_typeid**
3. <u>i_typeid</u>, full_coverage, liability

Office----1----Has----*----Employees

UNF:

Has (<u>of_id</u>, of_name, of_phone, of_address, <u>e_id</u>, e_name, e_hiredate, e_gender, e_salary)

1NF:

of_phone is a multivalued attribute

Has (<u>of_id</u>, of_name, of_phone, of_address, <u>e_id</u>, e_name, e_hiredate, e_gender, e_salary)

2NF:

(<u>of_id</u>, of_name, of_phone, of_address)

(<u>e_id,</u> e_name, e_hiredate, e_gender, e_salary)

3NF:

(<u>of_id</u>, of_name, of_phone, of_address)

(<u>e_id,</u> e_name, e_hiredate, e_gender, e_salary)

Table:

1. <u>of_id</u>, of_name, of_phone, of_address
2. <u>e_id</u>, e_name, e_hiredate, e_gender, e_salary, **of_id**

Customer----1----Choose----1----Destination

UNF:

Choose (<u>c_id</u>, c_name, c_phone, pickup_location, country, city, <u>street_id</u>)

1NF:

c_phone is a multivalued attribute

Choose (<u>c_id</u>, c_name, c_phone, pickup_location, country, city, <u>street_id</u>)

2NF:

(<u>c_id</u>, c_name, c_phone, pickup_location, country, city)

(<u>street_id</u>, country, city)

3NF:

(<u>c_id</u>, c_name, c_phone, pickup_location)

(country, city)

(street<u>_id)</u>

Table:

1. <u>c_id</u>, c_name, c_phone, pickup_location**, a_id**
2. <u>a_id</u>, country, city
3. <u>street_id</u>, **a_id, c_id**

Customer----*----Report----1----Office

UNF:

Report (c_id, c_name, c_phone, pickup_location, country, city, of_id, of_name, of_phone, of_address)

1NF:

c_phone and of_phone are multivalued attributes

Report (c_id, c_name, c_phone, pickup_location, country, city, of_id, of_name, of_phone, of_address)

2NF:

(c_id, c_name, c_phone, pickup_location, country, city)

(of_id, of_name, of_phone, of_address)

3NF:

(c_id, c_name, c_phone, pickup_location)

(country, city)

(of_id, of_name, of_phone, of_address)

Table:

1. c_id, c_name, c_phone, pickup_location, **a_id**, **of_id**
2. a_id, country, city
3. of_id, of_name, of_phone, of_address

Customer----1----Pays----1----Bill

UNF:

Pays (<u>c_id</u>, c_name, c_phone, pickup_location, country, city, <u>b_id</u>, b_check, b_cash, b_credit, b_discount)

1NF:

c_phone is a multivalued attribute

Pays (<u>c_id</u>, c_name, c_phone, pickup_location, country, city, <u>b_id</u>, b_check, b_cash, b_credit, b_discount)

2NF:

(<u>c_id</u>, c_name, c_phone, pickup_location, country, city)

<u>b_id</u>, b_check, b_cash, b_credit, b_discount

3NF:

(<u>c_id</u>, c_name, c_phone, pickup_location)

(country, city)

(<u>b_id</u>, b_cash, b_credit, b_check, b_discount)

Table:

1. <u>c_id</u>, c_name, c_phone, pickup_location,**a_id,b_id**
2. <u>a_id</u>, country, city
3. <u>b_id</u>, b_cash, b_credit, b_check.

Table Creation-:

1. <u>c_id</u>, c_name, c_phone, pickup_location, **a_id, of_id, b_id**
2. <u>a_id</u>, country, city
3. <u>reg_number</u>, car_name, year, color, **c_id, d_licence, ow_id, i_number**
4. <u>d_licence</u>, d_name, d_phone, d_location, d_salary, **c_id, ow_id**
5. <u>ow_id</u>, ow_name, ow_phone, ow_address, **of_id**
6. <u>of_id</u>, of_name, of_phone, of_address
7. <u>i_number</u>, **i_typeid**
8. <u>i_typeid</u>, full_coverage, liability
9. <u>e_id</u>, e_name, e_hiredate, e_gender, e_salary, **of_id**
10. <u>street_id</u>, **a_id, c_id**
11. <u>b_id</u>, total_price, b_discount, b_cash, b_check, b_credit