TRAFFIC MANAGEMENT AND PENALTY SYSTEM

DBMS PROJECT REVIEW 1

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❖ DATABASE DESCRIPTION:

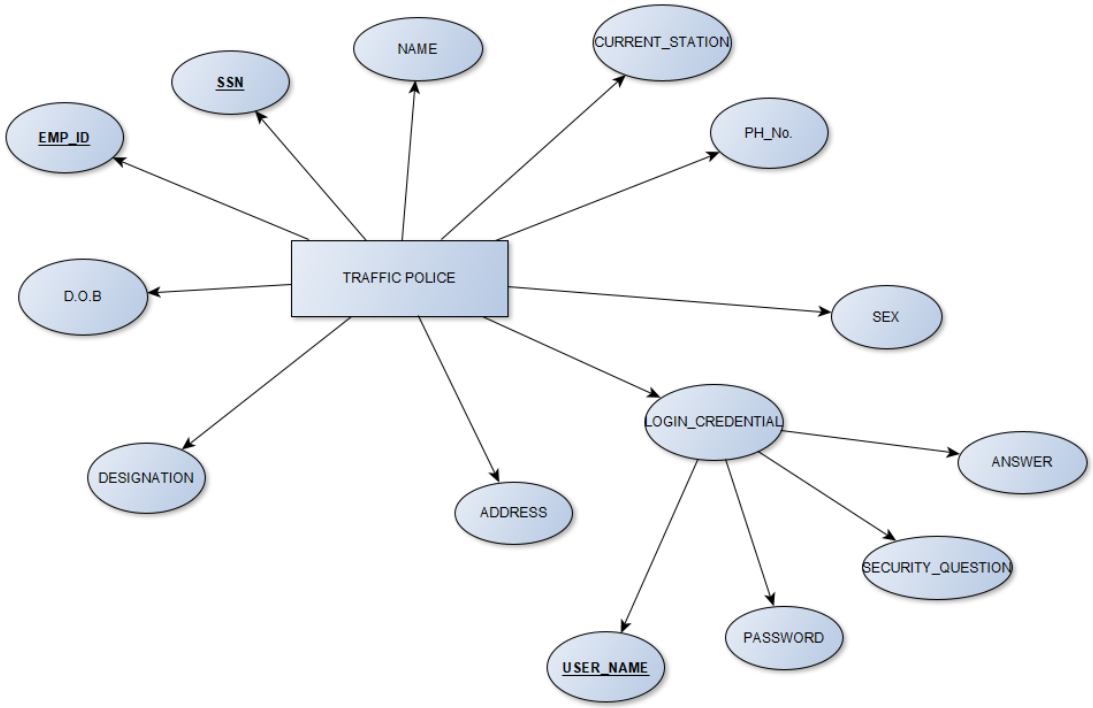
The database is called PENALTY which keep tracks of all the traffic police officers, registered valid Drivers, registered vehicles, rules and regulations. After all the requirement collection and analysis phase, the database the following description is to be represented in the database.

- The Traffic penalty system consist of certain no. of police force who are responsible for regulating the common people to follow traffic rules and regulations. And in case of any violation they are the one to impose penalty. We store each officer's name, SSN, employment id,address ,mobile number, sex, DOB, login credentials ,phone number and current assigned station.
- There are certain no. Of registered drivers who are qualified to drive vehicle. We store each driver's name, SSN,address ,mobile number, sex, DOB, login credentials ,phone number.
- There are certain rules and regulations which are to be followed while driving. Violating them imposes a penalty of certain amount on the driver. We store the rule number rule name and category penalty amount.
- All vehicles been used are registered with the traffic police . We store their rc_no., Licence plate no. , year of purchase model_name,vehicle class i.e. private or commercial. Owner name and color.
- All the payment must be done through a type of card. We store the card details like password , CVV, holder's name,bank name , expiry date.
- The challans issued for violation are stored with their id, place ,date and time.

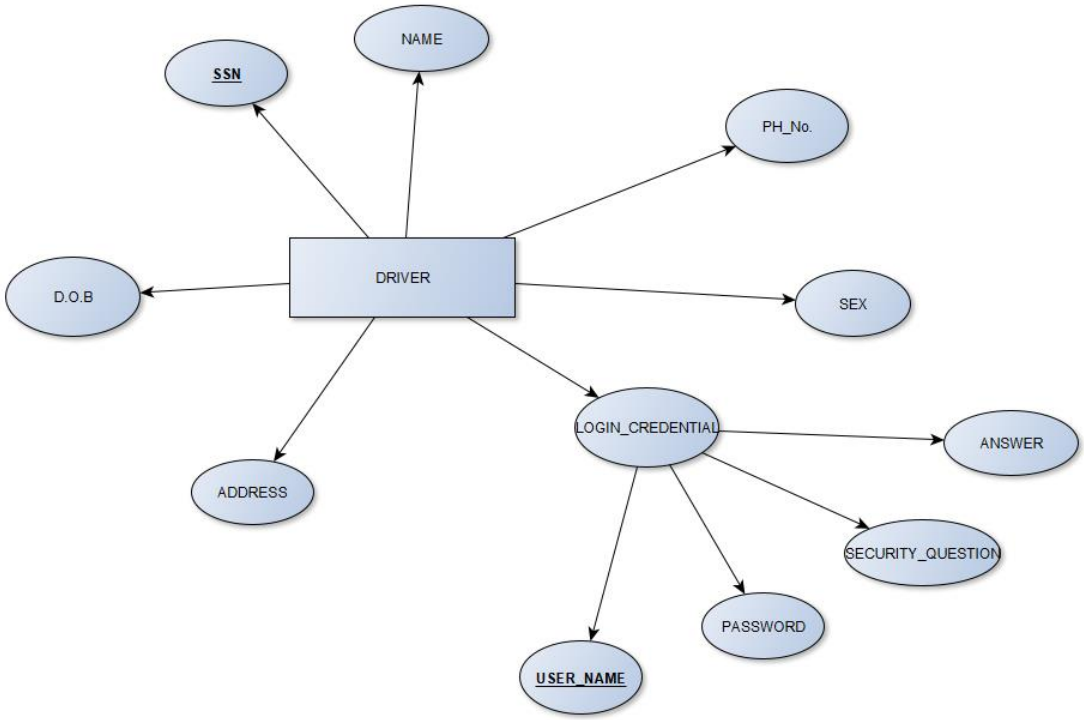
The whole idea of this database is to know when , where , why and to whom ,by whom the traffic rules were violated and penalty was imposed. This arranged data will efficiently help the retrieval of information as well as the users to interact.

❖ ENTITY AND ATTRIBUTE DESCRIPTION:

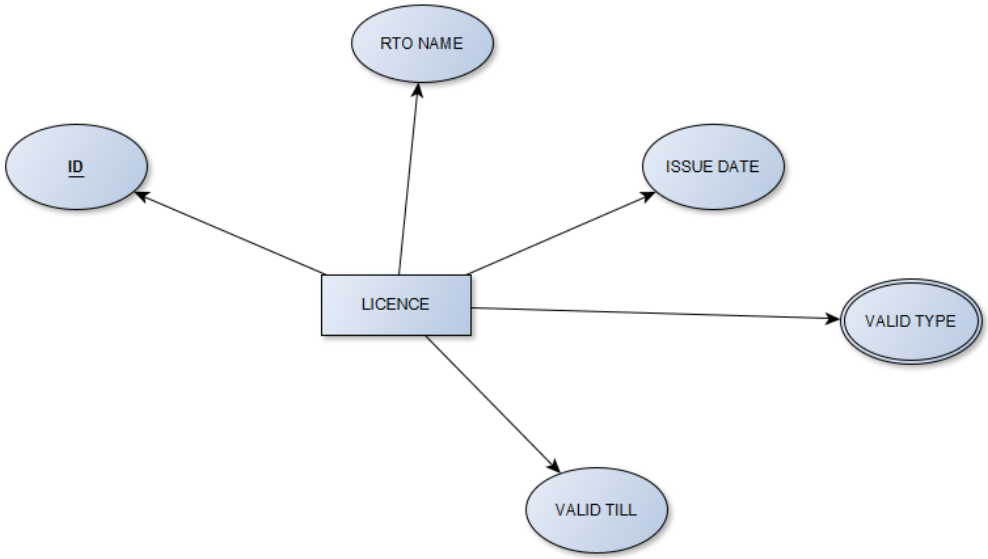
1. TRAFFIC POLICE:



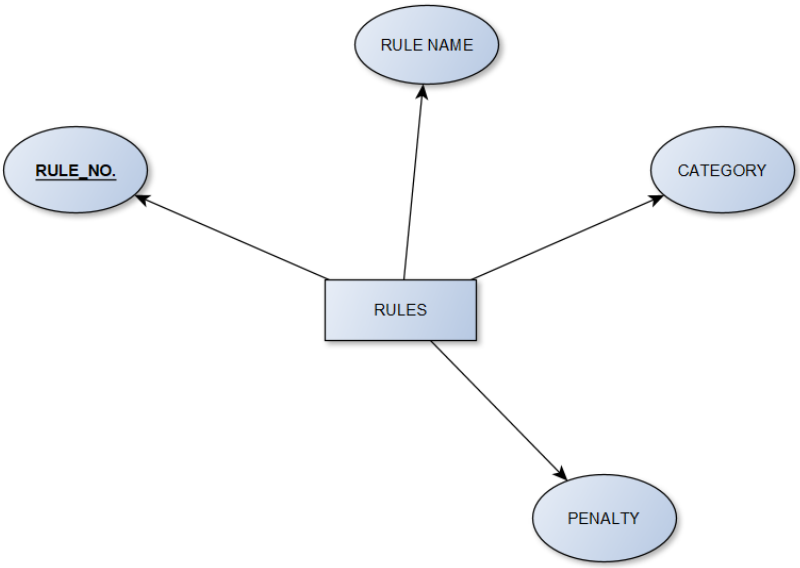
2. DRIVER:



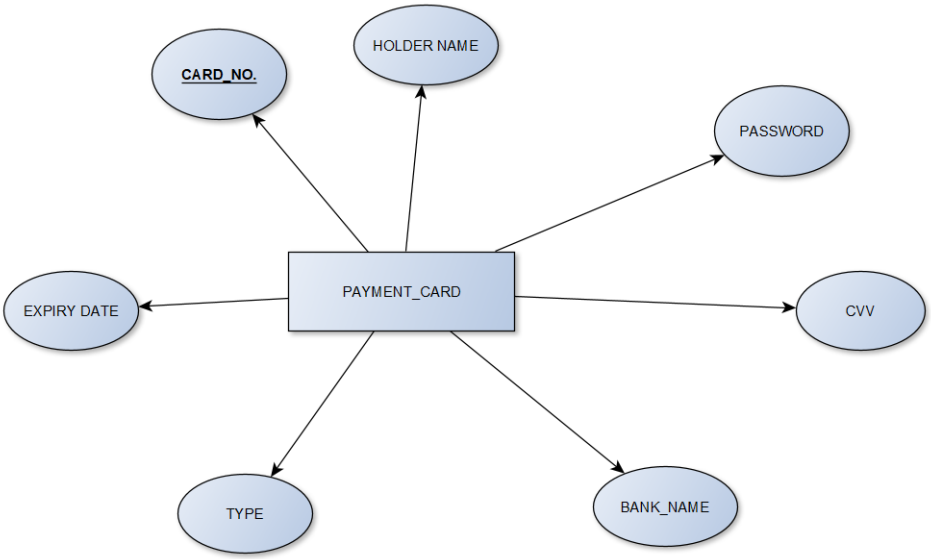
3. LICENCE:



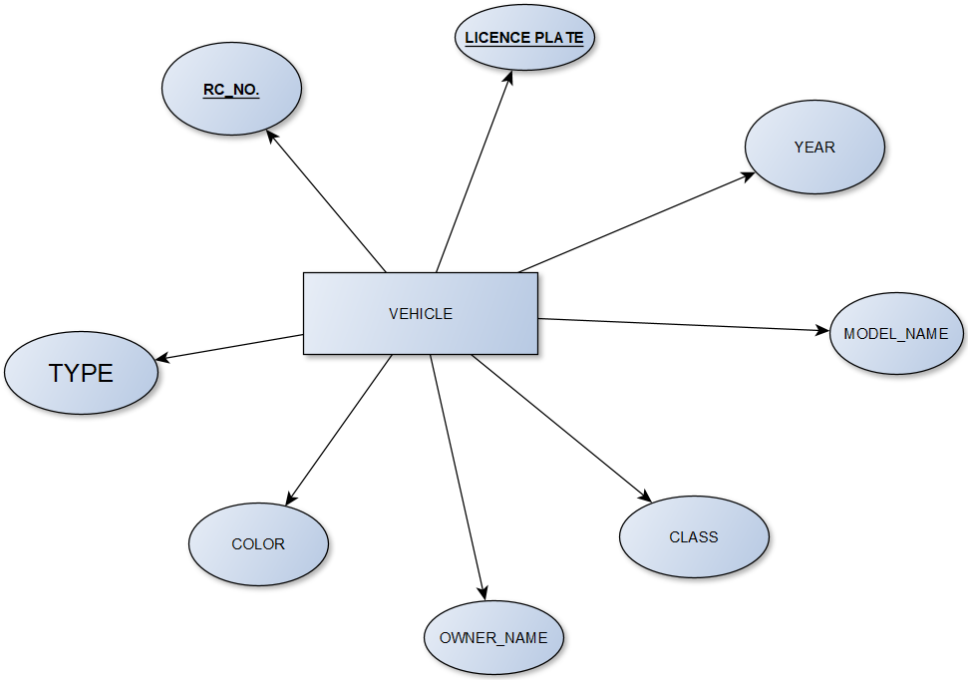
4. RULES:



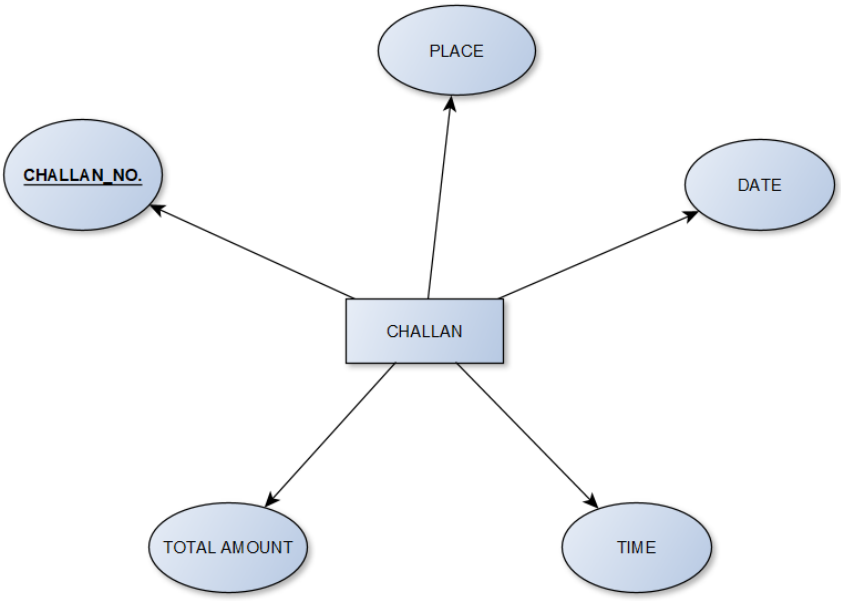
5. PAYMENT_CARD:



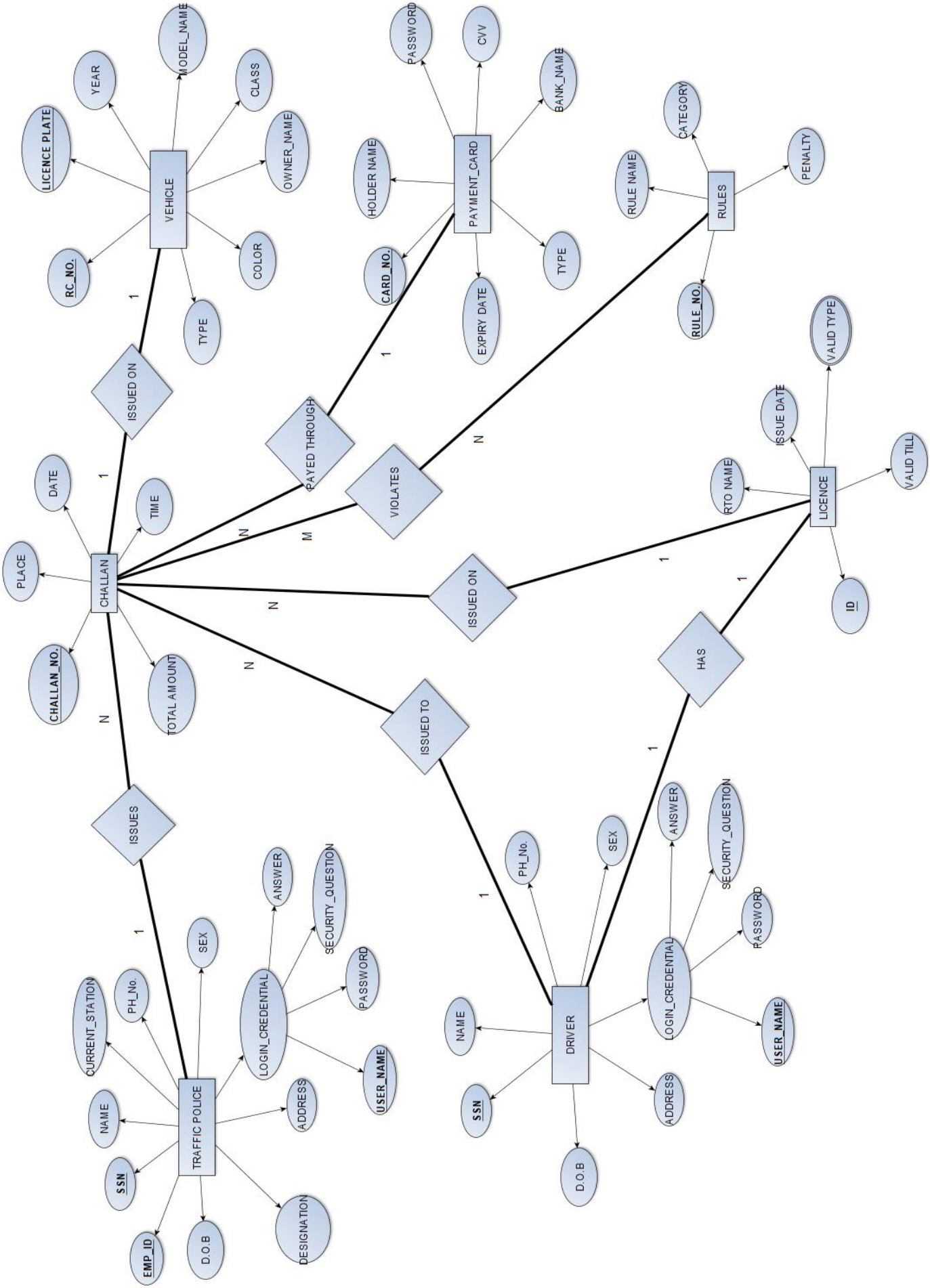
6. VEHICLE:



7. CHALLAN:



❖ ER DIAGRAM:


VEHICLE
LICENCE PLATE
YEAR
MODEL_NAME
CLASS
OWNER_NAME
RC_NO.
COLOR
TYPE
ISSUED ON
CHALLAN
DATE
TIME
PLACE
CHALLAN_NO.
TOTAL AMOUNT
PAYED THROUGH
PAYMENT_CARD
PASSWORD
CVV
BANK_NAME
HOLDER NAME
CARD_NO.
EXPIRY DATE
TYPE
VIOLATES
RULES
CATEGORY
RULE NAME
PENALTY
RULE_NO.
LICENCE
VALID TYPE
ISSUE DATE
VALID TILL
RTO NAME
ID
ISSUED ON
ISSUED TO
HAS
ISSUES
TRAFFIC POLICE
CURRENT_STATION
PH_No.
SEX
NAME
SSN
EMP_ID
D.O.B
DESIGNATION
ADDRESS
LOGIN_CREDENTIAL
ANSWER
SECURITY_QUESTION
PASSWORD
USER_NAME
DRIVER
PH_No.
SEX
NAME
SSN
D.O.B
ADDRESS
LOGIN_CREDENTIAL
ANSWER
SECURITY_QUESTION
PASSWORD
USER_NAME
1
N
M

❖ RELATION DESCRIPTION:

1. TRAFFIC POLICE AND CHALLAN:

The relation is that any individual person from traffic police can issue a n no. of challan. Therefore it is an 1:N type relation with total participation from challan entity and partial participation from traffic police entity.

2. DRIVER AND CHALLAN:

The relation is that the challan has been issued to a driver. Since N number of challan can be issued to a single person, therefore it is a 1:N type relation with total participation from challan entity and partial participation from driver entity.

3. DRIVER AND LICENCE:

All drivers who have passed the driving test have been officially permitted to drive vehicle and have been uniquely allotted a licence for the same. Since each person has been allotted only a single licence, therefore it is an 1:1 type relation with total participation from both sides.

4. CHALLAN AND VEHICLE:

The challan has been issued to a person using a particular vehicle during violation. Since each challan is issued on only one vehicle this is a 1:1 type relation with total participation from challan and partial participation from vehicle.

5. CHALLAN AND PAYMENT:

Each challan is payed through certain type of card. Since N no. of challans can be payed through a card it is a N:1 type of relation with total participation from challan entity and partial participation from traffic payment entity

6. CHALLAN AND LICENCE:

Each challan is issued on a licence no. , N no. of challans can be issued on 1 licence. Therefore it is a N:1 type of relation with total participation from challan entity and partial participation from traffic licence entity

7. CHALLAN AND RULES:

Challans are issued for violating certain no. of rules. M no. Of challans are issued for violating N no. Of rules. Thus, this is a M:N type relation with total participation from challan entity and partial participation from rules entity.

❖ MAPPING RELATIONAL MODEL FROM ER DIAGRAM:

STEP 1: MAPPING OF REGULAR ENTITIES:

All the entities and their attributes are drawn in a table.

STEP 2: MAPPING OF BINARY 1:1 RELATIONSHIP:

There are two 1:1 relations i.e.

(a) Driver and licence :

Take primary key of LICENCE i.e. licence_no. and introduce it as a foreign key in DRIVER.

(b) Challan and vehicle:

Take primary key of VEHICLE i.e. RC_no. And introduce it as a foreign key in CHALLAN .

STEP 3: MAPPING BINARY 1:N RELATIONSHIP:

For each regular binary 1:N relationship type R, identify the relation S that represents the participating entity type on N-side if relation type. Include as foreign key in S the primary key of the relation T that represents the other entity type participating in R.

There are four 1:N type relation.

(a) Traffic police and Challan:

Take primary key of TRAFFIC POLICE i.e Emp_id. and introduce it as a foreign key in CHALLAN.

(b) Driver and Challan:

Take primary key of DRIVER i.e SSN. and introduce it as a foreign key in CHALLAN.

(c) Challan and Payment:

Take primary key of PAYMENT i.e CARD NO. and introduce it as a foreign key in CHALLAN.

(d) Challan and licence:

Take primary key of LICENCE I.e. licence_no. and introduce it as a foreign key in CHALLAN.

STEP 4: MAPPING OF BINARY M:N TYPE RELATION :

For each binary M:N relationship type *R*, create a new relation *S* to represent *R*. Include as foreign key attributes in *S* the primary keys of the relations that represent the participating entity types; their *combination* will form the primary key of *S*. Also include any simple attributes of the M:N relationship type (or simple components of composite attributes) as attributes of *S*.

There is only one M:N relationship between CHALLAN and RULES.

STEP 5: MAPPING OF MULTI VALUE ATTRIBUTE:

For each multi-value attribute A , create a new relation R . This will include an attribute corresponding to A, plus the primary key attribute K as a foreign key in R of the relation that represents the entity type or relation type that has A as the attribute.

There is only one multi-valued attribute i.e. licence valid type in licence entity.

Taking licence id as the primary key introduce a new relation with attribute types.