

# TRAFFIC MANAGEMENT AND PENALTY SYSTEM

DBMS PROJECT REVIEW 2  
BY:

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## ➤ ER TO RELATIONAL MODEL (BEFORE NORMALIZATION):

### 1. TRAFFIC POLICE:

<u>EMP_ID</u>	SSN	NAME	STATION	PHONE	ADDRESS	SEX
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DOB	<u>USER_NAME</u>	PASSWORD
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### 2. DRIVER DETAILS:

<u>SSN</u>	NAME	<u>LID</u>	PHONE	ADDRESS	SEX	DOB
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<u>USER_NAME</u>	PASSWORD
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### 3. LICENCE:

<u>ID</u>	RTO_NAME	ISSUE_DATE	VALID_FOR	VALID_TILL
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### 4. RULES:

<u>RULE_NO.</u>	RULE_DESCRIPTION	PENALTY
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### 5. CARD DETAILS:

<u>NO.</u>	NAME	PIN	CVV	BANK_NAME	TYPE	EXPIRY_DATE
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### 6. VEHICLE DETAILS:

<u>RC_NO.</u>	LICENCE_PLATE	YEAR	MODEL	CLASS	OWNER	COLOR
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### 7. CHALLAN DETAILS:

<u>CHALLAN_NO.</u>	PLACE	DATE	TIME	AMOUNT	<u>RC_NO.</u>	<u>EMP_ID</u>	<u>SSN</u>
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<u>LICENCE_NO.</u>	<u>CARD_NO</u>
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### 8. VIOLATION:

<u>CHALLAN_NO.</u>	<u>RULE_NO.</u>
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➤ NORMALIZATION (UPTO 3NF) :

1. 0NF TO 1NF:

It includes removal of all repeating groups into a new relation like multi-valued attributes.

In the above relational mapping, in the relation licence “valid\_for “ is a multi-valued attribute i.e a licence can be valid for more than one class of vehicles. Therefore we decompose the table licence in another table- valid which consists of “id” and “valid\_for” as its attribute and both of these attribute combinedly are the primary keys of the table “valid”.

Licence\_1:

<u>ID</u>	RTO_NAME	ISSUE_DATE	VALID_TILL
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Valid\_1:

<u>ID</u>	VALID_FOR
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2. 1NF TO 2NF:

It includes removal of partial functional dependencies into a new relation.

Since in the above relational schema, there are no partial functional dependencies the relations are already in second normalized form.

3. 2NF TO 3NF:

It includes removal of transitive dependency into a new relation.

In the above relational mapping in the relations traffic police and driver details the attribute “password” depends upon the attribute “user\_name” and indirectly to the primary keys “EMP\_ID” and “SSN” respectively. Therefore we need to break both relations into a new table which consists of the user\_name and password and USER\_NAME as their primary key.

Police\_3:

<u>EMP_ID</u>	<u>SSN</u>	NAME	STATION	PHONE	ADDRESS	SEX	DOB	USER_NAME
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Police\_login3:

<u>USER_NAME</u>	PASSWORD
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Driver\_3:

<u>SSN</u>	NAME	<u>LID</u>	PHONE	ADDRESS	SEX	DOB	USER_NAME
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Driver\_login3:

<u>USER_NAME</u>	PASSWORD
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➤ RELATIONS AFTER NORMALIZATION:

1. Police\_3:

<u>EMP_ID</u>	SSN	NAME	STATION	PHONE	ADDRESS	SEX	DOB	USER_NAME
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2. Police\_login3:

<u>USER_NAME</u>	PASSWORD
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3. Driver\_3:

<u>SSN</u>	NAME	<u>LID</u>	PHONE	ADDRESS	SEX	DOB	USER_NAME
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4. Driver\_login3:

<u>USER_NAME</u>	PASSWORD
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5. Licence\_1:

<u>ID</u>	RTO_NAME	ISSUE_DATE	VALID_TILL
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6. Valid\_1:

<u>ID</u>	VALID_FOR
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7. RULES:

<u>RULE_NO.</u>	RULE_DESCRIPTION	PENALTY
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8. CARD DETAILS:

<u>NO.</u>	NAME	PIN	CVV	BANK_NAME	TYPE	EXPIRY_DATE
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## 9. VEHICLE DETAILS:

<u>RC_NO.</u>	LICENCE_PLATE	YEAR	MODEL	CLASS	OWNER	COLOR
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## 10.CHALLAN DETAILS:

<u>CHALLAN_NO.</u>	PLACE	DATE	TIME	AMOUNT	<u>RC_NO.</u>	<u>EMP_ID</u>	<u>SSN</u>
<u>LICENCE_NO.</u>	<u>CARD_NO</u>						

## 11.VIOLATION:

<u>CHALLAN_NO.</u>	<u>RULE_NO.</u>
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## ➤ BACK END AFTER NORMALIZATION:

### 1. TRAFFIC POLICE:

```
mysql> DESC POLICE;
```

Field	Type	Null	Key	Default	Extra
EMP_ID	bigint(20)	NO	PRI	NULL	
SSN	bigint(20)	YES	UNI	NULL	
NAME	varchar(40)	YES		NULL	
STATION	varchar(20)	YES		NULL	
PH_NO	bigint(10)	YES		NULL	
ADDRESS	varchar(30)	YES		NULL	
SEX	char(1)	YES		NULL	
DOB	date	YES		NULL	
USER_NAME	varchar(10)	YES		NULL	

```
rows in set (0.27 sec)
```

```
mysql> SELECT* FROM POLICE;
```

EMP_ID	SSN	NAME	STATION	PH_NO	ADDRESS	SEX	DOB	USER_NAME
1785	664483152	KAVERI SINGHAL	GANESH POLE	8456127390	C-39,LAJPAT NAGAR	F	1989-02-18	SINGHAL
10235	1102305457	RADHEYSHYAM SHARMA	BAPU NAGAR	141568974	A-14,CHARLES DARWIN	M	1977-01-25	ALL12345
10245	1238967450	KANGANA DESAI	JAYANTI MARKET	9870145263	B-36,POLE MARKET	F	1986-05-21	DESAI
11266	1459862370	MAHESH SINGHAL	INDRA NAGAR	4567891238	N-215,JAIN COLONY	M	1987-01-23	MAHESH02
11478	5789456120	YOGITA VASHISHTHA	MG ROAD	9561234870	P-219,VASANT VIHAR	F	1988-03-12	YOGITA09
14566	8549670321	JAMUNA DEVI	STATUE CIRCLE	8856914230	L-78,MAHATMA GANDI ROAD	F	1982-01-02	JAMUNA99
15236	249315678	ROHIT SHARMA	VDN ROAD	9801472635	Q-147,NETAJI BLOCK	M	1979-01-15	ROHIT01
15789	7845961302	RAJA BABU	MAHAPURA ROAD	9865321470	A-23,MAHESH NAGAR COLONY	M	1977-02-13	BABURAJA
20014	9899542163	AMREETA SINGH	MANNAT NAGAR	8654970123	K-77,LONGBOTTOM ROAD	F	1992-01-15	SINGHAM90
20145	8069743125	SACHIN MAHESHWARI	SHAJAHAN MARG	9245673010	O-92,MAHABALESHWAR ROAD	M	1977-05-03	SACHIN059

```
0 rows in set (0.00 sec)
```

## 2. POLICE\_LOGIN:

```
10 rows in set (0.00 sec)

mysql> DESC POLICE_LOGIN;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| USER_NAME | varchar(10)   | NO   | PRI | NULL    |       |
| PASSWORD   | varchar(10)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+

2 rows in set (0.00 sec)

mysql> SELECT* FROM POLICE_LOGIN;
+-----+-----+
| USER_NAME | PASSWORD |
+-----+-----+
| ALL12345   | 134quiop |
| BABURAJA   | 1RAJA002 |
| DESAI      | 15978563 |
| JAMUNA99   | OPOPPPO  |
| MAHESH02   | 156PO7888 |
| ROHIT01    | SHARMA@  |
| SACHIN059  | RUPA778  |
| SINGHAL    | SINGH01SIN |
| SINGHAM90  | JANA9008  |
| YOGITA09   | YAG7895  |
+-----+-----+

10 rows in set (0.00 sec)
```

## 3. DRIVER DETAILS:

```
mysql> DESC DRIVER;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| SSN        | bigint(20)    | NO   | PRI | NULL    |       |
| NAME       | varchar(40)   | YES  |     | NULL    |       |
| PH_NO      | bigint(10)    | YES  |     | NULL    |       |
| ADDRESS    | varchar(30)   | YES  |     | NULL    |       |
| SEX        | char(1)       | YES  |     | NULL    |       |
| DOB        | date          | YES  |     | NULL    |       |
| LIC        | bigint(20)    | YES  | MUL | NULL    |       |
| USER_NAME | varchar(20)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+

8 rows in set (0.00 sec)

mysql> SELECT* FROM DRIVER;
+-----+-----+-----+-----+-----+-----+-----+-----+
| SSN      | NAME              | PH_NO | ADDRESS              | SEX | DOB       | LIC      | USER_NAME |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1078945623 | RADHEY           | 8897451236 | A-14,GANGANAGAR COLONY | M   | 1997-01-25 | 1023457896 | RADHEY007 |
| 1159720345 | GAGANDEEP SINGH | 9079397921 | L-747,NETAJI BLOCK    | M   | 1987-01-19 | 4596123087 | SINGH09   |
| 1487954263 | ADITYA K RAHUL  | 8974515699 | L-804,CHARLES DARWIN BLOCK | F   | 1999-01-01 | 5978420163 | KUMARRAHUL |
| 1489955554 | ANJANA SHANKAR  | 5784961230 | K146,MAHESH NAGAR     | F   | 1999-01-20 | 7894521000 | SHANKAR_090 |
| 1895703556 | MAHESH SINGH    | 8754961230 | P-114,VALLABHAI PATEL BLOCK | M   | 1998-01-23 | 9986412307 | MAHESH090 |
| 5241903687 | AKSHITA JAIN    | 8956130247 | P-195,MAHENDRA NAGAR, KANPUR | F   | 1999-01-23 | 1124569873 | JAIN_AKSHI |
| 8521479630 | JAYESH SAHANI   | 4578961302 | T-109,KRISHNAPUR     | M   | 1992-06-07 | 8745910326 | SAHANIJAYESH |
| 8898789546 | SAURABH MISHRA  | 9876543012 | J-14,MG ROAD          | M   | 1987-01-25 | 4893152607 | MISHRAJI  |
| 8970214589 | SHIVANG SINGH   | 9460221578 | D-15,VASANT VIHAR     | M   | 1992-01-23 | 1145896370 | SHIVANGSHAYN |
| 9587461302 | AVANI SOLANKI   | 2302181017 | P-1050,LOKHANWALA     | F   | 1996-01-01 | 2489963150 | SOLANKI   |
+-----+-----+-----+-----+-----+-----+-----+-----+

10 rows in set (0.00 sec)
```

#### 4. DRIVER LOGIN:

```
mysql> DESC DRIVER_LOGIN;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| USER_NAME | varchar(20)   | NO   | PRI | NULL    |      |
| PASSWORD  | varchar(20)   | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> SELECT* FROM DRIVER_LOGIN;
+-----+-----+
| USER_NAME | PASSWORD |
+-----+-----+
| JAIN_AKSHI | 78POLI  |
| KUMARRAHUL | K0090P  |
| MAHESH090  | LOKI09  |
| MISHRAJI   | IS009   |
| RADHEY007  | 123QWERTY |
| SAHANIJAYESH | 01023569 |
| SHANKAR_090 | P0007   |
| SHIVANGSHAYN | HLA009  |
| SINGH09    | LOVE123 |
| SOLANKI    | OIP090  |
+-----+-----+
10 rows in set (0.00 sec)
```

#### 5. LICENCE DETAILS:

```
mysql> DESC LICENCE;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| ID         | bigint(20)    | NO   | PRI | NULL    |      |
| RTO        | varchar(20)   | YES  |     | NULL    |      |
| ISSUE      | date          | YES  |     | NULL    |      |
| VALID_TILL | date          | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT* FROM LICENCE;
+-----+-----+-----+-----+
| ID      | RTO              | ISSUE      | VALID_TILL |
+-----+-----+-----+-----+
| 1023457896 | VIDHYADHAR NAGAR | 2007-02-16 | 2021-02-25 |
| 1124569873 | SAHSTRI MARG     | 2000-01-16 | 2020-01-17 |
| 1145896370 | MANDIR MARG      | 2013-01-05 | 2026-01-05 |
| 2489963150 | SHASTRI MARG     | 2011-02-13 | 2025-01-25 |
| 4596123087 | STATUE CIRCLE    | 2000-01-08 | 2019-02-17 |
| 4893152607 | SAHAKAR BHAWAN   | 2011-01-25 | 2021-08-09 |
| 5978420163 | VIDHANSABHA ROAD | 2018-01-01 | 2028-01-01 |
| 7894521000 | CMC,VELLORE     | 2012-01-15 | 2029-01-02 |
| 8745910326 | MAIN BUILDING,JAIPUR | 2010-02-13 | 2024-02-07 |
| 9986412307 | MAHATMA GANDHI ROAD | 2018-09-23 | 2029-01-02 |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)

mysql> _
```

## 6. LICENCE TYPE:

```
mysql> DESC TYPE;
+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| LID   | bigint(20)    | NO   | PRI | NULL     |       |
| VALID | varchar(6)    | NO   | PRI | NULL     |       |
+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> SELECT* FROM TYPE;
+-----+-----+
| LID   | VALID |
+-----+-----+
| 1023457896 | LCMW  |
| 1023457896 | LMV   |
| 1124569873 | LCMW  |
| 1124569873 | LMV   |
| 1145896370 | LMV   |
| 2489963150 | LCMW  |
| 4596123087 | LCMW  |
| 4893152607 | LCMW  |
| 4893152607 | LMV   |
| 5978420163 | CV    |
| 7894521000 | LCMW  |
| 7894521000 | LMV   |
| 8745910326 | LMV   |
| 9986412307 | HMV   |
+-----+-----+
14 rows in set (0.03 sec)
```

## 7. RULES

```
mysql> DESC RULES;
+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| RULE_NO | varchar(5)    | NO   | PRI | NULL     |       |
| NAME    | varchar(50)   | YES  |     | NULL     |       |
| PENALTY | int(4)        | YES  |     | NULL     |       |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> SELECT* FROM RULES;
+-----+-----+-----+
| RULE_NO | NAME                                     | PENALTY |
+-----+-----+-----+
| 102     | NO HELMET                             | 1100    |
| 104     | ENTERING NO ENTRY                     | 2450    |
| 301     | NO VEHICLE PAPERS                     | 350     |
| 303-A   | NO SEATBELT                           | 450     |
| 303-B   | ACCOMPANYING DRIVER,NO SEATBELT      | 400     |
| 309     | PARK IN NO PARKING ZONE               | 4350    |
| 400     | NO LICENCE PLATE                      | 4050    |
| 401     | DRINK AND DRIVE                       | 5000    |
| 414     | NOT CARRYING LICENCE                  | 600     |
| 786     | USING MOBILE DURING DRIVING           | 5550    |
| 789     | SIGNAL BREAK                           | 1200    |
+-----+-----+-----+
11 rows in set (0.00 sec)
```



## 8. CARD DETAILS:

```
mysql> DESC CARD;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| NO    | bigint(20) | NO | PRI | NULL |
| NAME  | varchar(20) | NO |      | NULL |
| PIN   | int(10) | NO |      | NULL |
| CVV   | int(3) | NO |      | NULL |
| BANK_NAME | varchar(20) | NO |      | NULL |
| TYPE  | char(1) | NO |      | NULL |
| EXP   | date | NO |      | NULL |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> SELECT* FROM CARD;
+-----+-----+-----+-----+-----+-----+-----+
| NO | NAME | PIN | CVV | BANK_NAME | TYPE | EXP |
+-----+-----+-----+-----+-----+-----+-----+
| 1234567890 | ALLOKIK PRANSHU | 1234 | 748 | STATE BANK OF INDIA | C | 2021-04-19 |
| 1458796123 | SHIVANG SINGH | 5623 | 525 | INDIAN BANK | D | 2021-09-23 |
| 1524789663 | SARTHAK MISHRA | 1145 | 895 | BANK OF INDIA | C | 2023-01-26 |
| 1569478230 | ADITYA K RAHUL | 4454 | 741 | BANK OF BARODA | C | 2020-01-25 |
| 2302154789 | AVANI SOLANKI | 2302 | 555 | SATE BANK OF INDIA | D | 2019-01-01 |
| 4141456555 | ANJANA SINGH | 2458 | 898 | ICICI BANK | D | 2020-06-04 |
| 5693000002 | ALLOKIK PRANSHU | 4788 | 692 | ICICI BANK | D | 2021-02-25 |
| 5698743210 | AKSHITA JAIN | 5568 | 202 | HDFC BANK | C | 2023-05-07 |
| 7852635565 | GAGANDEEP SINGH | 7485 | 968 | KARNATAKA BANK | D | 2019-05-15 |
| 8549630278 | PIYUSH MADHWANI | 7878 | 985 | INDIAN BANK | C | 2020-02-02 |
+-----+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

## 9. VEHICLE DETAILS:

```
mysql> DESC VEHICLE;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RC    | int(11) | NO | PRI | NULL |
| LP    | varchar(20) | YES | UNI | NULL |
| YEAR  | int(4) | YES |      | NULL |
| MODEL_NAME | varchar(20) | YES |      | NULL |
| CLASS | varchar(10) | YES |      | NULL |
| OWNER | varchar(20) | YES |      | NULL |
| COLOR | varchar(10) | YES |      | NULL |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> SELECT* FROM VEHICLE;
+-----+-----+-----+-----+-----+-----+-----+
| RC | LP | YEAR | MODEL_NAME | CLASS | OWNER | COLOR |
+-----+-----+-----+-----+-----+-----+-----+
| 125987 | RJ14-TA-1234 | 2001 | WAGON-R | HACHBACK | ADITYA KUMAR | BLUE |
| 148789 | RJ14-4C-2343 | 2016 | FORTUNER | SUV | ALLOKIK | SILVER |
| 189566 | MH11-TC-1458 | 2018 | AUDI | SEDAN | SHIVANG | SILVER |
| 189745 | KR01-TP-1478 | 2011 | CIAZ | SEDAN | ANIRUDDH CHANDRA | BLUE |
| 256789 | KA01-TA-8989 | 2004 | INDICA | HACHBACK | GAGANDEEP | BLUE |
| 569855 | DL12-01-8956 | 2012 | FERRARI | SPORTS | PIYUSH MADHWANI | RED |
| 978462 | TN17-TT-2046 | 2011 | INNOVA | SUV | ROHIT RAJ | WHITE |
+-----+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```

## 10. CHALLAN DETAILS:

```
mysql> DESC CHALLAN;
```

Field	Type	Null	Key	Default	Extra
NO	int(11)	NO	PRI	NULL	
PLACE	varchar(20)	YES		NULL	
DATE	date	YES		NULL	
TIME	time	YES		NULL	
TOTAL_AMT	int(11)	YES		NULL	
RC	int(11)	YES	MUL	NULL	
EMP_ID	bigint(20)	YES	MUL	NULL	
SSN	bigint(20)	YES	MUL	NULL	
LIC	bigint(20)	YES	MUL	NULL	
PAYMENT	bigint(20)	YES	MUL	NULL	

```
10 rows in set (0.00 sec)
```

```
mysql> SELECT* FROM CHALLAN;
```

NO	PLACE	DATE	TIME	TOTAL_AMT	RC	EMP_ID	SSN	LIC	PAYMENT
11925	MAHESH MARG	2018-10-02	22:13:05	4350	256789	20014	8970214589	1145896370	1458796123
12476	STATUE	2018-10-02	22:13:05	1050	125987	10235	1895703556	1023457896	1234567890
12495	GANESH ROAD	2018-10-02	22:13:49	5150	189745	20145	1487954263	5978420163	5693000002

```
3 rows in set (0.00 sec)
```

## 11. VIOLATED RULES:

```
mysql> DESC VIOLATION;
```

Field	Type	Null	Key	Default	Extra
CHALLAN	int(11)	NO	PRI	NULL	
RULE	varchar(5)	NO	PRI	NULL	

```
2 rows in set (0.00 sec)
```

```
mysql> SELECT* FROM VIOLATION;
```

CHALLAN	RULE
12476	102
12476	303-A
11925	309
12476	400
12476	414

```
5 rows in set (0.00 sec)
```

## ➤ SOURCE CODE FOR BACK END:

### (A) RELATION CREATION:

#### 1. POLICE

```
CREATE TABLE POLICE(  
    EMP_ID BIGINT PRIMARY KEY,  
    SSN BIGINT UNIQUE,  
    NAME VARCHAR(40),  
    STATION VARCHAR(20),  
    PH_NO BIGINT(10),  
    ADDRESS VARCHAR(30),  
    SEX CHARACTER(1),  
    DOB DATE ,  
    USER_NAME VARCHAR(10));
```

#### 2. POLICE LOGIN CREDENTIAL

```
CREATE TABLE POLICE_LOGIN(  
    USER_NAME VARCHAR(10) PRIMARY KEY,  
    PASSWORD VARCHAR(10));
```

#### 3. LICENCE

```
CREATE TABLE LICENCE(  
    ID BIGINT PRIMARY KEY,  
    RTO VARCHAR(20),  
    ISSUE DATE,  
    VALID_TILL DATE)
```

#### 4. DRIVER

```
CREATE TABLE DRIVER (  
    SSN BIGINT PRIMARY KEY ,  
    NAME VARCHAR(40),  
    PH_NO BIGINT(10),  
    ADDRESS VARCHAR(30),  
    SEX CHARACTER(1),  
    DOB DATE,  
    LIC BIGINT,  
    USER_NAME VARCHAR(20),  
    FOREIGN KEY (LIC) REFERENCES LICENCE(ID) );
```

#### 5.DRIVER LOGIN CREDENTIALS:

```
CREATE TABLE DRIVER_LOGIN(  
    USER_NAME VARCHAR(20) PRIMARY KEY,  
    PASSWORD VARCHAR(20));
```

#### 6. LICENCE VALID TYPE:

```
CREATE TABLE TYPE(  
  LID BIGINT ,  
  VALID VARCHAR(6),  
  PRIMARY KEY(LID,VALID),  
  FOREIGN KEY(LID) REFERENCES LICENCE(ID));
```

#### 7. RULES :

```
CREATE TABLE RULES(  
  RULE_NO VARCHAR(5) PRIMARY KEY,  
  NAME VARCHAR(50),  
  PENALTY INT(4));
```

#### 8. CARD DETAILS

```
CREATE TABLE CARD(  
  NO BIGINT PRIMARY KEY,  
  NAME VARCHAR(20) NOT NULL,  
  PIN INT(10) NOT NULL,  
  CVV INT(3) NOT NULL,  
  BANK_NAME VARCHAR(20) NOT NULL,  
  TYPE CHARACTER(1) NOT NULL,  
  EXP DATE NOT NULL);
```

#### 9. VEHICLE

```
CREATE TABLE VEHICLE (  
  RC INT PRIMARY KEY,  
  LP VARCHAR(20) UNIQUE,  
  YEAR INT(4),  
  MODEL_NAME VARCHAR(20),  
  CLASS VARCHAR(10),  
  OWNER VARCHAR(20),  
  COLOR VARCHAR(10) );
```

#### 10. CHALLAN

```
CREATE TABLE CHALLAN(  
  NO INT PRIMARY KEY ,  
  PLACE VARCHAR(20),  
  DATE DATE,  
  TIME TIME,  
  TOTAL_AMT INT,  
  RC INT,  
  EMP_ID BIGINT ,  
  SSN BIGINT ,  
  LIC BIGINT ,
```

```
PAYMENT BIGINT ,  
FOREIGN KEY(RC) REFERENCES VEHICLE(RC),  
FOREIGN KEY(EMP_ID) REFERENCES POLICE(EMP_ID),  
FOREIGN KEY(SSN) REFERENCES DRIVER(SSN),  
FOREIGN KEY(LIC) REFERENCES LICENCE(ID),  
FOREIGN KEY(PAYMENT) REFERENCES CARD(NO) );
```

#### 11. VIOLATION

```
CREATE TABLE VIOLATION(  
CHALLAN INT ,  
RULE VARCHAR(5) ,  
PRIMARY KEY(CHALLAN,RULE),  
FOREIGN KEY(CHALLAN) REFERENCES CHALLAN(NO),  
FOREIGN KEY(RULE) REFERENCES RULES(RULE_NO));
```

## FRONT END

### ➤ LAYOUT:

#### 1. LOGIN PAGE:

The screenshot shows a Java Swing window titled 'Traffic.java' with a login form. The form has a light gray background and a white border. It contains the following elements:

- USER NAME:** A text label followed by a text field containing 'MAHESH02'.
- PASSWORD:** A text label followed by a password field with 12 dots.
- ISSUE CHALLAN:** A radio button followed by the text 'ISSUE CHALLAN'.
- PAY CHALLAN:** A radio button followed by the text 'PAY CHALLAN'.
- SUBMIT:** A rectangular button with the text 'SUBMIT'.

Below the form, there is an 'Output - traffic (run)' window showing the following text:

```
run:  
BUILD SUCCESSFUL (total time: 0 seconds)
```

## 2. ISSUE CHALLAN PAGE:

Start Page x Traffic.java x frame.java x POLICE.java x DRIVER.java x PAYMENT.java x

Source Design History

To select multiple components in an area hold Shift and drag mouse over the components.

CHALLAN NO. 11925

CHECK

DATE 2018-10-02 TIME 22:13:05

PLACE statue VEHICLE RC NO. 125987

RULES 301- NO LICENCE

TOTAL AMOUNT 1050

PAY

Output - traffic (run) x

run:  
BUILD SUCCESSFUL (total time: 0 seconds)

## 3. CHALLAN PAYMENT AND DETAIL PAGE:

Start Page x Traffic.java x frame.java x POLICE.java x DRIVER.java x PAYMENT.java x

Source Design History

The Tools>Palette>Swing/AWT Components menu item allows you to modify the content of the Palette.

LICENCE NO. 1023457896

CHECK

NAME RADHEY

CHALLAN NO. 12476

PLACE statue

DATE 2018-10-02

TIME 22:13:05

RULES 301- NO LICENCE

VEHICLE RC NO. 125987

TOTAL AMOUNT 1050

ISSUE

Output - traffic (run) x

run:  
BUILD SUCCESSFUL (total time: 0 seconds)

#### 4. PAYMENT GATEWAY PAGE:

The screenshot shows a Java IDE with multiple tabs: Start Page, Traffic.java, frame.java, POLICE.java, DRIVER.java, and PAYMENT.java. The Design tab is active, displaying a form titled "PAY THROUGH". The form has two radio buttons: "CREDIT CARD" and "DEBIT CARD". Below these are input fields for "CARD NO." (1234567890), "NAME ON CARD" (ALLOKIK PRANSHU), "CVV" (masked with three dots), "PIN" (masked with eight dots), and "EXPIRY DATE" (04/21). A "PAY" button is at the bottom. A tooltip above the form states: "The Navigator window displays a tree hierarchy of components in the opened form." The Output window at the bottom shows a successful build message: "BUILD SUCCESSFUL (total time: 0 seconds)".

#### ➤ LAYOUT DESCRIPTION AND WORKING IN FRONT END:

All users will enter the application through a login page. At the login page the users will enter the username and password which will be verified at the back end. The users (traffic police) will select the issue challan radio button and thus will be transferred to the issue challan page. At the challan issue page after entering the details of the valid licence the police can issue the details after entering necessary information. Clicking on issue will update the back-end . The users(drivers) will select the pay challan radio button and will be transferred to challan payment and detail page where they can see the challan details. After seeing the details, the drivers can pay the challan and will be migrated to payment gateway page after clicking on the pay button. At the payment page after entering the valid card details and verification of the card details the challan will be payed and will be updated at the back end.

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