TRAFFIC
MANAGEMENT
AND PENALTY
SYSTEM

DBMS PROJECT REVIEW 2 BY:

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> ER TO RELATIONAL MODEL (BEFORE NORMALIZATION):
1. TRAFFIC POLICE:
EMP_ID SSN NAME STATION PHONE ADDRESS SEX
DOB <u>USER_NAME</u> PASSWORD
2. DRIVER DETAILS:
SSN NAME LID PHONE ADDRESS SEX DOB
USER_NAME PASSWORD
3. LICENCE:
ID RTO_NAME ISSUE_DATE VALID_FOR VALID_TILL
4. RULE NO. RULE_DESCRIPTION PENALTY 5. CARD DETAILS: NO. NAME PIN CVV BANK_NAME TYPE EXPIRY_DATE
6. VEHICLE DETAILS: RC NO. LICENCE_PLATE YEAR MODEL CLASS OWNER COLOR
7. CHALLAN DETAILS:
CHALLAN_NO. PLACE DATE TIME AMOUNT RC_NO. EMP_ID SSN LICENCE_NO. CARD_NO
8. VIOLATION:
CHALLAN_NO. RULE_NO.

➤ NORMALIZATION (UPTO 3NF):

1. ONF 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> RIGININE ISSUE_BITE VIEW_TIEE	<u>ID</u>	RTO_NAME	ISSUE_DATE	VALID_TILL
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Valid 1:

<u>ID</u>	VALID_FOR

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:

EMP ID	<u>SSN</u>	NAME	STATION	PHONE	ADDRESS	SEX	DOB	USER_NAME
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Police_login3: USER NAME **PASSWORD** Driver_3: <u>SSN</u> **NAME** LID PHONE **ADDRESS** SEX DOB USER_NAME Driver_login3: USER_NAME PASSWORD > RELATIONS AFTER NORMALLIZATION: 1. Police_3: EMP ID SSN **NAME** STATION **PHONE ADDRESS** SEX DOB USER_NAME 2. Police_login3: USER_NAME **PASSWORD** 3. Driver_3: USER_NAME <u>SSN</u> **NAME** <u>LID</u> **PHONE ADDRESS SEX** DOB 4. Driver_login3: USER NAME PASSWORD 5. Licence_1: RTO_NAME ISSUE_DATE VALID_TILL ID 6. Valid_1: VALID_FOR ID 7. RULES: RULE_DESCRIPTION RULE_NO. **PENALTY** 8. CARD DETAILS: EXPIRY_DATE NO. NAME PIN CVV BANK_NAME TYPE

9. VEHICLE DETAILS:

	RC NO.	LICENCE PLATE	YEAR	MODEL	CLASS	OWNER	COLOR
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10.CHALLAN DETAILS:

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

LICENCE_NO. CARD_NO

11.VIOLATION:

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

1. TRAFFIC POLICE:

+	OLICE;	-+			++					
Field	Туре	Null	Key	Default	Extra					
EMP_ID	bigint(20)	NO NEC	PRI							
SSN NAME	bigint(20) varchar(40)	YES YES	UNI	NULL NULL						
STATION	varchar(40)			NULL	¦ ¦					
PH NO	bigint(10)	YES		NULL	i i					
ADDRESS	varchar(30)			NULL	i i					
SEX	char(1)	YES		NULL						
DOB	date	YES		NULL	!!					
USER_NAME	varchar(10)	YES		NULL	!!					
rows in set	(0.27 sec)	-+			++					
1000 111 500	(0.27 300)									
/sql> SELECT	* FROM POLIC	E;								
EMP_ID SS	N N	IAME		STAT	ION		PH_NO	PH_NO ADDRESS	PH_NO ADDRESS SEX	PH_NO
1785 6	64483152 K	AVERI SIN	IGHAL	GANE	SH POLE		8456127390	8456127390 C-39,LAJPAT NAGAR	8456127390 C-39,LAJPAT NAGAR F	8456127390 C-39,LAJPAT NAGAR F 1989-02-18
		ADHEYSHYA			NAGAR		141568974			
		ANGANA DE			NTI MARKE	T				
		NAHESH SIN			A NAGAR			4567891238 N-215, JAIN COLONY		
		OGITA VAS IAMUNA DEN			UAD UE CIRLCL	E	9561234870 E 8856914230			
		OHIT SHAF		VDN		_	9801472635			
		AJA BABU			PURA ROAD					
15789 78		MREETA SI	MGH		AT NAGAR		8654970123			
	99542163 A	MINTELIA 31	LIVOIT				9245673010		9245673010 0-92,MAHABALESHWAR ROAD M	

2. POLICE_LOGIN:

3. DRIVER DETAILS:

Field	Туре	Null	Key	Defa	ult Extra				
SSN	bigint(20)	+ NO	PRI	NULL	+				
NAME İ	varchar(40)	YES	j i	NULL	. j j				
PH NO	bigint(10)	YES	j i	NULL	. j j				
ADDRESS	varchar(30)	YES	j i	NULL	. j j				
SEX	char(1)	YES	j i	NULL	.				
DOB	date	YES	i i	NULL					
LIC	bigint(20)	YES	MUL	NULL					
USER_NAME	varchar(20)	YES		NULL					
rows in set	. (0.00 SEC)								
/sql> SELECT	* FROM DRIVER	;							
	* FROM DRIVER;	+-	PH_NO	-	ADDRESS	+ SEX	+	+ LIC	+ USER_NAME
SSN	+	+- 	PH_NO 8897451	+ + 1236	ADDRESSADJANAGAR COLONY	+ SEX +	+ DOB +	+	+ USER_NAME + RADHEY007
SSN 1078945623	+ NAME +					+	+	+	· – +
/sql> SELECT 	+ NAME NAME + RADHEY	+- +- INGH	8897451	7921	A-14,GANGANAGAR COLONY	м	 1997-01-25	1023457896	 + RADHEY007
SSN 1078945623 1159720345 1487954263	+	+- +- INGH 	8897451 9079397	7921 5699	A-14,GANGANAGAR COLONY L-747,NETAJI BLOCK	M M	1997-01-25 1987-01-19	1023457896 4596123087	- + RADHEY007 SINGH09
SSN 1078945623 1159720345 1487954263 1489955554	+	+- +- INGH HUL KAR	8897451 9079397 8974515	7921 5699 1230	A-14,GANGANAGAR COLONY L-747,NETAJI BLOCK L-804,CHARLES DARWIN BLOCK	M M F	1997-01-25 1987-01-19 1999-01-01	 1023457896 4596123087 5978420163	RADHEY007 SINGH09 KUMARRAHUL
SSN 1078945623 1159720345 1487954263 1489955554 1895703556 5241903687	RADHEY GAGANDEEP STADITYA K RAH ANJANA SHANN MAHESH SINGH	 +- INGH HUL KAR H	8897451 9079397 8974515 5784961 8754961	7921 5699 1230 1230 9247	A-14,GANGANAGAR COLONY L-747,NETAJI BLOCK L-804,CHARLES DARWIN BLOCK K146,MAHESH NAGAR P-114,VALLABHAI PATEL BLOCK P-195,MAHENDRA NAGAR, KANPUR	M M F F	1997-01-25 1987-01-19 1987-01-01 1999-01-01 1998-01-23 1998-01-23	1023457896 4596123087 5978420163 7894521000 9986412307 1124569873	RADHEY007 SINGH09 KUMARRAHUL SHANKAR_090 MAHESH090 JAIN_AKSHI
SSN 1078945623 1159720345 1487954263 1489955554 1895703556 5241903687	HADHEY GAGANDEEP S. ADITYA K RAI ANJANA SHANI	 +- INGH HUL KAR H	8897451 9079397 8974515 5784961	7921 5699 1230 1230 9247	A-14,GANGANAGAR COLONY L-747,NETAJI BLOCK L-804,CHARLES DARWIN BLOCK K146,MAHESH NAGAR P-114,VALLABHAI PATEL BLOCK	M M F F M	1997-01-25 1987-01-19 1999-01-01 1999-01-20 1998-01-23	1023457896 4596123087 5978420163 7894521000 9986412307	RADHEY007 SINGH09 KUMARRAHUL SHANKAR_090
SSN 1078945623 1159720345 1487954263 1489955554 1895703556	RADHEY GAGANDEEP STADITYA K RAH ANJANA SHANN MAHESH SINGH	 	8897451 9079397 8974515 5784961 8754961	7921 5699 1230 1230 3247 1302	A-14,GANGANAGAR COLONY L-747,NETAJI BLOCK L-804,CHARLES DARWIN BLOCK K146,MAHESH NAGAR P-114,VALLABHAI PATEL BLOCK P-195,MAHENDRA NAGAR, KANPUR	M M F F M	1997-01-25 1987-01-19 1987-01-01 1999-01-01 1998-01-23 1998-01-23	1023457896 4596123087 5978420163 7894521000 9986412307 1124569873	RADHEY007 SINGH09 KUMARRAHUL SHANKAR_090 MAHESH090 JAIN_AKSHI
SSN 1078945623 1159720345 1487954263 1489955554 1895703556 5241903687 8521479630	RADHEY GAGANDEEP STADITYA K RAH ANJANA SHANN MAHESH SING AKSHITA JAIN	 	8897451 9079397 8974515 5784961 8754961 8956136 4578961	7921 5699 1230 1230 1230 1302 1302 1578	A-14,GANGANAGAR COLONY L-747,NETAJI BLOCK L-804,CHARLES DARWIN BLOCK K146,MAHESH NAGAR P-114,VALLABHAI PATEL BLOCK P-195,MAHENDRA NAGAR, KANPUR T-109,KRISHNAPUR	- M M F F M F	1997-01-25 1987-01-19 1999-01-01 1999-01-20 1998-01-23 1999-01-23 1992-06-07	1023457896 4596123087 5978420163 7894521000 9986412307 1124569873 8745910326	RADHEY007 SINGH09 KUMARRAHUL SHANKAR_090 MAHESH090 JAIN_AKSHI SAHANIJAYESH

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
            LOKI09
 MAHESH090
 RADHEY007 122
            123QWERTY
 SAHANIJAYESH | 01023569
 SHANKAR_090 | P0007
 SHIVANGSHAYN | HLA009
            L0VE123
 SINGH09
          | OIP090
 SOLANKI
10 rows in set (0.00 sec)
```

5. LICENCE DETAILS:

6. LICENCE TYPE:

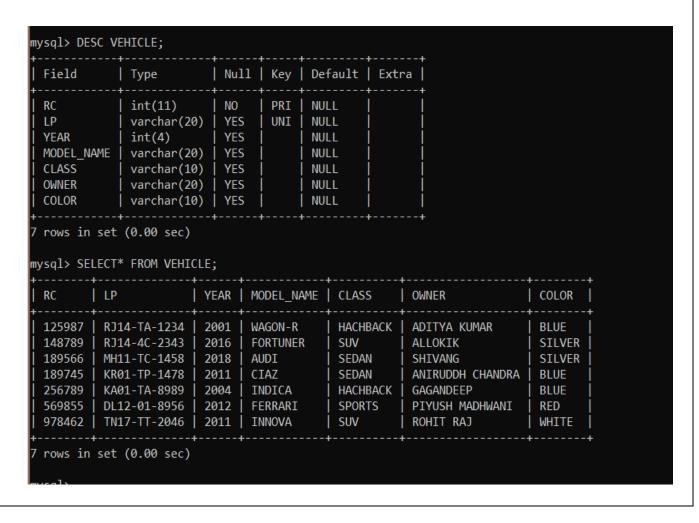
7. RULES

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

8. CARD DETAILS:

Field	Type	Null	Key	Defa	ult Extra		
NAME PIN CVV BANK_NAME TYPE	bigint(20) varchar(20) int(10) int(3) varchar(20) char(1) date	NO NO NO NO NO NO NO	PRI 	NULL NULL NULL NULL NULL NULL NULL			
rows in set	(0.00 sec)		+	+	+		
ysql> SELECT*	FROM CARD;						
NO	NAME		PIN	CVV	BANK_NAME	TYPE	EXP
1234567890 1458796123 1524789663 1569478230 2302154789 4141456555 5693000002 5698743210 7852635565	ALLOKIK PRAN SHIVANG SING SARTHAK MISH ADITYA K RAH AVANI SOLANK ANJANA SINGH ALLOKIK PRAN AKSHITA JAIN GAGANDEEP SI	GH IRA IUL CI I ISHU	1234 5623 1145 4454 2302 2458 4788 5568 7485	748 525 895 741 555 898 692 202 968 985	STATE BANK OF INDIA INDIAN BANK BANK OF INDIA BANK OF BARODA SATE BANK OF INDIA ICICI BANK ICICI BANK HDFC BANK KARNATAKA BANK INDIAN BANK	C	2021-04-19 2021-09-23 2023-01-26 2020-01-25 2019-01-01 2020-06-04 2021-02-25 2023-05-07 2019-05-15 2020-02-02

9. VEHICLE DETAILS:



10. CHALLAN DETAILS:

	Type	Null	Key	Default	Extra					
NO	int(11)	NO	PRI	NULL						
PLACE	varchar(2	20) YES		NULL						
DATE	date	YES		NULL						
TIME	time	YES		NULL						
TOTAL_AMT		YES		NULL	!!					
RC	int(11)	YES	MUL	NULL	!!					
EMP_ID	bigint(20		MUL	NULL	!!					
SSN	bigint(20		MUL	NULL	!!					
LIC	bigint(20		MUL	NULL	!!					
PAYMENT	bigint(20) YES	MUL	NULL	1 1					
nows in	-+set (0.00 se	·c)	++		-++					
7 1 0113 111	300 (0.00 30	,								
/sql> SELE	CT* FROM CHA	ALLAN;								
NO P	LACE	DATE	+ MIT	1E 1	TOTAL AMT	+ RC	+ EMP ID	 SSN	+ LIC	+ PAYMENT
NO I			+	+	<u>-</u>	+	- +	+	+	+
+		2018-10-6	2 22:	13:05	4350	256789	20014	8970214589	1145896370	1458796
	ahesh marg				1000	125987	10235	1895703556	1023457896	123456
11925 M	AHESH MARG TATUE	2018-10-6	2 22:	13:05	1050	123907	TOZOO	1093763330	1023437030	123430

11. VIOLATED RULES:

> 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),

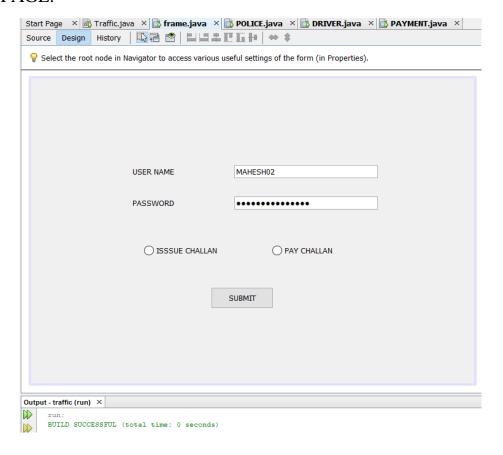
FOREIGN KEY(CHALLAN) REFERENCES CHALLAN(NO),

FOREIGN KEY(RULE) REFERENCES RULES(RULE_NO));

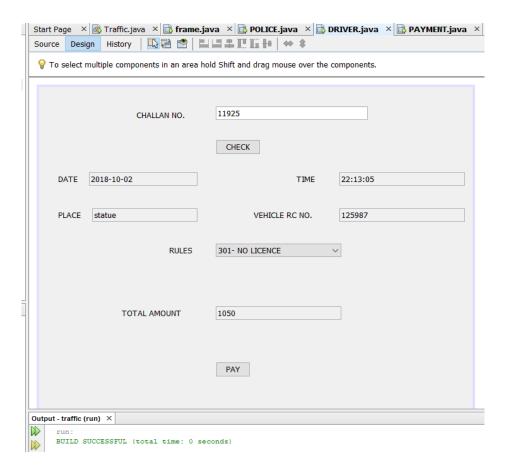
FRONT END

> LAYOUT:

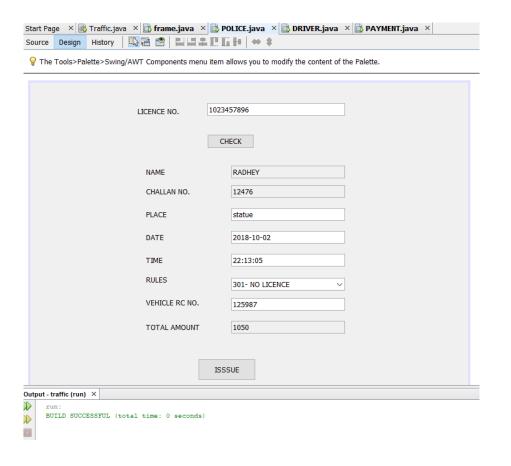
1. LOGIN PAGE:



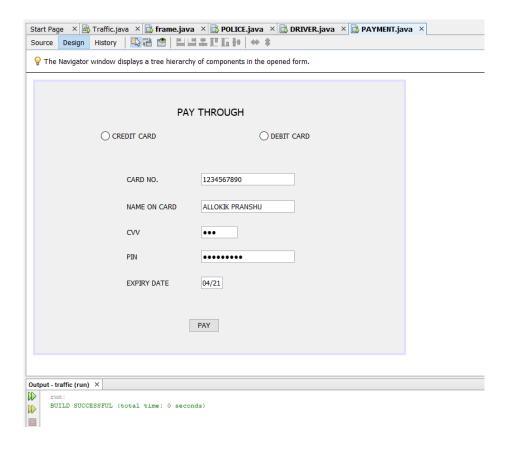
2. ISSUE CHALLAN PAGE:



3. CHALLAN PAYMENT AND DETAIL PAGE:



4. PAYMENT GATEWAY PAGE:



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.