IIT INDORE

Department of Computer Science Engineering

Course Code – CS257

Database and Information System

B.Tech. – 3rd Semester

Project Report

"RTO"

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Problem Statement

Regional transport office is the organization of the Indian government responsible for maintaining a database of vehicles like 2-wheeler registration, 3-wheeler registrations, LMV, HMV, learning license and driving license, changing of address, renewal form and much more. These are the main activities of RTO office. At present all records are maintained manually.

The following facilities are also provided:

->Registration of vehicle

->Fancy number selection of vehicles

->Issues of information about the license, which includes application forms and license test and other information.

People contact RTO for issues related to registration of vehicles and driving licenses. RTO entertains two types of driving license applications:

->Learning License: First time applicants have to go through a virtual test for a temporary license i.e. learning license. Applicants are provided with a particular slot of time on a particular date for evaluation of their driving skills. They are provided with a temporary ID.

->Permanent License: People issued learning license must apply for permanent license within a period of one month to six month of the issue date of learning license. For permanent license, applicants have to pass a driving test. After that they are issued a permanent license. The license is valid for 20 years from the date of issue or till the holder attains 50 years of age. After the expiry date it must be renewed.

RTO also deals with the management of vehicle registrations. This involves:

->New Vehicle Registration: New vehicles are provided a temporary number plate until a permanent number plate is issued within a span of 15 days. Applicant can apply for a fancy number also which is a customized number that

is not auto generated. Each vehicle is uniquely identified by its engine number or chassis number.

->Record of Pre-registered vehicles: Each pre-registered vehicle is uniquely identified by its number plate. Although it can also be identified by its engine number or chassis number.

->Transfer of Ownership: The business of pre-owned vehicles includes transfer of ownership. It contains information of the previous and new owners. The vehicle is deregistered from the previous owner and is registered to new owner.

RTO also levies Taxes on vehicle owners. Owners are required to pay a certain amount of tax, failing to do so may lead to confiscation of vehicle.

Relational Schema

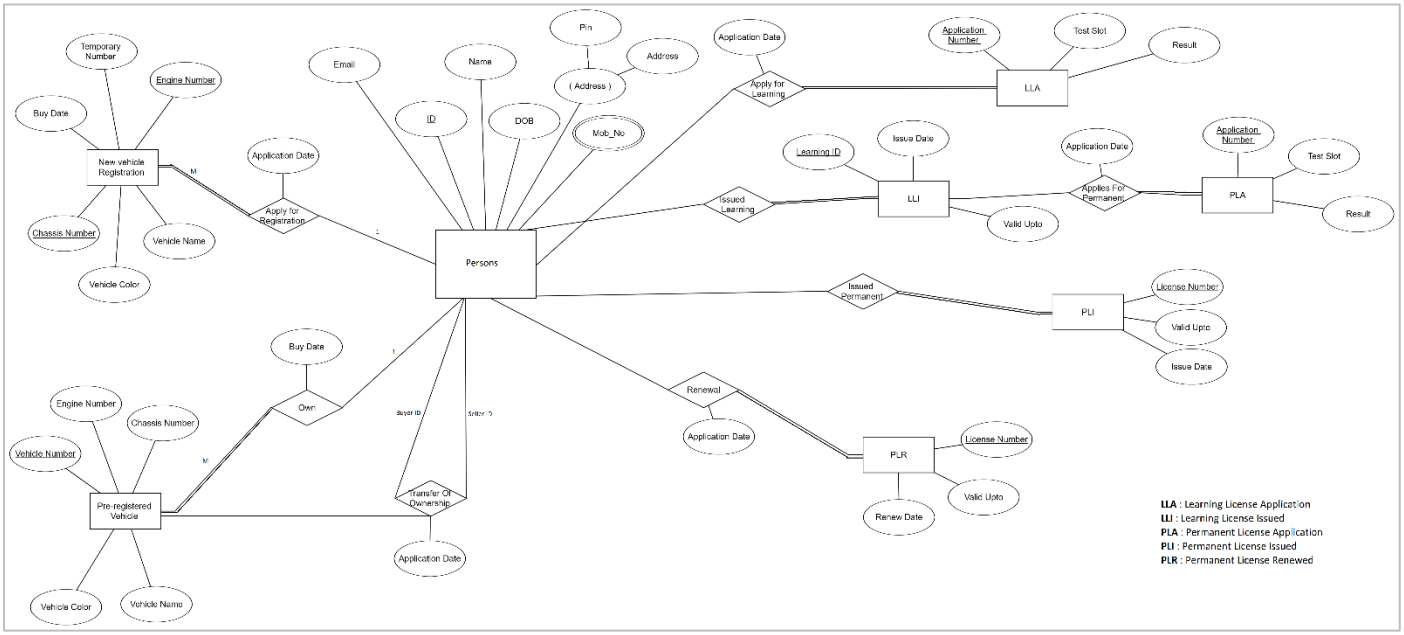
- Persons(ID, Name, DOB, Pin, (Address), {Mob_No}, Email)
  Candidate Keys = {ID}
  F = {ID-> Name, DOB, (Address), {Mob_No}, Email}
- Person_Mob(ID,Mob_No)
  Candidate Keys = {ID}
  F = {ID->Mob_No}
- LLA(Application Number, Test Slot, Result)
  Candidate Keys = {Application Number}
  F = {Applcation Number->Test Slot, Result}
- LLI(Learning ID, Issue date, Valid Upto)
  Candidate Keys = {Learning ID}
  F = {Learning ID -> Issue Date, Valid upto}
- PLA(Application number, Test slot, Result)
  Candidate Keys = {Application Number}
  F = { Applcation Number->Test Slot, Result }
- PLI(License Number, Valid upto, Issue date)
  Candidate Keys = {License Number}
  F = { License Number -> Issue Date, Valid upto }
- PLR(License Number, Valid upto, Issue date)
  Candidate Keys = {License Number}
  F = { License Number -> Issue Date, Valid upto }
- Pre-registered vehicles(Vehicle Number, Engine number, Chassis number, Vehicle name, Vehicle Color)
  Candidate Keys = {Vehicle Number}, {Engine number, Chassis number}
  F = {Vehicle number -> Engine number, Chassis number, Vehicle name, Vehicle Color}, {(Engine number, Chassis number) -> Vehicle Number, Vehicle name, Vehicle Color}
- New vehicle Registration(Engine Number, Chassis number, Temporary Number, Buy date, Vehicle Name, Vehicle Color)

Candidate Keys = {Engine number, Chassis number}
F = {(Engine number, Chassis number) -> Temporary Number, Vehicle name, Vehicle Color, Buy Date}

- Apply For Learning(Application Date, ID, Application Number)
  Candidate Keys = {Application Number}
  F = {Application Number -> ID, Application Date}
- Issued Learning(Learning ID, ID)
  Candidate Keys = {Learning ID}
  F = {Learning ID -> ID}
- Issued Permanent(License Number, ID)
  Candidate Keys = {License Number}, {ID}
  F = {License Number -> ID}, {ID -> License Number}
- Applies for Permanent(Application Number, Learning ID, Application Date)
  Candidate Keys = {Application Number}
  F = {Application Number -> Learning ID, Application Date}
- Renewal(License Number, Application Date, ID)
  Candidate Keys = {License Number}, {ID}
  F = {License Number -> ID, Application Date}, {ID -> License Number, Application Date}
- Own(Vehicle Number, ID, Buy Date)
  Candidate Keys = {Vehicle Number}
  F = {Vehicle Number -> ID, Buy Date}
- Apply for Registration(Application Date, ID , Engine Number, Chassis Number)
  Candidate Keys = {Engine number, Chassis number}
  F = {(Engine number, Chassis number) -> ID, Application Date}
- Transfer of Ownership(Vehicle Number, Application Date, Buyer ID, Seller ID)
  Candidate Keys = {Vehicle number, Application Date}
  F = {(Vehicle number, Application Date) -> Buyer ID, Seller ID}

  **Buyer ID and Seller ID in Transfer Of Ownership are ALIAS.

E-R Diagram



[ER.png]

“Create” SQL Queries

```
CREATE DATABASE RTO;
USE RTO;

CREATE  TABLE IF NOT EXISTS Person(
ID INT PRIMARY KEY NOT NULL AUTO INCREMENT,
Name VARCHAR(40) NOT NULL,
DOB DATE NOT NULL,
Address VARCHAR(40),
Pincode INT(6),

Email VARCHAR(25));

CREATE TABLE IF NOT EXISTS Person_Mob(
ID INT NOT NULL,
Mob_No INT(10),
FOREIGN KEY(ID) REFERENCES Person(ID));

CREATE TABLE LLA(
Application_No INT PRIMARY KEY AUTO INCREMENT,
TestSlot DATETIME,
Result CHAR(5));

CREATE TABLE LLI(
Learning_ID INT PRIMARY KEY AUTO INCREMENT,
ID INT UNIQUE,
Issue_Date DATE,
Valid_Upto DATE,
FOREIGN KEY(ID) REFERENCES Person(ID));

CREATE TABLE PLA(
Application_No INT PRIMARY KEY AUTO INCREMENT,
TestSlot DATETIME,
Result CHAR(5));

CREATE TABLE PLI(
License_No INT PRIMARY KEY AUTO INCREMENT,
ID INT UNIQUE,
Issue_Date DATE,
Valid_Upto DATE,
FOREIGN KEY(ID) REFERENCES Person(ID));

CREATE TABLE PLR(
License_No INT PRIMARY KEY,
Renewal_Date DATE,
Valid_Upto DATE);
```

```
CREATE TABLE IF NOT EXISTS PRV(
Vehicle_No VARCHAR(10) PRIMARY KEY NOT NULL,
Engine_No VARCHAR(20) NOT NULL,
Chassis_No VARCHAR(20) NOT NULL,
Vehicle_Name VARCHAR(20),
Vehicle_Color VARCHAR(20));

CREATE TABLE IF NOT EXISTS NVR(
Temporary_No VARCHAR(10),
Engine_No VARCHAR(20),
Chassis_No VARCHAR(20),
Vehicle_Name VARCHAR(20),
Vehicle_Color VARCHAR(20),
PRIMARY KEY(Engine_No,Chassis_No));

CREATE TABLE IF NOT EXISTS Apply_For_Learning(
Application_Date DATE,
ID INT,
Application_No INT PRIMARY KEY AUTO INCREMENT,
FOREIGN KEY(ID) REFERENCES Person(ID));

CREATE TABLE IF NOT EXISTS Applies_For_Permanent(
Application_No INT PRIMARY KEY AUTO INCREMENT,
Learning_ID INT,
FOREIGN KEY(Learning_ID) REFERENCES LLI(Learning_ID) ,
Application_Date DATE);

CREATE TABLE IF NOT EXISTS Renewal(
License_No INT PRIMARY KEY,
Application_Date DATE,
ID INT,
FOREIGN KEY(ID) REFERENCES Person(ID));

CREATE TABLE IF NOT EXISTS Own(
Vehicle_No VARCHAR(10) PRIMARY KEY NOT NULL,
ID INT NOT NULL,
FOREIGN KEY(ID) REFERENCES Person(ID),
Buy_Date DATE);

CREATE TABLE IF NOT EXISTS Apply_For_Registration(
Engine_No VARCHAR(20),
Chassis_No VARCHAR(20),
ID INT,
FOREIGN KEY(ID) REFERENCES Person(ID),
Application_Date DATE,
PRIMARY KEY(Engine_No,Chassis_No));

CREATE TABLE IF NOT EXISTS Transfer_Of_Ownership(
Vehicle_No VARCHAR(20),
Application_Date DATE,
Buyer_ID INT NOT NULL,
```

```
FOREIGN KEY(Buyer_ID) REFERENCES Person(ID),
Seller_ID INT NOT NULL,
FOREIGN KEY(Seller_ID) REFERENCES Person(ID));
```

“Triggers”

```
DELIMITER $$
CREATE TRIGGER T1 BEFORE INSERT ON PLI
FOR EACH ROW
BEGIN
DECLARE DD DATE;
SELECT TIMESTAMPADD(YEAR,20,NEW.Issue_Date) INTO DD FROM PLI;
SET NEW.Valid_Upto = DD;
END $$
DELIMITER ;
```

```
DELIMITER $$
CREATE TRIGGER T2 BEFORE INSERT ON LLI
FOR EACH ROW
BEGIN
SET NEW.Valid_Upto = TIMESTAMPADD(MONTH,6,NEW.Issue_Date);
END $$
DELIMITER ;
```

```
DELIMITER $$
CREATE TRIGGER T3 BEFORE INSERT ON PLR
FOR EACH ROW
BEGIN
SET NEW.Valid_Upto = TIMESTAMPADD(YEAR,20,NEW.Renewal_Date);
END $$
DELIMITER ;
```

```
DELIMITER $$
CREATE TRIGGER T4 BEFORE INSERT ON Transfer_Of_Ownership
FOR EACH ROW
BEGIN
UPDATE Own SET ID = NEW.Buyer_ID WHERE Own.ID = NEW.Seller_ID  AND  Vehicle_No=NEW.Vehicle_No;
SET NEW.Application_Date = CURDATE();
END $$
DELIMITER ;
```

“Insert” SQL Queries

INSERT INTO Person VALUES
(1,”Shubham”,”1995-12-14”,”Xyz Colony”,305002,”shubh@gg.com”),
(2,”Amelia Borg”,”1994-10-14”,”Xxyz Colony”,305001,”amebo@gg.com”),
(3,”Stuart Dwolf”,”1978-12-19”,”Xxxxyz Colony”,305006,”stuolf@gg.com”),
(4,”Jlota”,”1985-02-01”,”Xxxxxyz Colony”,305008,”jlotasama@gg.com”),
(5,”Bulla”,”1995-12-24”,”Xxxxxxyz Colony”,305010,”bulla@gg.com”);

INSERT INTO Person_Mob VALUES
(1,654321),
(2,654120),
(2,654222),
(3,564321),
(4,653421),
(5,634521);

INSERT INTO PRV VALUES
(“RJ052323”,”QW234”,”CH234”,”Hyundai I10”,”Red”),
(“RJ051552”,”QW289”,”CH289”,”Hyundai I20”,”White”),
(“RJ052689”,”QW298”,”CH298”,”Hyundai Grand I10”,”Black”),
(“RJ054586”,”QW342”,”CH342”,”Toyota Etios”,”Grey”),
(“RJ051234”,”QW457”,”CH457”,”Lamborgini”,”Red”),
(“RJ050001”,”QW789”,”CH789”,”SX4”,”Blue”),
(“RJ051457”,”QW432”,”CH432”,”Mauti Alto”,”Silver”);

INSERT INTO Own VALUES
(“RJ052323”,1),
(“RJ051552”,1),
(“RJ052689”,2),
(“RJ054586”,3),
(“RJ051234”,3),
(“RJ050001”,3),
(“RJ051457”,4);

INSERT INTO Transfer_Of_Ownership VALUES
(“RJ050001”,3,4);

Conclusion

We hereby conclude that the concepts of database management can be used to automate the daily tasks. Here we have shown the usage of MYSQL backed by PHP and HTML to make a simple website.