

Course No: CSE Course

Course Code:384

Title:Database Design Lab

Project Name: Car Showroom Management

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Project Overview: A Car showroom has various information like types of car, who sells them, how the transitions are done, sales, revenue, customers and so on. So it's quite difficult to track everything and manage them so that every information is correct and managed properly. So to ease the problems Car showroom management system on a single DBMS can be the best solution. Car management system is a kind of system where it shows how the showroom is keeping all the important information like vehicles, payment, customer and branch so that a showroom can run properly without any hazard. Also This project is also very helpful for the customers as well .Because a customer's all information is there so whenever a transition related query or service is needed easily all the information will be found in a short time.

There are mainly four entities for the project. Each of them is described below

Database Tables	Descriptions
Vehicle	This table is about the details of vehicles. The attributes are id, model, type and brand name.
Payment	This table is for customer's payment. Attributes are transition id, payment date, customer id, branch id, vehicle id and amount.
customer	The table is all about customer's information. The attributes are name, phone no, address and customer id.

Branch	The table is all about branch details. Attributes are branch no, branch id, address and contact number.
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Functionality:

The database allow the technicians to do the following functions

- 1.Enter & modify new Vehicles and their information
- 2.Enter & modify new customers and their information

The administrator handles all the operations and monitors them.

There are some functions and in the project which are described below:

Function(using Join): I have used natural join,equivalent join,left,right and full outer join among the tables.

The tables and Queries are given below:

```
creatable - Notepad
File Edit Format View Help
create table Vehicle(
vehicle_id varchar(40),
brand_name varchar(45),
model varchar(30),
category varchar(50),
price integer,
PRIMARY KEY(vehicle_id)
);

create table Branch(
branch_id integer,
name varchar(35),
address varchar(27),
contact_num varchar(32),
vehicle_id varchar(40),
PRIMARY KEY(branch_id),
FOREIGN KEY(vehicle_id) references Vehicle(vehicle_id)
);

create table Customer(
customer_id varchar(15),
name varchar(34),
phone varchar(33),
address varchar(28),
PRIMARY KEY(customer_id )
);

create table Payment(
transition_id varchar(20),
branch_id integer,
vehicle_id varchar(40),
payment_date date,
amount integer,
customer_id varchar(15),
PRIMARY KEY(transition_id),
FOREIGN KEY(vehicle_id) references Vehicle(vehicle_id),FOREIGN KEY(customer_id) references Customer(customer_id),FOREIGN KEY(branch_id) references Branch(branch_id)
);
```

Create Table

```
insert_table - Notepad
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insert into Vehicle (vehicle_id,brand_name,model,category,price) values('77783', 'Toyota', 'Prius S Package', 'Hybrid', 2420000);
insert into Vehicle (vehicle_id,brand_name,model,category,price) values('74517', 'Toyota', 'Axio X', 'Standard', 2250000);
insert into Vehicle (vehicle_id,brand_name,model,category,price) values('61716', 'Toyota', 'Axio X Non-Hybrid 2016', 'Standard', 1960000);
insert into Vehicle (vehicle_id,brand_name,model,category,price) values('62356', 'Honda', 'Grace EX', 'Standard', 2180000);
insert into Vehicle (vehicle_id,brand_name,model,category,price) values('78646', 'Honda', 'CR-V', 'Standard', 5700000);
insert into Vehicle (vehicle_id,brand_name,model,category,price) values('61420', 'Nissan', 'X-Trail 2017', 'Standard', 4400000);
insert into Vehicle (vehicle_id,brand_name,model,category,price) values('46300', 'Toyota', 'X Corolla', 'Standard', 1140000);
insert into Vehicle (vehicle_id,brand_name,model,category,price) values('55197', 'Toyota', 'Premio', 'Hybrid', 3420000);

insert into branch (branch_id,name,address,contact_num,vehicle_id) values(01, 'Gulshan', 'Gulshan-1,Dhaka', '01783543317','77783');
insert into branch (branch_id,name,address,contact_num,vehicle_id) values(02, 'Banani', 'Banani,Dhaka', '01622980260','74517');
insert into branch (branch_id,name,address,contact_num,vehicle_id) values(03, 'Uttora', 'Uttora,Dhaka', '016229802250','61716');
insert into branch (branch_id,name,address,contact_num,vehicle_id) values(04, 'Dhanmondi', 'Dhanmondi R/A,Dhaka', '01987321460','62356');
insert into branch (branch_id,name,address,contact_num,vehicle_id) values(05, 'Sylhet', 'chabagan,Sylhet', '01768032178','78646');
insert into branch (branch_id,name,address,contact_num,vehicle_id) values(06, 'Chittagong', 'nasirabad,Chittagong', '017430236710','61420');
insert into branch (branch_id,name,address,contact_num,vehicle_id) values(07, 'Barisal', 'choumuni,Barisal', '01789076432','46300');
insert into branch (branch_id,name,address,contact_num,vehicle_id) values(08, 'Rajshahi', 'sahebbazar,Rajshahi', '01834671095','55197');

insert into Customer (customer_id,name,phone,address) values('202075', 'Sumaiya Tasneem', '01678903216', 'block-a,Banani');
insert into Customer (customer_id,name,phone,address) values('202067', 'Sanzida Afrin', '01909431267', 'road no-6,Dhanmondi R/A');
insert into Customer (customer_id,name,phone,address) values('202070', 'Aminul Islam', '01531267890', 'block-d,Sylhet');
insert into Customer (customer_id,name,phone,address) values('202068', 'Sara Zannatul', '01653289012', 'nasirabad,Chittagong');
insert into Customer (customer_id,name,phone,address) values('202063', 'Jahidul Islam', '1574120945', 'road-107,Gulshan-2');
insert into Customer (customer_id,name,phone,address) values('202076', 'Sumaiya Rahman', '01876321098', 'babubazar,Rajshahi');
insert into Customer (customer_id,name,phone,address) values('202065', 'Ashiq Islam', '01785412097', 'sector-3,Uttora');
insert into Customer (customer_id,name,phone,address) values('202060', 'Riyad Hossain', '01908125670', 'kotwali,Barisal');

insert into Payment (transition_id,customer_id,branch_id,vehicle_id,payment_date,amount) values('2034578', '202075', 01, '74517', '22-jul-22', 2250000);
insert into Payment (transition_id,customer_id,branch_id,vehicle_id,payment_date,amount) values('2256789', '202076', 02, '77783', '21-jan-22', 2420000);
insert into Payment (transition_id,customer_id,branch_id,vehicle_id,payment_date,amount) values('2357854', '202067', 03, '78646', '12-feb-22', 5700000);
insert into Payment (transition_id,customer_id,branch_id,vehicle_id,payment_date,amount) values('2435890', '202060', 03, '61420', '10-jun-22', 4400000);
insert into Payment (transition_id,customer_id,branch_id,vehicle_id,payment_date,amount) values('2789054', '202070', 04, '46300', '30-jun-22', 1140000);
insert into Payment (transition_id,customer_id,branch_id,vehicle_id,payment_date,amount) values('2567432', '202063', 05, '55197', '19-jan-22', 3420000);
insert into Payment (transition_id,customer_id,branch_id,vehicle_id,payment_date,amount) values('2156843', '202065', 06, '61716', '01-mar-22', 1960000);
```

Insert Table

```
query - Notepad
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select price from Vehicle where brand_name='Toyota';

select customer_id from Payment where amount > 2000000 and amount < 2500000;

select count(address) from branch where address='%Dhaka' and contact_num='017%';

select customer_id,phone,address as details from Customer where customer_name='Sumaiya Tasneem';

select * from branch;

select vehicle_id,brand_name,model from Vehicle;

select distinct(brand_name) from Vehicle;

select transition_id,customer_id,branch_id,vehicle_id,payment_date,amount from payment order by amount;

update branch set contact_num='016229802145' where branch_id=01;

delete from customer where name='Aminul islam';

update branch set vehicle_id='77783'where vehicle_id='62356';

update branch set vehicle_id='62356'where vehicle_id='77783';
```

Query

```
query2 - Notepad
File Edit Format View Help
view code:

create view Car as
select vehicle_id as car_id,brand_name,model,category,price from Vehicle where brand_name='Toyota';

select * from Car;
select brand_name,model from Car where category='Hybrid' and price=2420000;

create view Payment_Details as
select transition_id,customer_id,branch_id,vehicle_id,payment_date from Payment where amount > 10000000 and amount < 25000000;

Tuple Code:

select V.brand_name, V.model , V.category, V.price , B.branch_id, B.name as branch_name from Vehicle V , branch B
WHERE V.Vehicle_id = B.Vehicle_id and V.brand_name = 'Toyota';

select N.Customer AS customer_name, N.phone, N.address, M.payment_date, M.amount
from Payment M , Customer N
WHERE M.Customer_id = N.Customer_id and payment_date = '22-APR-22';
```

View and Tuple

```
*query3 - Notepad
File Edit Format View Help
--Natural Join

select model from Vehicle natural join branch;

select phone from Customer natural join Payment;

--Equivalent join
select brand_name from Vehicle join Payment on Vehicle.vehicle_id=Payment.vehicle_id and Vehicle.price=Payment.amount;

--left join
select brand_name,category,address,contact_num from Vehicle left outer join branch on(Vehicle.vehicle_id=branch.vehicle_id);
insert into Customer (customer_id,name,phone,address) values('202080', 'Raiyan', '01563278901', 'mirpur,Dhaka');
select name,address,payment_date,amount from Customer left outer join Payment on(Customer.customer_id=Payment.customer_id);

--right join
insert into Vehicle (vehicle_id,brand_name,model,category,price) values('67543', 'Toyota', 'Premio', 'Hybrid', 3420000);
insert into branch (branch_id,name,address,contact_num,vehicle_id) values(10, 'Noakhali', 'Maijdee,Noakhali', '01834671876','67543');
select category,price,branch_id,name from Vehicle right outer join branch on(Vehicle.vehicle_id=branch.vehicle_id);

select name,phone,transition_id,amount from Customer right outer join Payment on(Customer.customer_id=Payment.customer_id);

--full outer join
select name,address,payment_date,amount from Customer full outer join Payment on(Customer.customer_id=Payment.customer_id);
select category,price,branch_id,name from Vehicle full outer join branch on(Vehicle.vehicle_id=branch.vehicle_id);
```

TYPES OF JOIN

Customer/Audience:

The main customer for this database is the employee. As employee's have to store every information correctly and manage them properly so that whenever any information about customers or any kind of query is required so that an employee gets that easily.

Database Design Process:

For this database project our approach was to take an existing basic prototype and optimize the database design. I have developed it with

oracle as it was my goal. We determined that the best course of action was to optimize the database design a stand-alone application so that it is at least ready for use. I have made and developed four new tables. Our table design provides future flexibility for growth and changes to the database tables. For example, the Payment table can add more attributes for the database's betterment. Payment type attribute is added then it would be helpful for the showroom's employees. In the payment table there are 2 foreign keys which are customer id and branch id from which we can get the information of which customer has bought which vehicle along that from which branch it has been purchased. Same goes for rest of the tables.

We learned several important lessons through the design process. These include:

- ◆ One of the most important things is how we design a table as there may be some tables which won't be required much, for that we have to keep in mind that the lowest number of tables with the same effectiveness is better.
- ◆ PL / SQL should be done in an effective way.
- ◆ Revising an existing database is quite harder than building a database, which is why initial design.
- ◆ Being able to design a database well for a client requires a lot of understanding about the business process and needs behind the applications.
- ◆ We must be careful using composite keys.

Future of the Database:

The database is currently a functional Oracle back-end and can begin to be used. However, the ideal situation would be for the database to be completely wrapped into the Khulna Food Management System's existing structure so that it could be a better one. It is anticipated that the following tasks will need to be done in order to achieve the goals stated above:

- Collect more detailed information about the Vehicles and the customer and payment.
- Add an option rating for the different attributes of the Vehicle and branch services by the registered customers.
- More pl/sql codes for better functionalities.
- More file based operation.
- Option for payment by different mobile banking systems.
- Rich design architecture.

Summary:

Database is one of my favorite courses as it has many real life applications in our daily life. I was very thrilled to learn it. Not only learn something new but also I added these learnings in my project also. I must say I have gathered much knowledge and improved myself. Now I'm looking forward to improve and apply in real life applications as well.

Schema Diagram:

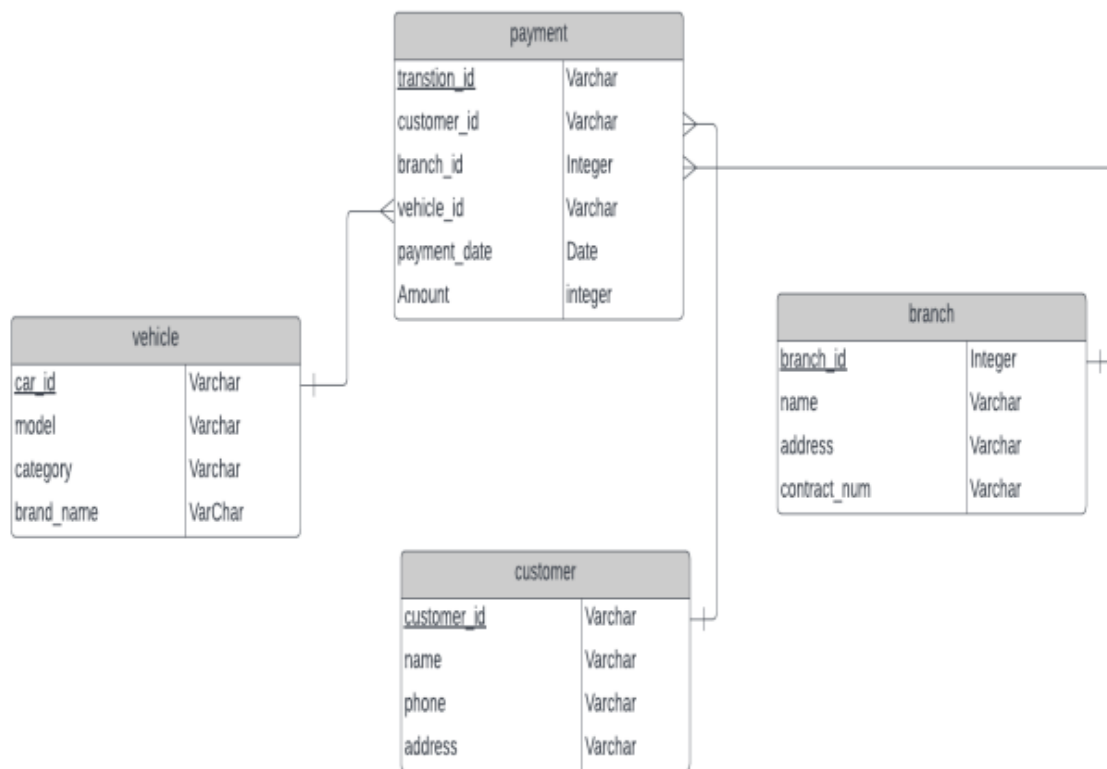


Figure:Schema diagram of Car Showroom Management