

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)



Skill Based Mini Project Report
on
TAXI-SERVICE MANAGEMNET SYSTEM

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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CERTIFICATE

This is certified that **Shakti Sagar Prajapati** (0901CS201115) has submitted the project report titled "**Taxi Service Management System**" under the mentorship of **Ms. Jaimala Jha**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.



Ms. Jaimala Jha

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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DECLARATION

I hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of my work under the mentorship of **Ms. Jaimala Jha, Ass. Professor**, Computer Science & Engineering Department.

I declare that I have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.



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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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ABSTRACT

The . “Taxi Service Management System” is to design and implement a database management system for a taxi service company. The system will be used to manage all the operations of the company, including the dispatch of taxis, the location of taxis, and maintaining records of the drivers and customers. The database will store information entered by the user, availability of taxis in the area, location of taxis and the status of each taxi (in or out of service). The system will allow efficient retrieval of data for analysis and reporting purposes, such as tracking the number of rides, etc. The system will be implemented using a RDBMS, with a user-friendly interface for easy access and data entry.

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LIST OF ABBREVIATIONS

AbbreviationDescription

DBMS	:	Database Management System
SQL	:	Structured Query Language
PL/SQL	:	Procedural Language extension to Structured Query Language
RDBMS	:	Relational Database Management System
ERD	:	Entity-Relationship Diagram
RS	:	Relational Schema

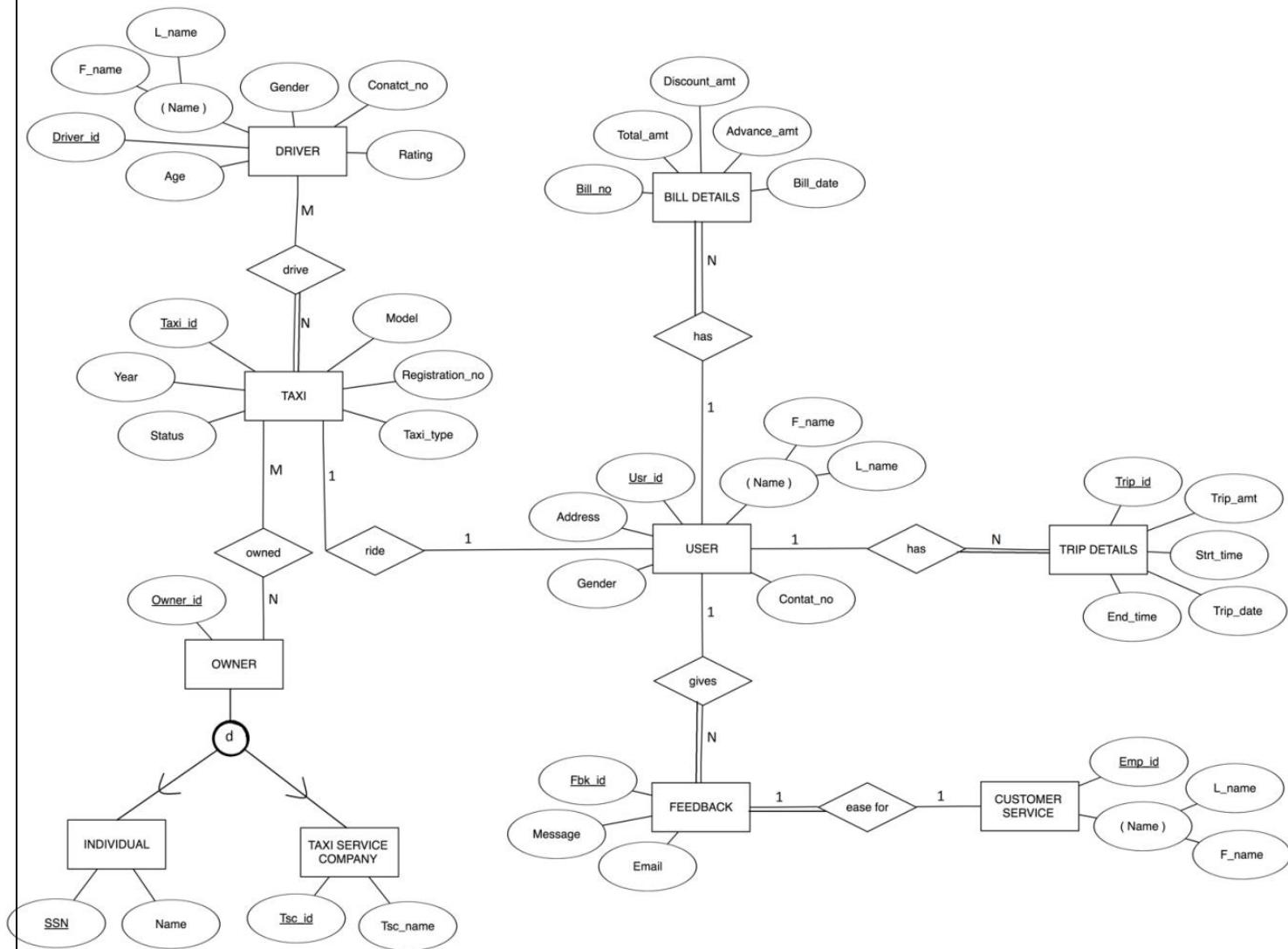
INTRODUCTION

Welcome to the report on our taxi service database management project. This report will cover the design, implementation, and maintenance of our database system for managing the operations of our taxi service. We will discuss the various features and functions of the database, as well as the challenges and solutions encountered during the development process. The goal of this project was to create a system that would allow us to efficiently and accurately track and manage the details of our taxi service, including the location and status of our vehicles, the schedules and routes of our drivers, and the information and preferences of our customers. We believe that the database system we have created will greatly improve the efficiency and effectiveness of our taxi service, and we hope that this report will provide a useful overview of our work.

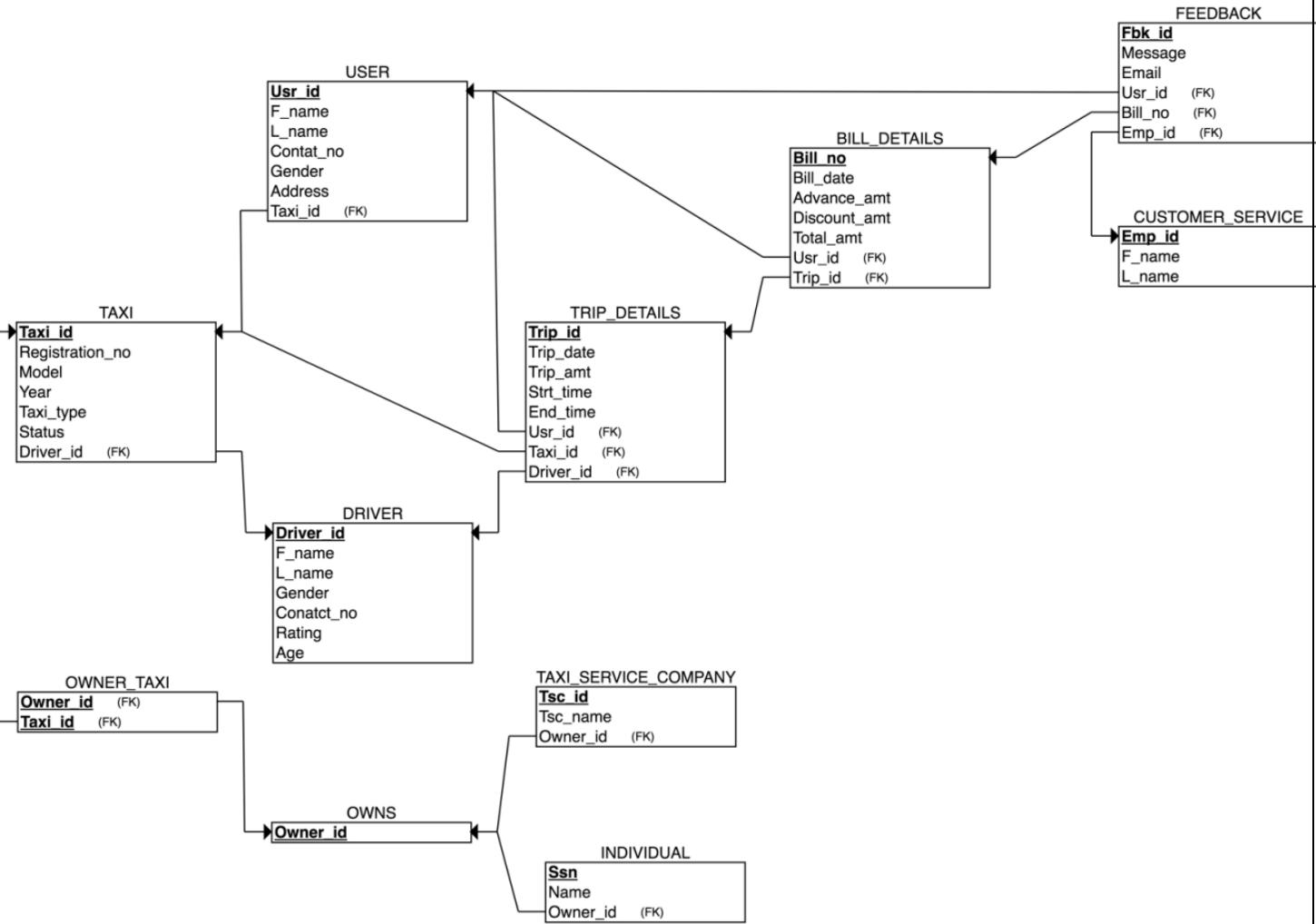
REQUIREMENTS

- ❖ It involves around three main entities Taxi, User and Trip.
- ❖ User has a unique User_id, a Contact_no and an Email.
- ❖ Has a number of taxis for service described by Taxi_id, Registration_no, Model, Manufactured year and Status.
- ❖ A User can reserve a taxi for a number of hours/days.
- ❖ A user is uniquely identified by his/her User_id. User information consists of his name as first name, last name, address, age and contact number.
- ❖ When the trip starts or ends, the starts or end trip time is automatically updated in the database by the system.
- ❖ A unique bill is generated with a Bill_no after a trip ends which has the information of user, driver, amount, date.
- ❖ The total amount and net amount are calculated based on start time, end time, taxi price per hour and promotional code if any.
- ❖ A taxi is categorized as Individual Owner and Taxi Service Company. Every taxi has a owner and he/she can give his/her car for the taxi service. Every owner has SSN and name. For the taxi service company information like tcs_id and tsc_name will also be there.
- ❖ A registered user will be provided with a login id and password. A customer can save his credit/debit card details for future payment.
- ❖ Partial payment can also be made at the time of booking and the balance must be paid by the user at the end of the trip.
- ❖ If user is a customer, he/she can pay through saved debit/credit card details
- ❖ A taxi can be drive by a driver. Driver has uniquely identified by the Driver_id. Other information consists of name, gender, contact_no, rating and age.
- ❖ After the trip over a unique trip_id is generated for that particular trip. Along with all the necessary trip_details such as amount, date etc.
- ❖ Users can also the give the feedback/rating for the trip they traveled into it. The feedback can be a message or rating out five for the driver who is giving trip to that user.

ER-DIAGRAM



Mapping of ERD in Relational Schema



TAXI

Taxi_id	Registration_no	Taxi_model	Taxi_year	Taxi_type	Status	Driver_id
---------	-----------------	------------	-----------	-----------	--------	-----------

- Primary key :Taxi_id
- Foreign key :Driver_id

USER TBL

User_id	F_name	L_name	Contact	Gender	Address	Taxi_id
---------	--------	--------	---------	--------	---------	---------

- Primary key :User_id
- Foreign key :Taxi_id

DRIVER

Driver_id	F_name	L_name	Gender	Contact_no	Rating	Age
-----------	--------	--------	--------	------------	--------	-----

- Primary key :Driver_id
- Foreign key : NA

TRIP DETAILS

Trip_id	Trip_date	Trip_amt	Driver_id	User_id	Taxi_id	Start_time	End_time
---------	-----------	----------	-----------	---------	---------	------------	----------

- Primary key :Trip_id
- Foreign key :Taxi_id, User_id, Driver_id

BILL DETAILS

Bill_no	Bill Date	Amount_amt	Discount_amt	Total_amt	User_id	Trip_id
---------	-----------	------------	--------------	-----------	---------	---------

- Primary key :Bill_no
- Foreign key :User_id, Trip_id

CUSTOMER SERVICE

Emp_id	F_name	L_name
--------	--------	--------

- Primary key :Emp_id
- Foreign key :NA

FEEDBACK

Fbk_id	Message	Email	Emp_id	Trip_id	User_id
--------	---------	-------	--------	---------	---------

- Primary key :Fbk_id
- Foreign key :Emp_id, Trip_id, User_id

OWNER TAXI

Owner_id	Taxi_id
----------	---------

- Primary key :Owner_id, Taxi_id
- Foreign key :Owner_id, Taxi_id

OWN

Own_id	No_cars
--------	---------

- Primary key : Own_id
- Foreign key : NA

INDIVIDUAL

Ssn	Name	Owner_id
-----	------	----------

- Primary key : Ssn
- Foreign key : Owner_id

TAXI SERVICE COMPANY

Tsc_id	Tsc_name	Owner_id
--------	----------	----------

- Primary key :Tsc_id
- Foreign key :Owner_id

SQL STATEMENTS

Table Creation

```
CREATE TABLE TAXI (
    Taxi_id integer NOT NULL,
    Registration_noVARCHAR(20),
    Taxi_ModelVARCHAR(20),
    Taxi_Year DATE,
    Taxi_typeVARCHAR(20),
    Status VARCHAR(20),
    Driver_id integer,
    PRIMARY KEY (Taxi_id),
    UNIQUE (Registration_no)
);
CREATE TABLE USER_TBL (
    Usr_id integer NOT NULL,
    F_nameVARCHAR(20),
    L_nameVARCHAR(20),
    Contat_no integer,
    Gender VARCHAR(10),
    Address VARCHAR(50),
    Taxi_id integer,
    PRIMARY KEY (Usr_id)
);
CREATE TABLE DRIVER (
    Driver_id integer NOT NULL,
    F_nameVARCHAR(10),
    L_nameVARCHAR(20),
    Gender VARCHAR(10),
    Conatct_noVARCHAR(20),
    Rating integer,
    Age integer,
    PRIMARY KEY (Driver_id)
);
CREATE TABLE TRIP_DETAILS (
    Trip_id integer NOT NULL,
    Trip_date DATE,
    Trip_amtdecimal(10,2),
    Driver_id integer,
    Usr_id integer,
    Taxi_id integer,
    Strt_time TIMESTAMP,
    End_time TIMESTAMP,
    PRIMARY KEY (Trip_id)
);
CREATE TABLE BILL_DETAILS (
```

```

    Bill_no integer NOT NULL,
    Bill_date DATE,
    Advance_amtdecimal(10,2),
    Discount_amtdecimal(10,2),
    Total_amtdecimal(10,2),
    Usr_id integer,
    Trip_id integer,
    PRIMARY KEY (Bill_no),
);

CREATE TABLE CUSTOMER_SERVICE (
    Emp_id integer NOT NULL,
    F_nameVARCHAR(20),
    L_nameVARCHAR(20),
    PRIMARY KEY (Emp_id)
);

CREATE TABLE FEEDBACK (
    Fbk_id integer NOT NULL,
    Message VARCHAR(140),
    Email VARCHAR(50),
    Emp_id integer,
    Usr_id integer,
    Trip_id integer,
    PRIMARY KEY (Fbk_id),
);

CREATE TABLE OWNS (
    Owner_id integer NOT NULL,
    No_Cars integer,
    PRIMARY KEY (Owner_id)
);

CREATE TABLE OWNER_TAXI (
    Owner_id integer NOT NULL,
    Taxi_id integer,
    PRIMARY KEY (Owner_id, Taxi_id)
);

CREATE TABLE INDIVIDUAL (
    Ssn integer NOT NULL,
    Name VARCHAR(20),
    Owner_id integer,
    PRIMARY KEY (Ssn)
);

CREATE TABLE TAXI_SERVICE_COMPANY (
    Tsc_id integer NOT NULL,
    Tsc_nameVARCHAR(20),
    Owner_id integer,
    PRIMARY KEY (Tsc_id)
);

```

Foreign Key Creation

```
ALTER TABLE TAXI ADD CONSTRAINT fketadr FOREIGN KEY (Driver_id)
REFERENCES DRIVER(Driver_id) ON DELETE CASCADE;

ALTER TABLE USER_TBL ADD CONSTRAINT fkusta FOREIGN KEY (Taxi_id)
REFERENCES TAXI(Taxi_id) ON DELETE CASCADE;

ALTER TABLE TRIP_DETAILS ADD CONSTRAINT fktddr FOREIGN KEY
(Driver_id) REFERENCES DRIVER(Driver_id) ON DELETE CASCADE;

ALTER TABLE TRIP_DETAILS ADD CONSTRAINT fktdusr FOREIGN KEY (Usr_id)
REFERENCES USER_TBL(Usr_id) ON DELETE CASCADE;

ALTER TABLE TRIP_DETAILS ADD CONSTRAINT fktdtax FOREIGN KEY
(Taxi_id) REFERENCES TAXI(Taxi_id) ON DELETE CASCADE;

ALTER TABLE BILL_DETAILS ADD CONSTRAINT fkbdtd FOREIGN KEY (Trip_id)
REFERENCES TRIP_DETAILS(Trip_id) ON DELETE CASCADE;

ALTER TABLE BILL_DETAILS ADD CONSTRAINT fkbdusr FOREIGN KEY (Usr_id)
REFERENCES USER_TBL(Usr_id) ON DELETE CASCADE;

ALTER TABLE FEEDBACK ADD CONSTRAINT fkfbemp FOREIGN KEY (Emp_id)
REFERENCES CUSTOMER_SERVICE(Emp_id) ON DELETE CASCADE;

ALTER TABLE FEEDBACK ADD CONSTRAINT fkfbtd FOREIGN KEY (Trip_id)
REFERENCES TRIP_DETAILS(Trip_id) ON DELETE CASCADE;

ALTER TABLE FEEDBACK ADD CONSTRAINT fkfbusr FOREIGN KEY (Usr_id)
REFERENCES USER_TBL(Usr_id) ON DELETE CASCADE;

ALTER TABLE OWNER_TAXI ADD CONSTRAINT fkeowtax FOREIGN KEY (Taxi_id)
REFERENCES TAXI(Taxi_id) ON DELETE CASCADE;

ALTER TABLE OWNER_TAXI ADD CONSTRAINT fkeowowns FOREIGN KEY
(Owner_id) REFERENCES OWNS(Owner_id) ON DELETE CASCADE;

ALTER TABLE INDIVIDUAL ADD CONSTRAINT fkeinowns FOREIGN KEY
(Owner_id) REFERENCES OWNS(Owner_id) ON DELETE CASCADE;

ALTER TABLE TAXI_SERVICE_COMPANY ADD CONSTRAINT fketscowns FOREIGN
KEY (Owner_id) REFERENCES OWNS(Owner_id) ON DELETE CASCADE;
```

Insert Commands

```
INSERT INTO TAXI VALUES(1,'KA-15R-3367','BENZE
300',to_date('01/01/2017','mm/dd/yyyy'),'SUV','Available',1)

INSERT INTO DRIVER
VALUES(1,'Abhi','Gowda','Male','4693805870',5,25);

INSERT INTO USER_TBL
VALUES(1,'USER1','LNAME','123456','Male','MCCallum','1');

INSERT INTO TRIP_DETAILS
VALUES(1,to_date('01/01/2017','mm/dd/yyyy'),123,1,1,1,TO_TIMESTAMP(
2017-01-01 06:14:00', 'YYYY-MM-DD HH24:MI:SS'),TO_TIMESTAMP('2017-
01-01 08:14:00', 'YYYY-MM-DD HH24:MI:SS'));

INSERT INTO BILL_DETAILS
VALUES(1,to_date('01/01/2017','mm/dd/yyyy'),1000.10,20.11,null,1,1);

INSERT INTO CUSTOMER_SERVICE VALUES(1,'abhi','gowda');

INSERT INTO FEEDBACK VALUES(1,'not so good','abhi@gmail.com',1,1,1);

INSERT INTO OWNS VALUES(1,1);

INSERT INTO OWNS VALUES(2,1);

INSERT INTO OWNER_TAXI (1,1);

INSERT INTO INDIVIDUAL VALUES(123,'abhi owner ind',1);

INSERT INTO TAXI_SERVICE_COMPANY VALUES (1,'abhi taxi comp',2);

INSERT INTO INDIVIDUAL values(123,'abhi owner ind',1);

INSERT INTO TAXI_SERVICE_COMPANY values (1,'abhi taxi comp',2);
```

PL/SQL PROCEDURE

For Book_Taxi

```
CREATE OR REPLACE PROCEDURE BOOK_TAXI
( Name IN VARCHAR2,
v_Address IN VARCHAR2,
v_Contact IN VARCHAR2,
Taxi_Model IN VARCHAR2,
v_Gender IN VARCHAR2,
Advance IN decimal,          )
AS
BEGIN
DECLARE
v_usr_idINT :=-1;
v_Trip_idINT :=-1;
v_Bill_noINT :=-1;
v_Taxi_idINT :=-1;
v_Driver_idINT :=1;
BEGIN
select MAX(Usr_id)+1 into v_usr_id from USER_TBL ;
select MAX(Trip_id)+1 into v_Trip_id from TRIP_DETAILS ;
select MAX(Bill_no)+1 into v_Bill_no from BILL_DETAILS ;
select taxi_id, Driver_id into v_Taxi_id,v_Driver_id from TAXI
where Status = 'Available' and Taxi_Model = Taxi_Model;
insert into USER_TBL values(v_usr_id, SUBSTR (Name, 1,
INSTR(Name, ' ',1)),SUBSTR (Name, INSTR(Name,
',1)+1,LENGTH(Name)),v_Contact,v_Gender,v_Address,v_Taxi_id);
insert into TRIP_DETAILS values(v_Trip_id,sysdate,
50,v_Driver_id,v_usr_id,v_Taxi_id,sysdate,null);
insert into BILL_DETAILS
values(v_Bill_no,null,Advance,null,null,v_usr_id,v_Trip_id);
END ;
```

Worksheet Query Builder

```
execute BOOK_TAXI('FRASBUK AGMERA', 'UID NORIB', '469380', 'BENZE 300', 'YALE', 23)
select * from trip_details
select * from bill_details
```

Script Output Query Result

SQL All Rows Fetched: 4 in 0.034 seconds

BILL_NO	BILL_DATE	ADVANCE_AMT	DISCOUNT_AMT	TOTAL_AMT	USR_ID	TRIP_ID
1	4 (null)	25	(null)	(null)	4	4
2	1 05-DEC-18	1000.1	10	350	1	1
3	2 (null)	16	(null)	(null)	2	1
4	3 06-DEC-18	20	45	-45	3	3

CS Oracle

Worksheet Query Builder

```
execute BOOK_TAXI('FRASBUK AGMERA', 'UID NORIB', '469380', 'BENZE 300', 'YALE', 23)
select * from trip_details
select * from bill_details
```

Script Output Query Result

SQL All Rows Fetched: 4 in 0.013 seconds

TRIP_ID	TRIP_DATE	TRIP_AMT	DRIVER_ID	USR_ID	TAXI_ID	STRT_TIME	END_TIME
1	4 06-DEC-18	50	1	4	1	06-DEC-18 09.41.39.000000000 AM (null)	
2	1 01-JAN-17	123	1	1	1	04-DEC-18 11.49.24.000000000 PM 06-DEC-18 12.07.34.000000000 AM	
3	2 05-DEC-18	(null)	1	2	1	05-DEC-18 11.56.05.000000000 PM 06-DEC-18 12.07.34.000000000 AM	
4	3 06-DEC-18	50	1	3	1	06-DEC-18 12.04.03.000000000 AM 06-DEC-18 12.07.34.000000000 AM	

For Trip_end

```
CREATE OR REPLACE PROCEDURE TRIP_END(v_trip IN INT , v_discount
IN Decimal )
AS
BEGIN
DECLARE
v_total_timeINT := -1;
v_bill_noINT :=-1;
BEGIN
select extract(day from (sysdate - Strt_time))*24 + extract(hour
from (sysdate - Strt_time)) into v_total_time from TRIP_DETAILS
where Trip_id = v_trip;
update TRIP_DETAILS set End_time = sysdate where Trip_id =
Trip_id ;
update BILL_DETAILS set Bill_date = sysdate ,Discount_amt =
v_discount ,Total_amt = (v_total_time * 15) - v_discount where
Trip_id = v_trip ;
END ;
END ;
/
```

CSoracle

Worksheet Query Builder

```
execute BOOK_TAXI('PRASHUK AGWERA', 'UID: NORTH', '469380', 'BENZE 300', 'MALE', 25)
execute TRIP_END(4,-10)
select * from trip_details
select * from bill_details
```

Script Output Query Result

SQL All Rows Fetched: 4 in 0.006 seconds

TRIP_ID	TRIP_DATE	TRIP_AMT	DRIVER_ID	USR_ID	TAXI_ID	STRT_TIME	END_TIME
1	06-DEC-18	50	1	4	1	06-DEC-18 09.41.39.000000000 AM	06-DEC-18 09.47.56.000000000 AM
2	01-JAN-17	123	1	1	1	04-DEC-18 11.49.24.000000000 PM	06-DEC-18 09.47.56.000000000 PM
3	205-DEC-18	(null)	1	2	1	05-DEC-18 11.56.05.000000000 PM	06-DEC-18 09.47.56.000000000 AM
4	306-DEC-18	50	1	3	1	06-DEC-18 12.04.03.000000000 AM	06-DEC-18 09.47.56.000000000 AM

CSoracle

Worksheet Query Builder

```
execute BOOK_TAXI('PRASHUK AGWERA', 'UID: NORTH', '469380', 'BENZE 300', 'MALE', 25)
execute TRIP_END(4,-10)
select * from trip_details
select * from bill_details
```

Script Output Query Result

SQL All Rows Fetched: 4 in 0.004 seconds

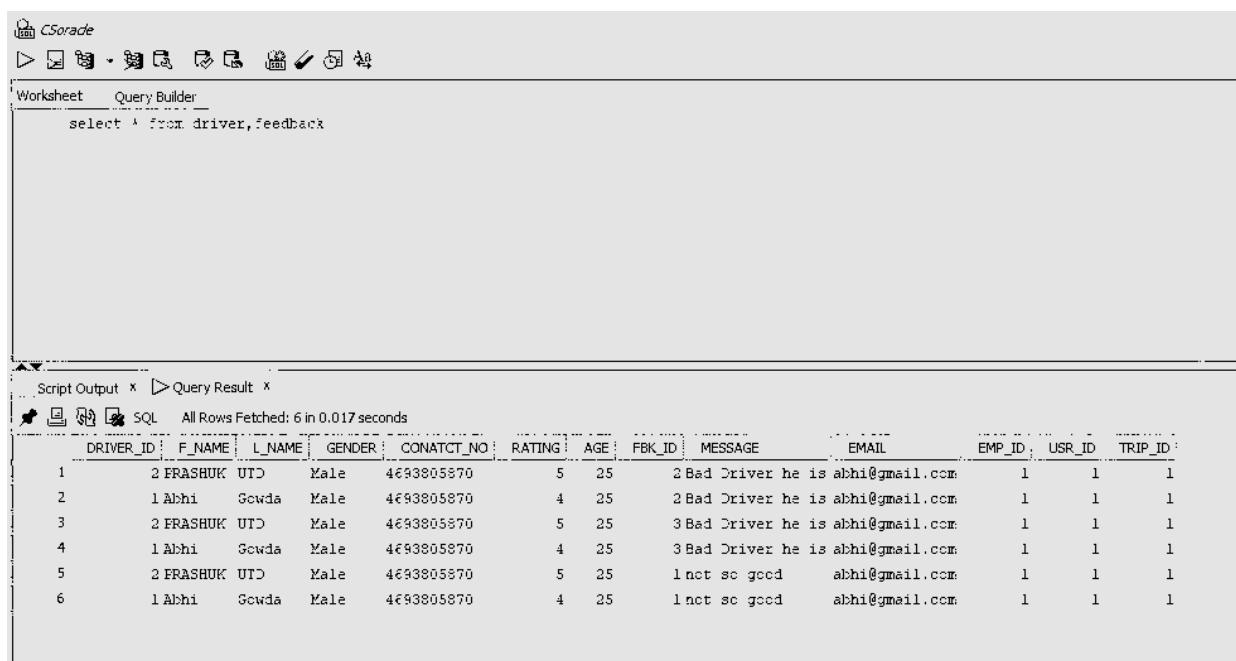
BILL_NO	BILL_DATE	ADVANCE_AMT	DISCOUNT_AMT	TOTAL_AMT	USR_ID	TRIP_ID
1	06-DEC-18	25	-10	10	4	4
2	05-DEC-18	1000.1	10	350	1	1
3	2 (null)	18	(null)	(null)	2	1
4	306-DEC-18	20	45	-45	3	3

PL/SQL TRIGGER

For Update_user_rating

```
CREATE OR REPLACE TRIGGER UPDATE_DRIVER_RATING
AFTER INSERT ON FEEDBACK
FOR EACH ROW
WHEN (NEW.Message like '%Bad Driver%')
DECLARE
v_driver_id INT;
BEGIN
  select driver_id into v_driver_id from TRIP_DETAILS where
trip_id= :NEW.Trip_id;

  update DRIVER set Rating = Rating -1 where driver_id =
v_driver_id;
END;
/
```



The screenshot shows the Oracle SQL Developer interface. The Worksheet tab contains the following SQL query:

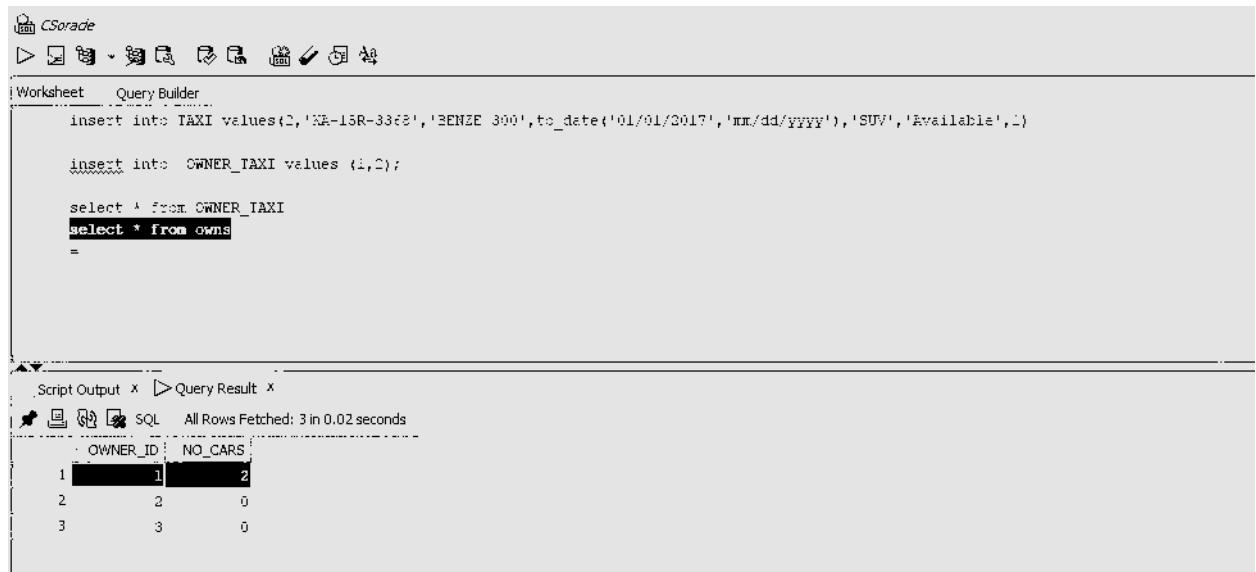
```
select * from driver,feedback
```

The Query Result tab displays the following data:

DRIVER_ID	F_NAME	L_NAME	GENDER	CONATCT_NO	RATING	AGE	FBK_ID	MESSAGE	EMAIL	EMP_ID	USR_ID	TRIP_ID	
1	2	FRASHUK	UTD	Male	4693805870	5	25	2	Bad Driver he is abhi@gmail.com	1	1	1	
2	1	Abhi	Gowda	Male	4693805870	4	25	2	Bad Driver he is abhi@gmail.com	1	1	1	
3	2	FRASHUK	UTD	Male	4693805870	5	25	3	Bad Driver he is abhi@gmail.com	1	1	1	
4	1	Abhi	Gowda	Male	4693805870	4	25	3	Bad Driver he is abhi@gmail.com	1	1	1	
5	2	FRASHUK	UTD	Male	4693805870	5	25	1	not so good	abhi@gmail.com	1	1	1
6	1	Abhi	Gowda	Male	4693805870	4	25	1	not so good	abhi@gmail.com	1	1	1

For Add_no_of_cars

```
CREATE OR REPLACE TRIGGER ADD_NO_OF_CARS
BEFORE INSERT OR UPDATE ON OWNS
FOR EACH ROW
DECLARE
v_no_of_cars INT;
BEGIN
    select count(Taxi_id) into v_no_of_cars from OWNER_TAXI where
Owner_id= :NEW.Owner_id group by Owner_id;
:NEW.No_Cars := v_no_of_cars;
END;
/
```



The screenshot shows the Oracle SQL Developer interface. The top section is a 'Worksheet' tab with the 'Query Builder' sub-tab selected. It contains the trigger creation code shown in the previous text block. The bottom section is a 'Script Output' tab showing the execution results. The results show three rows of data from the 'OWNS' table, with the 'NO_CARS' column populated by the trigger. The table structure is:

OWNER_ID	NO_CARS
1	1
2	2
3	3

Normalization of Relational Schema

➤ TAXI

{Taxi_id ® Registration_no, Taxi_Model, Taxi_Year, Taxi_type, Status}

➤ USER

{Usr_id ® F_name, L_name, Contat_no, Gender, Address, Taxi_id}

➤ DRIVER

{Driver_id ® F_name, L_name, Gender, Conatct_no, Rating, Age}

➤ TRIP_DETAILS

{Trip_id ® Trip_date, Trip_amt, Driver_id, Usr_id, Taxi_id, Strt_time, End_time}

➤ BILL_DETAILS

{Bill_no ® Bill_date, Advance_amt, Discount_amt, Total_amt, Usr_id, Trip_id}

➤ CUSTOMER_SERVICE

{Emp_id ® F_name, L_name}

➤ OWNER_TAXI

{Owner_id ® Taxi_id}

➤ OWNS

{Owner_id ® No_Cars}

➤ INDIVIDUAL

{Ssn ® Name, Owner_id}

➤ TAXI_SERVICE_COMPANY

{Tsc_id ® Tsc_name, Owner_id}

➤ FEEDBACK

{Fbk_id ® Message, Email, Emp_id, Usr_id, Trip_id}

CONCLUSION

The development and implementation of a taxi service database management system has proven to be a successful project. With the ability to efficiently store and retrieve information about drivers, vehicles, and customer data, the system can greatly improve the overall operation of the taxi service. The system can streamline communication between dispatch and drivers, resulting in faster and more efficient service for customers. Prior to the implementation of the database, I explore various features, operation of an actual taxi service to figure out the required attributes, entities and the relation amongst them to create an efficient ER-Diagram. Overall, the “**TAXI SERVICE MANAGEMENT SYSTEM**” has been a success and we also executed sample queries to check the performance of our system.

REFERENCE

- DBMS Tutorial - Learn DBMS (w3schools.in)
- <https://learn.microsoft.com/en-us/sql/ssms/>