AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH

(AIUB)

Project Name : **Car Transport Management System**

Course Name : Introduction to Database

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Section : F

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INTRODUCTION:

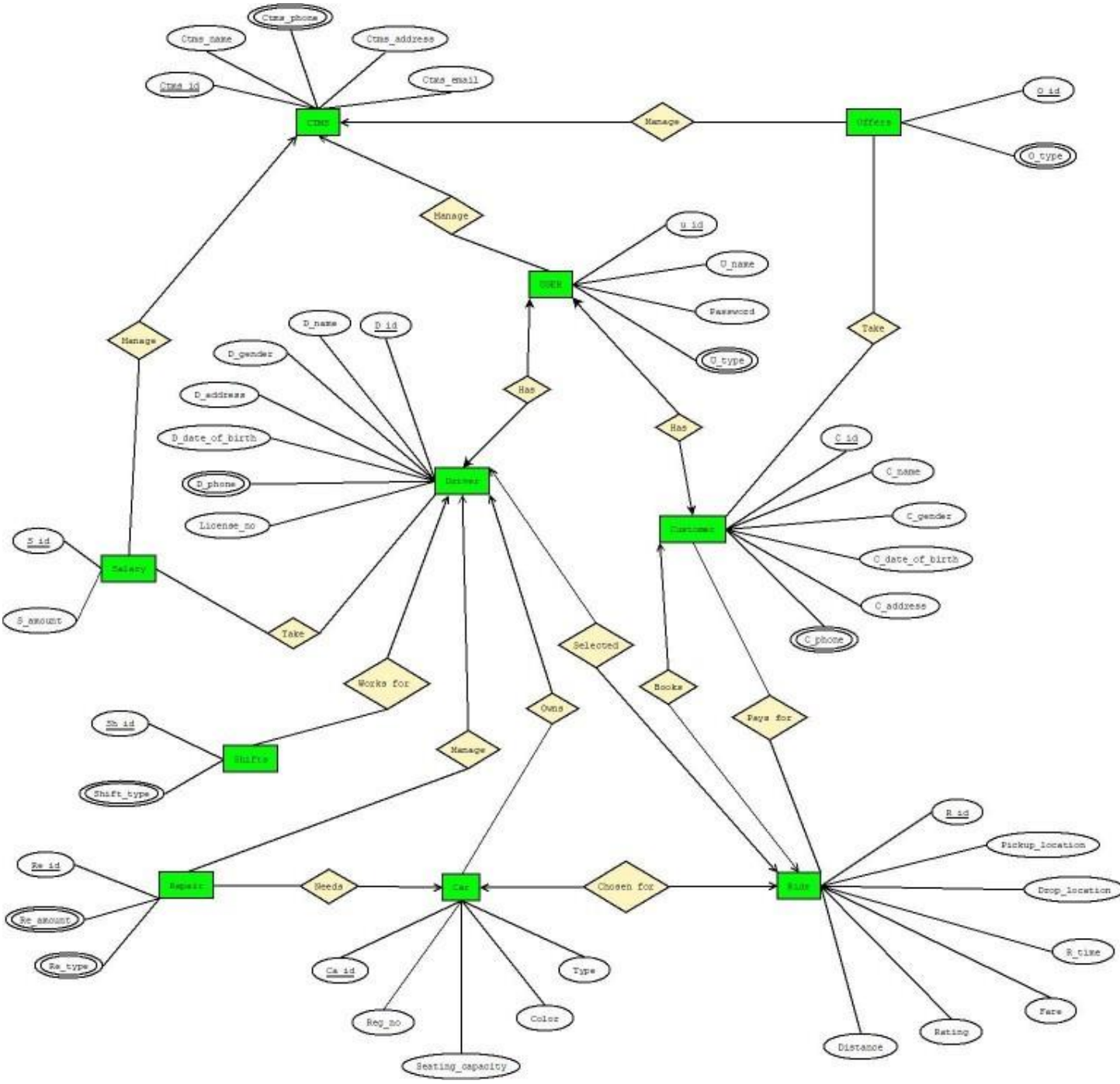
Database Management system (DBMS) is a collection of programs for managing data and simultaneously it support different type of users to create, manage, retrieve, update and store information. The vital functions of the database are that it not only manages database engine which is used to access the data but also the database schema which is used to define the logical structure of a database.

We used the concept of DBMS in our project (Car Transport Management System).

SCENARIO:

A car transport company wants to create a database management system which is CTMS. CTMS is required to store ctms_id, ctms_name, ctms_address, ctms_email, ctms_phone number (multivalued). CTMS manages user. Many users are managed by a ctms. To identify the user system also stores user_id, user_name, user_type (multivalued) and password. Users are two types. One is driver and another one is customer. Exactly one user has one driver. Driver is identified by driver_id, driver_name, driver_gender, driver_address, driver_phone number (multivalued), license_number, driver date_of_birth.Exactly one user has one customer. Customer is idendified by customer_id, customer_name, customer_gender, customer_address, customer_phone number (multivalued) and customer date-of_birth. Every driver takes salary. Many drivers take many salaries. CTMS manage many salaries The system also stores salary_id and salary_amount. Driver works for different shifts. To identify the shift shift_id and shift_type(multivalued) are also stored. Driver selects ride. One driver can select one ride. Ride_id, pickup_location, drop_location, ride_time, fare, rating, distance are also stored in the system. Customers book ride. Only one customer can book one ride. Car is chosen for ride. Car is identified by car_id registration_number, seating_capacity, color, type. Only one car is suitable for one ride. Driver owns car. One driver can own many cars. Car needs repair. To identify the repairing process repair_id, repair amount (multivalued), repair_type (multivalued) are also stored. Driver manages repair. One driver manages many kinds of repair. Customer pays for ride. Many customers pay for many rides. In different occasion CTMS manages many offers.Customer takes offers.Many customer can take many offer. To identify the offers offer_id and offer_types (multivalued) are also stored.

ER DIAGRAM:


Ctms_phone
Ctms_name
Ctms_address
Ctms_id
Ctms_email
CTMS
Manage
Offers
O_id
O_type
Manage
u_id
U_name
USER
Password
U_type
Manage
D_name
D_id
D_gender
D_address
D_date_of_birth
D_phone
License_no
Has
Has
Take
C_id
C_name
C_gender
C_date_of_birth
C_address
C_phone
Driver
Customer
S_id
Salary
S_amount
Take
Selected
Works for
Books
Pays for
Own
Sh_id
Shifts
Shift_type
Manage
R_id
Pickup_location
Drop_location
R_time
Fare
Rating
Distance
Re_id
Repair
Re_amount
Re_type
Needs
Car
Chosen for
Ride
Ca_id
Type
Reg_no
Color
Seating_capacity

NORMALIZATION:

CTMS--------1--------MANAGE----------* ------ USER

UNF:
Manage(ctms_phone,ctms_name,ctms_id,ctms_address,ctms_email,u_id ,password,u_name,u_type)

1NF:

Ctms_phone and u_type are multivalued attribute.

1.ctms_phone,ctms_name,ctms_id,ctms_address,ctms_email,u_id,passw ord,u_name,u_type.

2NF:

1. ctms_id,ctms_phone,ctms_name, ctms_address,ctms_email.

2. u_id,password,u_name,u_type.

3NF: No transitive dependency.

1. ctms_id,ctms_phone,ctms_name, ctms_address,ctms_email.

2. u_id,password,u_name,u_type.

Table Creation:

1. ctms_id, ctms_phone,ctms_name, ctms_address,ctms_email.

2. u_id,password,u_name,u_type, **ctms_id,ctms_phone.**

USER--------1--------HAS----------1------- DRIVER

UNF:has(u_id,password,u_name,u_type,d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no)

1NF:

u_type and d_phone are multivalued attribute.

1.u_id,password,u_name,u_type,d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no.

2NF:

1. u_id,password,u_name,u_type.

2.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

3NF:

No transitive dependency.

1. u_id,password,u_name,u_type.

2.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

Table Creation:

1. u_id,password,u_name, u_type.

2.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no ,**u_id**,**u_type**.

USER--------1--------MANAGE----------1 ------CUSTOMER

UNF:has(u_id,password,u_name,u_type,c_id,c_name,c_gender, c_date_of_birth,c_address,c_phone)

1NF:

u_type and c_phone are multivalued attribute.

1.u_id,password,u_name,u_type,c_id,c_name,c_gender,c_date_of_birth, c_address,c_phone.

2NF:

1. u_id,password,u_name,u_type.

2.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

3NF:

No transitive dependency.

1. u_id,password,u_name,u_type.

2. c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

Table Creation:

1. u_id,password,u_name,u_type.

2.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone,**u-_id,u_type**

CUSTOMER--------1--------BOOKS----------1 ------ RIDE

UNF:books(c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone,r_id,pickup_location,drop_location,r_time,fare,rating,distance).

1NF:

c_phone is a multivalued attribute.

1.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone,r_id,pickup_location,drop_location,r_time,fare,rating,distance.

2NF:

1. c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

2.r_id,pickup_location,drop_location,r_time,fare,rating,distance.

3NF:

No transitive dependency.

1. c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

2.r_id,pickup_location,drop_location,r_time,fare,rating,distance.

Table Creation:

1.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone,**r_id**.

2.r_id,pickup_location,drop_location,r_time,fare,rating,distance.

CUSTOMER--------*--------PAYS FOR----------* ------ RIDE

UNF:pays_for(c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone,r_id,pickup_location,drop_location,r_time,fare,rating,distance).

1NF:

c_phone is a multivalued attribute.

1.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone,r_id,pickup_location,drop_location,r_time,fare,rating,distance.

2NF:

1.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

2.r_id,pickup_location,drop_location,r_time,fare,rating,distance.

3NF:

No transitive dependency.

1.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

2.r_id,pickup_location,drop_location,r_time,fare,rating,distance.

Table Creation:

1.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

2.r_id,pickup_location,drop_location,r_time,fare,rating,distance.

3.**c_id ,c_phone,r_id .**

RIDE --------1--------CHOSEN FOR----------1-------CAR

UNF:chosen
for(r_id,pickup_location,drop_location,r_time,fare,rating,distance
,ca_id,reg_no,seating_capacity,color,type).

1NF:

There is no multivalued attribute.

1.r_id,pickup_location,drop_location,r_time,fare,rating,distance
,ca_id,reg_no,seating_capacity,color,type.

2NF:

1. r_id,pickup_location,drop_location,r_time,fare,rating,distance.

2. ca_id,reg_no,seating_capacity,color,type.

3NF:

No transitive dependency.

1.r_id,pickup_location,drop_location,r_time,fare,rating,distance.

2. ca_id,reg_no,seating_capacity,color,type.

Table Creation:

1.r_id,pickup_location,drop_location,r_time,fare,rating,distance.

2. ca_id,reg_no,seating_capacity,color,type,**r_id** .

CAR--------1--------NEEDS----------* ------ REPAIR

UNF:

Needs(ca_id,reg_no,seating_capacity,color,type,re_id,re_amount,re_type)

1NF:

re_type and re_amount are multivalued attribute.

1. ca_id,reg_no,seating_capacity,color,type,re_id,re_amount,re_type.

2NF:

1. ca_id,reg_no,seating_capacity,color,type.

2. re_id,re_amount,re_type.

3NF:

No transitive dependency.

1. ca_id,reg_no,seating_capacity,color,type

2. re_id,re_amount,re_type.

Table Creation:

1. ca_id,reg_no,seating_capacity,color,type

2. re_id,re_amount,re_type,**ca_id**.

DRIVER--------*--------TAKE----------* ------SALARY

UNF:take(d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no,s_id,s_amount)

1NF:

d_phone is multivalued attribute.

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no, s_id,s_amount.

2NF:

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. s_id,s_amount.

3NF:

No transitive dependency.

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. s_id,s_amount.

Table Creation:

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. s_id,s_amount.

3. d_id, d_phone, d_id.

DRIVER--------1--------WORKS_FOR----------* ------ SHIFT

UNF:works_for(d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no,sh_id,shift_type)

1NF:

d_phone and shift_type is multivalued attribute.

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no, sh_id,shift_type.

2NF:

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. sh_id,shift_type.

3NF:

No transitive dependency.

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. sh_id,shift_type.

Table Creation:

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. sh_id , shift_type , **d_id , d_phone**

DRIVER--------1--------MANAGE----------* ------REPAIR

UNF:manage(d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no,re_id,re_amount,re_type)

1NF:

d_phone and re_type , re_amount are multivalued attribute.

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no,re_id,re_amount,re_type.

2NF:

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. re_id,re_amount,re_type.

3NF:

No transitive dependency.

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. re_id,re_amount,re_type.

Table Creation:

1.d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no

2. re_id,re_amount,re_type, **d_id , d_phone.**

DRIVER--------1--------OWNS----------* ------ CAR

UNF:

Owns(d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no,ca_id,reg_no,seating_capacity,color,type.)

1NF:

d_phone is a multivalued attribute.

1.d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no,ca_id,reg_no,seating_capacity,color,type.

2NF:

1.d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no.

2. ca_id,reg_no,seating_capacity,color,type.

3NF:

No transitive dependency.

1.d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no.

2. ca_id,reg_no,seating_capacity,color,type.

Table Creation:

1.d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no.

2. ca_id,reg_no,seating_capacity,color,type,**d_id,d_phone.**

DRIVER--------1--------SELECTED----------1 ------ RIDE

UNF:
selected(d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no,r_id,pickup_location,drop_location,r_time,fare,rating,distance)

1NF:

d_phone is a multivalued attribute.

1.d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no,r_id,pickup_location,drop_location,r_time,fare,rating,distance.

2NF:

1.d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no.

2. r_id,pickup_location,drop_location,r_time,fare,rating,distance.

3NF:

No transitive dependency.

1.d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no.

2. r_id,pickup_location,drop_location,r_time,fare,rating,distance.

Table Creation:

1.d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no,**r_id**

2. r_id,pickup_location,drop_location,r_time,fare,rating,distance.

CUSTOMER--------*--------TAKE----------* ------OFFERS

UNF:take(c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone, o_id,o_type)

1NF:

c_phone and o_type are multivalued attribute.

1.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone, o_id,o_type.

2NF:

1. c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

2. o_id,o_type.

3NF:

No transitive dependency.

1. c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

2. o_id,o_type.

Table Creation:

1. c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

2. o_id,o_type.

3. c_id, c_phone, o_id, o_type.

CTMS--------1--------MANAGE----------* ------ OFFERS

UNF: manage(ctms_id,ctms_name,ctms_phone,o_id,o_type,ctms_email, ctms_address)

1NF:

ctms_phone and o_type are multivalued attribute.

1.ctms_id,ctms_name,ctms_phone,o_id,o_type,ctms_email, ctms_address.

2NF:

1.ctms_id,ctms_name,ctms_phone, ctms_email, ctms_address.

2. o_id,o_type.

3NF:

No transitive dependency.

1. ctms_id,ctms_name,ctms_phone, ctms_email, ctms_address.

2. o_id,o_type.

Table Creation:

1. ctms_id,ctms_name,ctms_phone, ctms_email, ctms_address.

2. o_id,o_type,**ctms_id** ,**ctms_phone**.

CTMS--------1--------MANAGE----------* ------SALRY

UNF:manage(ctms_id,ctms_name,ctms_phone,ctms_email, ctms_address, s_id,s_amount)

1NF:

ctms_phone is multivalued attribute.

1.ctms_id,ctms_name,ctms_phone,ctms_email,ctms_address, s_id,s_amount.

2NF:

1. ctms_id,ctms_name,ctms_phone,ctms_email,ctms_address.

2. s_id,s_amount.

3NF:

No transitive dependency.

1. ctms_id,ctms_name,ctms_phone, ctms_email, ctms_address.

2. s_id,s_amount.

Table Creation:

1. ctms_id,ctms_name,ctms_phone, ctms_email, ctms_address.

2. s_id,s_amount,**ctms_id** ,**ctms_phone**.

TABLE SORTING:

1.ctms_id, ctms_phone,ctms_name, ctms_address,ctms_email.

2.u_id,password,u_name,u_type, **ctms_id,ctms_phone.**

~~3.u_id,password,u_name, u_type.~~

4.
d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no,**u_id**,**u_type**.

~~5. u_id,password,u_name,u_type.~~

6.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone,**u-_id,u_type**

7.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone,**r_id**.

~~8. r_id,pickup_location,drop_location,r_time,fare,rating,distance.~~

9.c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone.

10. r_id,pickup_location,drop_location,r_time,fare,rating,distance.

11. **c_id ,c_phone,r_id .**

12. ~~r_id,pickup_location,drop_location,r_time,fare,rating,distance~~.

13. ca_id,reg_no,seating_capacity,color,type,**r_id**

14. ~~ca_id,reg_no,seating_capacity,color,type.~~

15. re_id,re_amount,re_type,**ca_id**.

16. ~~d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no~~

17. ~~s_id,s_amount~~.

18. **d_id, d_phone, d_id.**

19. ~~d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no~~

20. sh_id , shift_type , **d_id , d_phone**

21. ~~d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no~~

22. re_id,re_amount,re_type,**d_id,d_phone.**

23. ~~d_id,d_name,d_gender,d_date_of_birth,d_address,d_phone,license_no~~

24. re_id,re_amount,re_type.

25. d_id,d_name,d_gender,d_address,type,d_date_of_birth,d_phone,license_no,**r_id**

26. ~~r_id,pickup_location,drop_location,r_time,fare,rating,distance~~.

27. ~~c_id,c_name,c_gender,c_date_of_birth,c_address,c_phone~~.

28. ~~o_id,o_type~~.

29. **c_id, c_phone, o_id, o_type.**

30. ~~ctms_id,ctms_name,ctms_phone, ctms_email, ctms_address~~.

31. o_id,o_type,**ctms_id** ,**ctms_phone**

32. ~~ctms_id,ctms_name,ctms_phone, ctms_email, ctms_address~~.

33. s_id,s_amount,**ctms_id** ,**ctms_phone**.

FINAL TABLE:

1. Ctms_id, ctms_name, ctms_phone, ctms_address, ctms_email
2. U_id, password, u_name, u_type, **ctms_id, ctms_phone**
3. d_id, d_name, d_gender, d_address, d_date_of_birth, d_phone, license_no, **u_id, u_type, r_id**
4. c_id, c_name, c_gender, c_date_of_birth, c_address, c_phone, **u_id, u_type, r_id**
5. r_id, pickup_location, drop_location, r_time, fare, rating, distance
6. **c_id, c_phone, r_id**
7. ca_id, reg_no, sating_capacity, color, type, **r_id, d_id, d_phone**
8. re_id, re_amount, re_type, **ca_id, d_id, d_phone**
9. s_id, s_amount, **ctms_id, ctms_phone**
10. **d_id, d_phone, s_id**
11. sh_id, shift_type, **d_id, d_phone**
12. s_id, s_amount, **ctms_id,**

ctms_phone 13. **c_id, c_phone, o_id,**

o_type

SCHEMA DIAGRAM:

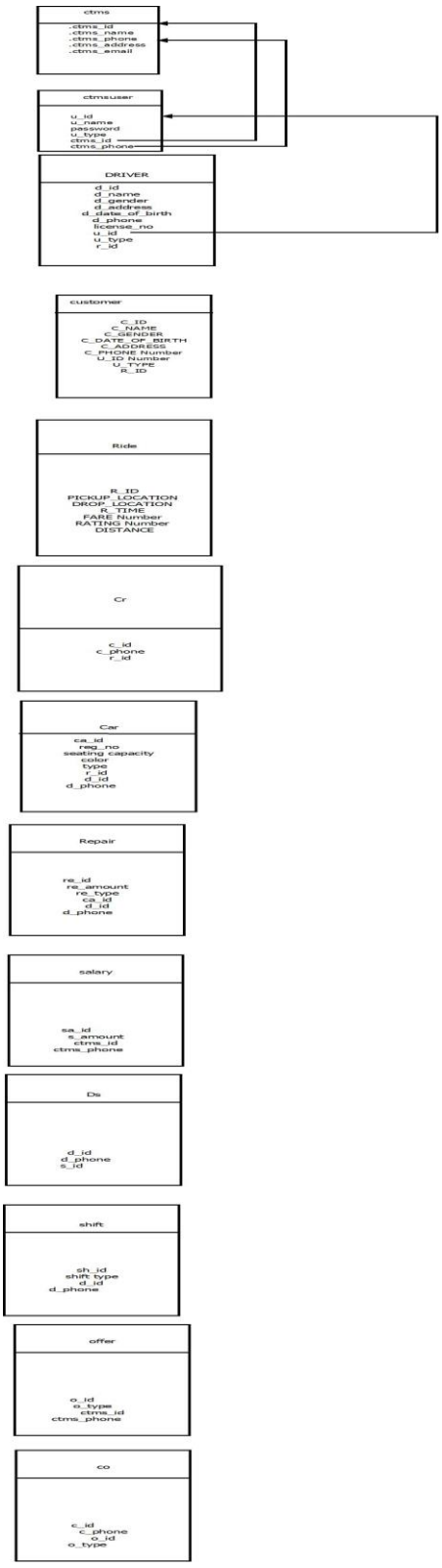


TABLE CREATION:

Ctms:

create table ctms(ctms_id number(20),ctms_name varchar2(50),ctms_phone number(11),ctms_address varchar2(500),ctms_email varchar2(500),constraint pk1 primary key(ctms_id,ctms_phone));

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CTMS	CTMS_ID	Number	-	20	0	1	-	-	-
	CTMS_NAME	Varchar2	50	-	-	-	✓	-	-
	CTMS_PHONE	Number	-	11	0	2	-	-	-
	CTMS_ADDRESS	Varchar2	500	-	-	-	✓	-	-
	CTMS_EMAIL	Varchar2	500	-	-	-	✓	-	-

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Ctmsuser:

create table ctmsuser(u_id number(20),password varchar2(500),u_name varchar2(50),u_type varchar2(500),ctms_id number(20),ctms_phone number(11),constraint pk5 primary key(u_id,u_type),constraint fk1 foreign key(ctms_id,ctms_phone) references ctms(ctms_id,ctms_phone));

ResultsExplainDescribeSaved SQLHistory

Object Type **TABLE** Object **CTMSUSER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CTMSUSER	U_ID	Number		20	0				-
	PASSWORD	Varchar2	500		-		✓		-
	U_NAME	Varchar2	50		-		✓		-
	U_TYPE	Varchar2	500		-				-
	CTMS_ID	Number		20	0		✓		-
	CTMS_PHONE	Number		11	0		✓		-

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Driver:

create table driver(d_id number(20),d_name varchar2(50),d_gender varchar(50)check(d_gender='male' or d_gender='female'),d_address varchar2(500),d_date_of_birth date,d_phone number(11),license_no varchar2(50),u_id number(20),u_type varchar2(500),r_idnumber(20),constraint pk6 primary key(d_id,d_phone),constraint fk6 foreign key(u_id,u_type) references ctmsuser(u_id,u_type));

alter table driver add constraint fk9 foreign key(r_id) references ride(r_id);

Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **DRIVER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DRIVER	D_ID	Number	-	20	0				-
	D_NAME	Varchar2	50		-		✓		-
	D_GENDER	Varchar2	50		-		✓		-
	D_ADDRESS	Varchar2	500		-		✓		-
	D_DATE_OF_BIRTH	Date	7		-		✓		-
	D_PHONE	Number	-	11	0				-
	LICENSE_NO	Varchar2	50		-		✓		-
	U_ID	Number	-	20	0		✓		-
	U_TYPE	Varchar2	500		-		✓		-
	R_ID	Number	-	20	0				-

1 - 10

Customer:

create table customer(c_id number(20),c_name varchar2(50),c_gender varchar(50)check(c_gender='male' or c_gender='female'),c_date_of_birth date,c_address varchar2(500),c_phone number(11),u_id number(20),u_type

varchar2(500),r_id number(20),payment_no number(10),constraint pk7 primary key(c_id,c_phone),constraint fk7 foreign key(u_id,u_type) references ctmsuser(u_id,u_type));

alter table customer add constraint fk8 foreign key(r_id) references ride(r_id);

Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **CUSTOMER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMER	C_ID	Number	-	20	0				-
	C_NAME	Varchar2	50		-		✓		-
	C_GENDER	Varchar2	50		-		✓		-
	C_DATE_OF_BIRTH	Date	7		-		✓		-
	C_ADDRESS	Varchar2	500		-		✓		-
	C_PHONE	Number	-	11	0				-
	U_ID	Number	-	20	0		✓		-
	U_TYPE	Varchar2	500		-		✓		-
	R_ID	Number	-	20	0		✓		-

1 - 9

Ride:

create table ride(r_id number(20)primary key,pickup_location varchar2(500),drop_location varchar2(500),r_time varchar2(50),fare number(15),rating number(15),distance varchar2(50),payment_no number(10));

ResultsExplainDescribeSaved SQLHistory

Object Type **TABLE** Object **RIDE**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
RIDE	R_ID	Number	-	20	0				-
	PICKUP_LOCATION	Varchar2	500		-		✓		-
	DROP_LOCATION	Varchar2	500		-		✓		-
	R_TIME	Varchar2	50		-		✓		-
	FARE	Number	-	15	0				-
	RATING	Number	-	15	0		✓		-
	DISTANCE	Varchar2	50		-		✓		-

1 - 7

Cr:

create table cr(c_id number(20),c_phone number(11),r_id number(20),constraint pk8 primary key(c_id,c_phone,r_id),constraint

fk10 foreign key(c_id,c_phone) references customer(c_id,c_phone),constraint fk11 foreign key(r_id) references ride(r_id));

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **CR**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CR	C_ID	Number		20	0	1		-	-
	C_PHONE	Number		11	0	2		-	-
	R_ID	Number		20	0	3		-	-

1 - 3

Car:

create table car(ca_id number(20)primary key,reg_no number(20),seating_capacity number(10),color varchar2(10),type varchar2(10),r_id number(20),d_id number(20),d_phone number(11),constraint fk12 foreign key(r_id) references

ride(r_id),constraint fk13 foreign key(d_id,d_phone) references driver(d_id,d_phone));

alter table car add constraint ch check(type='car plus' or type='premium');

ResultsExplainDescribeSaved SQLHistory

Object Type **TABLE** Object **CAR**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CAR	CA_ID	Number		20	0				-
	REG_NO	Number		20	0		✓		-
	SEATING_CAPACITY	Number		10	0		✓		-
	COLOR	Varchar2	10		-		✓		-
	TYPE	Varchar2	10		-		✓		-
	R_ID	Number		20	0		✓		-
	D_ID	Number		20	0		✓		-
	D_PHONE	Number		11	0		✓		-

1 - 8

Repair:

create table repair(re_id number(20),re_amount number(10),re_type varchar2(50),ca_id number(20),d_id number(20),d_phone number(11),constraint pk9 primary key(re_id,re_amount,re_type),constraint fk14 foreign key(ca_id) references car(ca_id),constraint fk15 foreign key(d_id,d_phone) references driver(d_id,d_phone));

Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **REPAIR**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
REPAIR	RE_ID	Number		20	0				-
	RE_AMOUNT	Number		10	0				-
	RE_TYPE	Varchar2	50		-				-
	CA_ID	Number		20	0		✓		-
	D_ID	Number		20	0		✓		-
	D_PHONE	Number		11	0		✓		-

1 - 6

Salary:

create table salary(s_id number(20)primary key,s_amount number(10),ctms_id number(20),ctms_phone number(11),constraint fk16 foreign key(ctms_id,ctms_phone) references ctms(ctms_id,ctms_phone));

Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **SALARY**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
SALARY	S_ID	Number		20	0				-
	S_AMOUNT	Number		10	0		✓		-
	CTMS_ID	Number		20	0		✓		-
	CTMS_PHONE	Number		11	0		✓		-

1 - 4

Ds:

create table ds(d_id number(20),d_phone number(11),s_id number(20),constraint pk10 primary key(d_id,d_phone,s_id),constraint fk17 foreign key(d_id,d_phone) references driver(d_id,d_phone),constraint fk18 foreign key(s_id) references salary(s_id));

Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **DS**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DS	D_ID	Number		20	0	1		-	-
	D_PHONE	Number		11	0	2		-	-
	S_ID	Number		20	0	3		-	-

1 - 3

Shift:

create table shift(sh_id number(20),shift_type varchar2(10),d_id number(20),d_phone number(11),constraint pk11 primary key(sh_id,shift_type),constraint fk19 foreign key(d_id,d_phone) references driver(d_id,d_phone));

alter table shift add constraint ch1 check(shift_type='day' or shift_type='night');

ResultsExplainDescribeSaved SQLHistory

Object Type **TABLE** Object **SHIFT**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
SHIFT	SH_ID	Number		20	0				-
	SHIFT_TYPE	Varchar2	10		-				-
	D_ID	Number		20	0		✓		-
	D_PHONE	Number		11	0		✓		-

1 - 4

Offer:

create table offer(o_id number(20),o_type varchar2(20),ctms_id number(20),ctms_phone number(11),constraint pk12 primary key(o_id,o_type),constraint fk20 foreign key(ctms_id,ctms_phone) references ctms(ctms_id,ctms_phone));

ResultsExplainDescribeSaved SQLHistory

Object Type **TABLE** Object **OFFER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
OFFER	O_ID	Number		20	0				-
	O_TYPE	Varchar2	20		-				-
	CTMS_ID	Number		20	0		✓		-
	CTMS_PHONE	Number		11	0		✓		-

1 - 4

Co:

create table co(c_id number(20),c_phone number(11),o_id number(20),o_type varchar2(20),constraint pk13 primary key(c_id,c_phone,o_id,o_type),constraint fk21 foreign key(c_id,c_phone) references customer(c_id,c_phone),constraint fk22 foreign key(o_id,o_type) references offer(o_id,o_type));

ResultsExplainDescribeSaved SQLHistory

Object Type **TABLE** Object **CO**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CO	C_ID	Number	-	20	0	1		-	-
	C_PHONE	Number	-	11	0	2		-	-
	O_ID	Number	-	20	0	3		-	-
	O_TYPE	Varchar2	20	-		4		-	-

1 - 4

DATA INSERTION:

Ctms:

```
insert into ctms
values('12300789333','MAST','01788184097','Gazipur,Dhaka','mast@yahoo.com')
;

insert into ctms
values('12300789333','MAST','01788184098','Gazipur,Dhaka','mast@yahoo.com')
;
```

Ctmsuser:

```
insert into ctmsuser values('1834653','9999','akash
khan','customer','12300789333','01788184097');

insert into ctmsuser values('1834653','9999','akash
khan','driver','12300789333','01788184097');

insert into ctmsuser values('1834654','10000','Md
ridy','driver','12300789333','01788184097');

insert into ctmsuser values('1834655','10001','kamal
rahman','customer','12300789333','01788184097');

insert into ctmsuser values('1834656','10002','shathi
begum','customer','12300789333','01788184097');

insert into ctmsuser values('1834657','10003','jony
khan','driver','12300789333','01788184097');
```

Driver:

insert into driver values('111','akash khan','male','kuratoli,dhaka','23-JAN-1995','01721520776','AB78892','1834653','driver','311');

insert into driver values('112','Md ridy','male','gazipur,dhaka','23-JAN-1997','01721520369','AB78888','1834654','driver','312');

insert into driver values('113','akash khan','male','kuratoli,dhaka','23-JAN-1995','01721520776','AB78892','1834653','driver','313');

insert into driver values('114','akash khan','male','kuratoli,dhaka','23-JAN-1995','01721520776','AB78892','1834653','driver','314');

insert into driver values('115','jony khan','male','pallabi,dhaka','02-DEC-1995','01721429837','AB78801','1834657','driver','315');

insert into driver values('116','jony khan','male','pallabi,dhaka','02-DEC-1995','01721429837','AB78801','1834657','driver','316');

Customer:

insert into customer values('211','kamal Rahman','male','12-JUN-2002','savar,dhaka','01754468966','1834655','customer','311','1');

insert int0 customer values('212','kamal Rahman','male','12-JUN-2002','savar,dhaka','01754468966','1834655','customer','313','2')
;

insert into customer values('213','shathi begum','female','10-
AUG-
2002','bashundhara,dhaka','01818309886','1834656','customer','
314','3');

insert into customer values('214','shathi begum','female','10-
AUG-
2002','bashundhara,dhaka','01818309886','1834656','customer','

315','4');

insert into customer values('215','akash khan','male','23-JAN-1995','kuratoli,dhaka','01818309886','1834656','customer','314','5');

Ride:

```
insert into ride values('311','dhanmondi','kuratoli','1hr','350','8.9','13.2km');

insert into ride values('312','gazipur','kuratoli','2hr','350','8.9','22.2km');

insert into ride values('313','dhanmondi','savar','2.5hr','500','8.9','24.2km');

insert into ride values('314','kuratoli','mirpur','1.8hr','250','8.5','7.2km');

insert into ride values('315','mirpur','airpoort','30min','150','8.9','4.2km');

insert into ride values('316','komlapur','kuratoli','1hr','290','8.9','11.2km');
```

Cr:

```
insert into cr values('211','01754468966','311');

insert into cr values('212','01754468966','313');

insert into cr values('213','01818309886','314');

insert into cr values('214','01818309886','315');

insert into cr values('215','01721520776','312');

insert into cr values('215','01721520776','312');
```

Car:

```
insert into car values('411','112233','4','red','car plus','311','111','01721520776');

insert into car
values('412','112232','4','white','premium','313','113','01721520776');

insert into car values('413','112233','4','red','car plus','314','114','01721520776');
```

```
insert into car values('414','112234','4','white','car
plus','312','112','01721520369');

insert into car values('415','112235','4','black','car
plus','315','115','01721429837');

insert into car values('416','112235','4','black','car
plus','316','116','01721429837');
```

Repair:

```
insert into repair values('511','1000','fuel','411','111','01721520776');

insert into repair values('512','10000','tyre','411','111','01721520776');

insert into repair values('513','5000','fuel','412','113','01721520776');

insert into repair values('514','1000','fuel','413','114','01721520776');

insert into repair values('515','1000','fuel','414','112','01721520369');

insert into repair values('516','1000','fuel','415','115','01721429837');

insert into repair values('517','15000','clean','416','116','01721429837');
```

Salary:

```
insert into salary values('611','20000','12300789333','01788184097');

insert into salary values('612','17000','12300789333','01788184097');

insert into salary values('613','16500','12300789333','01788184097');
```

Ds:

```
insert into ds values('111','01721520776','611');

insert into ds values('113','01721520776','611');

insert into ds values('114','01721520776','611');

insert into ds values('112','01721520369','612');

insert into ds values('115','01721429837','613');

insert into ds values('116','01721429837','613');
```

Shift:

```
insert into shift values('711','day','111','01721520776');

insert into shift values('712','day','113','01721520776');

insert into shift values('713','night','114','01721520776');

insert into shift values('714','day','112','01721520369');

insert into shift values('715','day','115','01721429837');

insert into shift values('716','night','116','01721429837');
```

Offer:

```
insert into offer values('811','NULL','12300789333','01788184097');

insert into offer values('812','eid offer','12300789333','01788184097');

insert into offer values('813','cupon','12300789333','01788184097');

insert into offer values('814','cash back','12300789333','01788184097');
```

Co:

```
insert into co values('211','01754468966','811','NULL');

insert into co values('212','01754468966','812','eid offer');

insert into co values('213','01818309886','812','eid offer');

insert into co values('214','01818309886','811','NULL');

insert into co values('215','01721520776','813','cupon');

insert into co values('216','01721520776','814','cash back');
```

QUERY WRITING:

SINGLE-ROW FUNCTIONS:

1. select distinct c_name,LENGTH(c_name),INSTR(c_name,'a') from customer where c_gender='male';

C_NAME	LENGTH(C_NAME)	INSTR(C_NAME,' A')
akash khan	10	1
kamal Rahman	12	2

2. select distinct d_name,d_gender,d_date_of_birth from driver where LOWER(d_name)='jony khan';

D_ NAME	D_ GENDER	D_ DATE_ OF_ BIRTH
jony khan	male	02-DEC-95

GROUP FUNCTION:

1. select avg(fare),max(fare),min(fare) from ride where r_id like '3%';

AVG(FARE)	MAX(FARE)	MIN(FARE)
315	500	150

2. select count(*) from ride where fare='500';

COUNT(*)
1

SUBQUERY:

1. select r_id,pickup_location,drop_location from ride where fare<(select fare from ride where r_id='313');

R_ID	PICKUP_LOCATION	DROP_ LOCATION
314	kuratoli	mirpur
315	mirpur	airpoort
316	komlapur	kuratoli
311	dhanmondi	kuratoli
312	gazipur	kuratoli

2. select u_id,u_type from ctmsuser where u_name=(select u_name from ctmsuser where u_name='shathi begum');

U_ID	U_TYPE
1834656	customer

JOINING:

1. select customer.c_name,ride.pickup_location,ride.drop_location from customer,ride where customer.r_id=ride.r_id;

C_NAME	PICKUP_LOCATION	DROP_ LOCATION
kamal Rahman	dhanmondi	savar
shathi begum	kuratoli	mirpur
shathi begum	mirpur	airpoort
akash khan	komlapur	kuratoli
kamal Rahman	dhanmondi	kuratoli
akash khan	gazipur	kuratoli

2. select driver.d_name,shift.shift_type from driver,shift where driver.d_id=shift.d_id;

D_NAME	SHIFT_TYPE
akash khan	day
akash khan	day
akash khan	night
Md ridy	day
jony khan	day
jony khan	night

RELATIONAL ALGEBRA :

1.Q: Find the name of the user who's ctms id is 12300789333.

Ans: $\Pi_{u\_name}(\sigma_{tctms\_id= \text{“12300789333”}} (user))$

2.Q: Find drivers name.

Ans: Π_{d_name} (drivers)

3.Q: find the car id which repair id is 511?

Ans: $\Pi_{ca\_id}(\sigma_{re\_id=\text{”511”}} (car))$

4.Q: Find the name of all driver and users name.

Ans: Π_{d_name,u_name} (*driver* ⋈ *user*)

5.Q: Find driver name who's ride id is 311 and live in kuratoli,dhaka'.

Ans: $\Pi_{d\_name}(\sigma_{t\_id=\text{”311”} \wedge \text{d\_address=” kuratoli,Dhaka”}}$ (driver))

CONCLUSION:

The project gave us the opportunity to try our new skills in practice.While doing this project we also gained deeper understanding on database design and how it can be implemented in real life situation.We believe we can use our database designing skills also in our future working field.