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Introduction to Database

Content List:

Introduction:

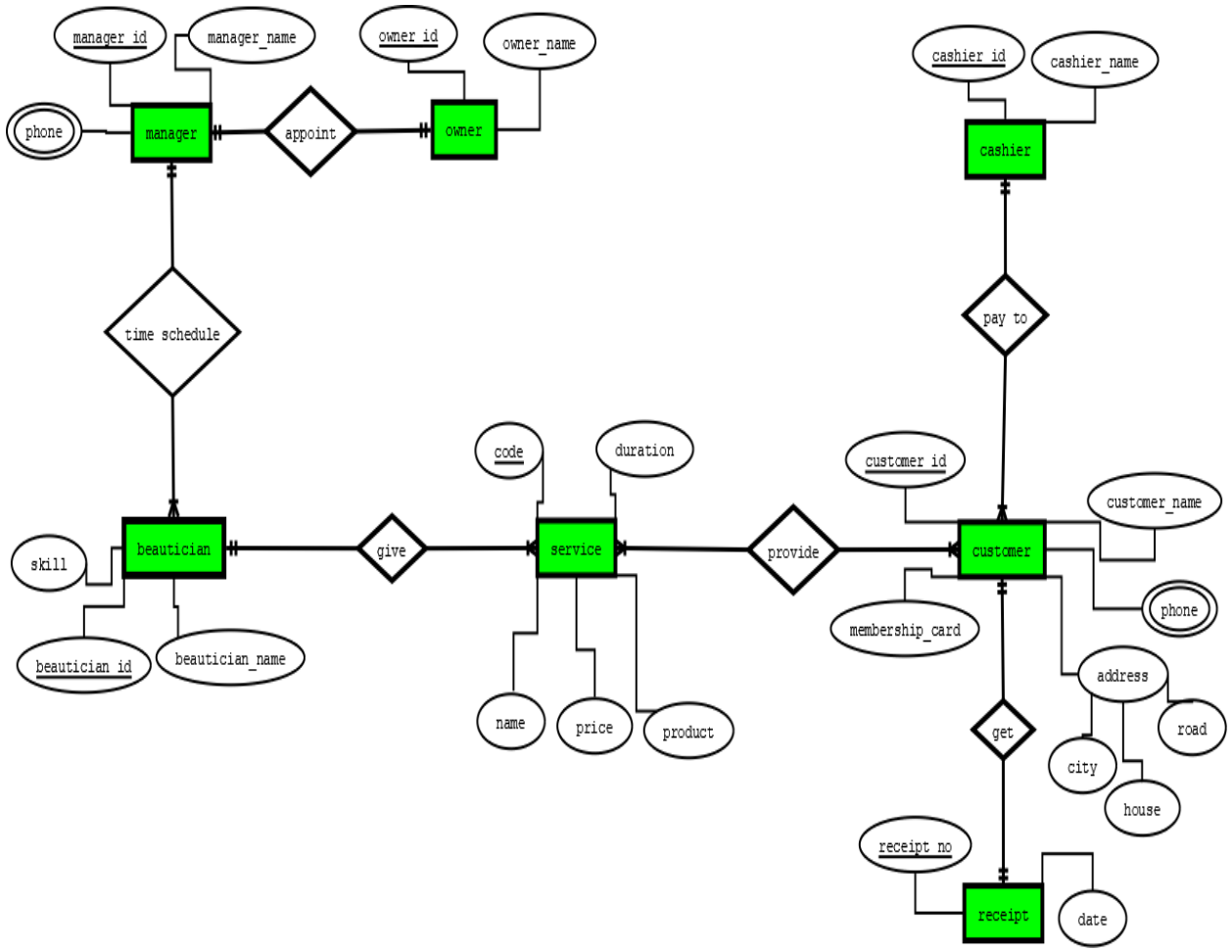
A database management system (DBMS) is a system software for creating and managing databases. The DBMS provides users and programmers with systematic way to create, retrieve, update and manage data. A DBMS makes it possible for end users to create, read, update and delete data in a database.

In our project (Beauty parlor management system) was created by the concept of DBMS.

Scenario:

Rustic beauty parlor is a parlor. Its owner wants to create a database management system to manage its employees and services for customer.The owner has id and name. The owner appoints one manager who has id, name and phone. The manager manages the time schedule of the beauticians.Each beautician has id,name and skill. The manager hires many beauticians to give services to customers at different times. Beauticians give different types of services.One beautician can offer many services at a time. Each service has code,name,price,product,duration.These services are provided to customer. Each customer has id,name, phone, membership-card and address. Address is composed of city, house and road. One service can be offered to many customers. Every customer pays money through cashier. One cashier deals with many customers at a time. A cashier has id and name. Customers get a receipt to pay money. A receipt has number and date. Each customer has exactly one receipt.

ER Diagram:


manager id
manager_name
owner id
owner_name
cashier id
cashier_name
phone
manager
appoint
owner
cashier
time schedule
pay to
code
duration
customer id
customer_name
skill
beautician
give
service
provide
customer
phone
membership_card
beautician id
beautician_name
address
name
price
product
get
road
city
house
receipt no
receipt
date

Normalization:

owner---------1-------Appoint------1----------manager

Appoint (owner_id,owner_name,manager_id,manager_name,phone)

1NF: Phone Multivalued attribute.

2NF: owner_id,owner_name

Manager_id,manager_name,phone,owner_id

3NF: owner_id,owner_name

Manager_id,manager_name,phone,owner_id

Table 1:

1. owner_id,owner_name
2. manager_id,manager_name,phone,owner_id

Manager--------1-----time schedule-----*-------beautician

Time schedule (manager_id,manager_name,phone, beautician_id, beautician_name,skill)

1NF: phone multivalued attribute.

2NF: manager_id,manager_name,phone

beautician_id, beautician_name,skill, manager_id.

3NF: manager_id,manager_name,phone

beautician_id, beautician_name,skill, manager_id.

Table 2:

1. manager_id,manager_name,phone

2. beautician_id, beautician_name,skill, manager_id.

Beautician---------1---give----*----------service

Give (beautician_id,beautician_name,skill,code,name,duration,product,price)

1NF: No multivalued attribute.

2NF : beautician_id, beautician_name,skill.

code, name, duration,product, price, beautician_id.

3NF: beautician_id, beautician_name,skill.

code,name, duration,product, price, beautician_id.

Table 3:

1. beautician_id, beautician_name,skill.

2. code, name,duration,product, price, beautician_id.

Customer----------1------get------1----------receipt

Get (customer_id, customer_name, phone, membership_card, city, house, road ,receipt_no,date)

1NF: Phone multivalued attribute.

2NF: customer_id, customer_name, phone, membership_card, city, house, road.

receipt_no, date, customer_id.

3NF: customer_id, customer_name, phone, membership_card, address.

receipt_no, date, customer_id.

Address,,city,house,road.

Table 4:

1. customer_id, customer_name, phone, membership_card, address.

2.receipt_no, date, customer_id.

3.address,city,house,road.

Customer----------*-----provide-----*----------service

Provide (customer_id, customer_name, phone, membership_card, city, house, road, code, name, duration,product, price)

1NF: Phone multivalued attribute.

2NF: customer_id, customer_name, phone, membership_card, city, house, road

Code,name,duration,product,price

C_id, customer_id, code.

3NF: customer_id, customer_name, phone, membership_card, address.

address, city, house, road.

Code, name,duration product, price

C_id, customer_id, code.

Table 5:

1. customer_id, customer_name, phone,membership_card, address.

2. address, city, house, road.

3.code, name,duration, product, price

4.c_id, customer_id, code.

Customer-------1-----pay to------*--------cashier

Pay to (customer_id,customer_name,phone,membership_card,city,house,road,cashier_id, cashier_name,)

1NF: phone_Multivalued attribute.

2NF: customer_id, customer_name, phone,membership_card, city, house, road, cashier_id.

Cashier_id, cashier_name

3NF: customer_id, customer_name, phone, membership_card,address, cashier_id

cashier_id, cashier_name

Address,city,house,road.

Table 6:

1. customer_id, customer_name, phone,membership_card, address, cashier_id

2. cashier_id, cashier_name

3. address,city,house,road.

Total table:

1. owner_id,owner_name
2. manager_id,manager_name,phone,owner_id
3. ~~manager_id,manager_name,phone~~
4. beautician_id,beautician_name,skill,manager_id
5. ~~beautician_id,beautician_name,skil~~l
6. code,name,duration,product,price,beautician_id
7. ~~customer_id,customer_name,phone,membership_card,adress~~
8. receipt_no,receipt_date
9. address,city,house,road
10. ~~customer_id,customer_name,phone,membership_card,address~~
11. ~~code,name,duration,product,price~~
12. c_id,customer_id,code
13. ~~address,city,house,road~~
14. customer_id,customer_name,phone,membership_card,address,cashier_id
15. cashier_id,cashier_name
16. ~~address,city,house,road~~

Final table:

1. owner_id,owner_name
2. manager_id,manager_name,phone,owner_id
3. beautician_id,beautician_name,skill,manager_id
4. code,name,duration,product,price,beautician_id
5. customer_id,customer_name,phone,membership_card,address,cashier_id
6. receipt_no,date,customer_id
7. address,city,house,road
8. cashier_id,cashier_name
9. c_id,customer_id,code

Table creation:

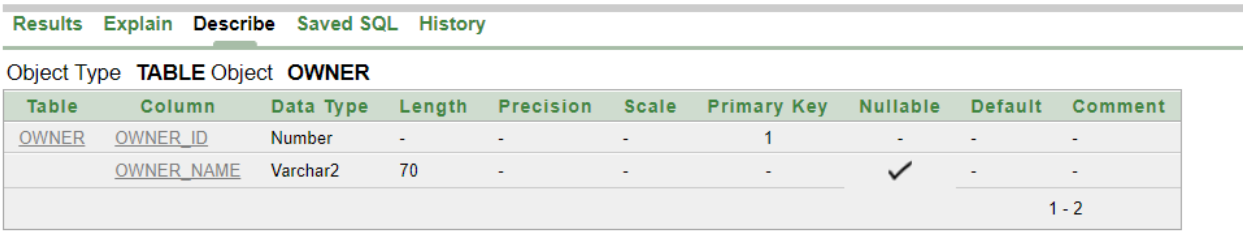
1. create table owner

(

owner_id number constraint owner_owner_id_pk primary key,

owner_name varchar2(70)

)



Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **OWNER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
OWNER	OWNER_ID	Number	-	-	-	1	-	-	-
	OWNER_NAME	Varchar2	70	-	-	-	✓	-	-

1 - 2

2. create table manager

(

manager_id number constraint manager_manager_id_pk primary key,

manager_name varchar2(60),

phone number,

owner_id number constraint manager_owner_id_fk

references

owner(owner_id)

)

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **MANAGER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MANAGER	MANAGER_ID	Number	-	-	-	1	-	-	-
	MANAGER_NAME	Varchar2	60	-	-	-	✓	-	-
	PHONE	Number	-	-	-	-	✓	-	-
	OWNER_ID	Number	-	-	-	-	✓	-	-

1 - 4

3.create table beautician

(

beautician_id number constraint beautician_beautician_id_pk primary key,

beautician_name varchar2(60),

skill varchar2(60),

manager_id number constraint beautician_manager_id_fk

references

manager (manager_id)

)

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **BEAUTICIAN**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
BEAUTICIAN	BEAUTICIAN_ID	Number	-	-	-	1	-	-	-
	BEAUTICIAN_NAME	Varchar2	60	-	-	-	✓	-	-
	SKILL	Varchar2	60	-	-	-	✓	-	-
	MANAGER_ID	Number	-	-	-	-	✓	-	-

1 - 4

4.create table service

(

code number constraint service_code_pk primary key,

name varchar2(60),

duration varchar2(40),

product varchar2(70),

price number,

beautician_id number constraint service_beautician_id_fk

references

beautician (beautician_id)

)

Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **SERVICE**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
SERVICE	CODE	Number	-	-	-	1	-	-	-
	NAME	Varchar2	60	-	-	-	✓	-	-
	DURATION	Varchar2	40	-	-	-	✓	-	-
	PRODUCT	Varchar2	70	-	-	-	✓	-	-
	PRICE	Number	-	-	-	-	✓	-	-
	BEAUTICIAN_ID	Number	-	-	-	-	✓	-	-

1 - 6

5.create table cashier

(

cashier_id number constraint cashier_cashier_id_pk primary key,

cashier_name varchar2(50)

)

Results Explain **Describe** Saved SQL History

Object Type **TABLE** Object **CASHIER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CASHIER	CASHIER_ID	Number	-	-	-	1	-	-	-
	CASHIER_NAME	Varchar2	50	-	-	-	✓	-	-

1 - 2

6.create table address

(

address varchar2(70) constraint address_address_pk

primary key,

city varchar2(40),

house varchar2(40),

road varchar2(50)

)

Results Explain Describe Saved SQL History

Object Type TABLE Object ADDRESS

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ADDRESS	ADDRESS	Varchar2	70	-	-	1	-	-	-
	CITY	Varchar2	40	-	-	-	✓	-	-
	HOUSE	Varchar2	40	-	-	-	✓	-	-
	ROAD	Varchar2	50	-	-	-	✓	-	-

1 - 4

7.

create table customer

(

customer_id number constraint customer_customer_id_pk primary key,

customer_name varchar2(60),

phone number,

membership_card varchar2(30),

address varchar2(70) constraint customer_address_fk

references

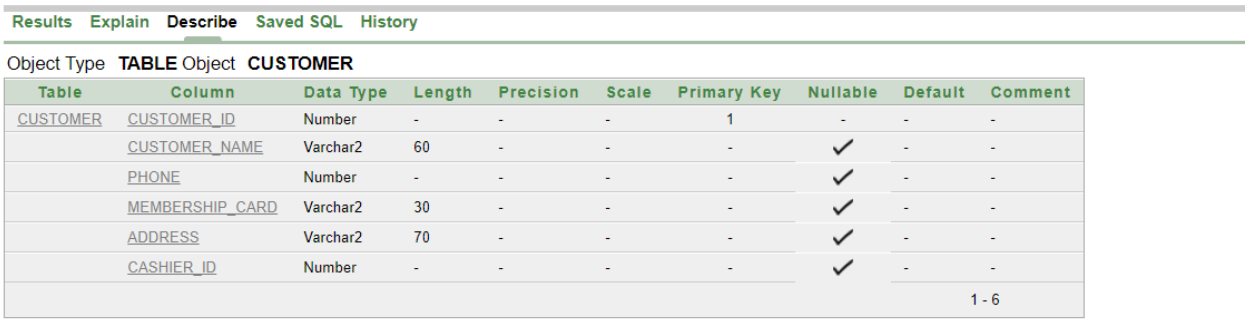
address (address),

cashier_id constraint customer_cashier_id_fk

references

cashier (cashier_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	CUSTOMER_ID	Number	-	-	-	1	-	-	-
	CUSTOMER_NAME	Varchar2	60	-	-	-	✓	-	-
	PHONE	Number	-	-	-	-	✓	-	-
	MEMBERSHIP_CARD	Varchar2	30	-	-	-	✓	-	-
	ADDRESS	Varchar2	70	-	-	-	✓	-	-
	CASHIER_ID	Number	-	-	-	-	✓	-	-

1 - 6

8.create table receipt

(

receipt_no number,

receipt_date varchar2(40),

customer_id number constraint receipt_customer_id_fk

references

customer (customer_id)

)

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **RECEIPT**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
RECEIPT	RECEIPT_NO	Number	-	-	-	-	✓	-	-
	RECEIPT_DATE	Varchar2	40	-	-	-	✓	-	-
	CUSTOMER_ID	Number	-	-	-	-	✓	-	-

1 - 3

9.create table id

(

c_id number constraint id_c_id_pk primary key,

customer_id number constraint id_customer_id_fk

references

customer (customer_id),

code number constraint id_code_fk

references

service (code)

)

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **ID**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ID	C_ID	Number	-	-	-	1	-	-	-
	CUSTOMER_ID	Number	-	-	-	-	✓	-	-
	CODE	Number	-	-	-	-	✓	-	-

1 - 3

Data Insertion:

1.Owner:

```
create sequence seq1

start with 101

increment by 1

maxvalue 106

insert into owner (owner_id,owner_name) values(seq1.nextval,'Neena')

insert into owner (owner_id,owner_name) values(seq1.nextval,'Saif')

insert into owner (owner_id,owner_name) values(seq1.nextval,'Jain')

insert into owner (owner_id,owner_name) values(seq1.nextval,'Rini')

insert into owner (owner_id,owner_name) values(seq1.nextval,'Ani')
```

2.Manager:

```
create sequence seq2

start with 201

increment by 1

maxvalue 208

insert into manager (manager_id,manager_name,phone,owner_id)
values(seq2.nextval,'Afia',01646744686,101)

insert into manager (manager_id,manager_name,phone,owner_id)
values(seq2.nextval,'Nira',01643567866,102)
```

insert into manager (manager_id,manager_name,phone,owner_id) values(seq2.nextval,'Afrin',01956464623,103)

insert into manager (manager_id,manager_name,phone,owner_id) values(seq2.nextval,'Stella',01934566367,104)

insert into manager (manager_id,manager_name,phone,owner_id) values(seq2.nextval,'Mina',01643865640,105)

3.Beautician:

create sequence seq3

start with 301

increment by 1

maxvalue 308

insert into beautician (beautician_id,beautician_name,skill,manager_id) values (seq3.nextval,'Airin','Makeup_artist',201)

insert into beautician (beautician_id,beautician_name,skill,manager_id) values (seq3.nextval,'Sheli','hair_expert',202)

insert into beautician (beautician_id,beautician_name,skill,manager_id) values (seq3.nextval,'Samy','Nail_technician',203)

insert into beautician (beautician_id,beautician_name,skill,manager_id) values (seq3.nextval,'Avril','Message',204)

insert into beautician (beautician_id,beautician_name,skill,manager_id) values (seq3.nextval,'Diba','Hair_expert',205)

4.Service:

create sequence seq4

start with 1001

increment by 1

maxvalue 1009

insert into service (code,name,duration,product,price,beautician_id) values (seq4.nextval,'Makeup','1_hour','Makeup_kits',1500,301)

insert into service (code,name,duration,product,price,beautician_id) values (seq4.nextval,'Hair_cut','30_minutes','Nothing',1000,302)

insert into service (code,name,duration,product,price,beautician_id) values (seq4.nextval,'Nail_polish','30_minutes','Nail_color',1000,303)

insert into service (code,name,duration,product,price,beautician_id) values (seq4.nextval,'Facial','1_hour','Creams',1500,304)

insert into service (code,name,duration,product,price,beautician_id) values (seq4.nextval,'Hair_cut','30_minutes','Nothing',1000,305)

5.Cashier:

create sequence seq5

start with 401

increment by 1

maxvalue 410

insert into cashier (cashier_id,cashier_name) values (seq5.nextval,'Rita')

insert into cashier (cashier_id,cashier_name) values (seq5.nextval,'Amira')

insert into cashier (cashier_id,cashier_name) values (seq5.nextval,'Bina')

insert into cashier (cashier_id,cashier_name) values (seq5.nextval,'Emi')

insert into cashier (cashier_id,cashier_name) values (seq5.nextval,'Simin')

6.Address:

insert into address (address,city,house,road) values ('Bashundhara R/A','Dhaka','plot-82','3rd')

insert into address (address,city,house,road) values ('Mirpur','Dhaka','plot-71','4th')

insert into address (address,city,house,road) values ('Uttara','Dhaka','plot-88','2nd')

insert into address (address,city,house,road) values ('Badda','Dhaka','plot-45','3rd')

insert into address (address,city,house,road) values ('Gulshan','Dhaka','plot-23','1st')

7.Customer:

create sequence seq6

start with 501

increment by 1

maxvalue 510

insert into customer (customer_id,customer_name,phone,membership_card,address,cashier_id) values (seq6.nextval,'Raima',01324245678,'Yes','Bashundhara R/A',401)

insert into customer (customer_id,customer_name,phone,membership_card,address,cashier_id) values (seq6.nextval,'Tushi',01956332564,'No','Mirpur',402)

insert into customer (customer_id,customer_name,phone,membership_card,address,cashier_id) values (seq6.nextval,'Mouly',01737389215,'No','Uttara',403)

insert into customer (customer_id,customer_name,phone,membership_card,address,cashier_id) values (seq6.nextval,'Ankita',01952955402,'Yes','Badda',404)

insert into customer (customer_id,customer_name,phone,membership_card,address,cashier_id) values (seq6.nextval,'Oishi',01734007542,'Yes','Gulshan',405)

8.Receipt:

create sequence seq7

start with 1

increment by 1

maxvalue 7

insert into receipt (receipt_no,receipt_date,customer_id) values (seq7.nextval,'5-Aug-19',501)

insert into receipt (receipt_no,receipt_date,customer_id) values (seq7.nextval,'10-Aug-19',502)

insert into receipt (receipt_no,receipt_date,customer_id) values (seq7.nextval,'3-Sep-19',503)

insert into receipt (receipt_no,receipt_date,customer_id) values (seq7.nextval,'7-Sep-19',504)

insert into receipt (receipt_no,receipt_date,customer_id) values (seq7.nextval,'18-Oct-19',505)

9.Id

create sequence seq8

start with 5001

increment by 1

maxvalue 5010

insert into id (c_id,customer_id,code) values (seq8.nextval,501,1001)

insert into id (c_id,customer_id,code) values (seq8.nextval,502,1002)

insert into id (c_id,customer_id,code) values (seq8.nextval,503,1003)

insert into id (c_id,customer_id,code) values (seq8.nextval,504,1004)

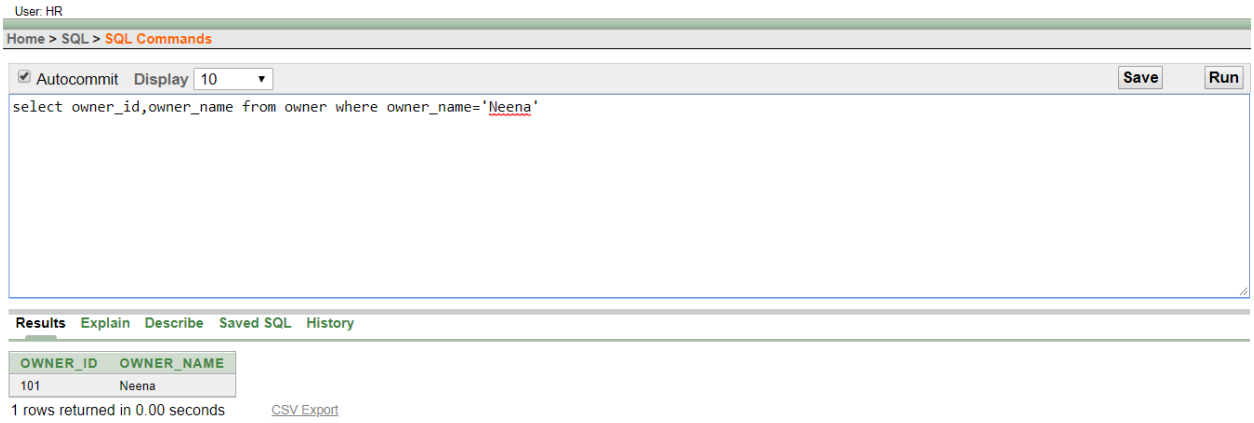
insert into id (c_id,customer_id,code) values (seq8.nextval,505,1005)

Query Writing:

Single Row Function:

1.Ques:Find out owner id,name when owner name is Neena.

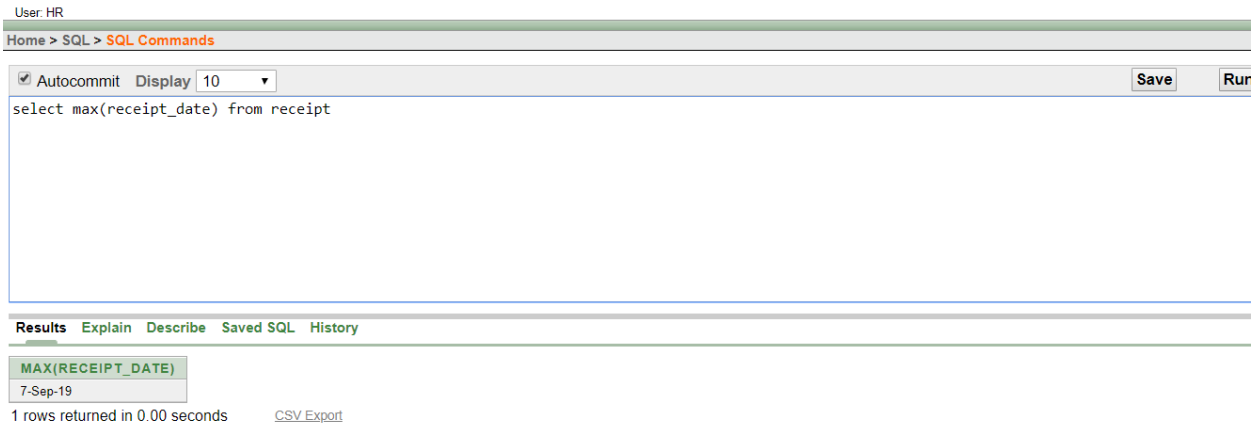
Ans:select owner_id,owner_name from owner where owner_name='Neena'



Group Function:

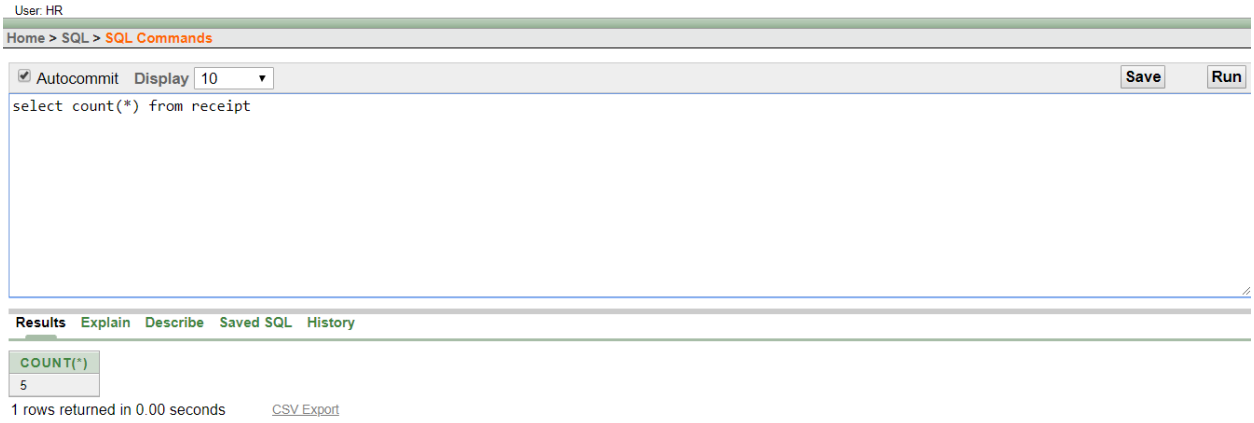
2.Ques:Find out maximum receipt date.

Ans:select max(receipt_date) from receipt



3.Ques:Find out the number of rows from receipt.

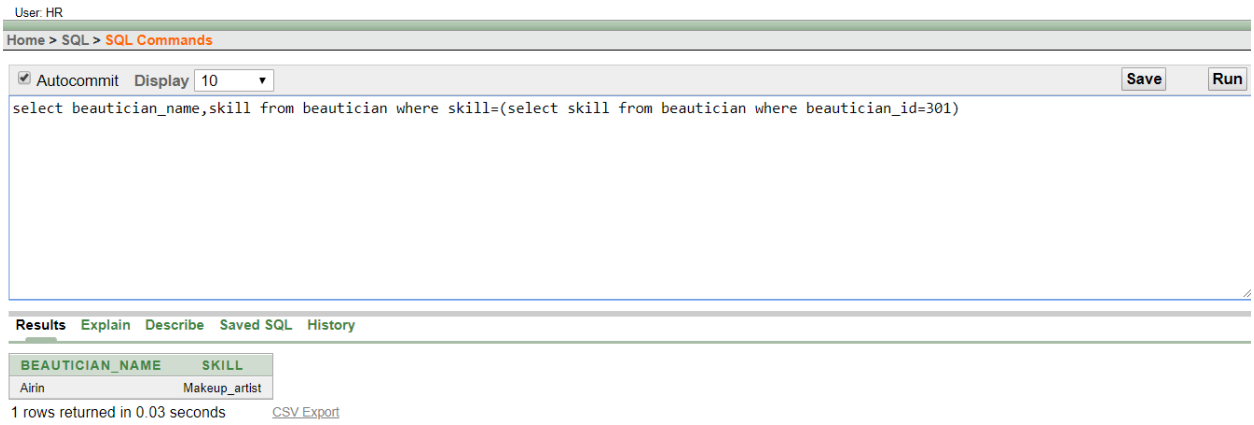
Ans:select count(*) from receipt



Subquery:

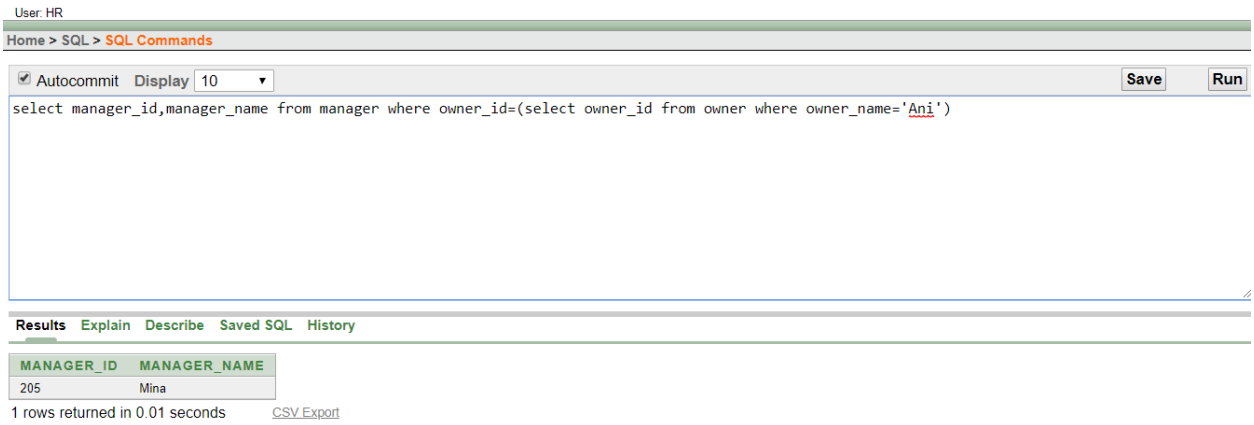
4.Ques:Find out beautician name,skill for those beautician whose skill are same as the beautician's id equal to 301.

Ans:select beautician_name,skill from beautician where skill=(select skill from beautician where beautician_id=301)



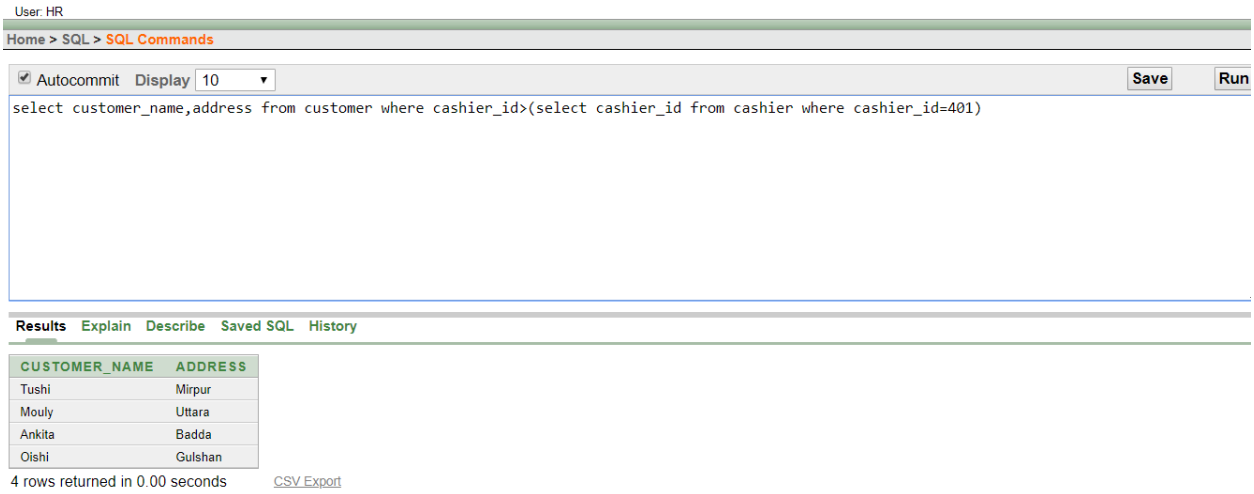
5.Ques:Find out manager id,name for those whose owner name is Ani.

Ans:select manager_id,manager_name from manager where owner_id=(select owner_id from owner where owner_name='Ani')



6.Ques:Find out customer name,address for those whose cashier id is greater than 401.

Ans:select customer_name,address from customer where cashier_id>(select cashier_id from cashier where cashier_id=401)



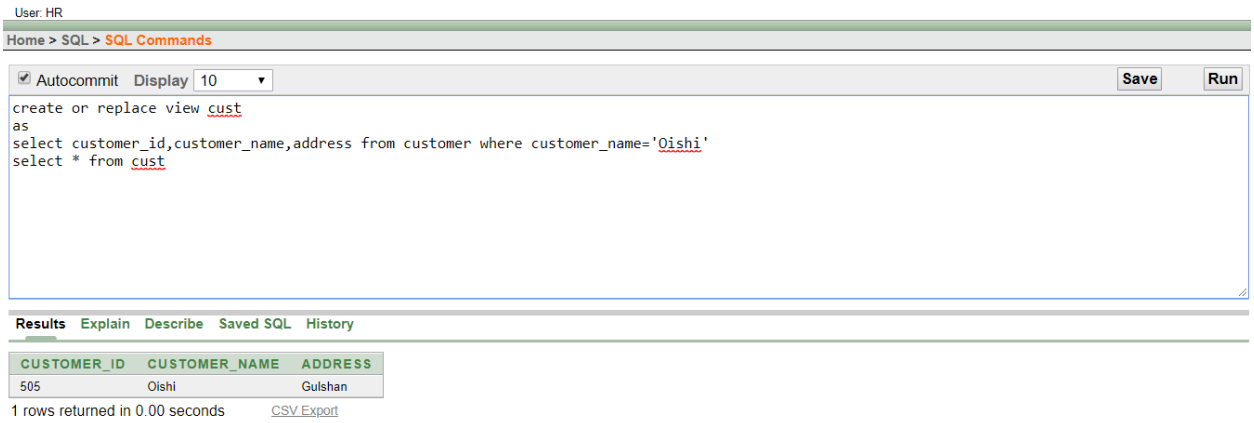
View:

7.Ques:Create a view to find out customer id,name,address for the customer Oishi.

Ans:create or replace view custAs

select customer_id,customer_name,address from customer where customer_name='Oishi'

select * from cust

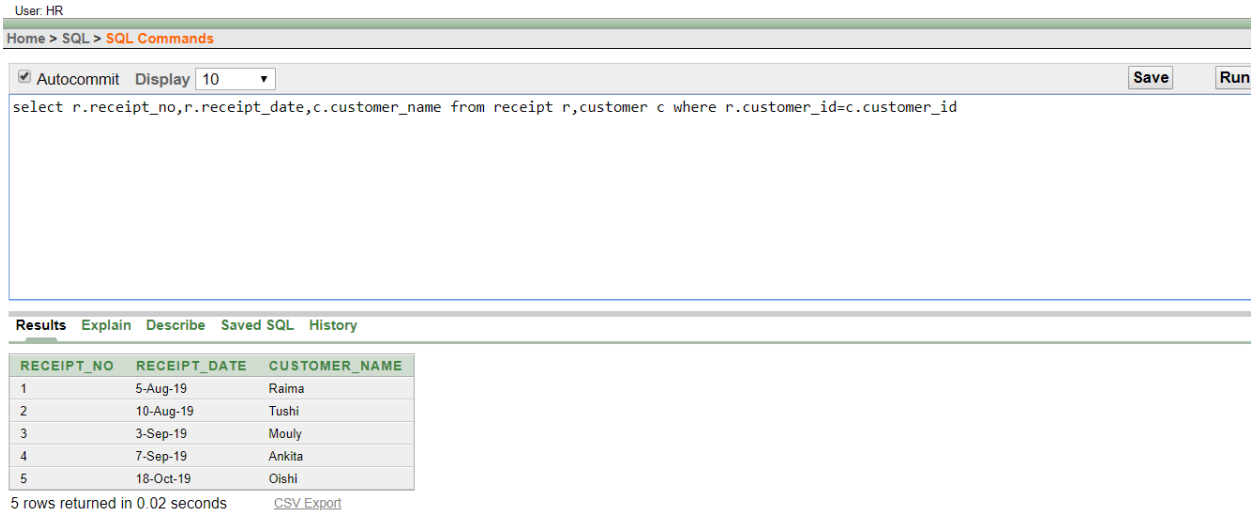


Join:

8.Ques:Find out receipt no,date and customer name.

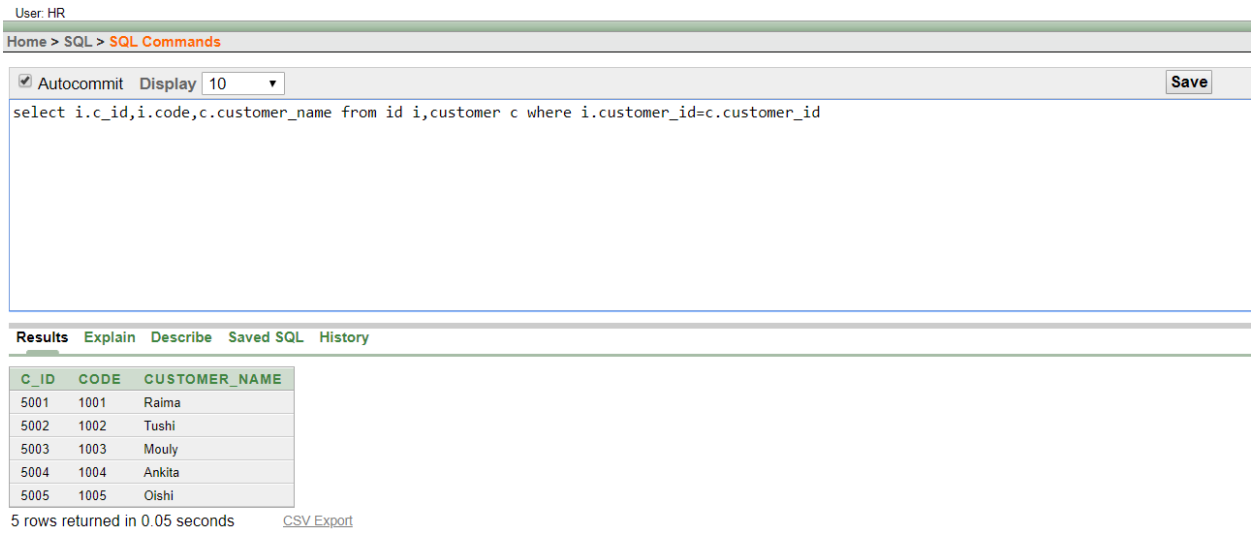
Ans:

select r.receipt_no,r.receipt_date,c.customer_name from receipt r,customer c where r.customer_id=c.customer_id



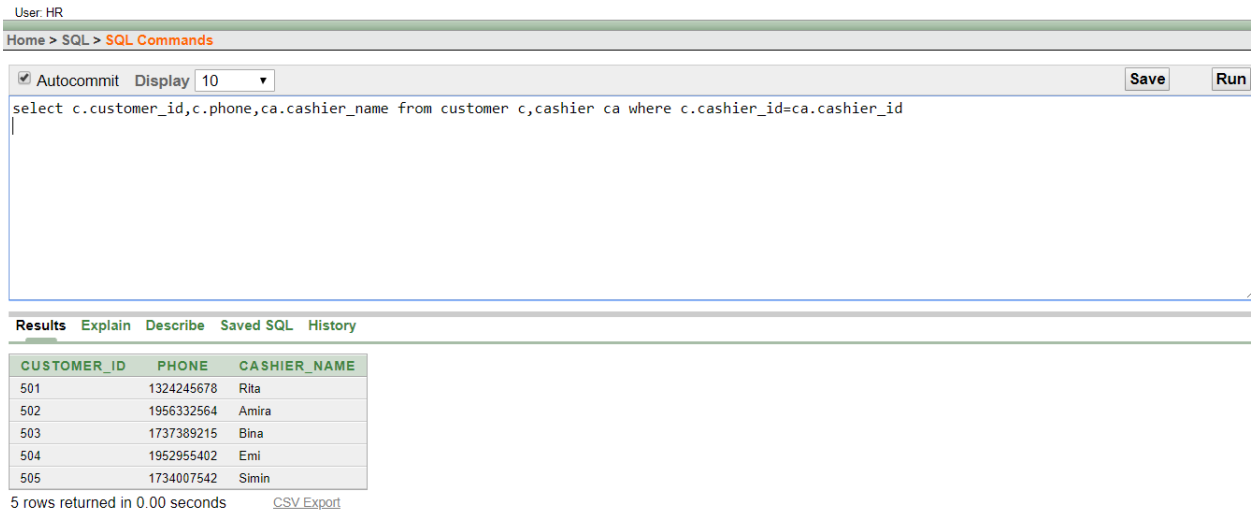
9.Ques:Find out c id,code and customer name.

Ans:select i.c_id,i.code,c.customer_name from id i,customer c where i.customer_id=c.customer_id



10.Ques:Find out customer id,phone and cashier name.

Ans:select c.customer_id,c.phone,ca.cashier_name from customer c,cashier ca where c.cashier_id=ca.cashier_id



Relational Algebra:

1. Find out all cashier's details.

Ans:

(Cashier)

π

cashier_id,cashier_name

2. Find out all details for beautician id=303.

Ans:

(beautician)

σ

beautician_id=303

3. Find out customer name and address for customer id equal to 502.

Ans:

(Customer)

σ

customer_id=502

π

customer_name,address

4.Find out service name and product whose price is 1500

Ans:

(service)

σ

price=1500

π

name,product

5.Find the beauticians name and skill where manager id=202.

Ans:

(beautician)

σ

manager_id=202

π

beautician_name,skill

6.Find out receipt no,date and customer name.

Ans:

(Receipt customer)

π

receipt_no,receipt_date,customer_name

7.Find out code,name,duration and beautician name.

Ans:

(Service beautician)

π

code,name,duration,beautician_name

8.Find out owner id,name and manager name for the owners who have manger or not.

Ans:

(owner manager)

π

owner_id,owner_name,manager_name

9.Find out c id ,code and customer name where the code have customer or not.

Ans:

(id customer)

π

c_id,code,customer_name

10.Find out beautician id,name and manager name who has assigned beautician or not.

Ans:

(beautician manager)

π

beautician_id,beautician_name,manager_name

11.Find out customer id,phone,cashier_name if the cashier has any customer or not.

Ans:

(customer cashier)

π

customer_id,phone,cashier_name

12.Find out customer's address ,house,road and phone.

Ans:

(address customer)

π

address,house,road,phone

13.Find out service name,price,beautician name and id .

Ans:

(service beautician)

π

name,price,beautician_name,beautician_id

14.Find out manger id,manager name and owner id.

Ans:

(owner×manager)

σ

owner.owner_id=manager.owner_id

π

manager_id,manager_name,owner_id

15.Find out customer name,phone,cashier name.

Ans:

$$\pi_{\text{customer\_name,phone,cashier\_name}}\left(\sigma_{\text{customer.cashier\_id=cashier.cashier\_id}}(\text{customer}\times\text{cashier})\right)$$

Conclusion:

After a lot of hard work and dedication from our group member, we managed to create our database project ‘Beauty Parlor Management System’. While doing this project we faced some difficulty but finally we accomplished the task. This project helped us to understand how we can store data and never lose them. Now we are confident about our project. Hopefully in future we will be able to create a real database system for institutes.