AMERICAN INTERNATIONAL UNIVERSITY–BANGLADESH (AIUB)

DEPARTMENT OF ENGINEERING

INTRODUCTION TO DATABASE

Section: M, Group: 9

Project Name

PARKING SPOT MANAGEMENT SYSTEM

Supervised By

Kawser Irom Rushee

Submitted By

ID	Name
22-47900-2	ARIFUR RAHMAN
22-46321-1	NAHID HASAN NOBIL
22-47894-2	MD. HEDAET SHAHRIAR HIMON
22-47045-1	TARIN SULTANA

Date of Submission: 17 MAY,2023.

TABLE OF CONTENTS

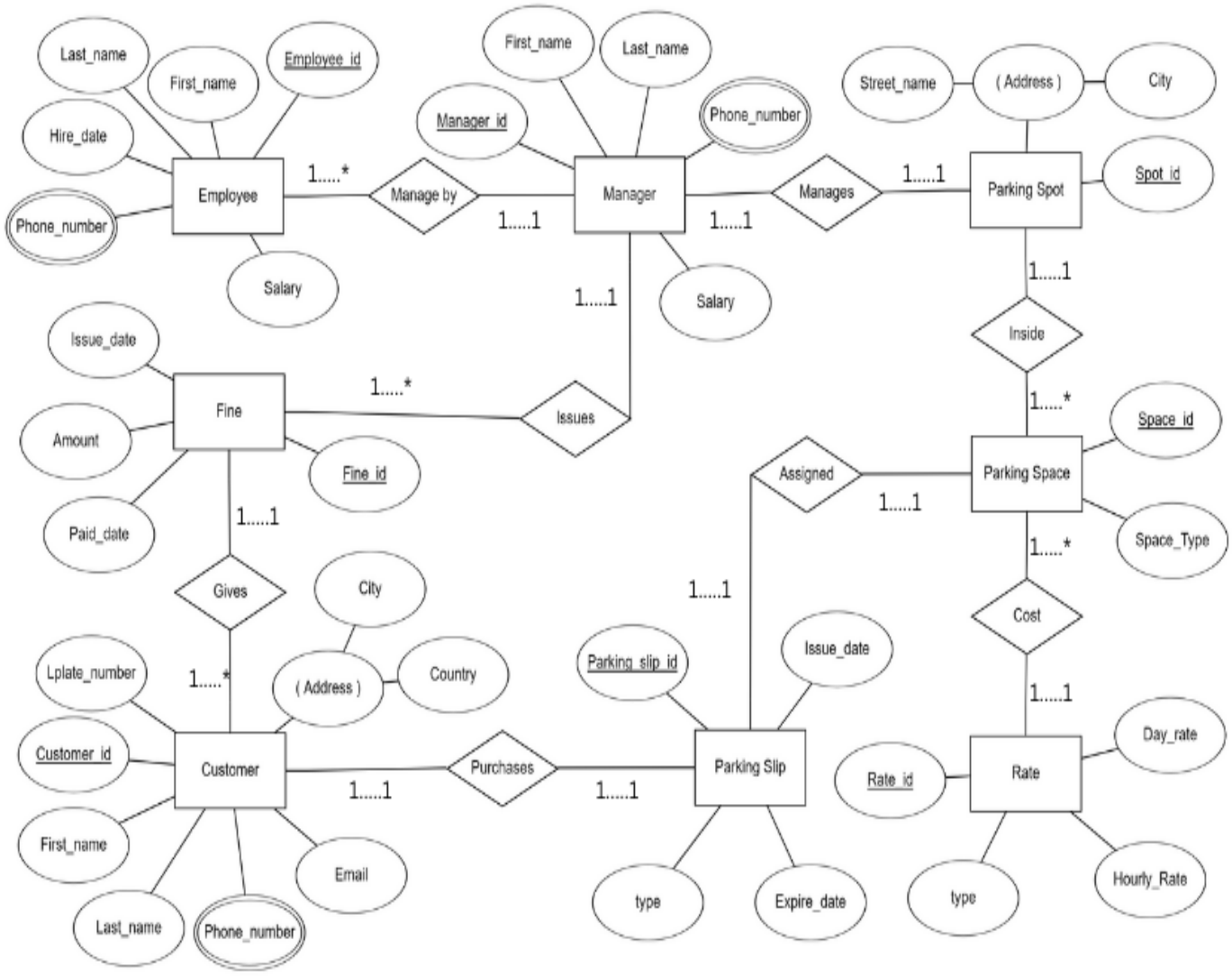
TOPICS

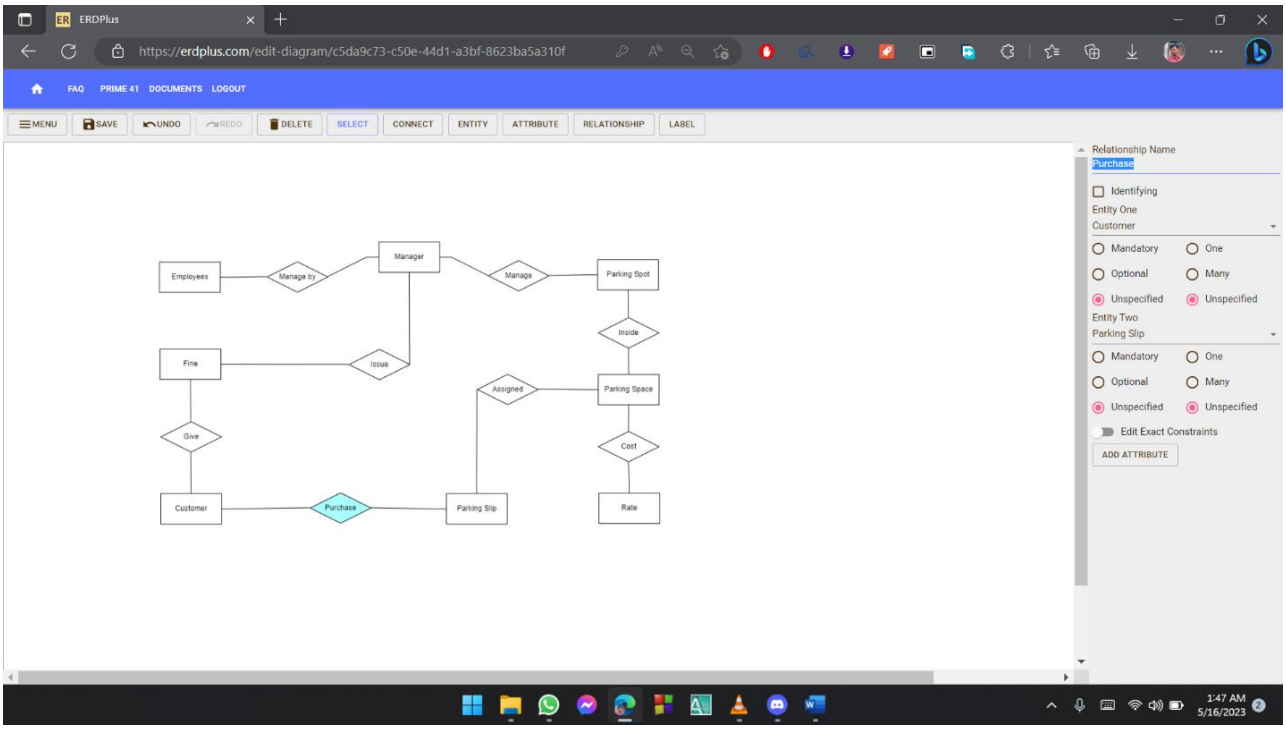
PARKING SPOT MANAGEMENT SYSTEM

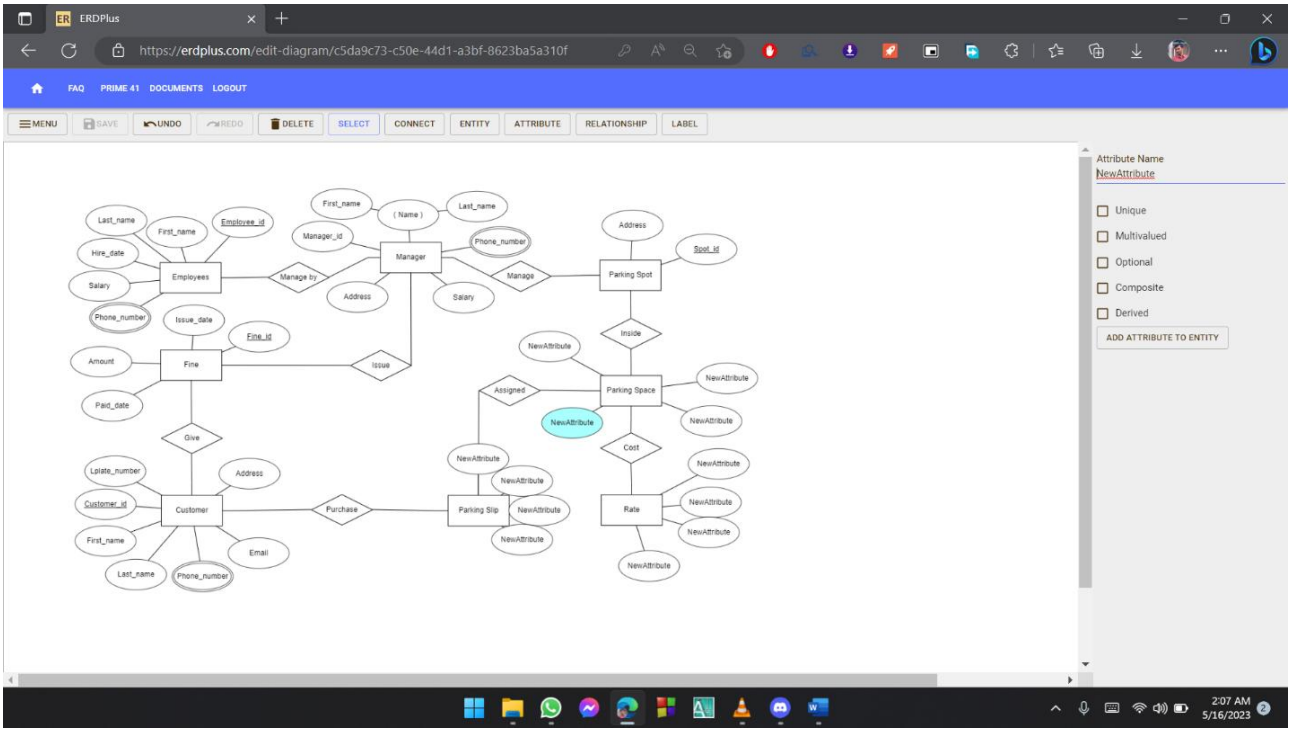
Case Study:

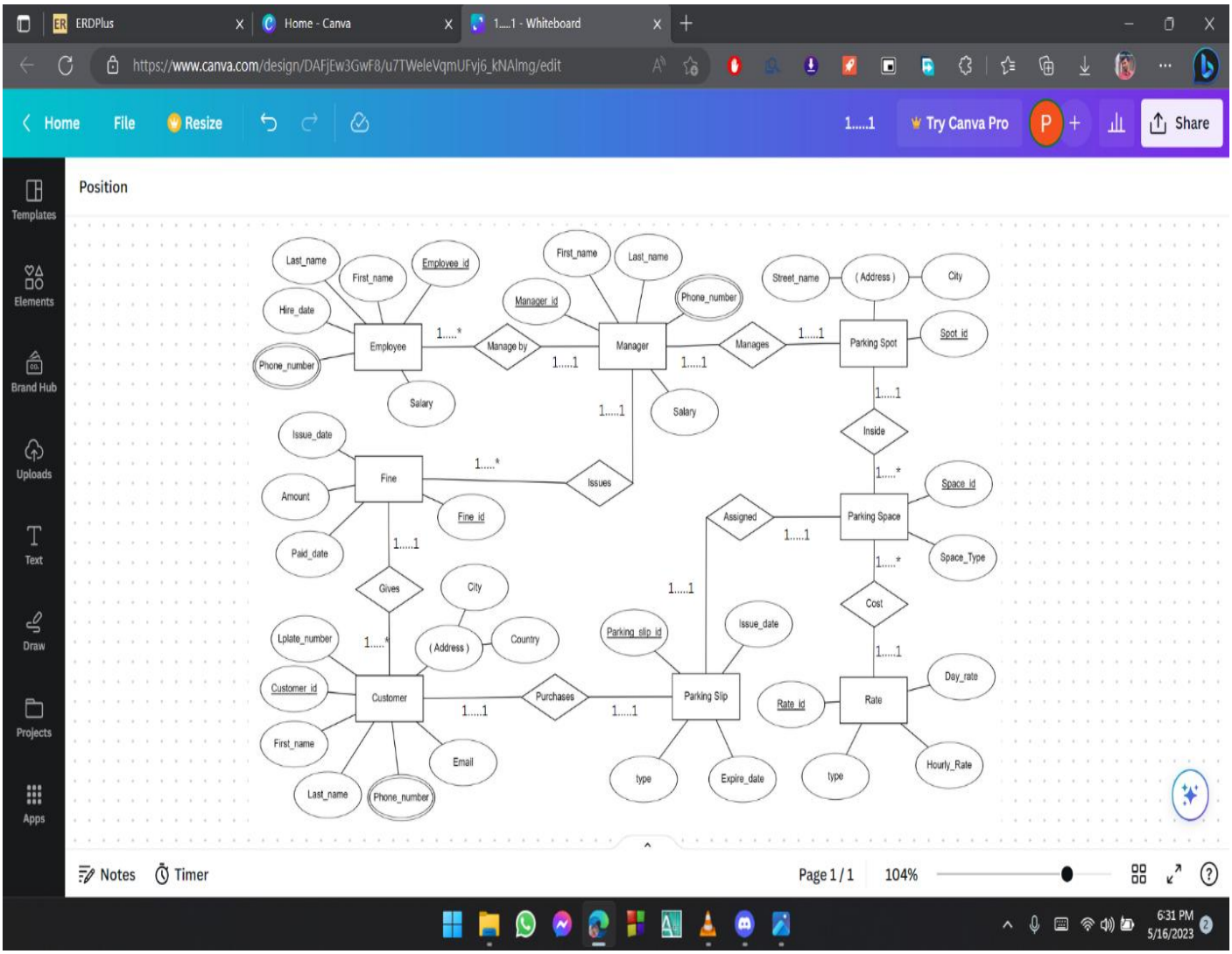
The parking spot management system has multiple employees who are supervised by managers, each manager overseeing one or more employees. The employees and managers are identified through unique employee and manager IDs, and their personal information such as first and last name, hire date, phone numbers, and salary are stored in the system. The managers are responsible for managing the parking spot as a whole, which is identified by a spot ID and has a own physical address. The parking spot contains several parking spaces, each with a unique space ID and type, which determines the cost rate for hiring the space on hourly or daily basis. Each space type also has a unique rate ID. Customers are assigned a parking slip upon hiring a space, which includes a slip ID, issue date, and expire date and type. The customers are identified through their own unique ID and their personal information, including first and last name, email address, phone numbers, license plate numbers, and address, is stored in the system. In order to better manage the parking spot and provide better services, there are various rules in place, and fines may be issued by the manager to customers who violate these rules. These fines include an ID, issue date, amount, and paid date.

ER Diagram:


Last_name
First_name
Employee_id
Hire_date
Phone_number
Employee
Salary
1.....*
Manage by
1.....1
First_name
Last_name
Manager_id
Phone_number
Manager
Salary
1.....1
1.....1
Manages
1.....1
Street_name
(Address)
City
Parking Spot
Spot_id
1.....1
Inside
1.....*
Space_id
Parking Space
Space_Type
1.....*
Cost
1.....1
Rate
Day_rate
Rate_id
type
Hourly_Rate
Assigned
1.....1
1.....1
Issue_date
Fine
Amount
Paid_date
Fine_id
1.....*
Issues
1.....1
Gives
1.....*
Customer
Lplate_number
Customer_id
First_name
Last_name
Phone_number
Email
City
(Address)
Country
Purchases
1.....1
1.....1
Parking_slip_id
Issue_date
Parking Slip
type
Expire_date

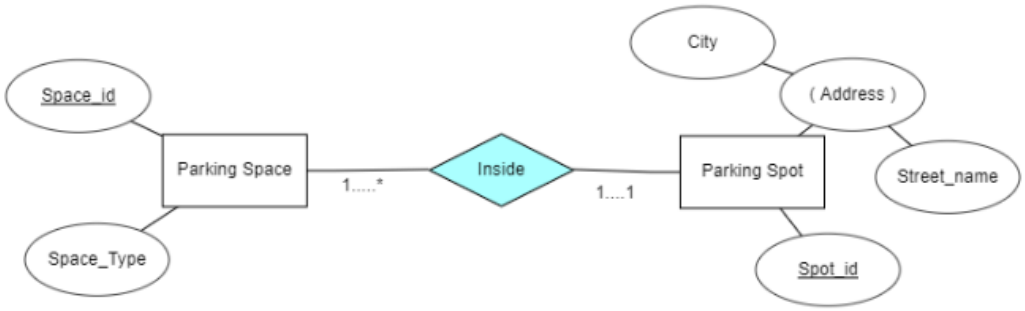

ERDPlus
https://erdplus.com/edit-diagram/c5da9c73-c50e-44d1-a3bf-8623ba5a310f
FAQ PRIME 41 DOCUMENTS LOGOUT
MENU SAVE UNDO REDO DELETE SELECT CONNECT ENTITY ATTRIBUTE RELATIONSHIP LABEL
Relationship Name
Purchase
Identifying
Entity One
Customer
Mandatory One
Optional Many
Unspecified Unspecified
Entity Two
Parking Slip
Mandatory One
Optional Many
Unspecified Unspecified
Edit Exact Constraints
ADD ATTRIBUTE
Employees
Manage by
Manager
Manage
Parking Spot
Inside
Fine
Issue
Assigned
Parking Space
Give
Cost
Customer
Purchase
Parking Slip
Rate
1:47 AM
5/16/2023


ERDPlus
https://erdplus.com/edit-diagram/c5da9c73-c50e-44d1-a3bf-8623ba5a310f
FAQ PRIME 41 DOCUMENTS LOGOUT
MENU SAVE UNDO REDO DELETE SELECT CONNECT ENTITY ATTRIBUTE RELATIONSHIP LABEL
Attribute Name
NewAttribute
Unique
Multivalued
Optional
Composite
Derived
ADD ATTRIBUTE TO ENTITY
2:07 AM
5/16/2023


ERDPlus
Home - Canva
1.....1 - Whiteboard
https://www.canva.com/design/DAFjEw3GwF8/u7TWeleVqmUFvj6_kNAlmg/edit
Home
File
Resize
1.....1
Try Canva Pro
Share
Templates
Elements
Brand Hub
Uploads
Text
Draw
Projects
Apps
Position
Employee
Manager
Parking Spot
Fine
Parking Space
Customer
Parking Slip
Rate
Manage by
Manages
Issues
Inside
Assigned
Gives
Purchases
Cost
Notes
Timer
Page 1 / 1
104%
6:31 PM
5/16/2023

Normalization of Database:

Inside



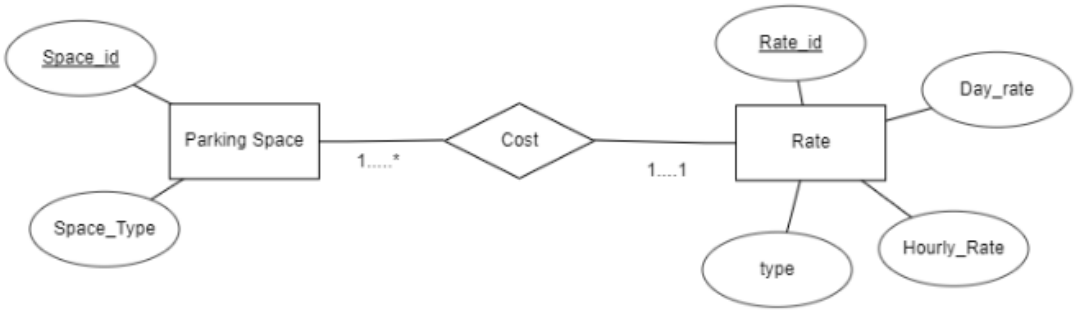
UNF: Spot_id, Street_no,City, Space_id, Space_type.
1NF: No multivalued attribute
Spot_id, Street_no,City, Space_id, Space_type

2NF: Spot_id, Street_no,City
Space_id, Space_Type,Spot_id

3NF: Street_no,City has transitive dependency
Spot_id, Street_no,City
Space_id, Space_Type, Spot_id

Table: 1.Spot_id, Street_no,City
2.Space_id, Space_Type, Spot_id

Cost



UNF: Space_id, Space_type, Rate_id, Hourly_rate, Day_Rate ,Type.

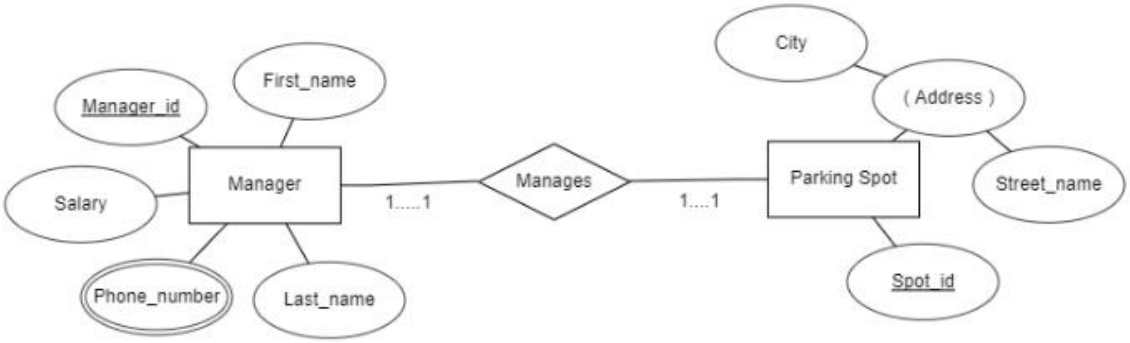
1NF: No multivalued attribute
Space_id, Space_type, Rate_id, Hourly_rate, Day_Rate, Type.

2NF: Space_id, Space_Type, Rate_id
Rate_id, Hourly_rate, Day_Rate,Type.

3NF: No transitive dependency
Space_id, Space_Type, Rate_id
Rate_id, Hourly_rate, Day_Rate,Type.

Table: 1.Space_id, Space_Type, Rate_id
2.Rate_id, Hourly_rate, Day_Rate,Type

Manages



UNF: Spot_id, Street_no,City, Manager_id, Phone_number,
First_name,Last_name ,Salary

1NF: Phone_number multivalued attribute
Spot_id, Street_no,City, Manager_id, Phone_number,
First_name,Last_name, Salary

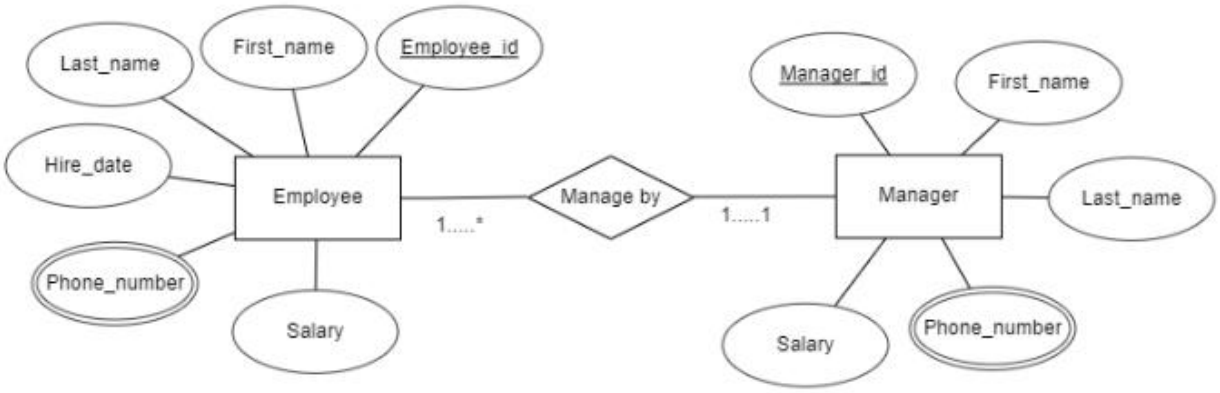
2NF: Spot_id, Street_no,City, Manager_id
Manager_id, First_name,Last_name, Salary
Phone_number, Manager_id

3NF: No transitive dependency

Spot_id, Street_no,City, Manager_id
Manager_id, First_name,Last_name,Salary
Phone_number, Manager_id

Table: 1.Spot_id, Street_no,City, Manager_id
2.Manager_id,First_name,Last_name,Salary
3.Phone_number, Manager_id

Manage by



UNF: Manager_id , Phone_number , First_name,Last_name, Salary, Employee_id, First_Name , Last_Name , Hire_date, Salary, Phone_number

1NF: Phone_number multivalued attribute in employee and manager

Manager_id , Phone_number , First_name,Last_name, Salary, Employee_id, First_Name , Last_Name , Hire_date, Salary,Phone_number

2NF: 1.Manager_id, First_name,Last_name,Salary
2.Phone_number, Manager_id
3.Employee_id, First_Name, Last_Name, Hire_date, Salary, Manager_id
4.Phone_number, Employee_id

3NF: No transitive dependency

1. Manager_id , First_name,Last_name,Salary
2. Phone_number, Manager_id
3. Employee_id, First_Name , Last_Name , Hire_date, Salary, Manager_id
4. Phone_number, Employee_id

Table: 1. Manager_id, First_name,Last_name,Salary
2. Phone_number, Manager_id
3. Employee_id, First_Name , Last_Name , Hire_date, Salary, Manager_id
4. Phone_number, Employee_id

Assigned

UNF: Space_id,Space_Type,Parking_slip_id,Issue_date,Expire_date, Type

1NF: No multivalued attribute

1. Space_id,Space_Type,Parking_slip_id,Issue_date,Expire_date, Type

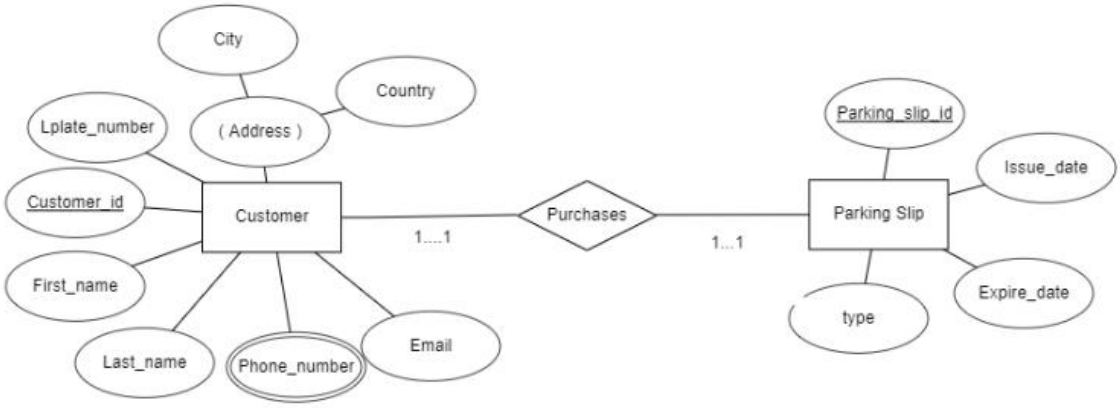
2NF: 1. Space_id, Space_Type
2. Parking_slip_id,Issue_date,Expire_date,Type,Space_id

3NF: No transitive dependency

1. Space_id,Space_Type
2. Parking_slip_id,Issue_date,Expire_date,Type,Space_id

Table: 1. Space_id,Space_type
2.Parking_slip_id,Issue_date,Expire_date,Type,Space_id

Purchases



UNF: Customer_id,First_name,Last_name,Email,City,Country
Phone_number,Lplate_number,Parking_slip_id,Issue_date,
Expire_date,Type

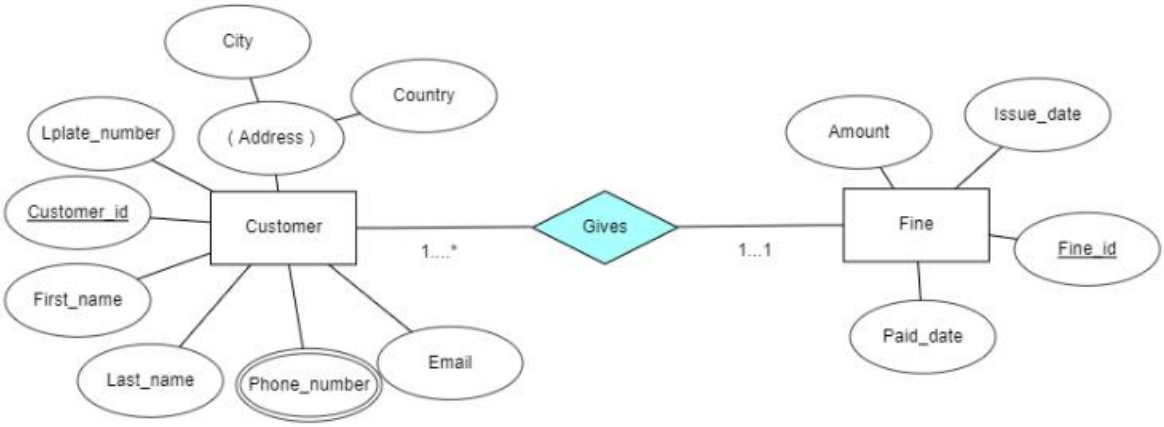
1NF: Phone_number multivalued attribute
Customer_id,First_name,Last_name,Email,City,Country,
Phone_number, Lplate_number, Parking_slip_id,
Issue_date, Expair_date,Type

2NF: 1.Customer_id,First_name,Last_name,Email,City,Country,
Lplate_number
2.Parking_slip_id,Issue_date,Expire_date,Type,Customer_id
3.Phone_number , Customer_id

3NF: City,Country has transitive dependency
1.Customer_id,First_name,Last_name,Email,Lplate_number
2 Customer_id,City,Country
3.Parking_slip_id,Issue_date,Expair_date,Type,Customer_id
4.Phone_number, Customer_id

Table:1.Customer_id,First_name,Last_name,Email,Lplate_number
2 Customer_id,city,country
3.Parking_slip_id,Issue_date,Expair_date,Type,Customer_id
4.Phone_number, Customer_id

Gives



UNF: Customer_id,First_name,Last_name,Email, City,Country
Phone_number,Lplate_number,Fine_id ,Issue _date,
Paid_date,Amount

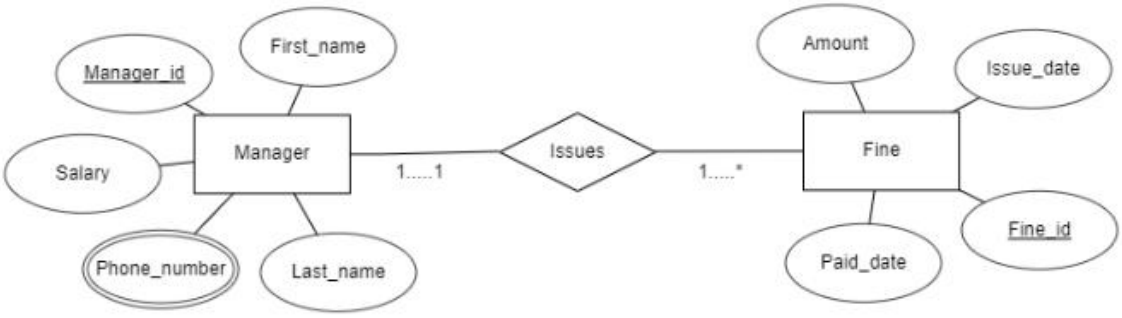
1NF: Phone_number multivalued attribute
Customer_id,First_name,Last_name,Email, City,Country,
Phone_number,Lplate_number,Fine_id ,Issue _date,
Paid_date,Amount

2NF: 1. Customer_id,First_name,Last_name,Email, City,Country,
Lplate_number,Fine_id
2.Fine_id, Issue_date,Paid_date,Amount
3.Phone_number, Customer_id

3NF: City,Country has transitive dependency
1.Customer_id,First_name,Last_name,Email,
Lplate_number,Fine_id
2. Customer_id, City,Country
3.Fine_id, Issue_date,paid_date,Amount
4.Phone_number, Customer_id

Table: 1.Customer_id,First_name,Last_name,Email,
Lplate_number,Fine_id
2. Customer_id, City,Country
3.Fine_id, Issue_date,Paid_date,Amount
4.Phone_number, Customer_id

Issues



UNF: Manager_id, Phone_number,Fine_id,Issue_date,
Paid_date,Amount

1NF: Phone_number multivalued attribute
Manager_id, First_name,Last_name,
Salary,Phone_number,Fine_id,Issue_date,Paid_date,Amount

2NF: 1. Manager_id, First_name,Last_name,Salary
2.Fine_id,Issue_date, Paid_date,Amount,Manager id
3.Phone_number, Manager_id

3NF: No transitive dependency
1.Manager_id, First_name,Last_name,Salary
2.Fine_id,Issue_date, Paid_date,Amount,Manager_id
3.Phone_number, Manager_id

Table:1.Manager_id, First_name,Last_name,Salary
2.Fine_id,Issue_date, Paid_date,Amount,Manager_id
3.Phone_number, Manager_id

Total Table:

1.Spot_id, Street_no,City
2.Space_id, Space_Type, Spot_id
3.Space_id, Space_Type, Rate_id
4.Rate_id, Hourly_rate, Day_Rate,Type
5.Spot_id, Street_no,City, Manager_id
6.Manager_id,first_name,last_name,Salary
7.Phone_number, Manager_id

8.Manager_id, First_name,Last_name,Salary
9.Phone_number, Manager_id
10.Employee_id, First_Name , Last_Name , Hire_date, Salary, Manager_id
11.Phone_number, Employee_id
12.Space_id,Space_type
13.Parking_slip_id,Issue_date,Expire_date,Type,Space_id
14.Customer_id,First_name,Last_name,Email,Lplate_number
15.Customer_id,City,Country
16.Parking_slip_id,Issue_date,Expair_date,Type,Customer_id
17.Phone_number, Customer_id
18.Customer_id,First_name,Last_name,Email,Lplate_number,Fine_id
19.Customer_id, City,Country
20.Fine_id, Issue_date,Paid_date,Amount
21.Phone_number, Customer_id
22.Manager_id, First_name,Last_name,Salary
23.Fine_id,Issue_date, Paid_date,Amount,Manager_id
24.Phone_number, Manager_id

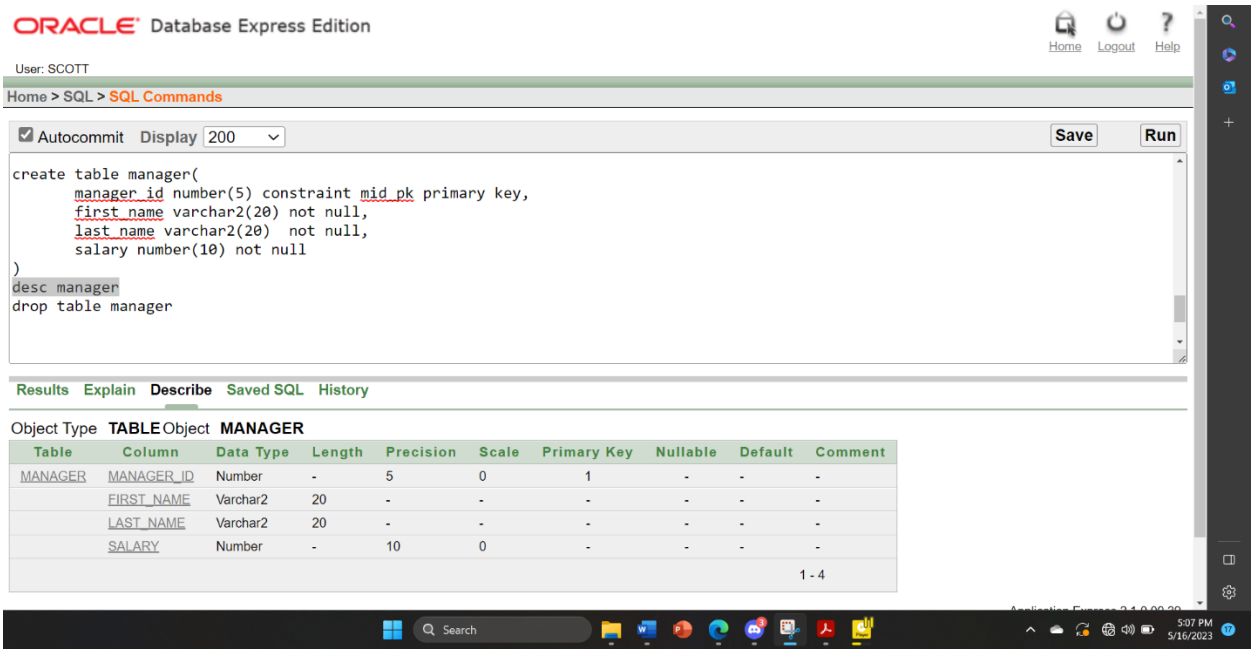
Final Table:

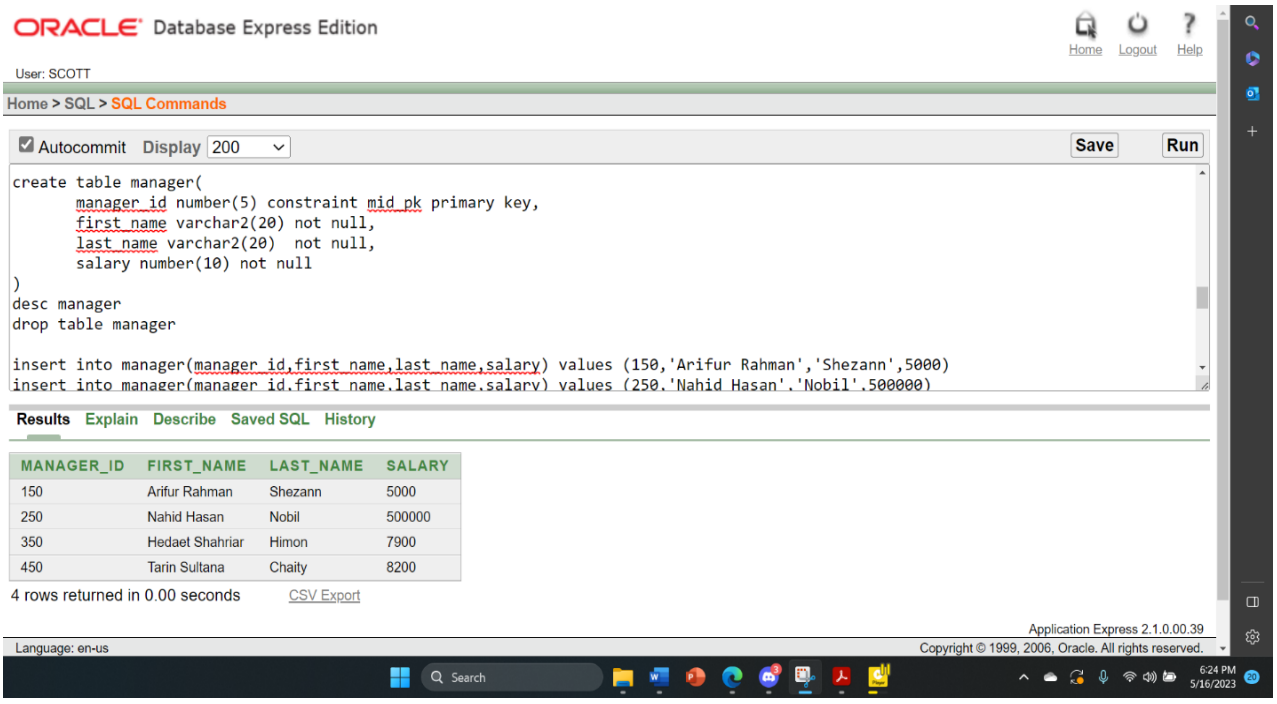
1.Space_id, Space_Type, Spot_id
2.Space_id, Space_Type, Rate_id
3.Rate_id, Hourly_rate, Day_Rate,Type
4.Spot_id, Street_no,City, Manager_id
5.Manager_id,First_name,Last_name,Salary
6.Phone_number, Manager_id
7.Employee_id, First_Name , Last_Name , Hire_date, Salary, Manager_id
8.Phone_number, Employee_id
9.Parking_slip_id,Issue_date,Expire_date,Type,Space_id
10.Customer_id,City,Country
11.Parking_slip_id,Issue_date,Expair_date,Type,Customer_id
12.Phone_number, Customer_id
13.Customer_id,First_name,Last_name,Email,Lplate_number, Fine_id
14.Fine_id,Issue_date, Paid_date,Amount,Manager_id

Table Creation And Data Insertion:

MANAGER TABLE:

```
create table manager

( manager_id number(5) constraint mid_pk primary key,

first_name varchar2(20) not null,

last_name varchar2(20) not null,

salary number(10) not null)

desc manager

drop table manager

insert into manager(manager_id,first_name,last_name,salary) values
(150,'Arifur Rahman','Shezann',5000)

insert into manager(manager_id,first_name,last_name,salary) values
(250,'Nahid Hasan','Nobil',500000)

insert into manager(manager_id,first_name,last_name,salary) values
(350,'Hedaet Shahriar','Himon',7900)

insert into manager(manager_id,first_name,last_name,salary) values
(450,'Tarin Sultana','Chaity',8200)

select * from manager
```


ORACLE Database Express Edition
Home
Logout
Help
User: SCOTT
Home > SQL > SQL Commands
Autocommit
Display 200
Save
Run
create table manager(
manager_id number(5) constraint mid_pk primary key,
first_name varchar2(20) not null,
last_name varchar2(20) not null,
salary number(10) not null
)
desc manager
drop table manager
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
5
0
1
FIRST_NAME
Varchar2
20
LAST_NAME
Varchar2
20
SALARY
Number
10
0
1 - 4


ORACLE Database Express Edition
Home
Logout
Help
User: SCOTT
Home > SQL > SQL Commands
Autocommit
Display 200
Save
Run
create table manager(
manager_id number(5) constraint mid_pk primary key,
first_name varchar2(20) not null,
last_name varchar2(20) not null,
salary number(10) not null
)
desc manager
drop table manager
insert into manager(manager_id,first_name,last_name,salary) values (150,'Arifur Rahman','Shezann',5000)
insert into manager(manager_id,first_name,last_name,salary) values (250,'Nahid Hasan','Nobil',500000)
Results
Explain
Describe
Saved SQL
History
MANAGER_ID
FIRST_NAME
LAST_NAME
SALARY
150
Arifur Rahman
Shezann
5000
250
Nahid Hasan
Nobil
500000
350
Hedaet Shahriar
Himon
7900
450
Tarin Sultana
Chaity
8200
4 rows returned in 0.00 seconds
CSV Export
Application Express 2.1.0.00.39
Language: en-us
Copyright © 1999, 2006, Oracle. All rights reserved.

M_PHONENUMBER TABLE:

create table m_phonenumber

(phone_number number(11) unique not null,

manager_id number(5) constraint mid_fk references manager(manager_id) not null)

desc m_phonenumber

drop table m_phonenumber

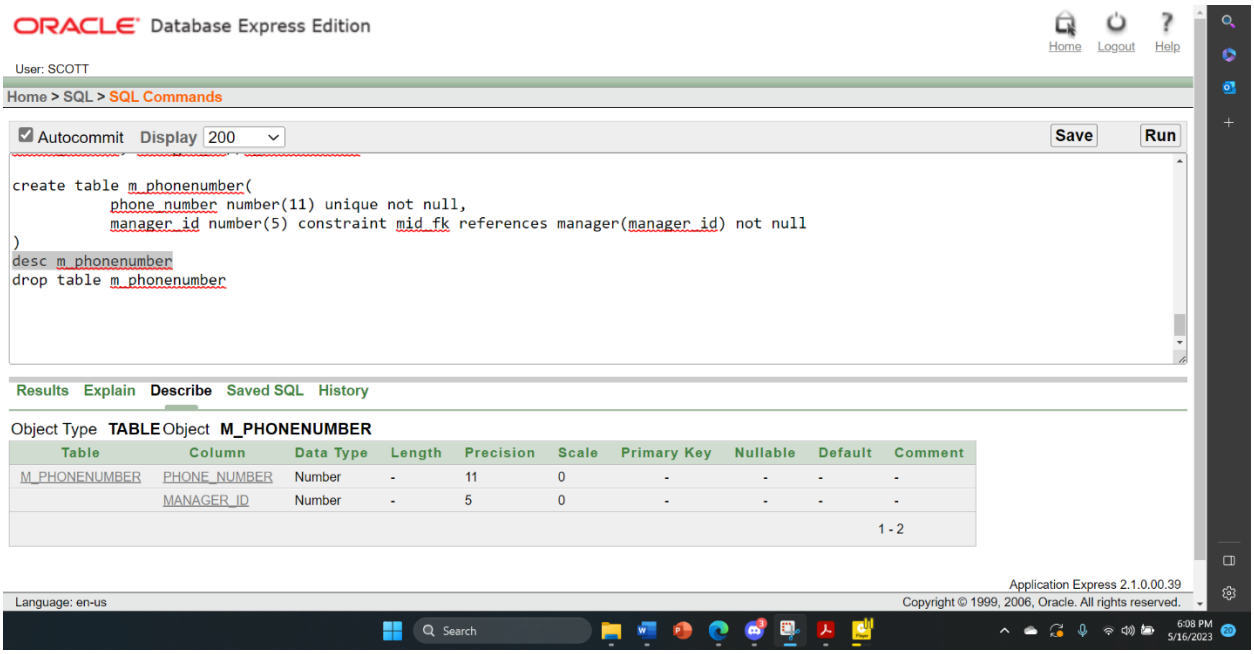
insert into m_phonenumber(manager_id,phone_number) values (150, 01865454574)

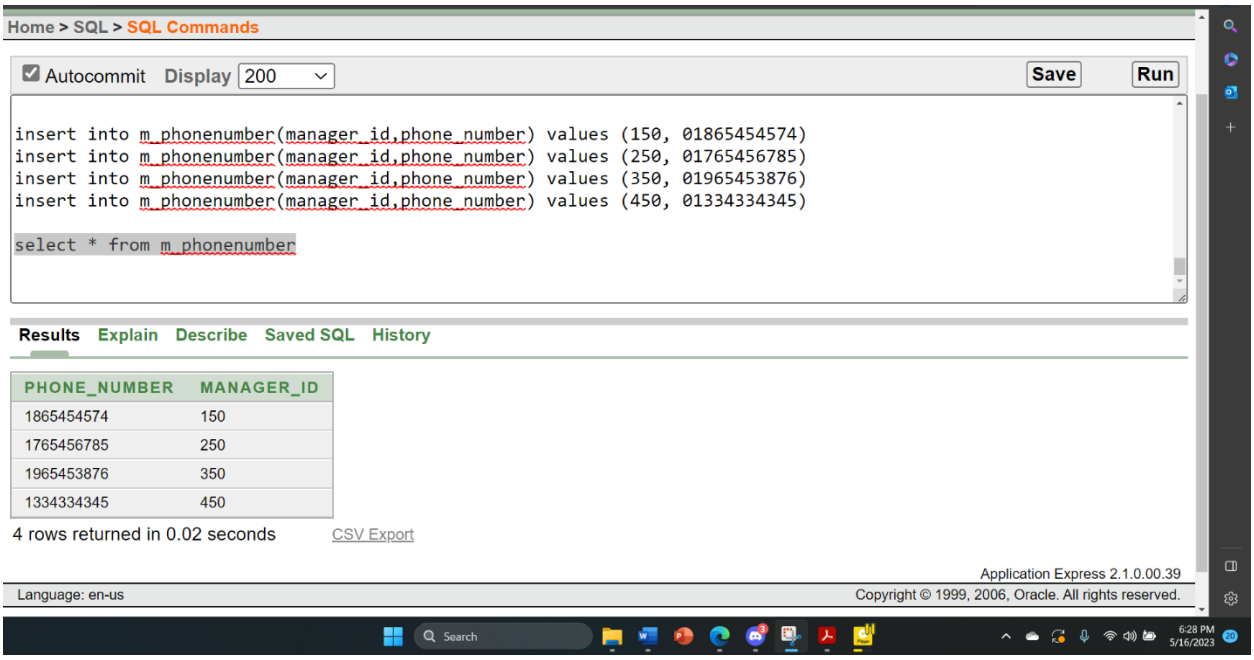
insert into m_phonenumber(manager_id,phone_number) values (250, 01765456785)

insert into m_phonenumber(manager_id,phone_number) values (350, 01965453876)

insert into m_phonenumber(manager_id,phone_number) values (450, 01334334345)

select * from m_phonenumber





PARKINGSPOT TABLE:

create table parkingspot

(spot_id number(5)constraint spotid_pk primary key,

street_no number(10) unique not null,

city varchar2(20) not null,

manager_id number(5) constraint mnid_fk references manager(manager_id) not null)

desc parkingspot

drop table parkingspot

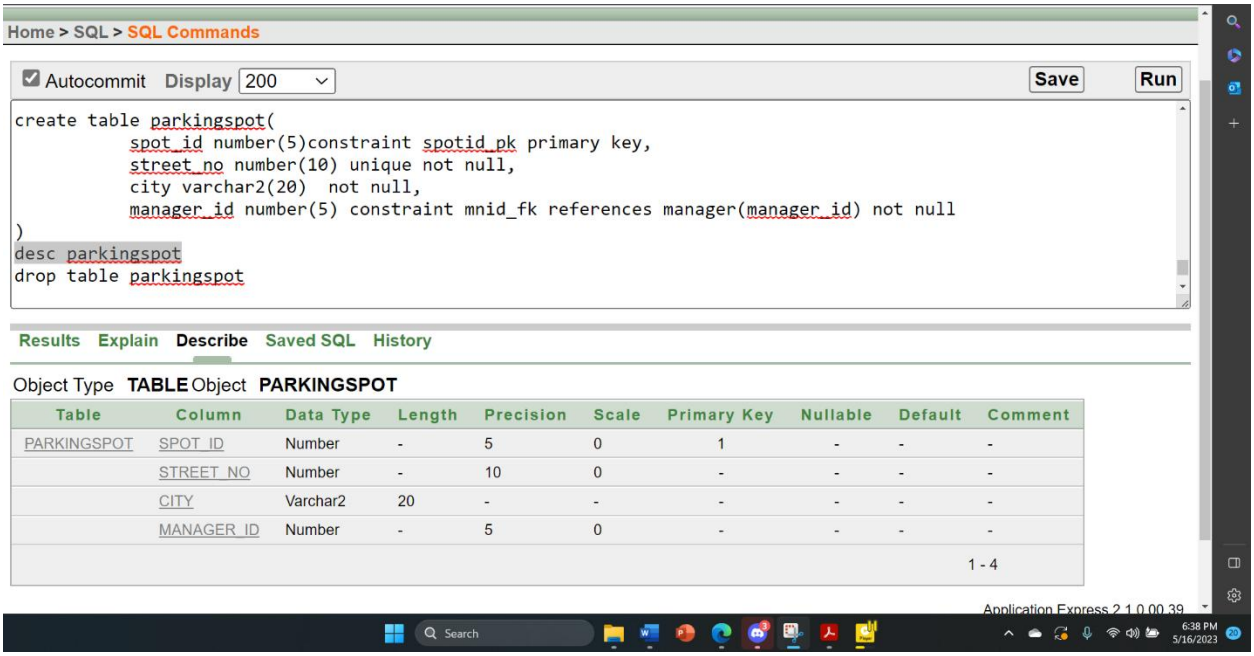
insert into parkingspot(spot_id,street_no,city,manager_id) values (10,8,'Coxs-Bazar',150)

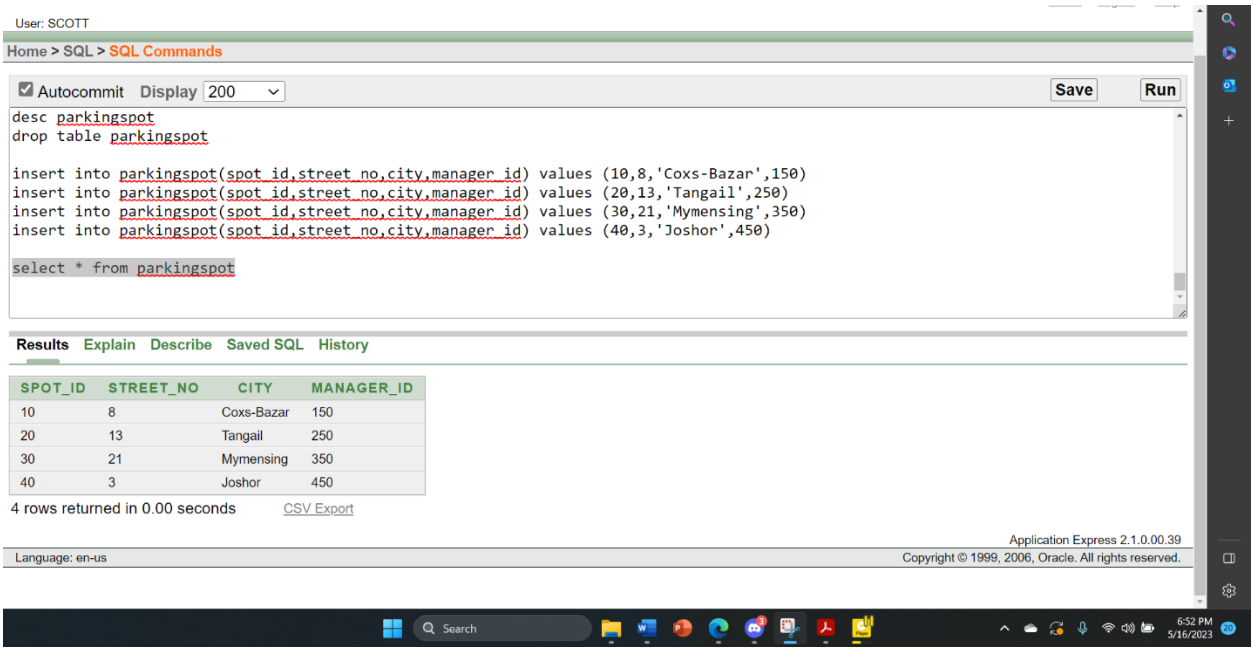
insert into parkingspot(spot_id,street_no,city,manager_id) values (20,13,'Tangail',250)

insert into parkingspot(spot_id,street_no,city,manager_id) values (30,21,'Mymensing',350)

insert into parkingspot(spot_id,street_no,city,manager_id) values (40,3,'Joshor',450)

select * from parkingspot





PARKINGSPACE TABLE:

```
create table parkingspace

( space_id number(5) constraint spid_pk primary key,

space_type varchar2(20) check( space_type in ('Small','Medium','Large')) not null,

spot_id number(5) constraint spotid_fk references parkingspot(spot_id) not null )

desc parkingspace drop table parkingspace

insert into parkingspace (space_id,space_type,spot_id) values(1,'Large',10)

insert into parkingspace (space_id,space_type,spot_id) values(2,'Small',10)

insert into parkingspace (space_id,space_type,spot_id) values(3,'Large',10)

insert into parkingspace (space_id,space_type,spot_id) values(4,'Small',40)

insert into parkingspace (space_id,space_type,spot_id) values(5,'Medium',20)

insert into parkingspace (space_id,space_type,spot_id) values(6,'Small',20)

insert into parkingspace (space_id,space_type,spot_id) values(7,'Large',20)

insert into parkingspace (space_id,space_type,spot_id) values(8,'Medium',40)

insert into parkingspace (space_id,space_type,spot_id) values(9,'Medium',30)

insert into parkingspace (space_id,space_type,spot_id) values(10,'Medium',30)

insert into parkingspace (space_id,space_type,spot_id) values(11,'Large',30)

insert into parkingspace (space_id,space_type,spot_id) values(12,'Medium',40)

select * from parkingspace
```

Autocommit Display 200 Save Run

```
insert into parkingspace (space_id,space_type,spot_id) values(6,'Small',20)
insert into parkingspace (space_id,space_type,spot_id) values(7,'Large',20)
insert into parkingspace (space_id,space_type,spot_id)values(8,'Medium',40)
insert into parkingspace (space_id,space_type,spot_id)values(9,'Medium',30)
insert into parkingspace (space_id,space_type,spot_id)values(10,'Medium',30)
insert into parkingspace (space_id,space_type,spot_id)values(11,'Large',30)
insert into parkingspace (space_id,space_type,spot_id)values(12,'Medium',40)

select * from parkingspace
```

Results Explain Describe Saved SQL History

SPACE_ID	SPACE_TYPE	SPOT_ID
1	Large	10
2	Small	10
3	Large	10
4	Small	40
5	Medium	20
6	Small	20
7	Large	20
8	Medium	40
9	Medium	30
10	Medium	30
11	Large	30
12	Medium	40

ORACLE Database Express Edition

Home Logout Help

User: SCOTT

Home > SQL > SQL Commands

Autocommit Display 200 Save Run

```
create table parkingspace(
      space_id number(5) constraint spid_pk primary key,
      space_type varchar2(20)
                  check( space_type in ('Small','Medium','Large')) not null,
      spot_id number(5)
                  constraint spotid_fk references parkingspot(spot_id) not null
)
desc parkingspace
drop table parkingspace
```

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **PARKINGSPACE**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
PARKINGSPACE	SPACE_ID	Number	-	5	0	1	-	-	-
	SPACE_TYPE	Varchar2	20	-	-	-	-	-	-
	SPOT_ID	Number	-	5	0	-	-	-	-

1 - 3

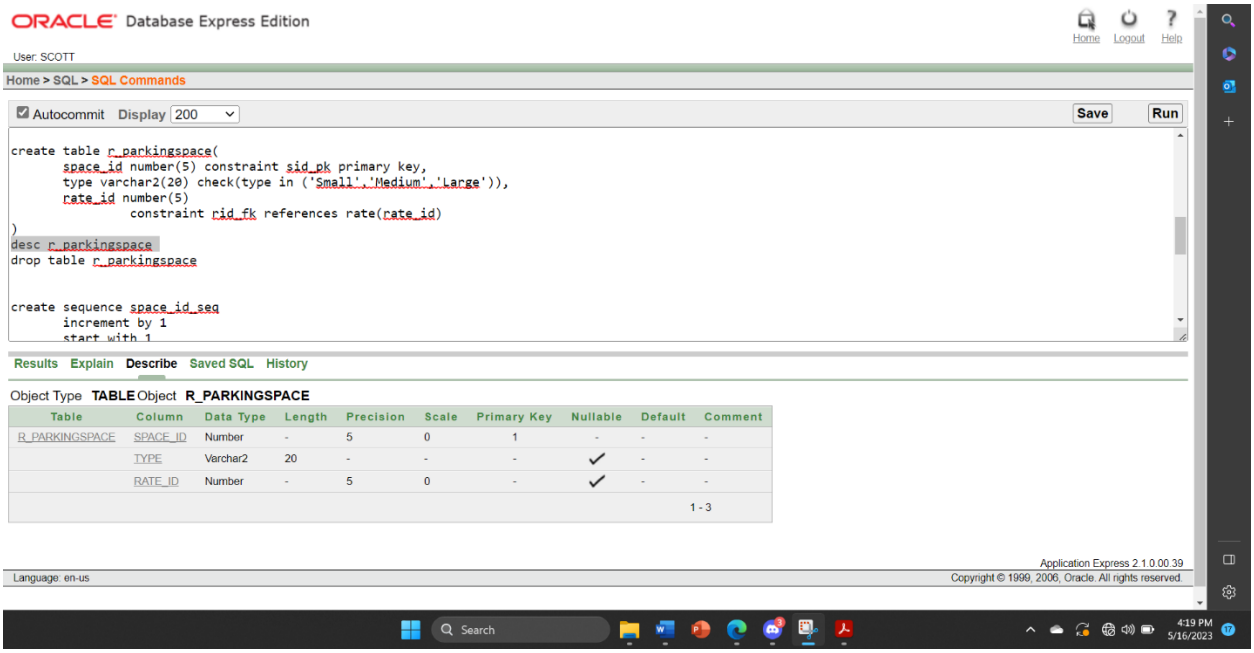
Application Express 2.1.0.00.39

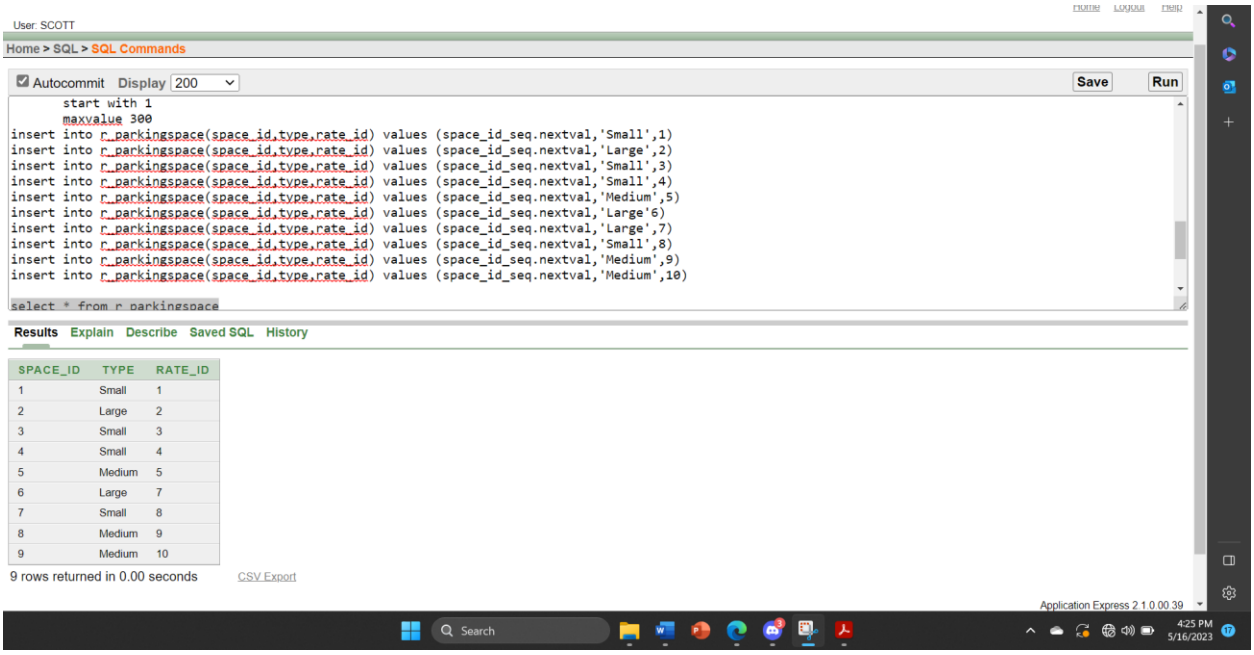
Language: en-us

R_PARKINGSPACE TABLE:

```
create table r_parkingspace
( space_id number(5) constraint sid_pk primary key,
type varchar2(20) check(type in ('Small','Medium','Large')),
rate_id number(5) constraint rid_fk references rate(rate_id))
desc r_parkingspace
drop table r_parkingspace
create sequence space_id_seq
increment by 1
start with 1
maxvalue 300
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Small',1)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Large',2)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Small',3)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Small',4)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Medium',5)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Large'6)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Large',7)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Small',8)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Medium',9)
insert into r_parkingspace(space_id,type,rate_id) values
(space_id_seq.nextval,'Medium',10)
```

select * from r_parkingspace

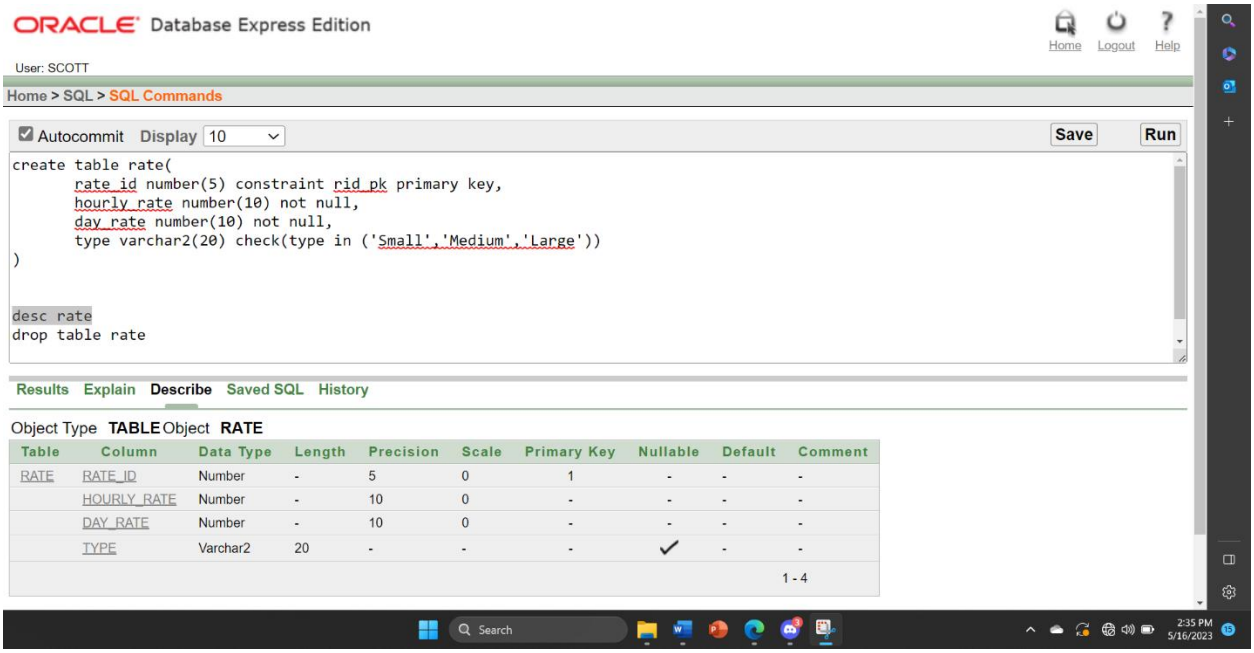


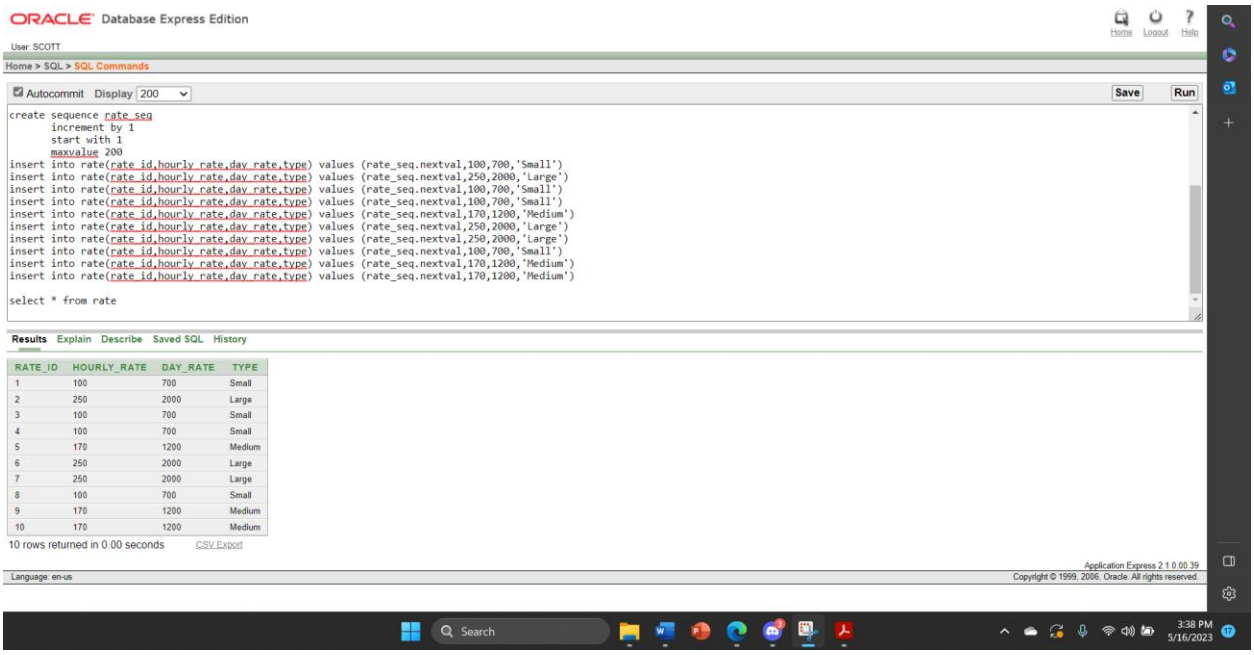


RATE TABLE:

```
create table rate

( rate_id number(5) constraint rid_pk primary key,
hourly_rate number(10) not null,

day_rate number(10) not null,

type varchar2(20) check(type in ('Small','Medium','Large')) )

desc rate

drop table rate

create sequence rate_seq

increment by 1

start with 1

maxvalue 200

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,100,700,'Small')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,250,2000,'Large')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,100,700,'Small')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,100,700,'Small')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,170,1200,'Medium')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,250,2000,'Large')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,250,2000,'Large')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,100,700,'Small')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,170,1200,'Medium')

insert into rate(rate_id,hourly_rate,day_rate,type) values
(rate_seq.nextval,170,1200,'Medium')
```

select * from rate





EMPLOYEE TABLE:

```
create table employee

(employee_id number(5) constraint employee_emid_pk primary key,

first_name varchar2(20) not null,

last_name varchar2(20),

hire_date date not null,

salary number(10) not null,

manager_id number(5) constraint mngid_fk references
manager(manager_id) not null)

desc employee

drop table employee

insert into
employee(employee_id,first_name,Last_name,hire_date,salary,manager_i
d) values(100,'Rahim','khan','06-FEB-20',15000,150)

insert into
employee(employee_id,first_name,Last_name,hire_date,salary,manager_i
d) values(200,'Rana ','Ialam','28-MAR-21',12000,150)

insert into
employee(employee_id,first_name,Last_name,hire_date,salary,manager_i
d) values(300,'Salman','Shihab','14-JUL-18',25000,150)

insert into
employee(employee_id,first_name,Last_name,hire_date,salary,manager_i
d) values(400,'Badhon','Bishwas','17-JAN-08',18000,350)

insert into
employee(employee_id,first_name,Last_name,hire_date,salary,manager_i
d) values(500,'Nahid','Khan','06-DEC-19',20000,350)

insert into
employee(employee_id,first_name,Last_name,hire_date,salary,manager_i
d) values(600,'Jorina','Khatun','01-MAY-15',13000,350)

insert into
employee(employee_id,first_name,Last_name,hire_date,salary,manager_i
d) values(700,'karim','Mirza','12-JUN-22',14000,450)
```

insert into employee(employee_id,first_name,Last_name,hire_date,salary,manager_id) values(800,'Hero','Alam','15-JAN-17',10000,450)

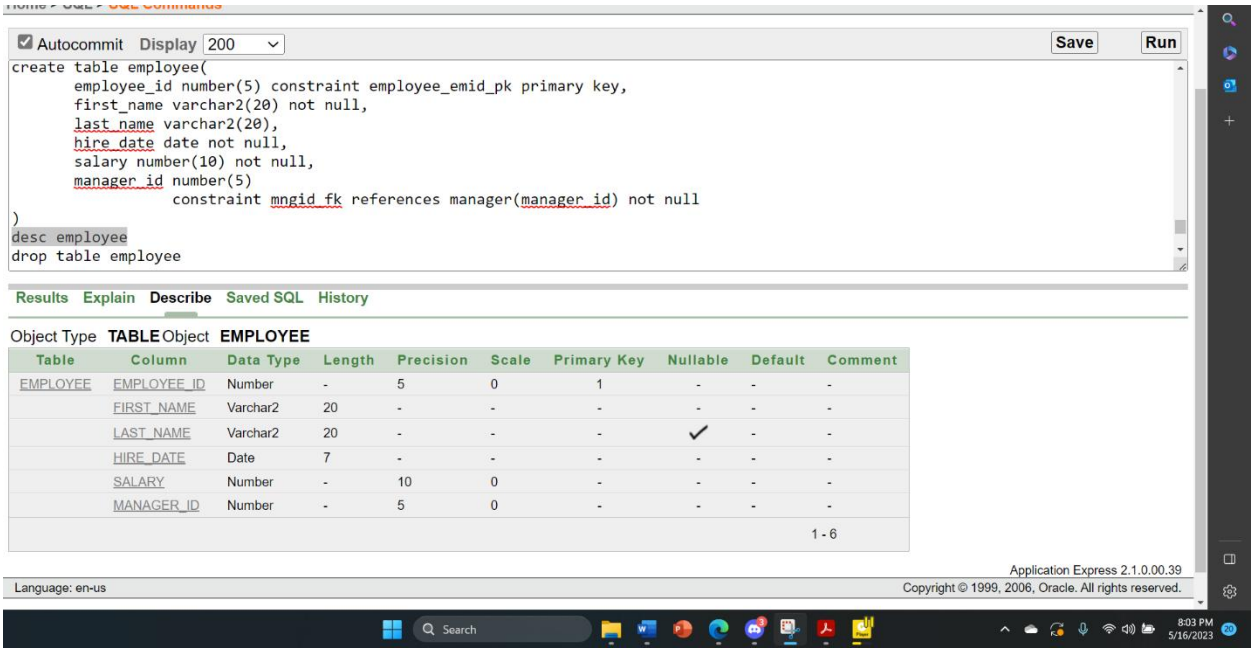
insert into employee(employee_id,first_name,Last_name,hire_date,salary,manager_id) values(900,'Chengish','Khan','17-JAN-11',17000,450)

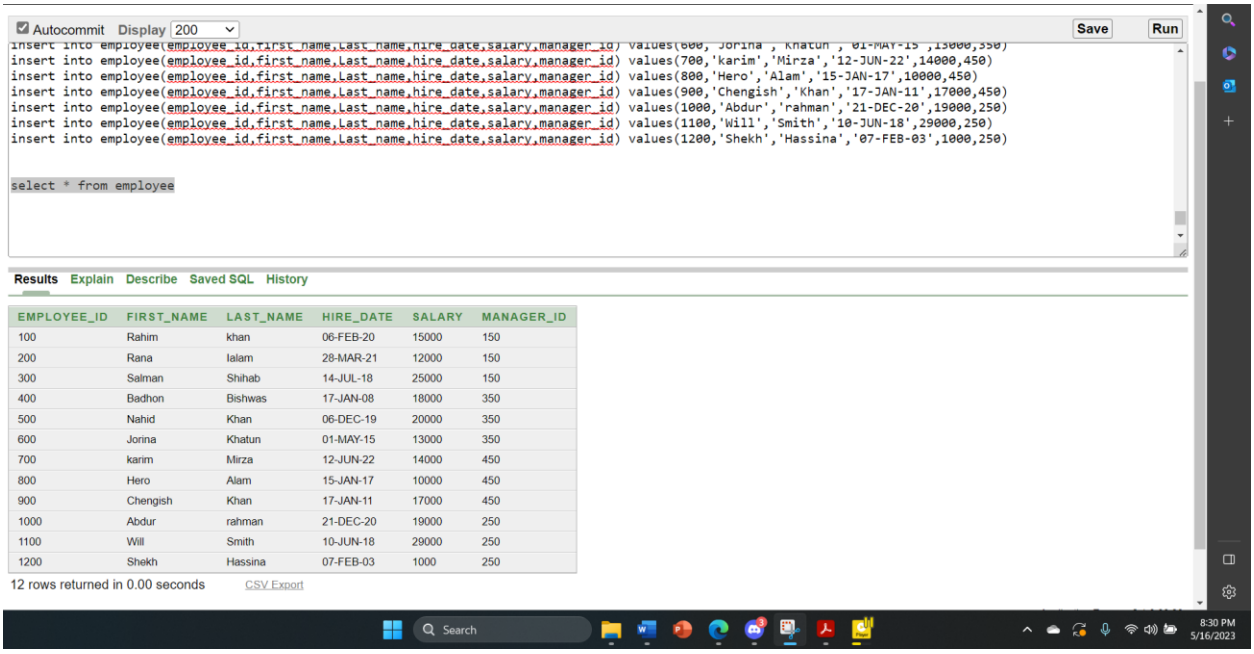
insert into employee(employee_id,first_name,Last_name,hire_date,salary,manager_id) values(1000,'Abdur','rahman','21-DEC-20',19000,250)

insert into employee(employee_id,first_name,Last_name,hire_date,salary,manager_id) values(1100,'Will','Smith','10-JUN-18',29000,250)

insert into employee(employee_id,first_name,Last_name,hire_date,salary,manager_id) values(1200,'Shekh','Hassina','07-FEB-03',1000,250)

select * from employee





E_PHONENUMBER TABLE:

create table e_phonenumber

(phone_number number(10) unique not null,

employee_id number(5) constraint emid_fk references employee(employee_id) not null)

desc e_phonenumber

drop table e_phonenumber

insert into e_phonenumber(employee_id,phone_number) values(100,01756324896)

insert into e_phonenumber(employee_id,phone_number) values(200,01824526126)

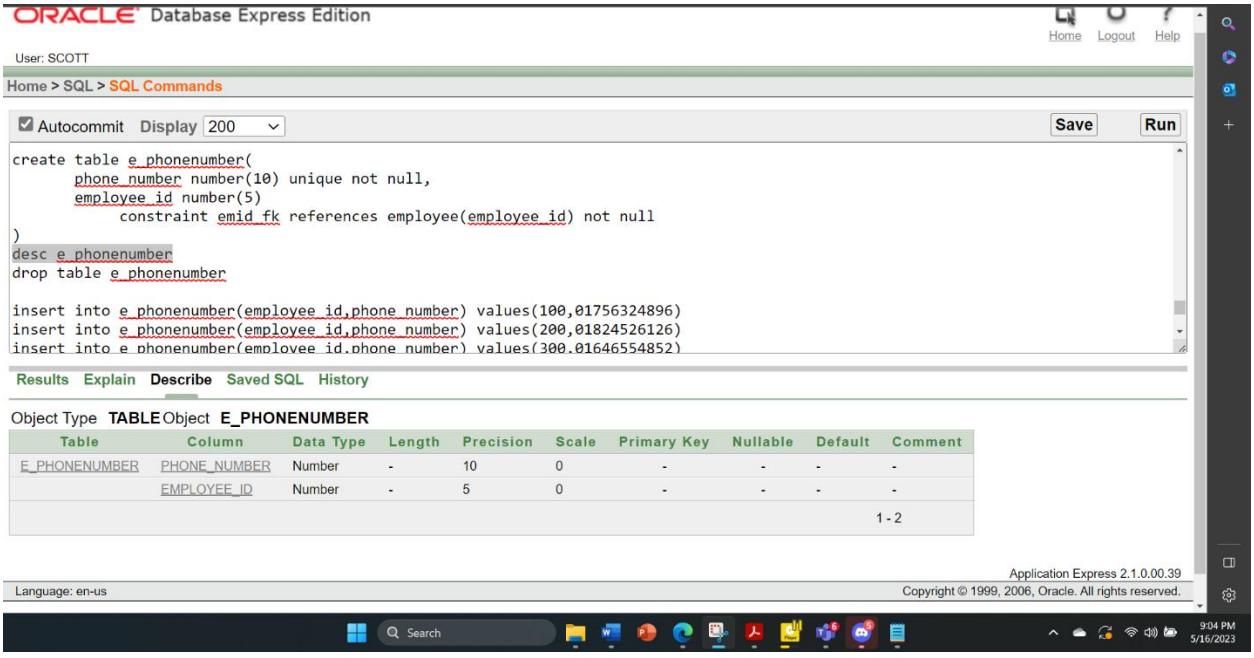
insert into e_phonenumber(employee_id,phone_number) values(300,01646554852)

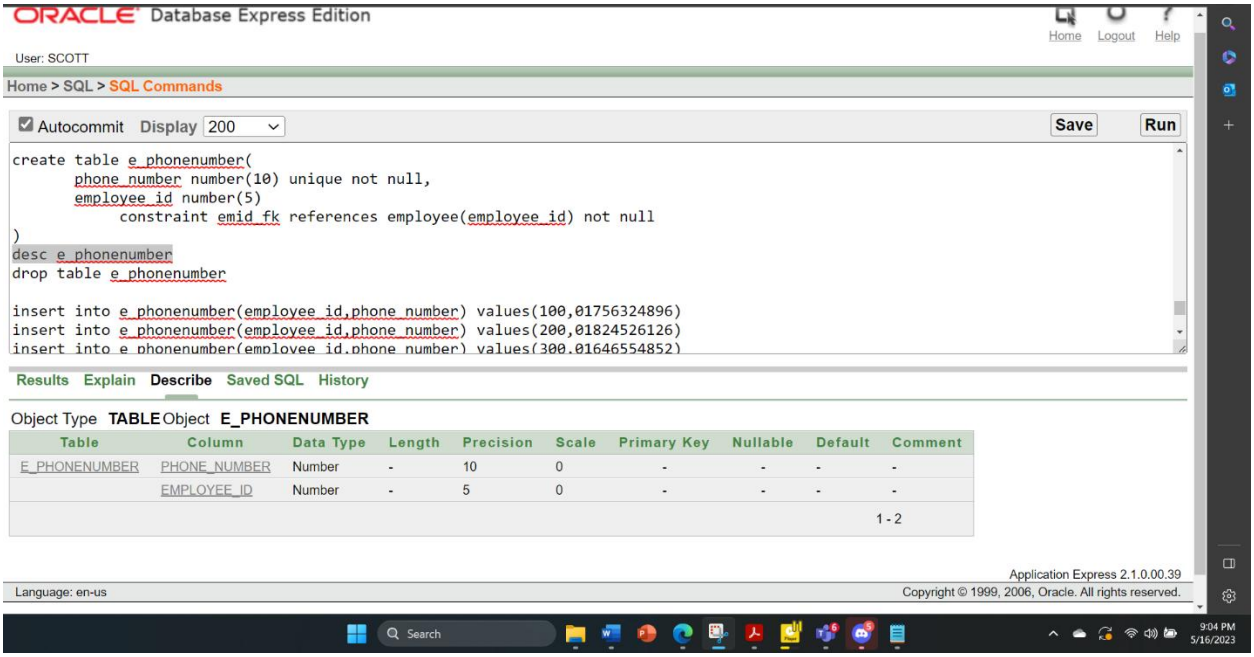
insert into e_phonenumber(employee_id,phone_number) values(400,01648423541)

insert into e_phonenumber(employee_id,phone_number) values(500,01756395463)

insert into e_phonenumber(employee_id,phone_number) values(600,01756378521)

```
insert into e_phonenumber(employee_id,phone_number)
values(700,01956885776)

insert into e_phonenumber(employee_id,phone_number)
values(800,01856654823)

insert into e_phonenumber(employee_id,phone_number)
values(900,01654854228)

insert into e_phonenumber(employee_id,phone_number)
values(1000,01751234897)

insert into e_phonenumber(employee_id,phone_number)
values(1100,01562486248)

insert into e_phonenumber(employee_id,phone_number)
values(1200,01888888111)

select * from e_phonenumber
```





FINE TABLE:

create table fine

(fine_id number(5) constraint fid_pk primary key,

issue_date date not null,

paid_date date not null,

amount number(10) not null,

manager_id number(5) constraint fmid_fk references manager(manager_id) not null)

desc fine

drop table fine

insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (01,'08-dec-22','09-dec-22',70,150)

insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (02,'11-dec-22','12-dec-22',120,150)

insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (03,'12-feb-22','18-feb-22',200,150)

insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (04,'15-mar-21','20-mar-21',300,250)

insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (05,'20-jul-20','27-jul-20',250,250)

insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (06,'20-dec-19','22-dec-19',500,350)

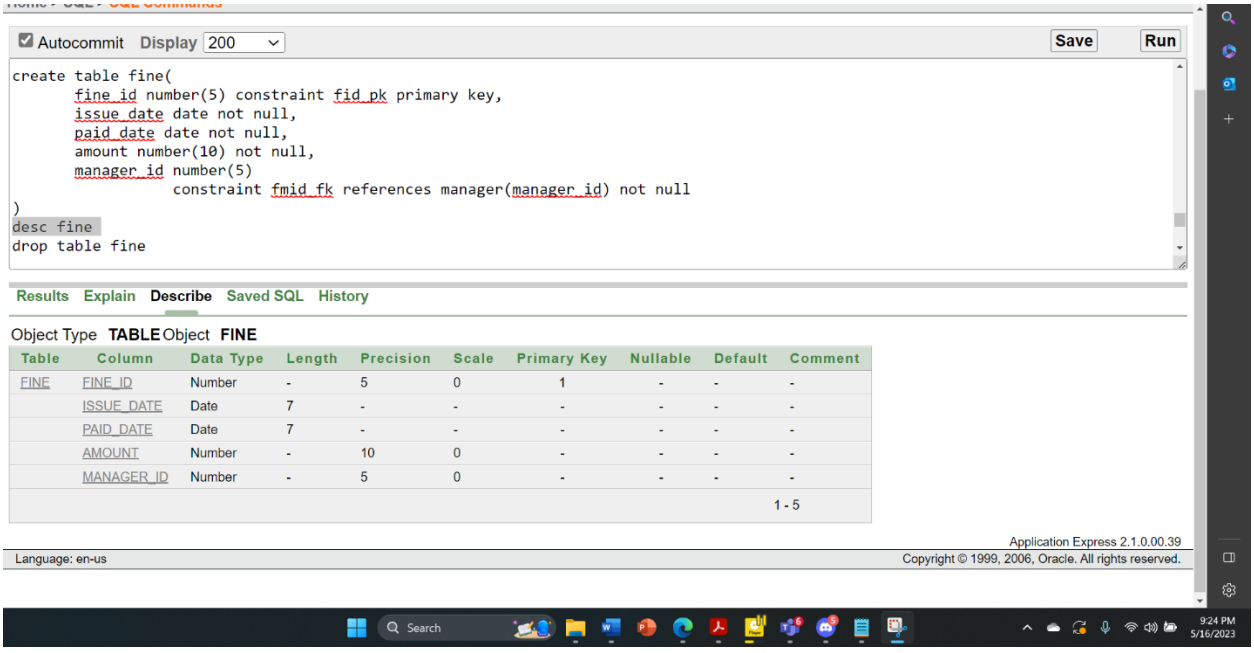
insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (07,'10-jan-23','15-jan-23',1000,450)

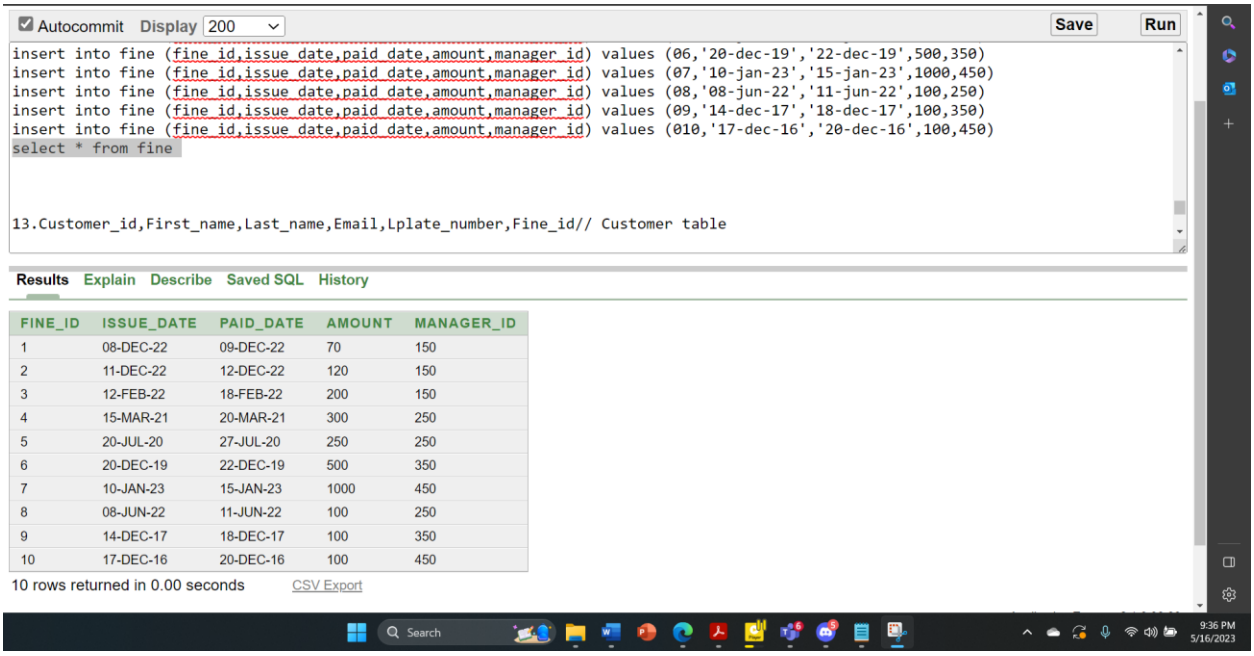
insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (08,'08-jun-22','11-jun-22',100,250)

insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (09,'14-dec-17','18-dec-17',100,350)

insert into fine (fine_id,issue_date,paid_date,amount,manager_id) values (010,'17-dec-16','20-dec-16',100,450)

select * from fine



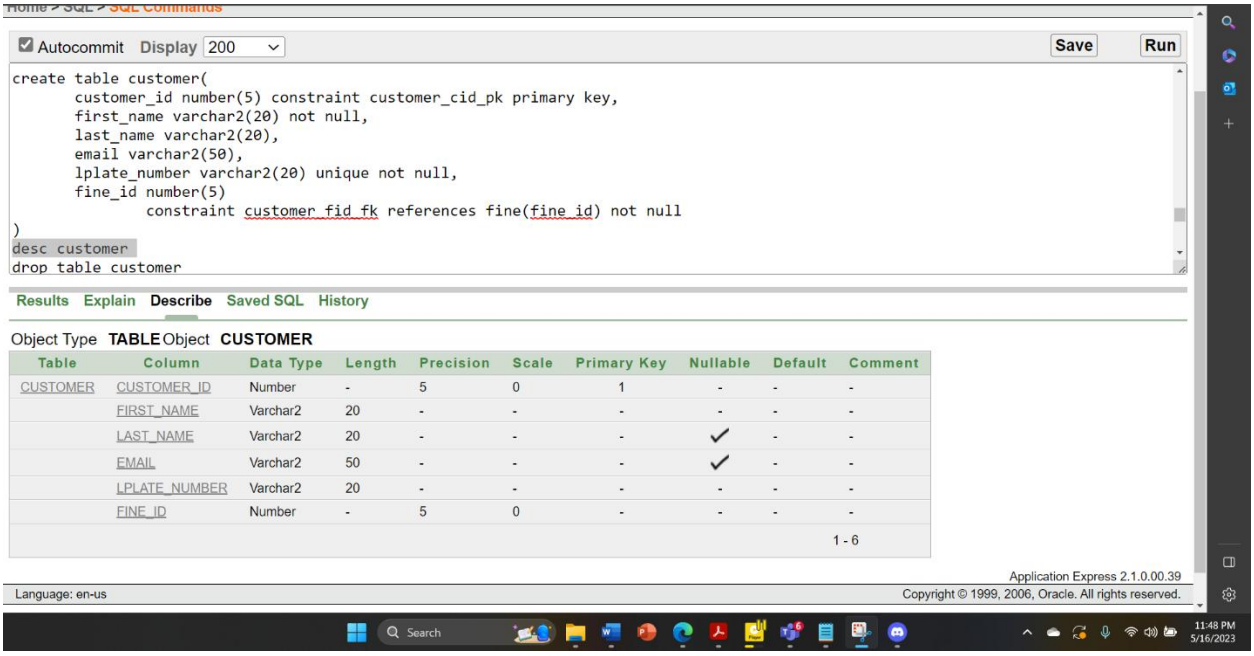


CUSTOMER TABLE:

```
create table customer(
        customer_id number(5) constraint customer_cid_pk primary key,
        first_name varchar2(20) not null,
        last_name varchar2(20),
        email varchar2(50),
        lplate_number varchar2(20) unique not null,
        fine_id number(5)
                constraint customer_fid_fk references fine(fine_id) not null
)
desc customer
drop table customer


insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id)v
alues(111,'Winston','Taylor','instonaylor@gmail.com','KA 45-2422',03)
```

```
insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(222,'Jean','Fleaur','jeanfleaur@gmail.com','KA 34-3243',08)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(333,'Nandita','Sarchand','nanditasarchand@gmail.com','GA 22-
1232',01)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(444,'Alexis','Bull','alexisbull@gmail.com','KA 33-4332',02)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(555,'Julia','Dellinger','juliadellinger@gmail.com','KA 65-4534',03)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(666,'Anthony','Cabrio','anthonycabrio@gmail.com','KHA 25-
4311',04)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(777,'Kelly','Chung','kellychung@gmail.com','CA 25-2432',05)

insert into customer
(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(888,'Jennifer','Dilly','jenniferdilly@gmail.com','KA 53-2423',09)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(999,'Timothy','Gates','timothygates@gmail.com','KA 43-2422',08)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(1010,'Randall','Perkins','randallperkins@gmail.com','KA 62-
1434',07)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(1111,'Sarah','Bell','sarahbell@gmail.com','KHA 51-5234',06)

insert into
customer(customer_id,first_name,last_name,email,lplate_number,fine_id )
values(1212,'Britney','Everett','britneyeverett@gmail.com','KHA 53-
6423',010)
```

select * from customer



```
create table customer(
       customer_id number(5) constraint customer_cid_pk primary key,
       first_name varchar2(20) not null,
       last_name varchar2(20),
       email varchar2(50),
       lplate_number varchar2(20) unique not null,
       fine_id number(5)
              constraint customer_fid_fk references fine(fine_id) not null
)
desc customer
drop table customer
```

Results Explain Describe Saved SQL History

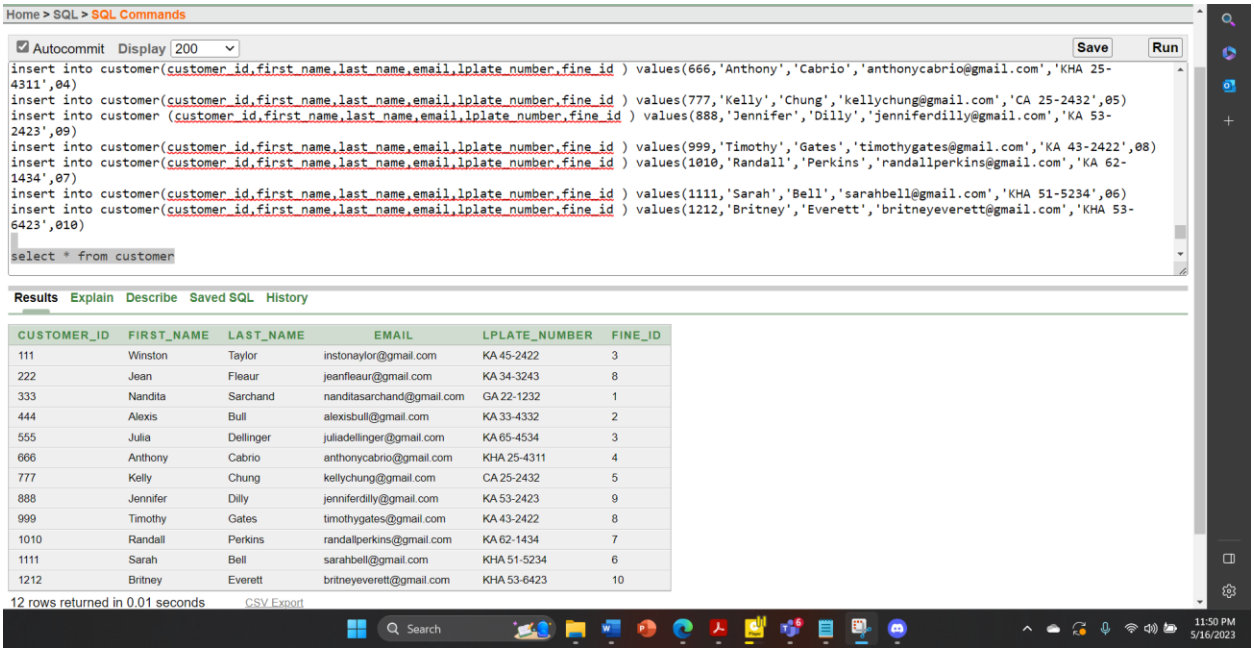
Object Type **TABLE** Object **CUSTOMER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMER	CUSTOMER_ID	Number	-	5	0	1	-	-	-
	FIRST_NAME	Varchar2	20	-	-	-	-	-	-
	LAST_NAME	Varchar2	20	-	-	-	✓	-	-
	EMAIL	Varchar2	50	-	-	-	✓	-	-
	LPLATE_NUMBER	Varchar2	20	-	-	-	-	-	-
	FINE_ID	Number	-	5	0	-	-	-	-

1 - 6

Application Express 2.1.0.00.39

Language: en-us



```
insert into customer(customer_id,first_name,last_name,email,lplate_number,fine_id ) values(666,'Anthony','Cabrio','anthonycabrio@gmail.com','KHA 25-
4311',04)
insert into customer(customer_id,first_name,last_name,email,lplate_number,fine_id ) values(777,'Kelly','Chung','kellychung@gmail.com','CA 25-2432',05)
insert into customer (customer_id,first_name,last_name,email,lplate_number,fine_id ) values(888,'Jennifer','Dilly','jenniferdilly@gmail.com','KA 53-
2423',09)
insert into customer(customer_id,first_name,last_name,email,lplate_number,fine_id ) values(999,'Timothy','Gates','timothygates@gmail.com','KA 43-2422',08)
insert into customer(customer_id,first_name,last_name,email,lplate_number,fine_id ) values(1010,'Randall','Perkins','randallperkins@gmail.com','KA 62-
1434',07)
insert into customer(customer_id,first_name,last_name,email,lplate_number,fine_id ) values(1111,'Sarah','Bell','sarahbell@gmail.com','KHA 51-5234',06)
insert into customer(customer_id,first_name,last_name,email,lplate_number,fine_id ) values(1212,'Britney','Everett','britneyeverett@gmail.com','KHA 53-
6423',010)

select * from customer
```

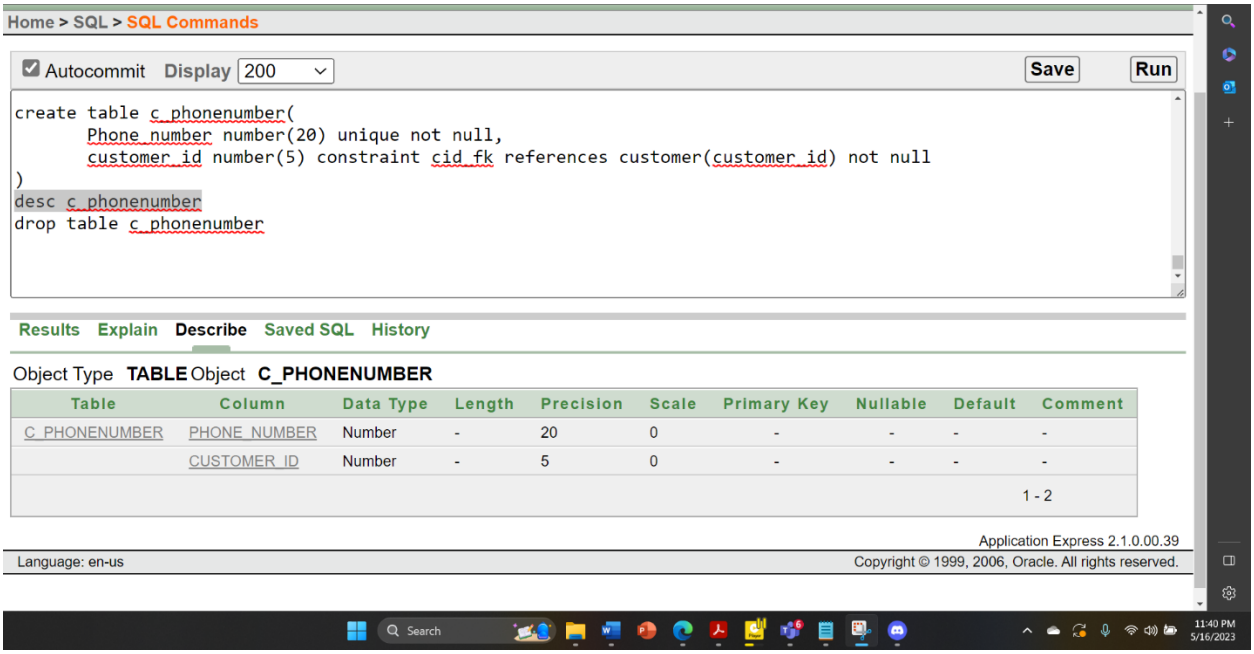
Results Explain Describe Saved SQL History

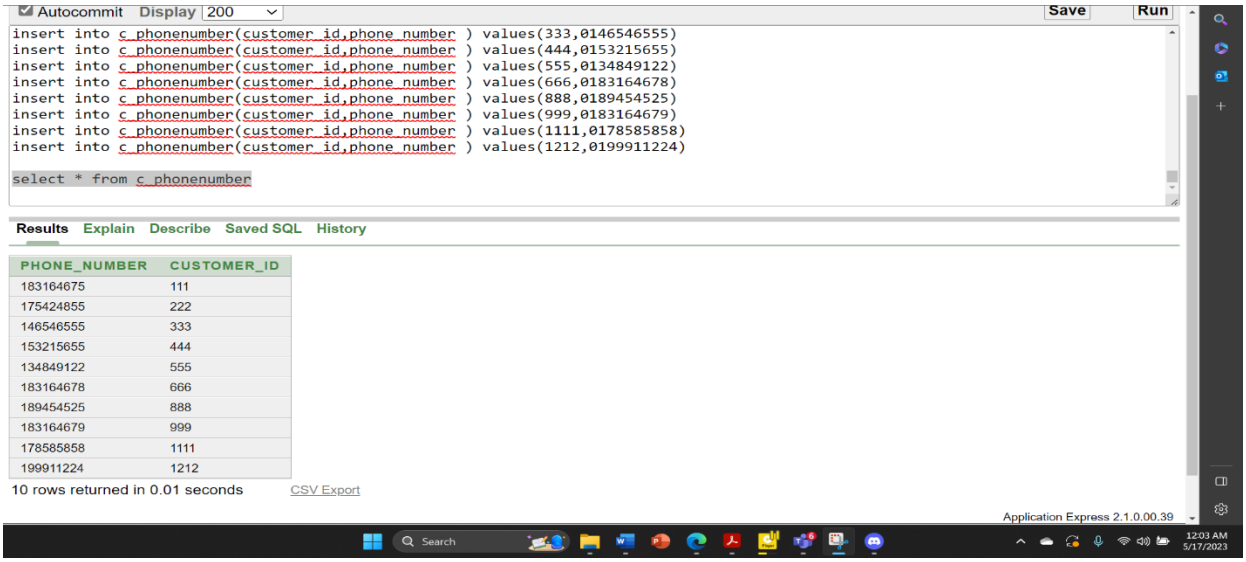
CUSTOMER_ID	FIRST_NAME	LAST_NAME	EMAIL	LPLATE_NUMBER	FINE_ID
111	Winston	Taylor	instonaylor@gmail.com	KA 45-2422	3
222	Jean	Fleaur	jeanfleaur@gmail.com	KA 34-3243	8
333	Nandita	Sarchand	nanditasarchand@gmail.com	GA 22-1232	1
444	Alexis	Bull	alexisbull@gmail.com	KA 33-4332	2
555	Julia	Dellinger	juliadellinger@gmail.com	KA 65-4534	3
666	Anthony	Cabrio	anthonycabrio@gmail.com	KHA 25-4311	4
777	Kelly	Chung	kellychung@gmail.com	CA 25-2432	5
888	Jennifer	Dilly	jenniferdilly@gmail.com	KA 53-2423	9
999	Timothy	Gates	timothygates@gmail.com	KA 43-2422	8
1010	Randall	Perkins	randallperkins@gmail.com	KA 62-1434	7
1111	Sarah	Bell	sarahbell@gmail.com	KHA 51-5234	6
1212	Britney	Everett	britneyeverett@gmail.com	KHA 53-6423	10

12 rows returned in 0.01 seconds CSV Export

C_PHONENUMBER TABLE:

```
create table c_phonenumber
( Phone_number number(20) unique not null,
customer_id number(5) constraint cid_fk references
customer(customer_id) not null)

desc c_phonenumber

drop table c_phonenumber

insert into c_phonenumber(customer_id,phone_number )
values(111,0183164675)

insert into c_phonenumber(customer_id,phone_number )
values(222,0175424855)

insert into c_phonenumber(customer_id,phone_number )
values(333,0146546555)

insert into c_phonenumber(customer_id,phone_number )
values(444,0153215655)

insert into c_phonenumber(customer_id,phone_number )
values(555,0134849122)

insert into c_phonenumber(customer_id,phone_number )
values(666,0183164678)
insert into c_phonenumber(customer_id,phone_number )
values(888,0189454525)

insert into c_phonenumber(customer_id,phone_number )
values(999,0183164679)

insert into c_phonenumber(customer_id,phone_number )
values(1111,0178585858)
insert into c_phonenumber(customer_id,phone_number )
values(1212,0199911224)

select * from c_phonenumber
```


Home > SQL > SQL Commands
Autocommit Display 200
Save
Run
create table c_phonenumber(
Phone_number number(20) unique not null,
customer_id number(5) constraint cid_fk references customer(customer_id) not null
)
desc c_phonenumber
drop table c_phonenumber
Results Explain Describe Saved SQL History
Object Type TABLE Object C_PHONENUMBER
Table Column Data Type Length Precision Scale Primary Key Nullable Default Comment
C_PHONENUMBER PHONE_NUMBER Number - 20 0 - - - -
CUSTOMER_ID Number - 5 0 - - - -
1 - 2
Application Express 2.1.0.00.39
Language: en-us
Copyright © 1999, 2006, Oracle. All rights reserved.
Search
11:40 PM
5/16/2023


Autocommit Display 200
Save
Run
insert into c_phonenumber(customer_id,phone_number) values(333,0146546555)
insert into c_phonenumber(customer_id,phone_number) values(444,0153215655)
insert into c_phonenumber(customer_id,phone_number) values(555,0134849122)
insert into c_phonenumber(customer_id,phone_number) values(666,0183164678)
insert into c_phonenumber(customer_id,phone_number) values(888,0189454525)
insert into c_phonenumber(customer_id,phone_number) values(999,0183164679)
insert into c_phonenumber(customer_id,phone_number) values(1111,0178585858)
insert into c_phonenumber(customer_id,phone_number) values(1212,0199911224)
select * from c_phonenumber
Results Explain Describe Saved SQL History
PHONE_NUMBER CUSTOMER_ID
183164675 111
175424855 222
146546555 333
153215655 444
134849122 555
183164678 666
189454525 888
183164679 999
178585858 1111
199911224 1212
10 rows returned in 0.01 seconds
CSV Export
Application Express 2.1.0.00.39
Search
12:03 AM
5/17/2023

C_ADDRESS TABLE:

```
create table c_address
( city varchar2(20) not null,
country varchar2(20) not null,
customer_id number(5) constraint ccid_fk references
customer(customer_id) not null)

desc c_address

drop table c_address

insert into c_address(customer_id,city,country ) values(111,'Dellas','USA')

insert into c_address(customer_id,city,country )
values(222,'Amsterdam','Netherlands')

insert into c_address(customer_id,city,country ) values(333,'Texas','USA')

insert into c_address(customer_id,city,country )
values(444,'Bharmingham','Uk')

insert into c_address(customer_id,city,country ) values(555,'London','Uk')

insert into c_address(customer_id,city,country )
values(666,'California','USA')
insert into c_address(customer_id,city,country ) values(777,'San
Diego','USA')

insert into c_address(customer_id,city,country ) values(888,'San
Francisco','USA')

insert into c_address(customer_id,city,country ) values(999,'Miami','USA')

insert into c_address(customer_id,city,country )
values(1010,'Florida','USA')

insert into c_address(customer_id,city,country ) values(1111,'New
York','USA')

insert into c_address(customer_id,city,country ) values(1212,'Orange
County','USA')

select * from c_address
```

User: SCOTT

Home > SQL > SQL Commands

Autocommit Display 200 Save Run

```
create table c_address(
       city varchar2(20) not null,
       country varchar2(20) not null,
       customer_id number(5) constraint ccid_fk references customer(customer_id) not null
)
desc c_address
drop table c_address
```

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **C_ADDRESS**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
C_ADDRESS	CITY	Varchar2	20	-	-	-	-	-	-
	COUNTRY	Varchar2	20	-	-	-	-	-	-
	CUSTOMER_ID	Number	-	5	0	-	-	-	-

1 - 3

Application Express 2.1.0.00.39


```
insert into c_address(customer_id,city,country ) values(444,'Bharmingham','Uk')
insert into c_address(customer_id,city,country ) values(555,'London','USA')
insert into c_address(customer_id,city,country ) values(666,'California','USA')
insert into c_address(customer_id,city,country ) values(777,'San Diego','USA')
insert into c_address(customer_id,city,country ) values(888,'San Francisco','USA')
insert into c_address(customer_id,city,country ) values(999,'Miami','USA')
insert into c_address(customer_id,city,country ) values(1010,'Florida','USA')
insert into c_address(customer_id,city,country ) values(1111,'New York','USA')
insert into c_address(customer_id,city,country ) values(1212,'Orange County','USA')

select * from c_address
```

Results Explain Describe Saved SQL History

CITY	COUNTRY	CUSTOMER_ID
Dellas	USA	111
Amsterdam	Netherlands	222
Texas	USA	333
Bharmingham	Uk	444
London	USA	555
California	USA	666
San Diego	USA	777
San Francisco	USA	888
Miami	USA	999
Florida	USA	1010
New York	USA	1111
Orange County	USA	1212

12 rows returned in 0.00 seconds CSV Export

C_PARKINGSLIP TABLE:

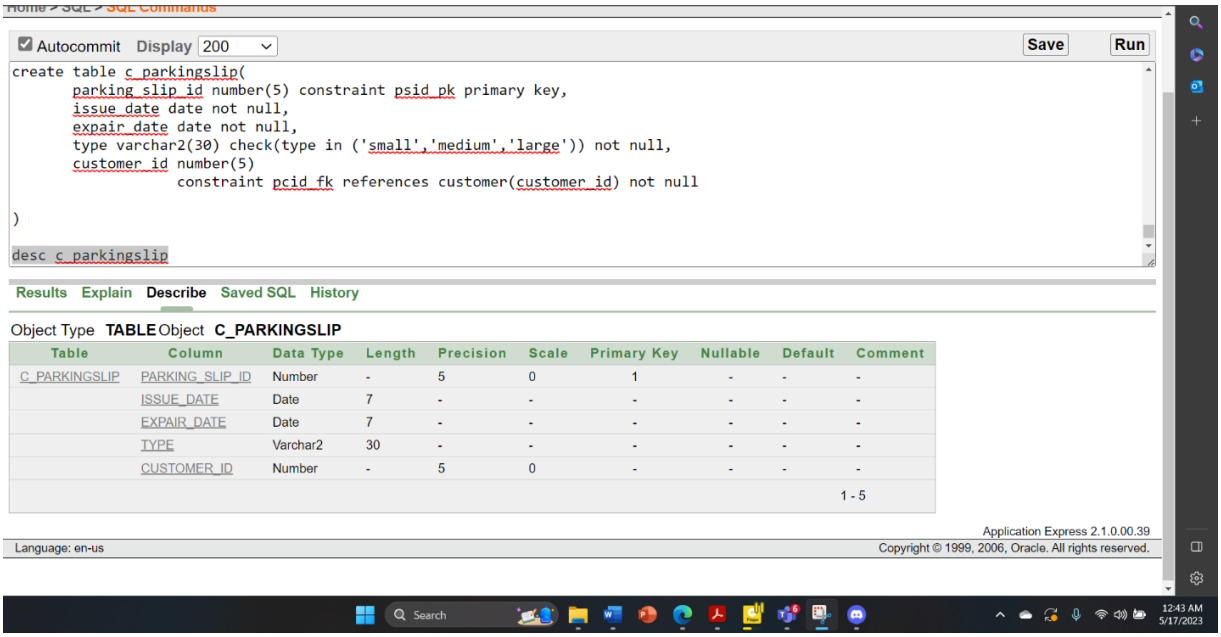
```
create table c_parkingslip
(parking_slip_id number(5) constraint psid_pk primary key,
issue_date date not null,
expair_date date not null,
type varchar2(30) check(type in ('small','medium','large')) not null,
customer_id number(5)
constraint pcid_fk references customer(customer_id) not null)
desc c_parkingslip
drop table c_parkingslip
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(1,'09-dec-22','10-dec-22','small',111)
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(2,'10-dec-22','11-dec-22','medium',222)
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(3,'11-dec-22','12-dec-22','small',333)
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(4,'12-dec-22','13-dec-22','small',444)
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(5,'12-dec-22','14-dec-22','large',555)
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(6,'13-dec-22','16-dec-22','small',666)
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(7,'16-dec-22','17-dec-22','large',777)
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(8,'18-dec-22','20-dec-22','large',888)
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type,
customer_id) values(9,'19-dec-22','21-dec-22','small',999)
```

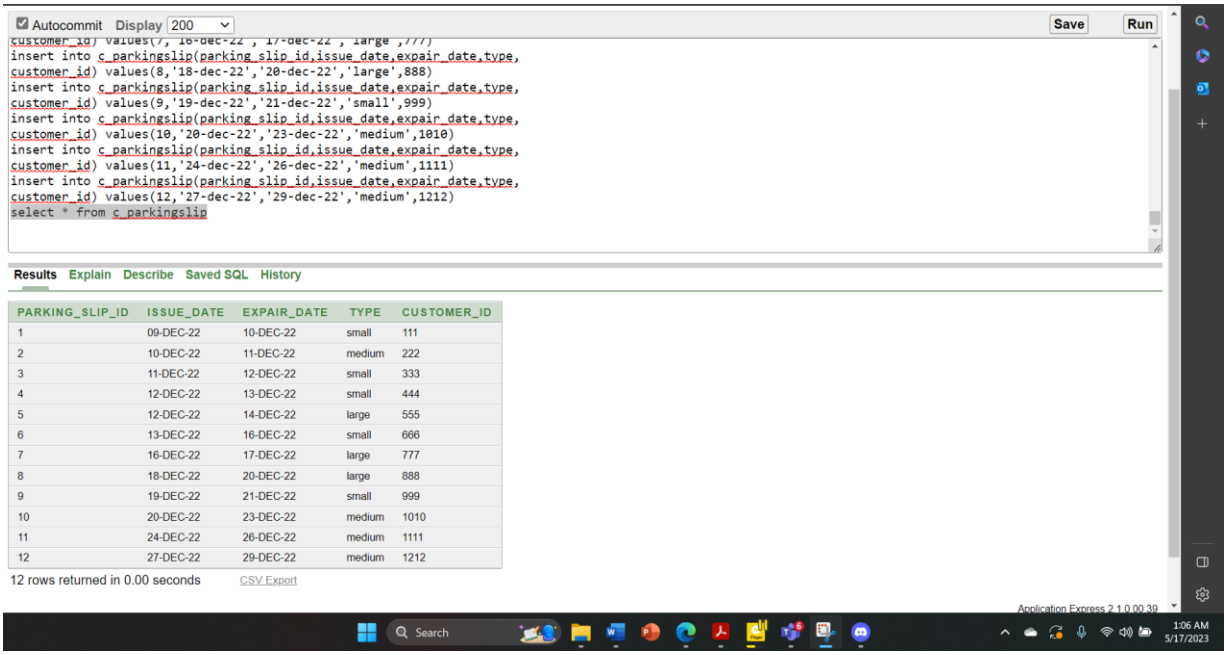
insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type, customer_id) values(10,'20-dec-22','23-dec-22','medium',1010)

insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type, customer_id) values(11,'24-dec-22','26-dec-22','medium',1111)

insert into c_parkingslip(parking_slip_id,issue_date,expair_date,type, customer_id) values(12,'27-dec-22','29-dec-22','medium',1212)

select * from c_parkingslip

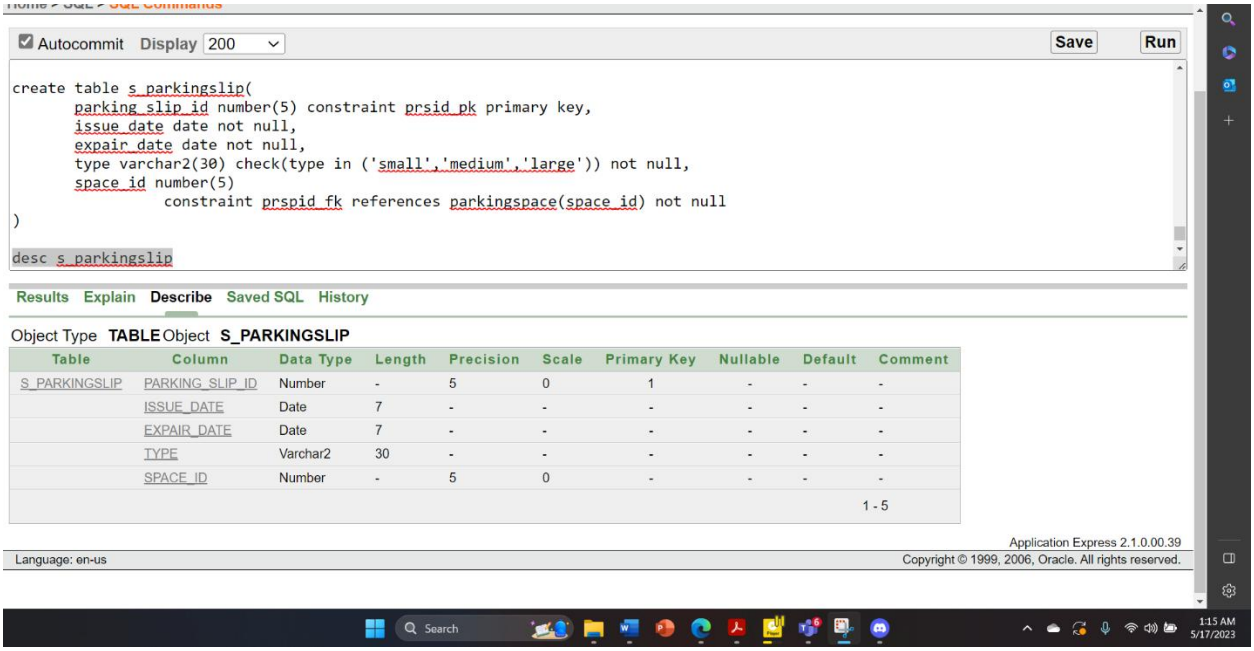


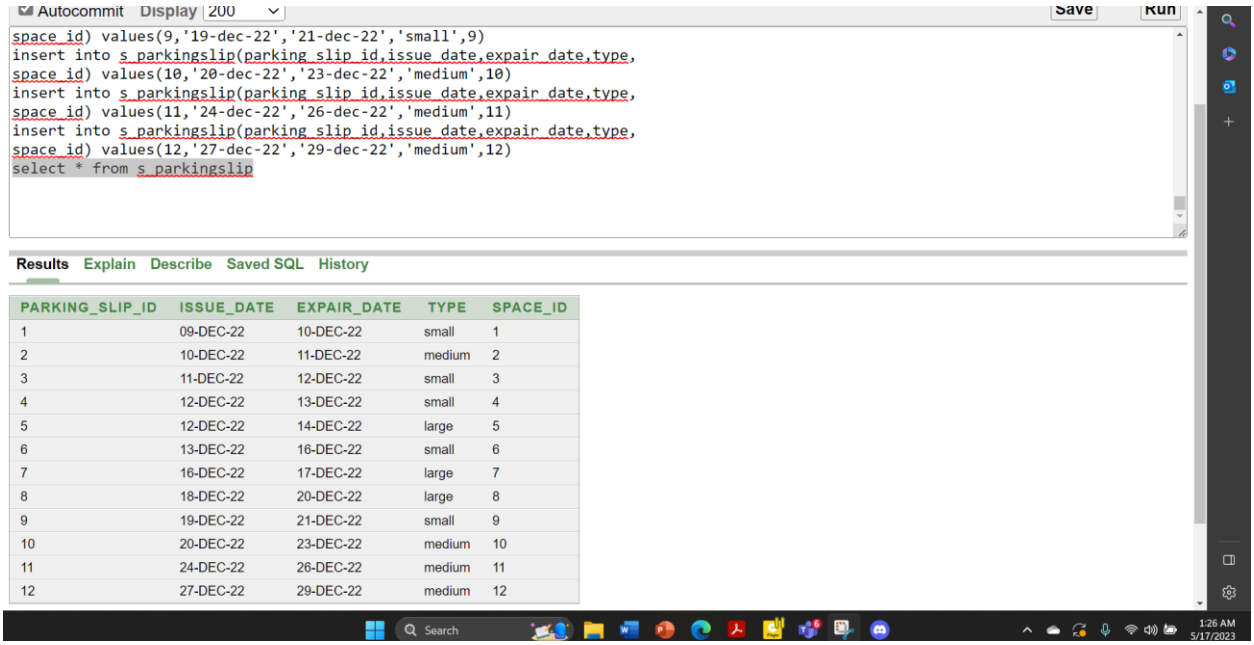


S_PARKINGSLIP TABLE:

```
create table s_parkingslip(
    parking_slip_id number(5) constraint prsid_pk primary key,
    issue_date date not null,
    expair_date date not null,
    type varchar2(30) check(type in ('small','medium','large')) not null,
    space_id number(5)
    constraint prspid_fk references parkingspace(space_id) not null)

desc s_parkingslip
drop table s_parkingslip

insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(1,'09-dec-22','10-dec-22','small',1)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(2,'10-dec-22','11-dec-22','medium',2)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(3,'11-dec-22','12-dec-22','small',3)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(4,'12-dec-22','13-dec-22','small',4)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(5,'12-dec-22','14-dec-22','large',5)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(6,'13-dec-22','16-dec-22','small',6)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(7,'16-dec-22','17-dec-22','large',7)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(8,'18-dec-22','20-dec-22','large',8)
```

```
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(9,'19-dec-22','21-dec-22','small',9)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(10,'20-dec-22','23-dec-22','medium',10)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(11,'24-dec-22','26-dec-22','medium',11)
insert into s_parkingslip(parking_slip_id,issue_date,expair_date,type,
space_id) values(12,'27-dec-22','29-dec-22','medium',12)
select * from s_parkingslip
```





select * from employee
select * from manager
select * from e_phonenumber
select * from m_phonenumber
select * from customer
select * from c_phonenumber
select * from c_address
select * from fine
select * from s_parkingslip
select * from s_parkingslip
select * from parkingspace
select * from r_parkingspace
select * from parkingspot
select * from rate

JOINNING:

Equijoin:

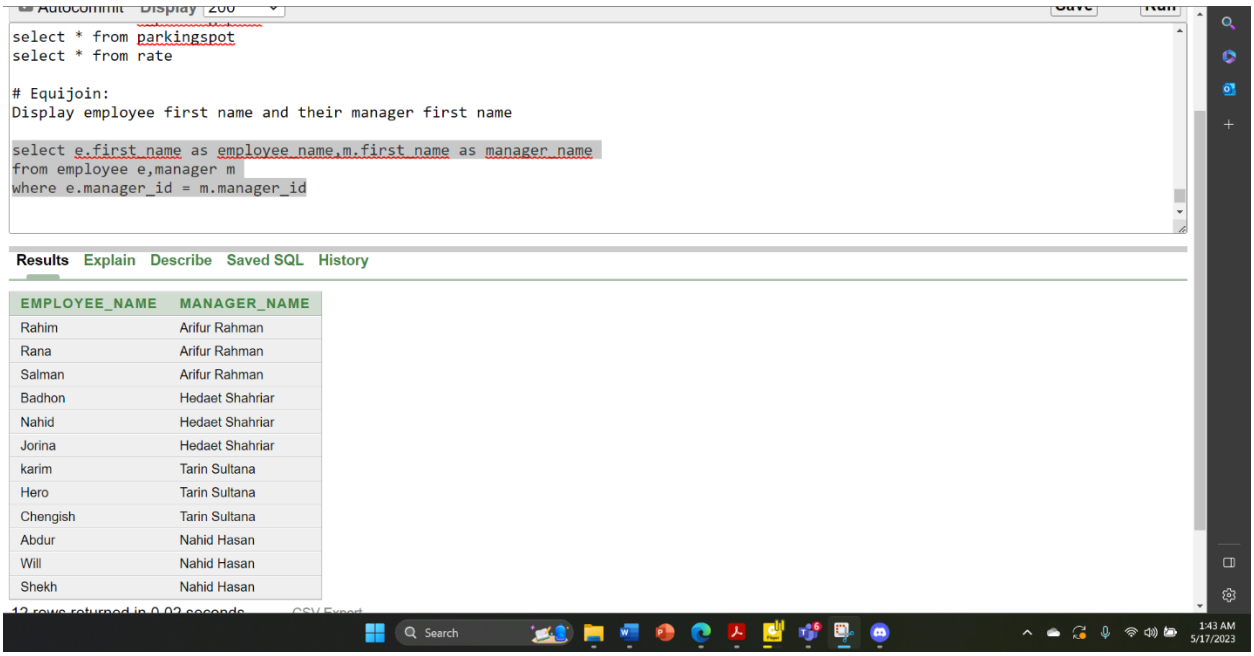
Display employee first name and their manager first name
select e.first_name as employee_name,m.first_name as manager_name
from employee e,manager m
where e.manager_id = m.manager_id

```
select * from parkingspot
select * from rate

# Equijoin:
Display employee first name and their manager first name

select e.first_name as employee_name,m.first_name as manager_name
from employee e,manager m
where e.manager_id = m.manager_id
```

Results Explain Describe Saved SQL History

EMPLOYEE_NAME	MANAGER_NAME
Rahim	Arifur Rahman
Rana	Arifur Rahman
Salman	Arifur Rahman
Badhon	Hedaet Shahriar
Nahid	Hedaet Shahriar
Jorina	Hedaet Shahriar
karim	Tarin Sultana
Hero	Tarin Sultana
Chengish	Tarin Sultana
Abdur	Nahid Hasan
Will	Nahid Hasan
Shekh	Nahid Hasan

12 rows returned in 0.02 seconds CSV Export



Outerjoin:

1.Display the first name, last name for all employee who have or have not parking any car.

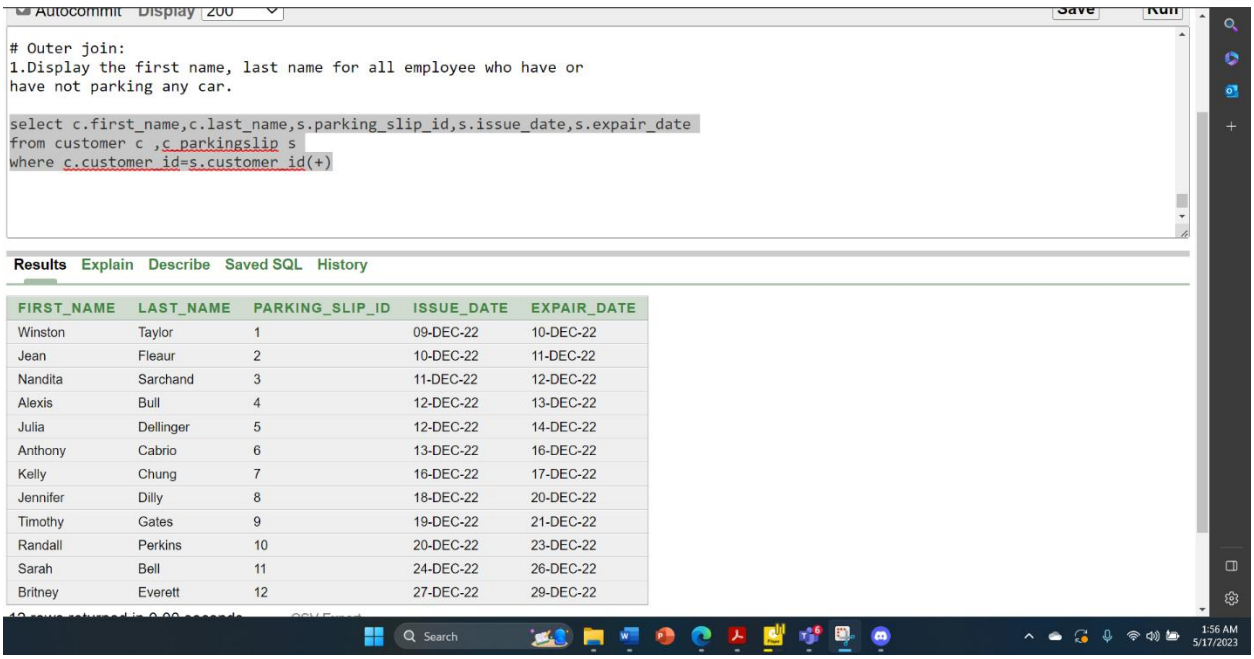
Select
c.first_name,c.last_name,s.parking_slip_id,s.issue_date,s.expair_date
from customer c ,c_parkingslip s
where c.customer_id=s.customer_id(+)

```
# Outer join:
1.Display the first name, last name for all employee who have or
have not parking any car.

select c.first_name,c.last_name,s.parking_slip_id,s.issue_date,s.expair_date
from customer c ,c_parkingslip s
where c.customer_id=s.customer_id(+)
```

Results Explain Describe Saved SQL History

FIRST_NAME	LAST_NAME	PARKING_SLIP_ID	ISSUE_DATE	EXPAIR_DATE
Winston	Taylor	1	09-DEC-22	10-DEC-22
Jean	Fleaur	2	10-DEC-22	11-DEC-22
Nandita	Sarchand	3	11-DEC-22	12-DEC-22
Alexis	Bull	4	12-DEC-22	13-DEC-22
Julia	Dellinger	5	12-DEC-22	14-DEC-22
Anthony	Cabrio	6	13-DEC-22	16-DEC-22
Kelly	Chung	7	16-DEC-22	17-DEC-22
Jennifer	Dilly	8	18-DEC-22	20-DEC-22
Timothy	Gates	9	19-DEC-22	21-DEC-22
Randall	Perkins	10	20-DEC-22	23-DEC-22
Sarah	Bell	11	24-DEC-22	26-DEC-22
Britney	Everett	12	27-DEC-22	29-DEC-22

12 rows returned in 0.00 seconds CSV Export

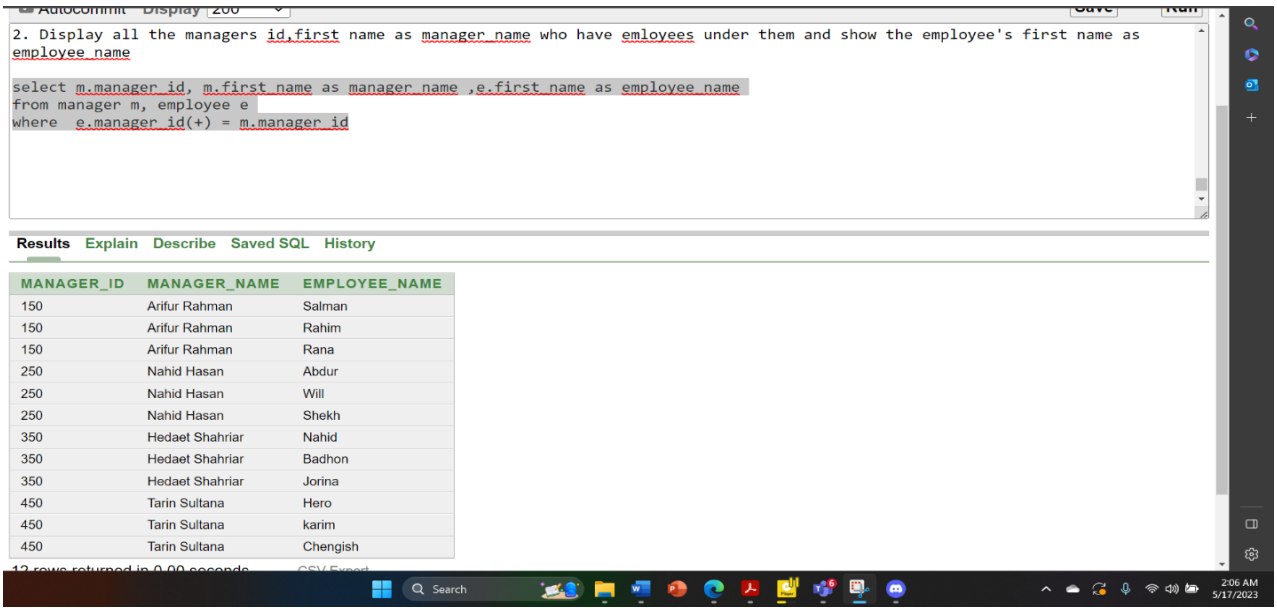


2.Display all the managers id,first name as manager_name who have emloyees under them and show the employee's first name as employee_name

select m.manager_id, m.first_name as manager_name ,e.first_name as employee_name

from manager m, employee e

where e.manager_id(+) = m.manager_id



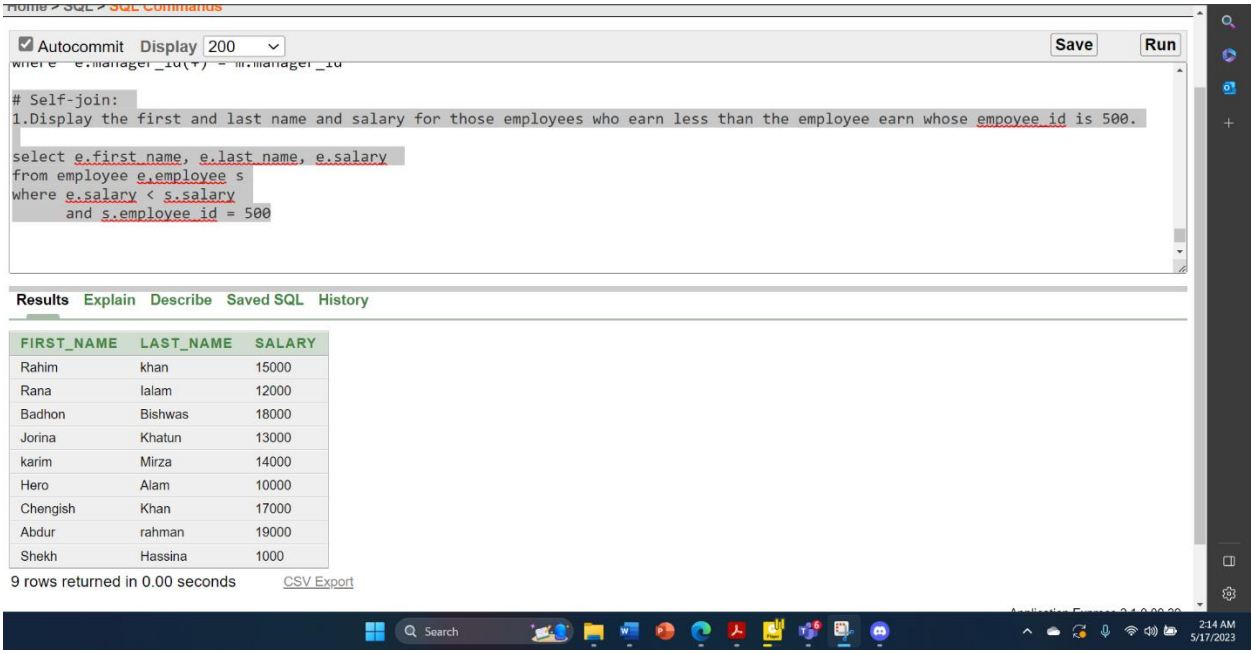
#Self-join:

Display the first and last name and salary for those employees who earn less than the employee earn whose empoyee_id is 500.

select e.first_name, e.last_name, e.salary

from employee e,employee s

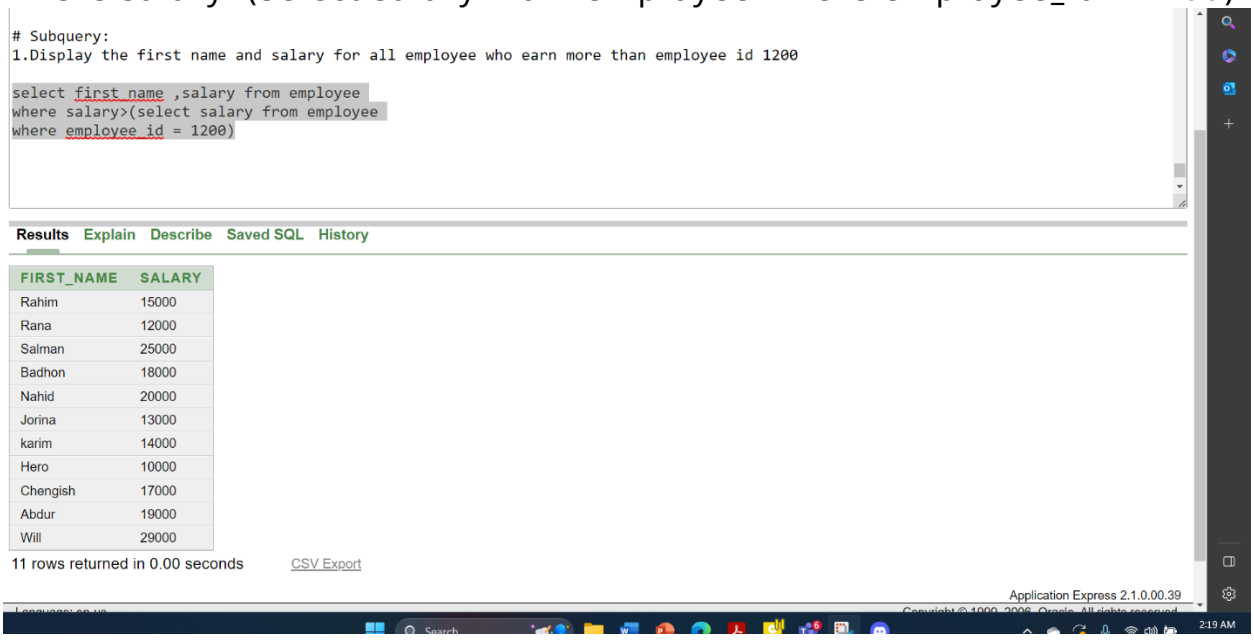
where e.salary < s.salary and s.employee_id = 500



SUBQUERY:

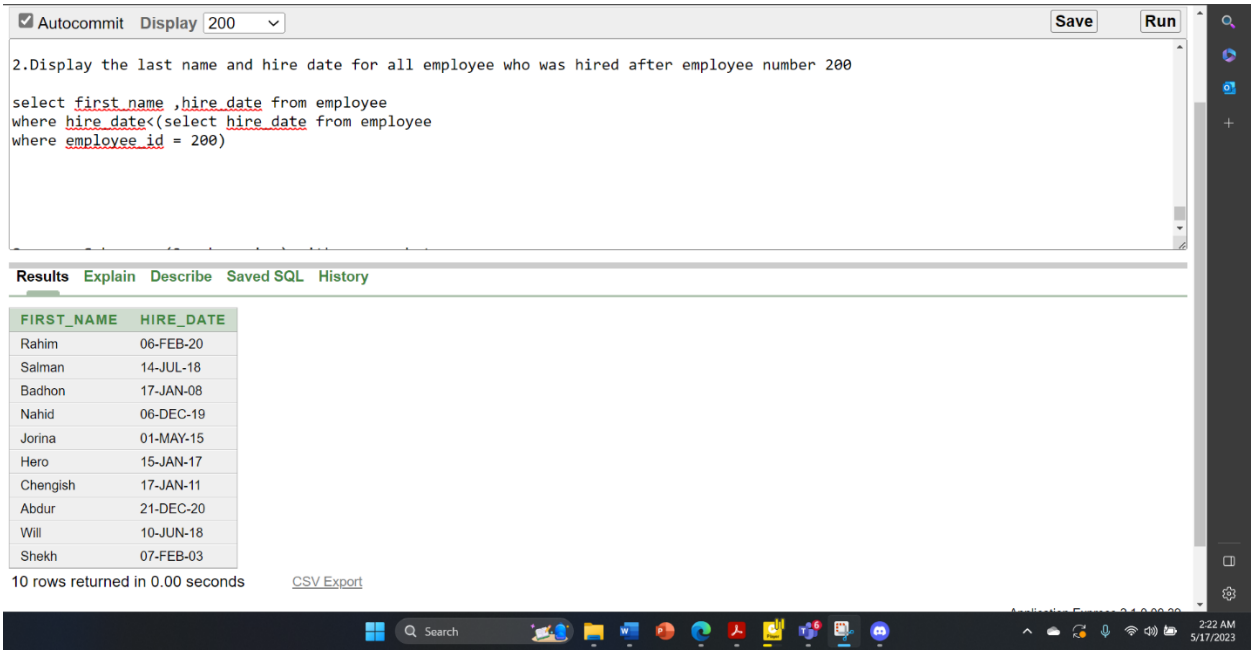
1.Display the first name and salary for all employee who earn more than employee id 1200

```
select first_name ,salary
from employee
where salary>(select salary from employee where employee_id = 1200)
```



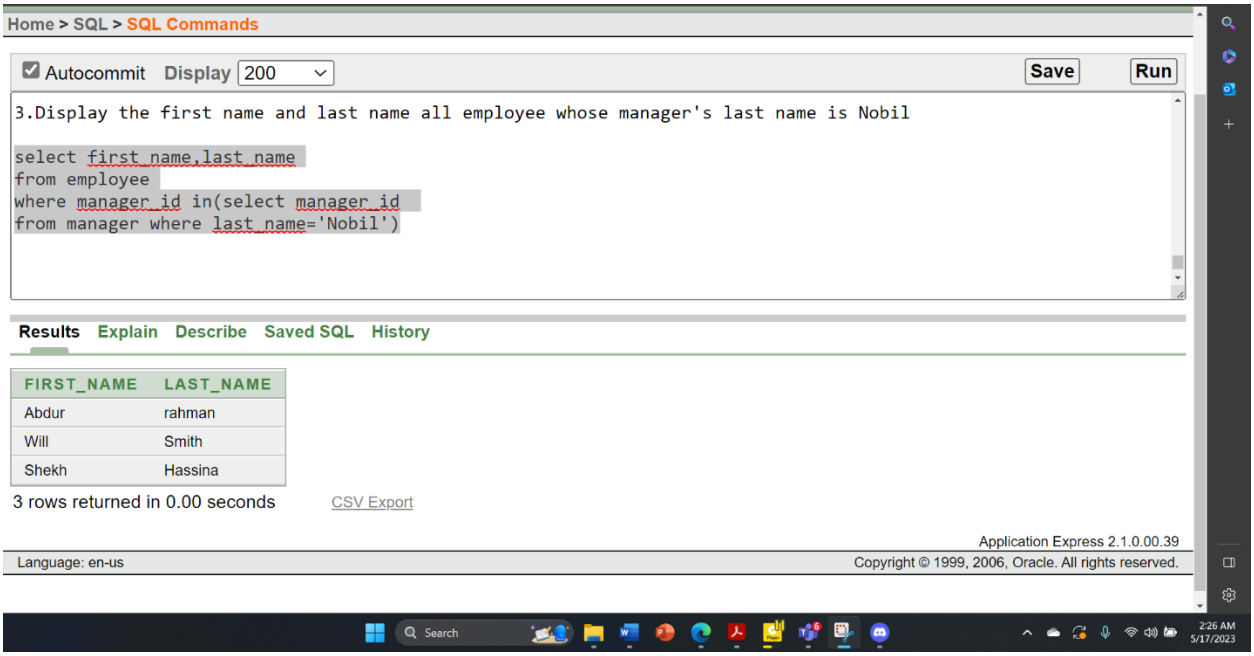
2.Display the last name and hire date for all employee who was hired after employee number 200

```
select first_name ,hire_date
from employee
where hire_date<
                (select hire_date from employee where employee_id = 200)
```



3.Display the first name and last name all employee whose manager's last name is Nobil

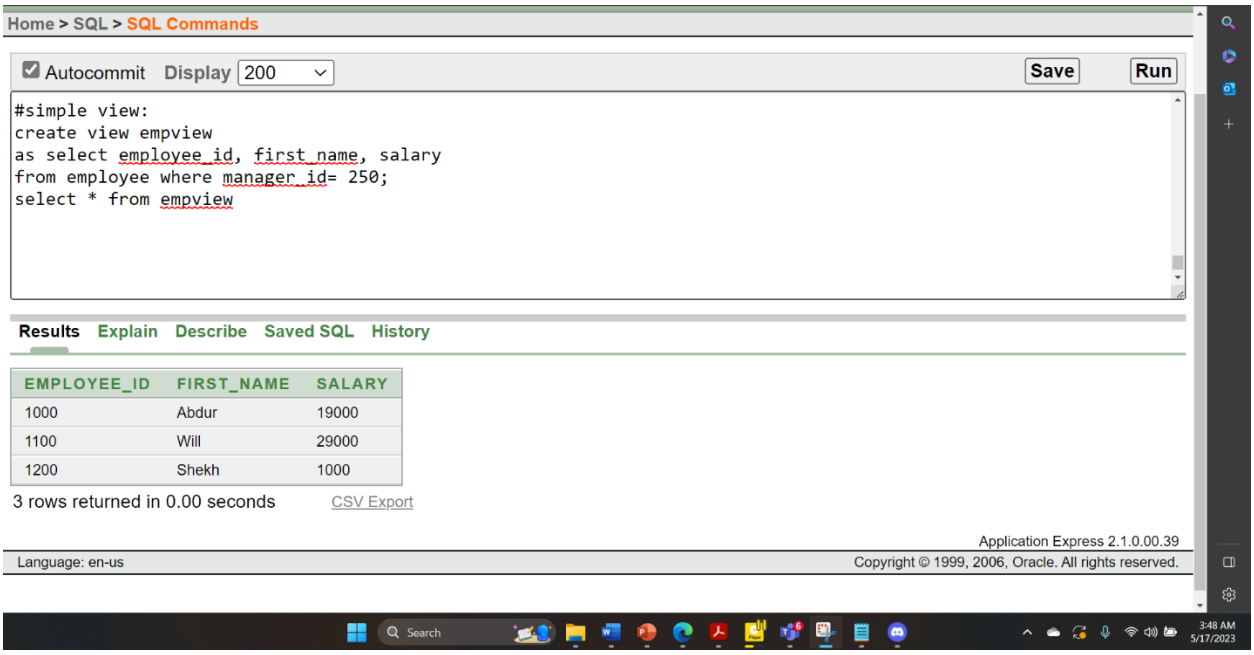
```
select first_name,last_name
from employee
where manager_id in (select manager_id from manager where
last_name='Nobil')
```



VIEW:

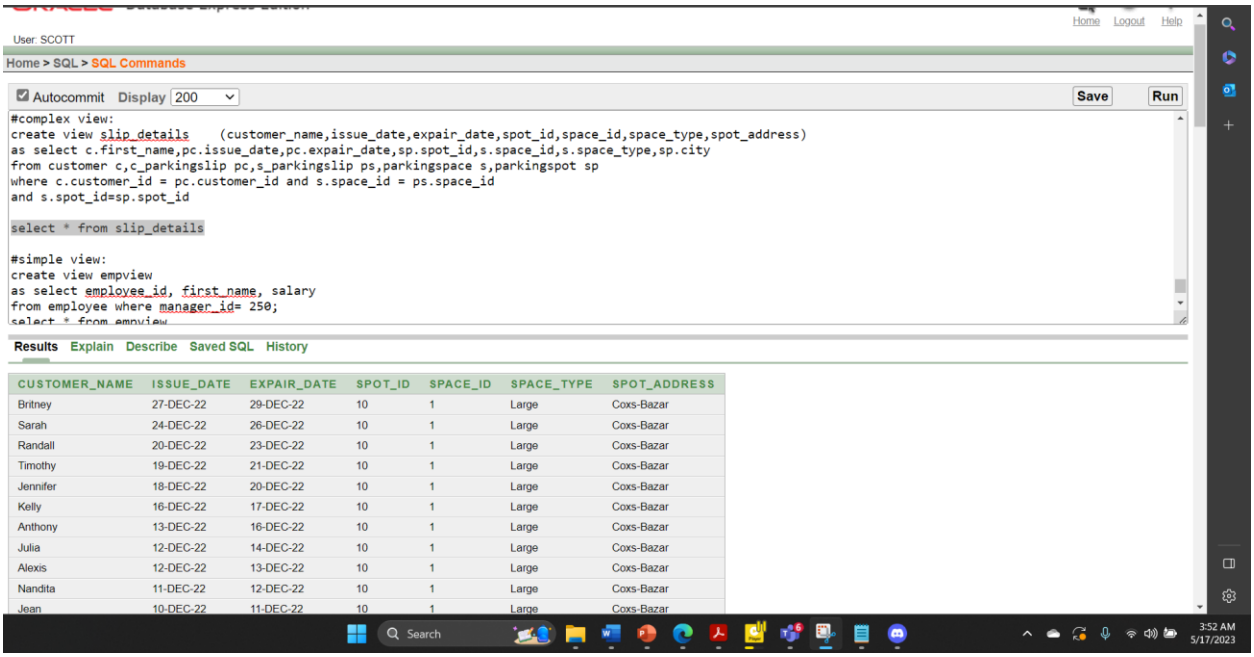
#simple view:

create view empview
as select employee_id, first_name, salary from employee where manager_id= 250; select * from empview



#complex view:

```
create view slip_details
(customer_name,issue_date,expair_date,spot_id,space_id,space_type,s
pot_address)
as select
c.first_name,pc.issue_date,pc.expair_date,sp.spot_id,s.space_id,
s.space_type,sp.city
from customer c,c_parkingslip pc,s_parkingslip ps,
parkingspace s,parkingspot sp
where c.customer_id = pc.customer_id and s.space_id = ps.space_id
and s.spot_id=sp.spot_id
```



ADD CONSTRAINT:

Add unique constraint in customer table with the email column
Alter table customer add constraint cuq unique (email);