**DATABASE PROJECT**

**Introduction:**

**Scenario:**

ER DIAGRAM

Diagram

Description automatically generated

**NORMALISATION**

**Has** (Car Expo Ltd has Bank accounts)

UNF: (CompID, CompName, CompPhone, Address, AccID, AccBalance, AccTransactions)

• CompPhone is a multivalued attribute

1NF:

1. CompID, CompName, Street, City, AccID, AccName, AccBalance, AccTransactions

2NF:

1. CompID, CompName, Street, City
2. CompID, CompPhone
3. AccID, AccName, AccBalance, AccTransations, CompID

3NF:

1. CompID, CompName
2. CompID, Street, City
3. CompID, CompPhone
4. AccID, AccName, AccBalance, AccTransation, CompID

**Sells** (Salesman sells car)

UNF: (SM\_ID, SMName, CarID, CarCondition, CarType, CarReg)

1NF:

1. SM\_ID, SMName, CarID, CarCondition, CarType, CarReg

2NF:

1. SM\_ID, SMName
2. CarID, CarCondition, CarType, CarReg
3. SM\_ID, SMName

3NF:

1. SM\_ID, SMName
2. CarID, CarCondition, CarType
3. CarID, CarReg
4. SM\_ID, SMName

**Owns** (Car Expo Ltd owns car garages)

UNF: (CompID, CompName, CompPhone, Address, SlotID, GPhone)

• CompPhone is a multivalued attribute

1NF:

1. CompID, CompName, Street, City, SlotID, GPhone

2NF:

1. CompID, CompName, Street, City
2. CompID, Phone
3. SlotID, Gphone, CompID

3NF:

1. CompID, CompName
2. CompID, Street, City
3. CompID, CompPhone
4. SlotID, Gphone, CompID

**Keeps** (Car garage keeps cars)

UNF (Car\_ID, CarCondition, CarReg, SlotID, Gphone)

1NF:

1. Car\_ID, CarCondition, CarReg, SlotID, Gphone)

2NF:

1. CarID, CarCondition, SlotID
2. CarID, Car\_Reg
3. SlotID, Gphone

3NF:

1. CarID, CarCondition, SlotID
2. CarID, Car\_Reg
3. SlotID, Gphone

**Work for** (Employees work for Car Expo Ltd)

UNF: (EmpID, EmpName, CompID, CompName, CompPhone, Address)

• CompPhone is a multivalued attribute

1NF:

1. EmpID, FN, LN, CompID, CompName, Street, City

2NF:

1. EmpID, FN, LN, CompID
2. CompID, CompPhone
3. CompID, CompName, Street, City

3NF:

1. EmpID, FN, LN, CompID
2. CompID, CompPhone
3. CompID, CompName
4. CompID, Street, City

**Imports and Exports** (Dealer imports and exports cars)

UNF (D\_ID, DName, Car\_ID, CarCondition, CarType, CarReg)

1NF:

1. D\_ID, DName, Car\_ID, CarCondition, CarType, CarReg

2NF:

1. D\_ID, DName
2. Car\_ID, CarCondition, CarType, CarReg
3. D\_ID, Car\_ID

3NF:

1. D\_ID, DName
2. CarID, CarCondition, CarType
3. CarID, CarReg
4. D\_ID, Car\_ID

**Manages** (Managers manage cars)

UNF: (MgrID, MgrName, MgrPhone, CarID, CarCondition, CarType, CarReg)

* CompPhone is a multivalued attribute

1NF:

1. MgrID, MgrName, CarID, CarCondition, CarType, CarReg

2NF:

1. MgrID, MgrName
2. MgrID, MgrPhone
3. Car\_ID, CarCondition, CarType, CarReg
4. MgrID, CarID

3NF:

1. MgrID, MgrName
2. MgrID, MgrPhone
3. CarID, CarCondition, CarType,
4. CarID, CarReg
5. MgrID, CarID

**Sold to** (Cars sold to customers)

UNF: (CarID, CarCondition, CarType, CarReg, C\_ID, CEmail, CName)

1NF:

1. CarID, CarCondition, CarType, CarReg, C\_ID, CEmail, CName

2NF:

1. CarID, CarCondition, CarType, CarReg
2. C\_ID, CEmail, CName

3NF:

1. CarID, CarType, Car Condition
2. CarID, CarReg
3. C\_ID, CEmail, CName
4. CarID, C\_ID

**Guards** (Security guards car garage)

UNF: (SecID, SecName, SlotID, GPhone)

1NF:

1. SecID, SecName
2. SlotID, GPhone
3. SecID, SlotID

3NF:

1. SecID, SecName
2. SlotID, GPhone
3. SecID, SlotID

**Maintains** (Cleaners maintains car)

UNF(CL\_ID, CL\_Nam,e, CarID, CarType, Car Condition, CarReg)

1NF:

1. CL\_ID, CLName, CarID, Car Condition, CarType, Car Reg

2NF:

1. CL\_ID, CLName, CarID
2. CarID, Car Condition, CarType
3. CarID, CarReg

3NF: Same as 2NF

**Maintains** (Mechanic maintains car)

UNF(CL\_ID, CL\_Nam,e, CarID, CarType, Car Condition, CarReg)

1NF:

1. MecID, MecName, CarID, Car Condition, CarType, Car Reg

2NF:

1. MecID, MecName, CarID
2. CarID, Car Condition, CarType
3. CarID, CarReg

3NF: Same as 2NF

**Total table:**

1. CompID, CompName, CompPhone
2. CompID, Street, City
3. ~~CompID, CompPhone~~
4. AccID, AccName, AccBalance, AccTransation, CompID
5. SM\_ID, SMName
6. CarID, CarCondition, CarType
7. CarID, CarReg
8. ~~SM\_ID, SMName~~
9. ~~CompID, CompName~~
10. ~~CompID, Street, City~~
11. ~~CompID, CompPhone~~
12. SlotID, Gphone, CompID
13. CarID, CarCondition, SlotID
14. ~~CarID, Car\_Reg~~
15. ~~SlotID, Gphone~~
16. EmpID, FN, LN, CompID
17. ~~CompID, CompPhone~~
18. ~~CompID, CompName~~
19. ~~CompID, Street, City~~
20. D\_ID, DName
21. ~~CarID, CarCondition, CarType~~
22. ~~CarID, CarReg~~
23. D\_ID, Car\_ID
24. MgrID, MgrName
25. MgrID, MgrPhone
26. ~~CarID, CarCondition, CarType,~~
27. ~~CarID, CarReg~~
28. MgrID, CarID
29. ~~CarID, CarType, Car Condition~~
30. ~~CarID, CarReg~~
31. C\_ID, CEmail, CName
32. CarID, C\_ID
33. SecID, SecName
34. ~~SlotID, GPhone~~
35. SecID, SlotID
36. CL\_ID, CLName, CarID
37. ~~CarID, Car Condition, CarType~~
38. ~~CarID, CarReg~~
39. MecID, MecName, CarID
40. ~~CarID, Car Condition, CarType~~
41. ~~CarID, CarReg~~

**Final table**

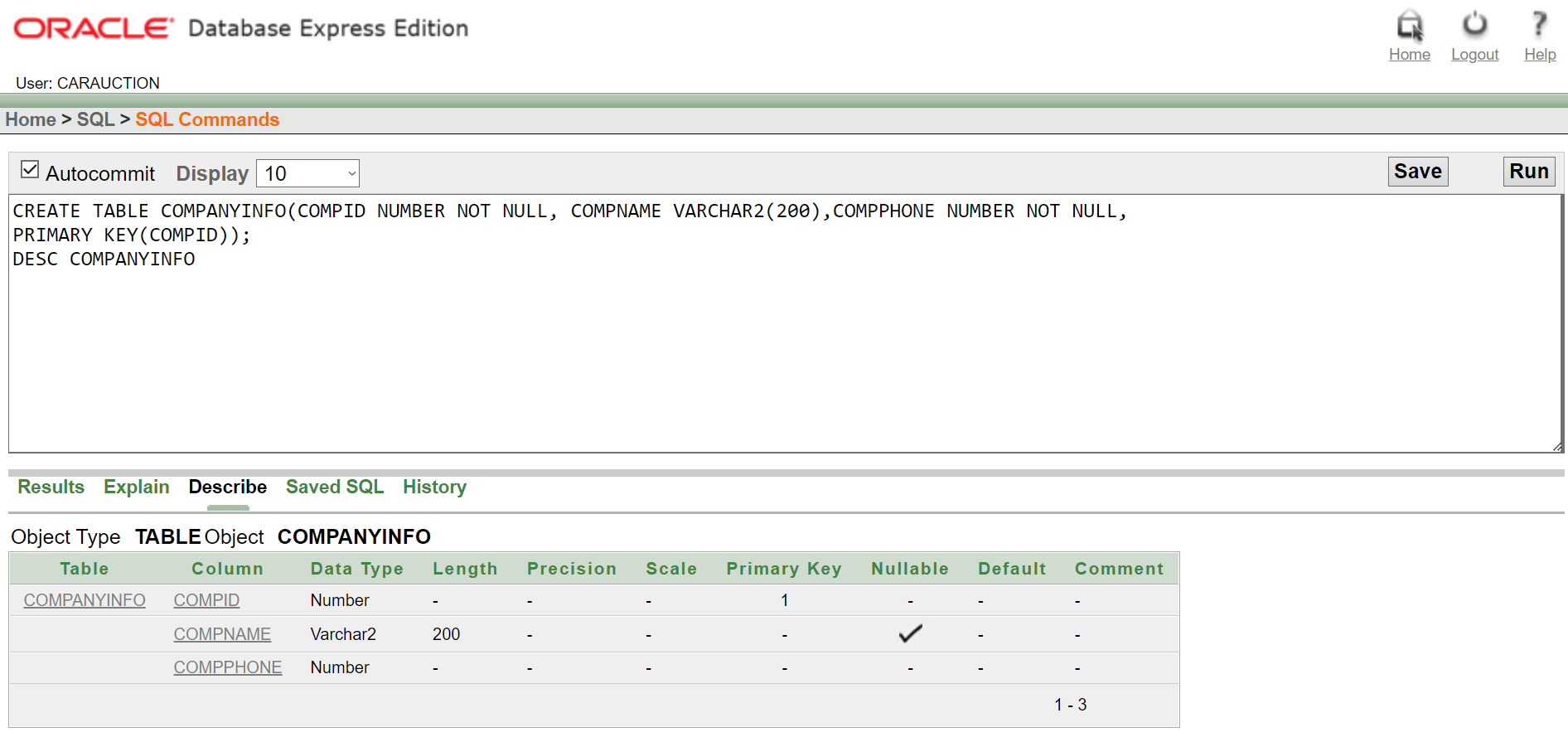
1. CompID, CompName, CompPhone
2. CompID, Street, City
3. AccID, AccName, AccBalance, AccTransation, CompID (fk)
4. SM\_ID, SMName
5. CarID, CarCondition, CarType
6. CarID, CarReg
7. SlotID, Gphone, CompID (fk)
8. CarID, CarCondition, SlotID (fk)
9. EmpID, FN, LN, CompID (fk)
10. D\_ID, DName
11. D\_ID, Car\_ID (fk)
12. MgrID, MgrName
13. MgrID, MgrPhone
14. MgrID, CarID (fk)
15. C\_ID, CEmail, CName
16. CarID, C\_ID (fk)
17. SecID, SecName
18. SecID, SlotID (fk)
19. CL\_ID, CLName, CarID (fk)
20. MecID, MecName, CarID (fk)

**TABLE CREATION**

1) CREATE TABLE COMPANYINFO(COMPID NUMBER NOT NULL, COMPNAME VARCHAR2(200),COMPPHONE NUMBER NOT NULL,

PRIMARY KEY(COMPID));

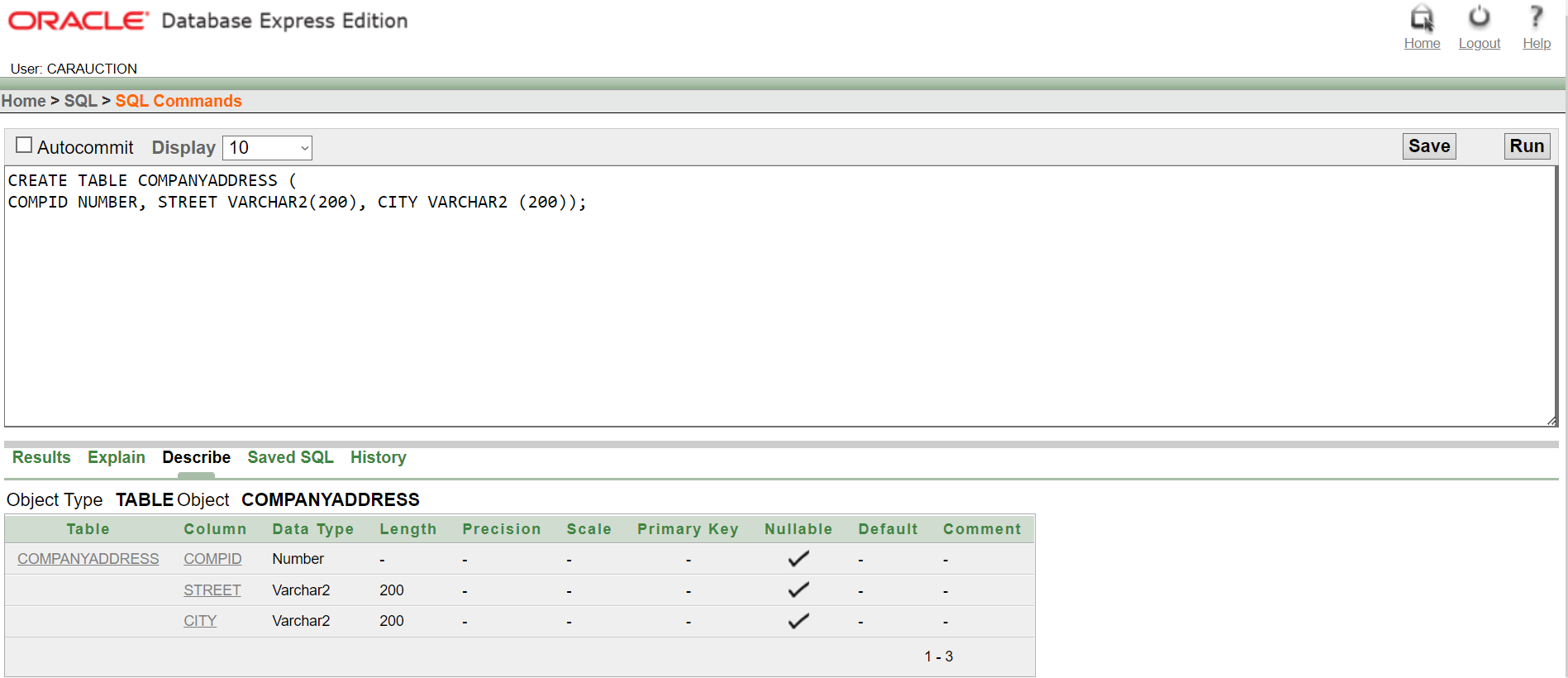
DESC COMPANYINFO



2) CREATE TABLE COMPANYADDRESS (

COMPID NUMBER, STREET VARCHAR2(200), CITY VARCHAR2 (200));

DESC COMPANYADDRESS



3) CREATE TABLE HAS (

ACCID NUMBER NOT NULL, ACCNAME VARCHAR2(200), ACCBALANCE NUMBER NOT NULL, ACCTRANSACTIONS NUMBER NOT NULL, COMPID NUMBER NOT NULL, PRIMARY KEY (ACCID), FOREIGN KEY (COMPID) REFERENCES COMPANYINFO(COMPID) );

DESC HAS

Graphical user interface, application, table

Description automatically generated

4) CREATE TABLE SALESMANINFO (SMID NUMBER NOT NULL, SMNAME VARCHAR2(200), PRIMARY KEY (SMID) );

DESC SALESMANINFO

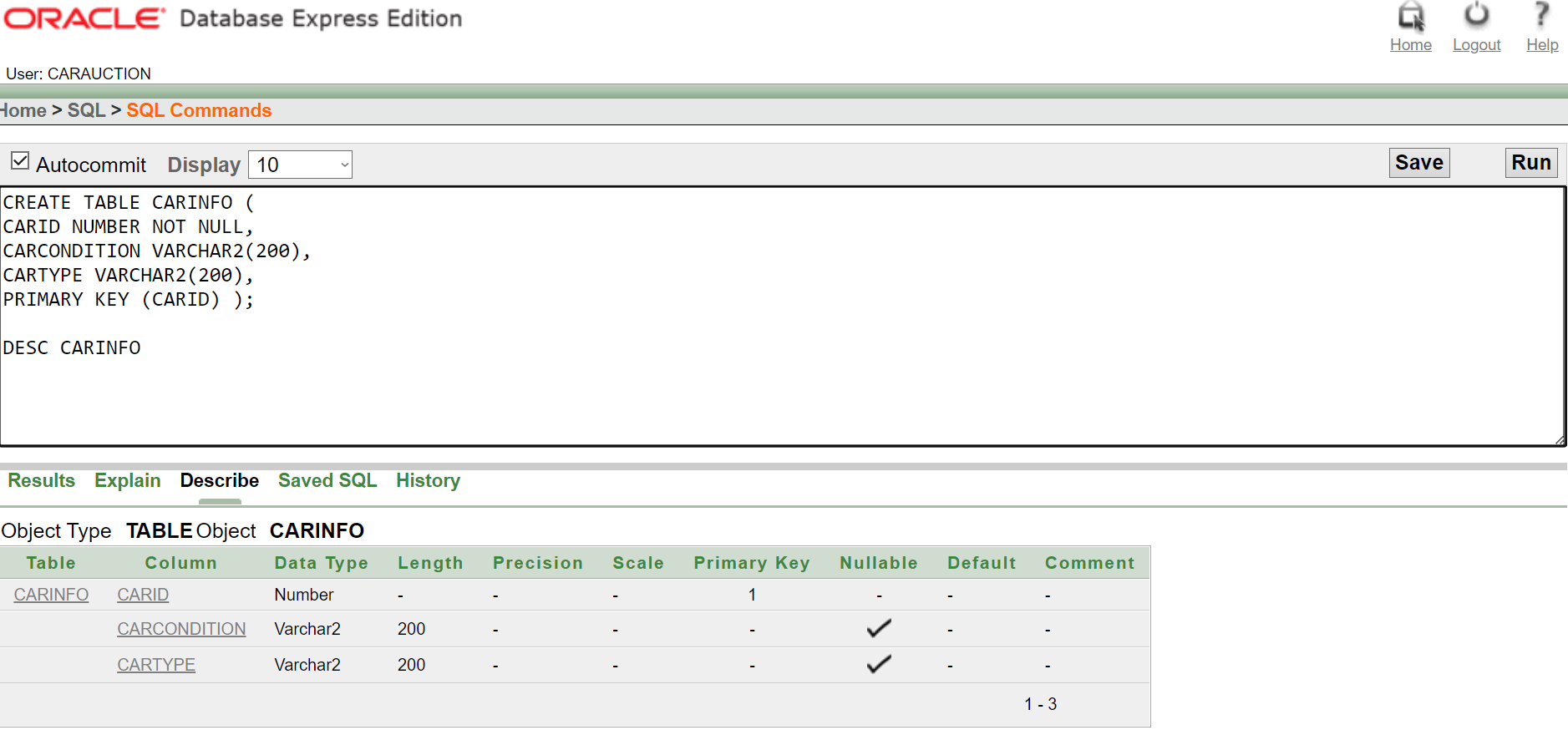
Graphical user interface, text, application

Description automatically generated

5) CREATE TABLE CARINFO ( CARID NUMBER NOT NULL, CARCONDITION VARCHAR2(200), CARTYPE VARCHAR2(200),

PRIMARY KEY (CARID) );

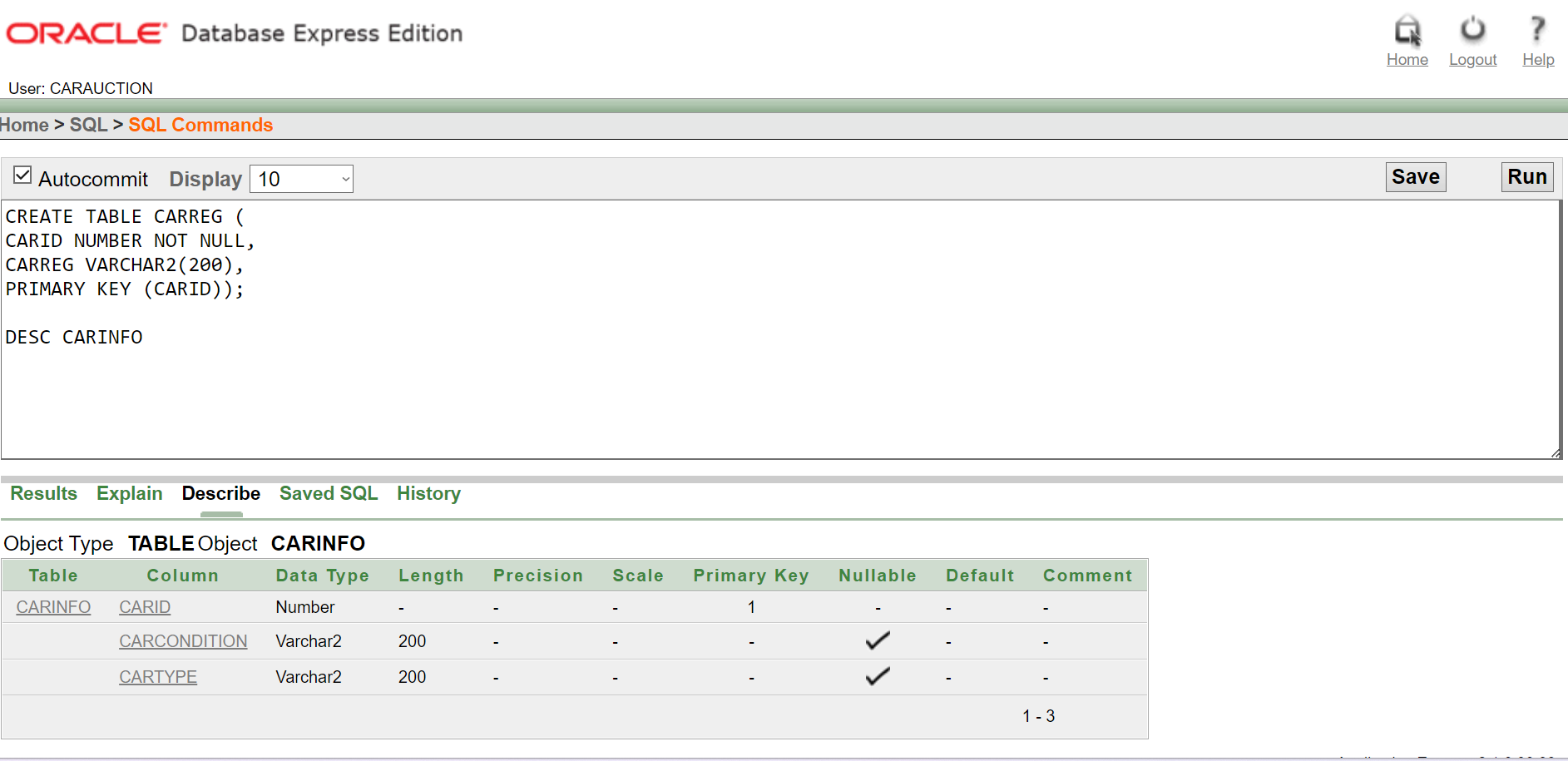
DESC CARINFO



6) CREATE TABLE CARREG ( CARID NUMBER NOT NULL,

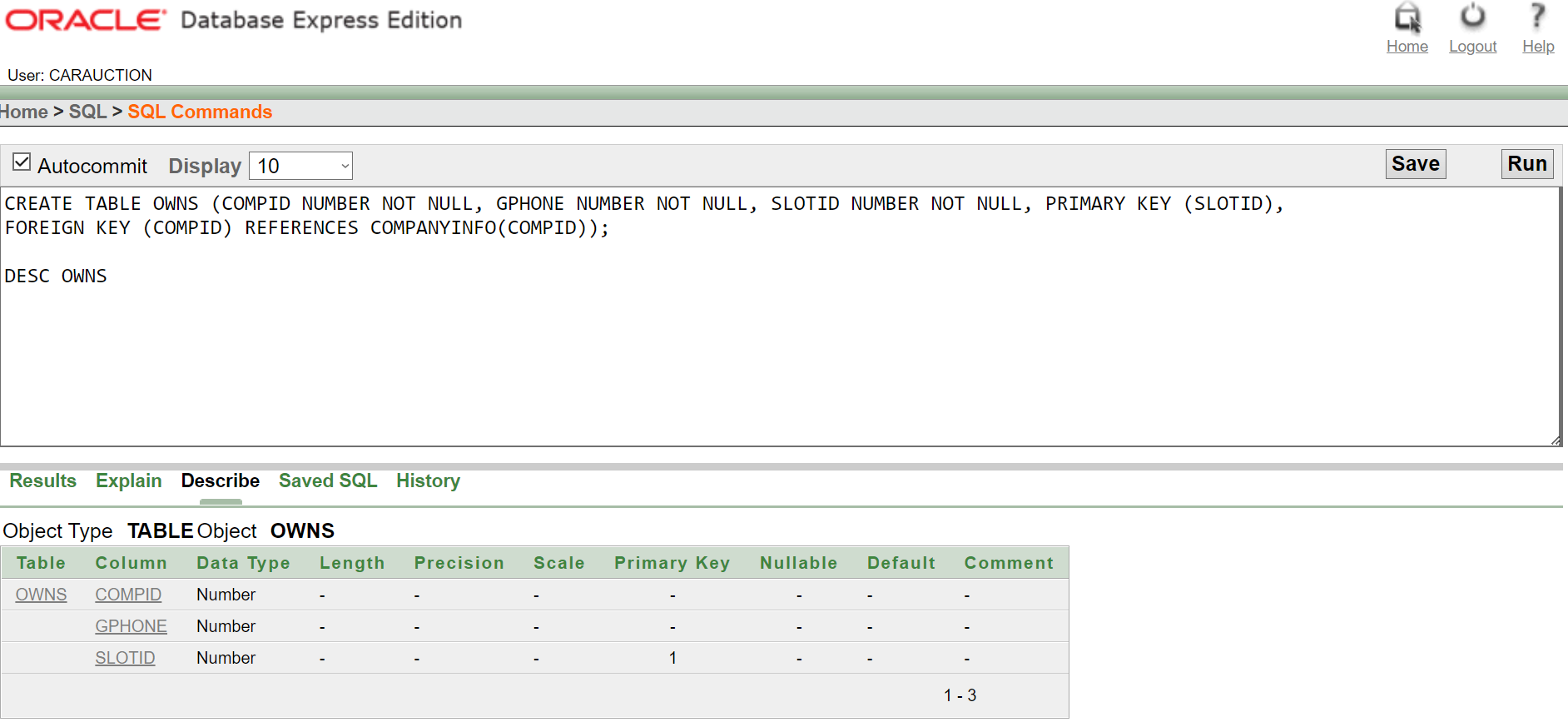
CARREG VARCHAR2(200), PRIMARY KEY (CARID));

DESC CARINFO



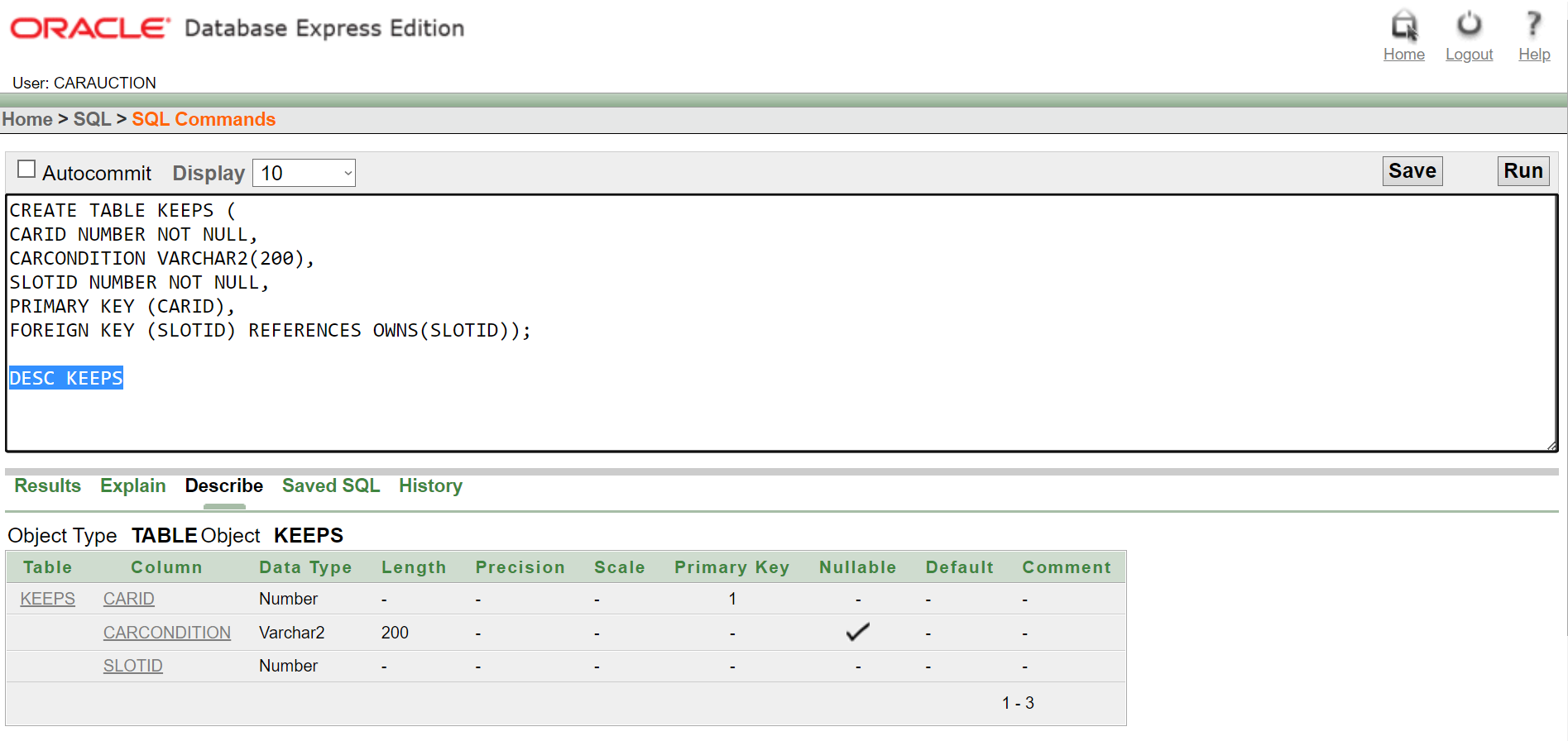
7) CREATE TABLE OWNS (COMPID NUMBER NOT NULL, GPHONE NUMBER NOT NULL, SLOTID NUMBER NOT NULL, PRIMARY KEY (SLOTID), FOREIGN KEY (COMPID) REFERENCES COMPANYINFO(COMPID));

DESC OWNS



8) CREATE TABLE KEEPS ( CARID NUMBER NOT NULL, CARCONDITION VARCHAR2(200), SLOTID NUMBER NOT NULL, PRIMARY KEY (CARID), FOREIGN KEY (SLOTID) REFERENCES OWNS(SLOTID) );

DESC KEEPS



9) CREATE TABLE WORKSFOR(EMPID NUMBER NOT NULL, FNAME VARCHAR2(200),LNAME VARCHAR2(200),COMPID NUMBER NOT NULL,PRIMARY KEY (EMPID), FOREIGN KEY (COMPID) REFERENCES COMPANYINFO(COMPID));

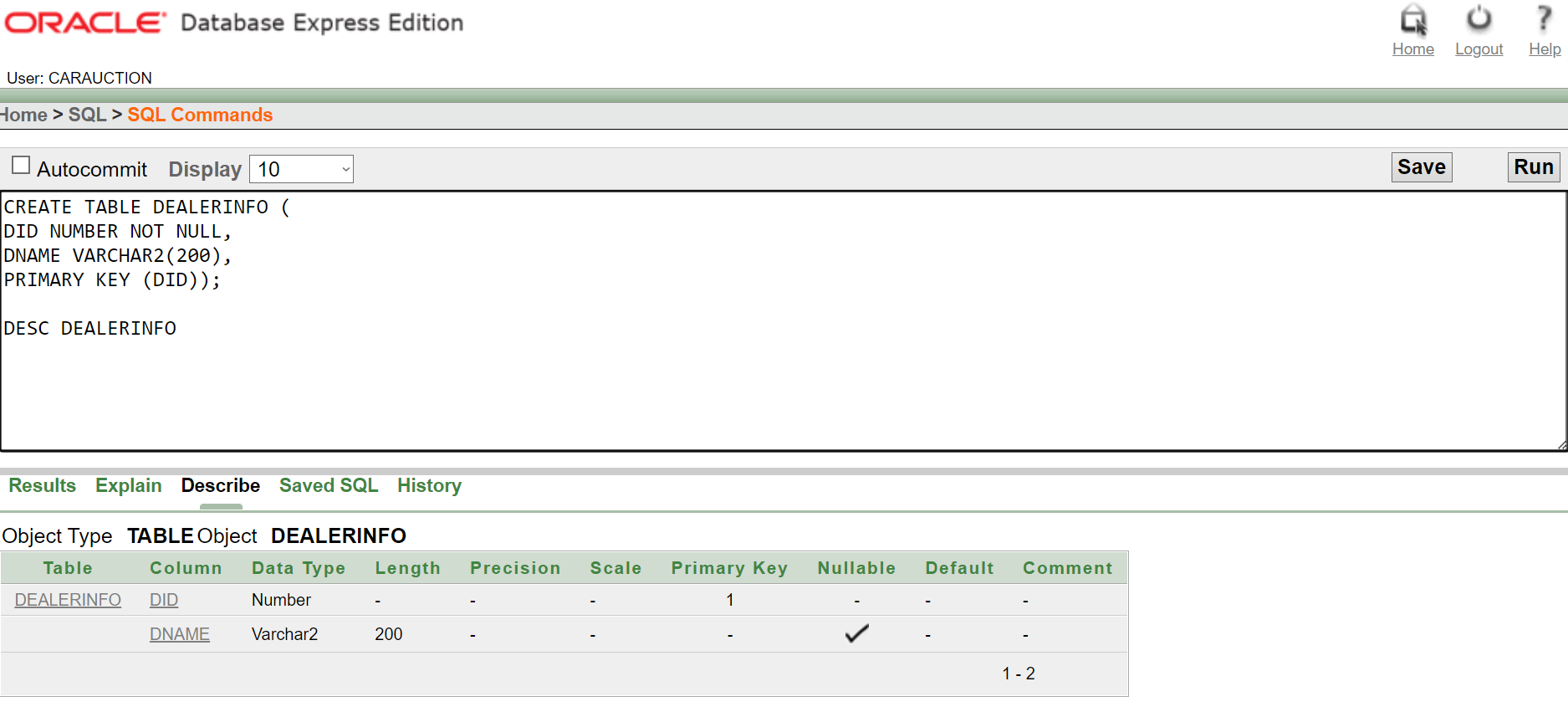
DESC WORKSFOR

Graphical user interface, text, application, table

Description automatically generated

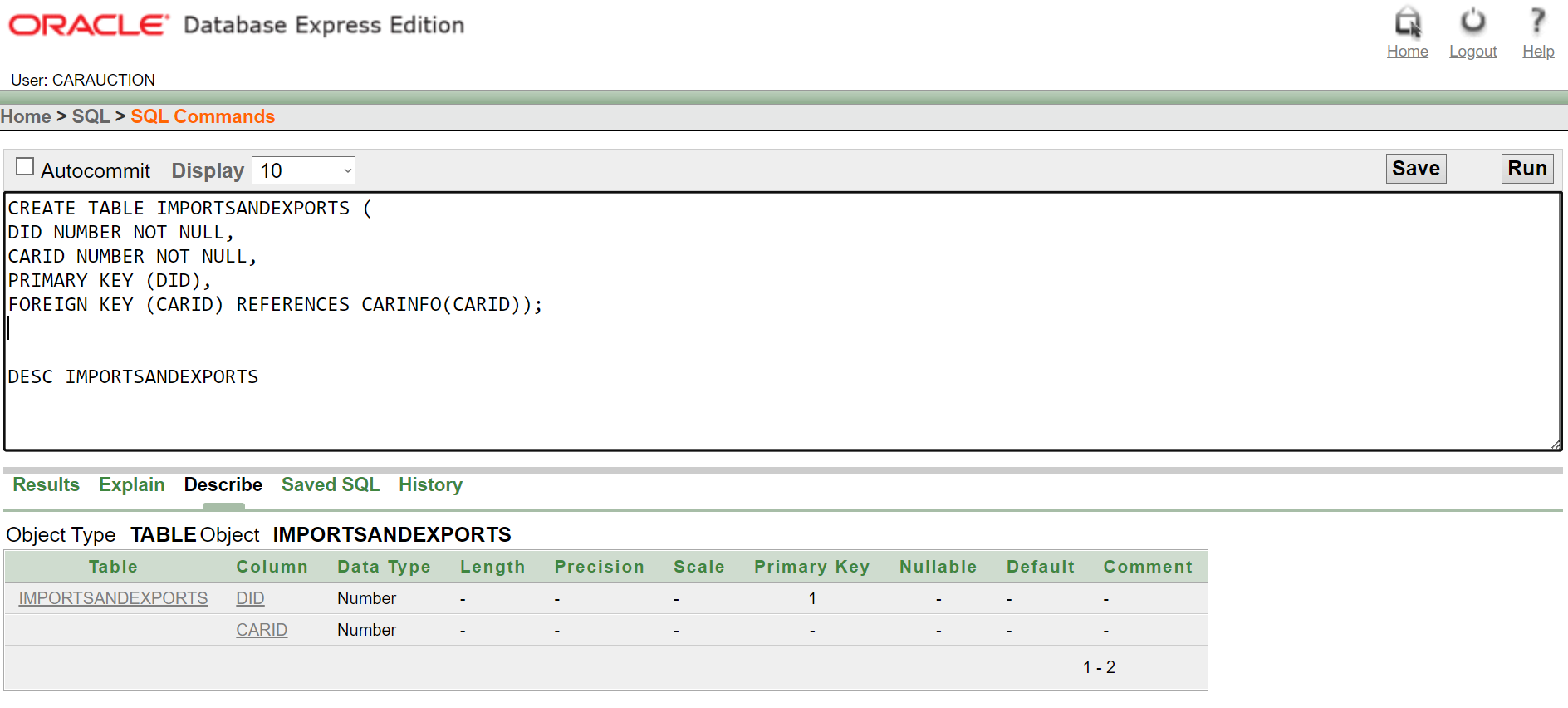
10) CREATE TABLE DEALERINFO ( DID NUMBER NOT NULL, DNAME VARCHAR2(200), PRIMARY KEY (DID));

DESC DEALERINFO



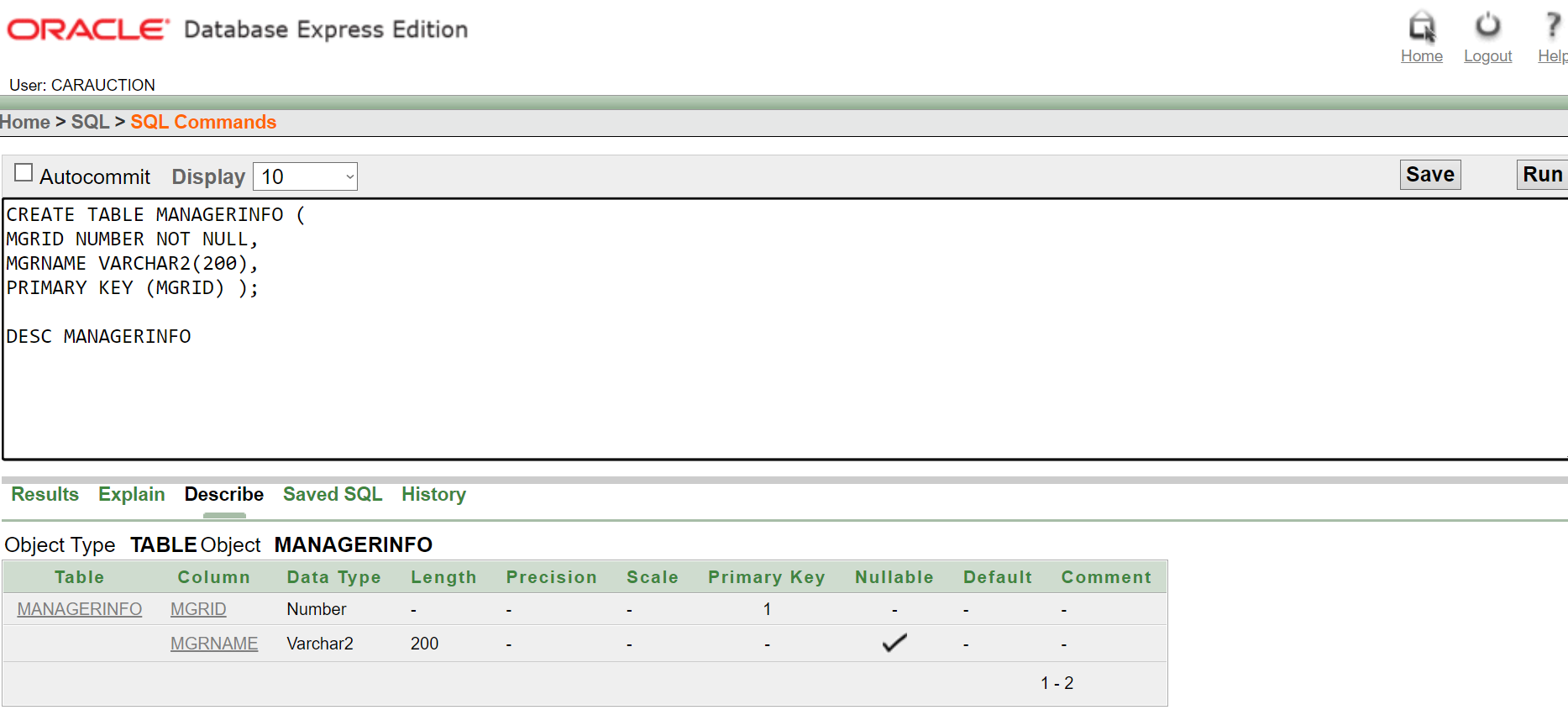
11) CREATE TABLE IMPORTSANDEXPORTS ( DID NUMBER NOT NULL, CARID NUMBER NOT NULL, PRIMARY KEY (DID), FOREIGN KEY (CARID) REFERENCES CARINFO(CARID));

DESC IMPORTSANDEXPORTS



12) CREATE TABLE MANAGERINFO ( MGRID NUMBER NOT NULL, MGRNAME VARCHAR2(200), PRIMARY KEY (MGRID) );

DESC MANAGERINFO



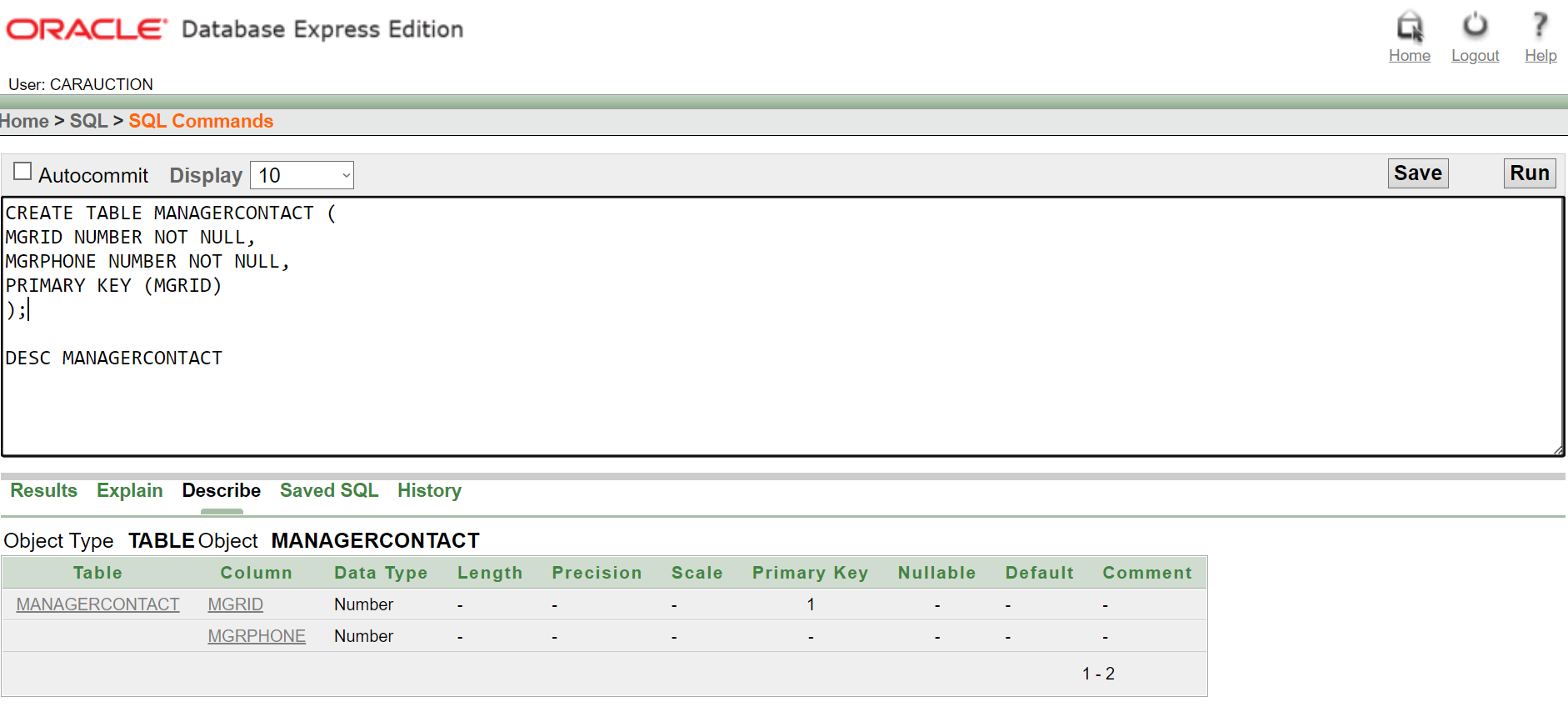
13) CREATE TABLE MANAGERCONTACT (

MGRID NUMBER NOT NULL,

MGRPHONE NUMBER NOT NULL,

PRIMARY KEY (MGRID) );

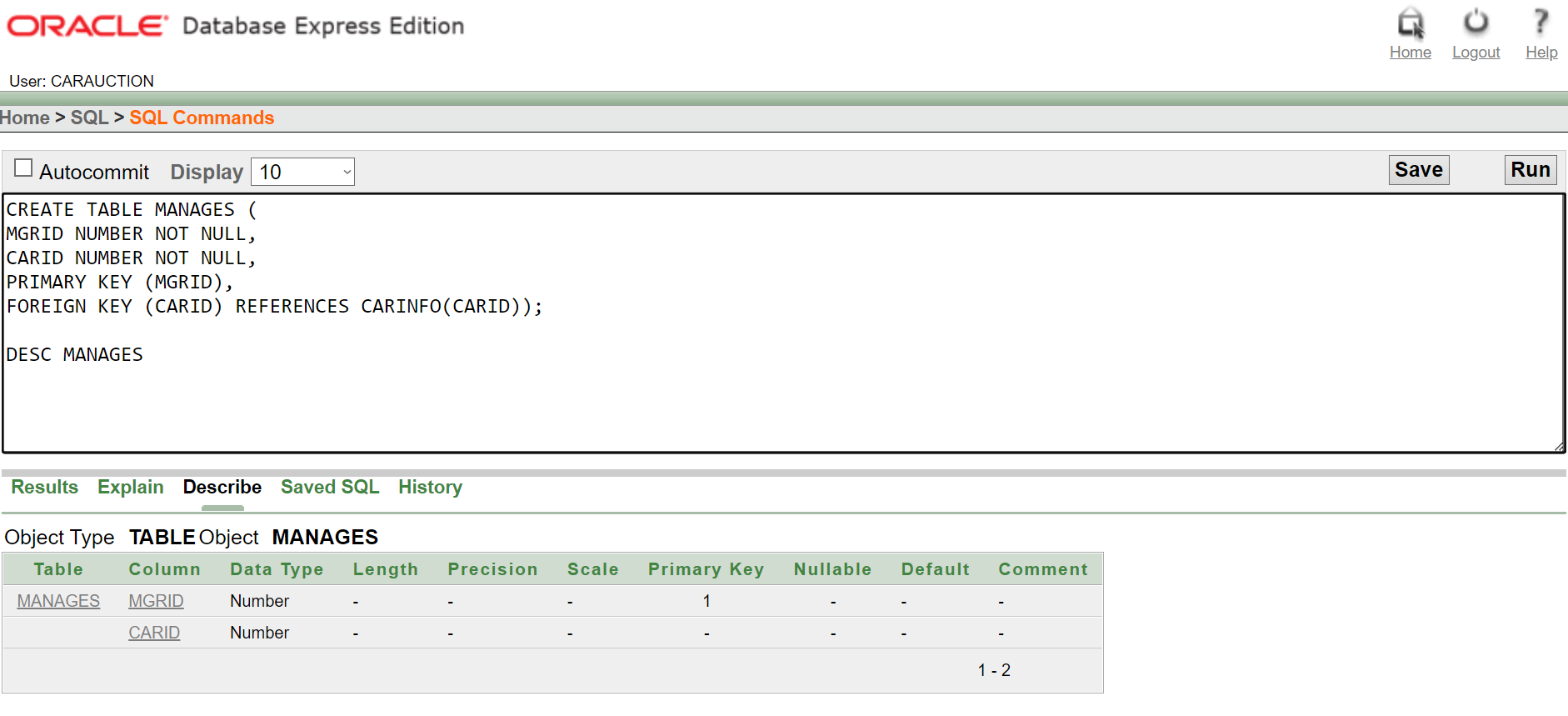
DESC MANAGERCONTACT



14) CREATE TABLE MANAGES ( MGRID NUMBER NOT NULL, CARID NUMBER NOT NULL, PRIMARY KEY (MGRID),

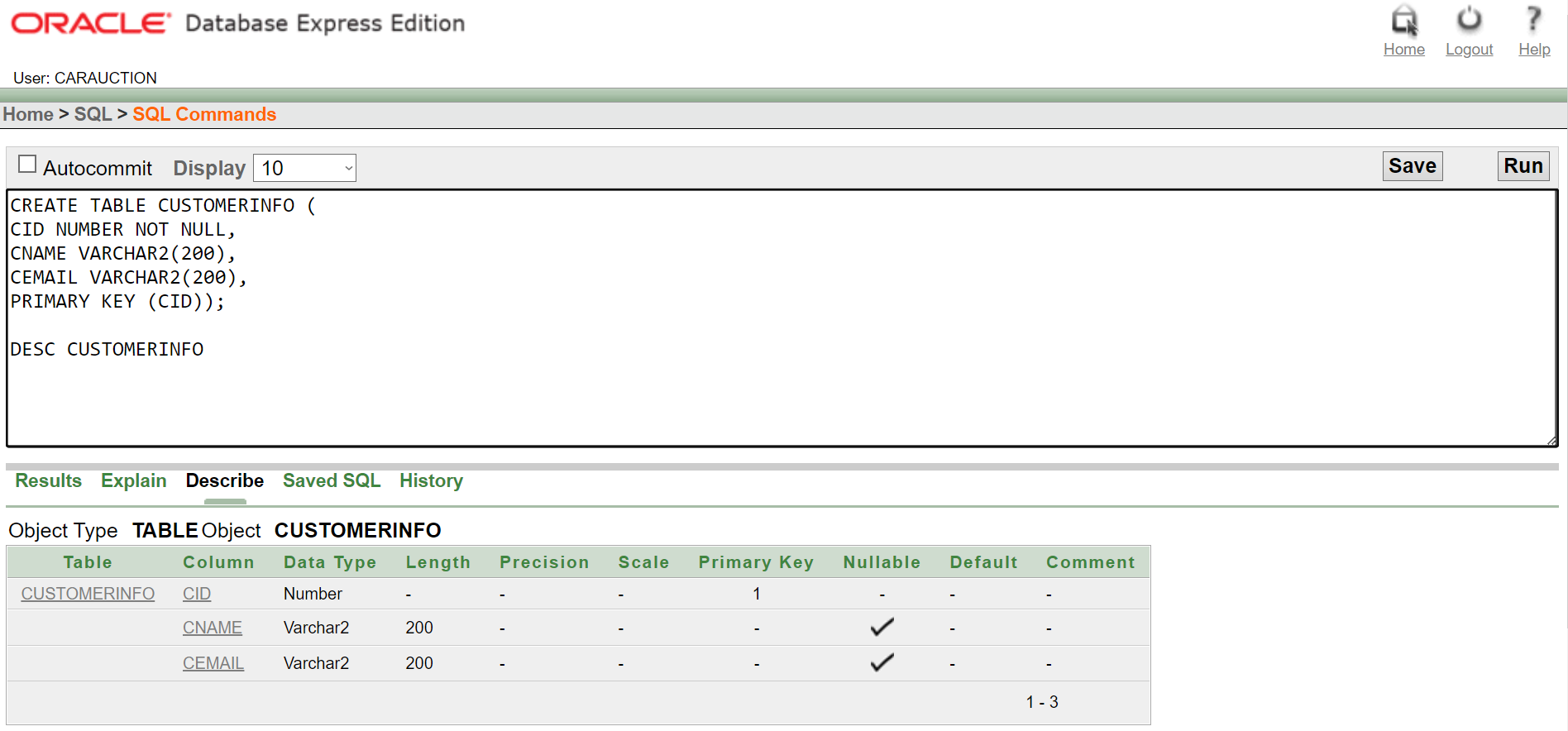
FOREIGN KEY (CARID) REFERENCES CARINFO(CARID));

DESC MANAGES



15) CREATE TABLE CUSTOMERINFO ( CID NUMBER NOT NULL, CNAME VARCHAR2(200), CEMAIL VARCHAR2(200), PRIMARY KEY (CID));

DESC CUSTOMERINFO



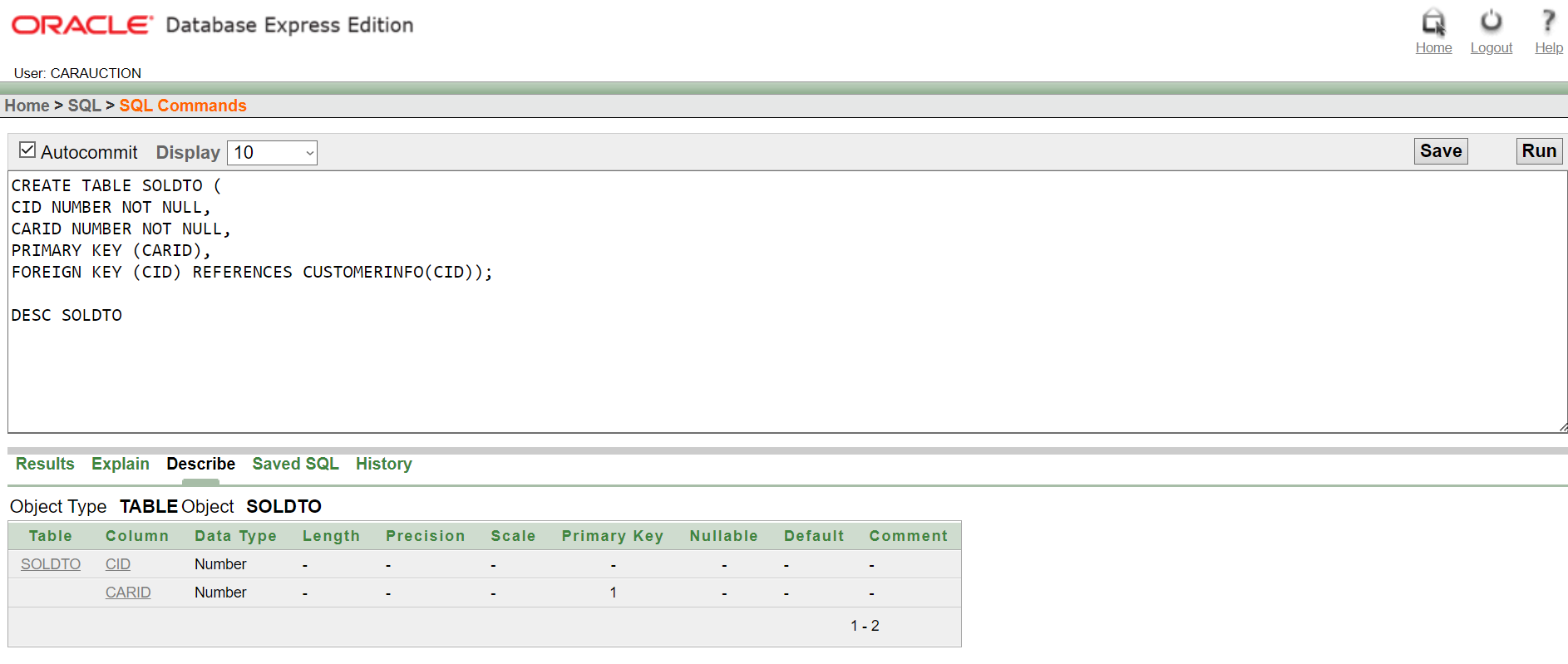
16) CREATE TABLE SOLDTO (

CID NUMBER NOT NULL,

CARID NUMBER NOT NULL,

PRIMARY KEY (CARID),

FOREIGN KEY (CID) REFERENCES CUSTOMERINFO(CID));

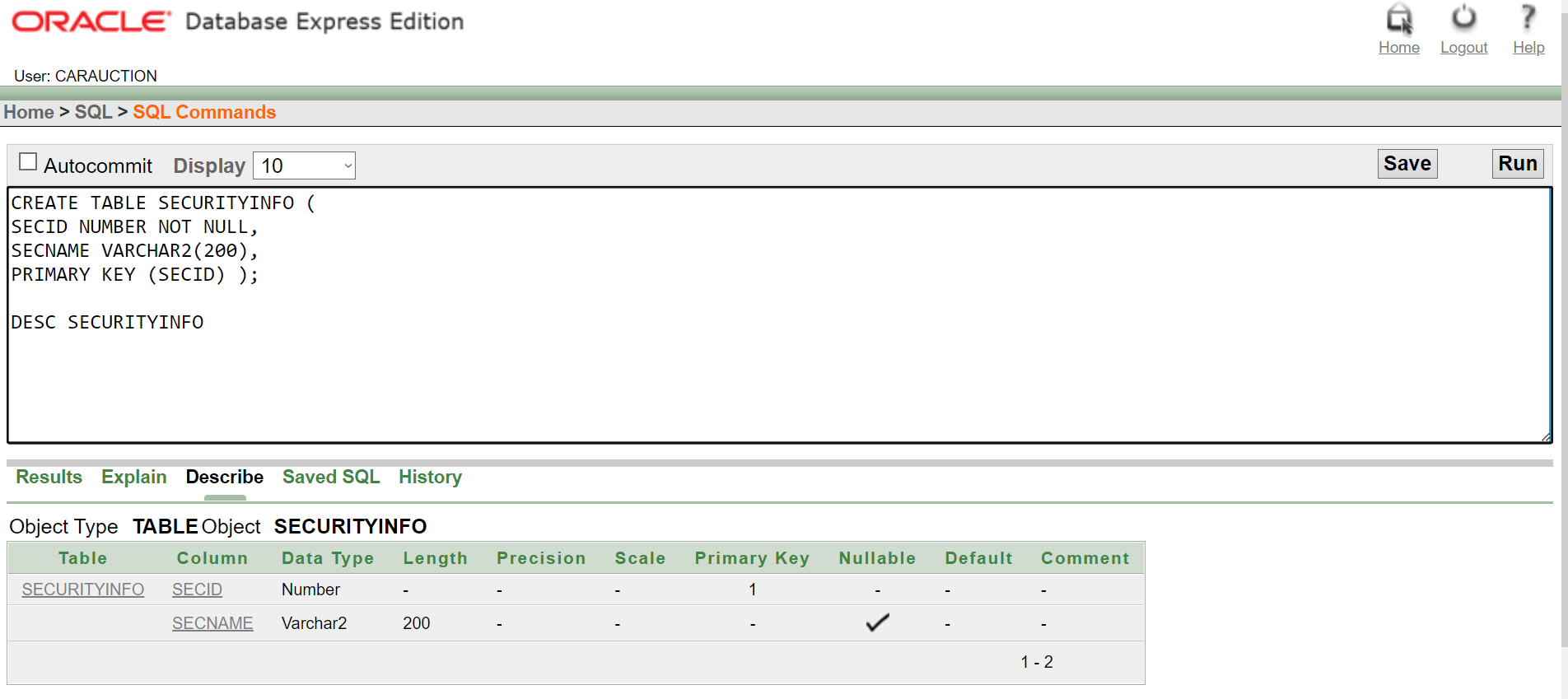


17) CREATE TABLE SECURITYINFO (

SECID NUMBER NOT NULL,

SECNAME VARCHAR2(200),

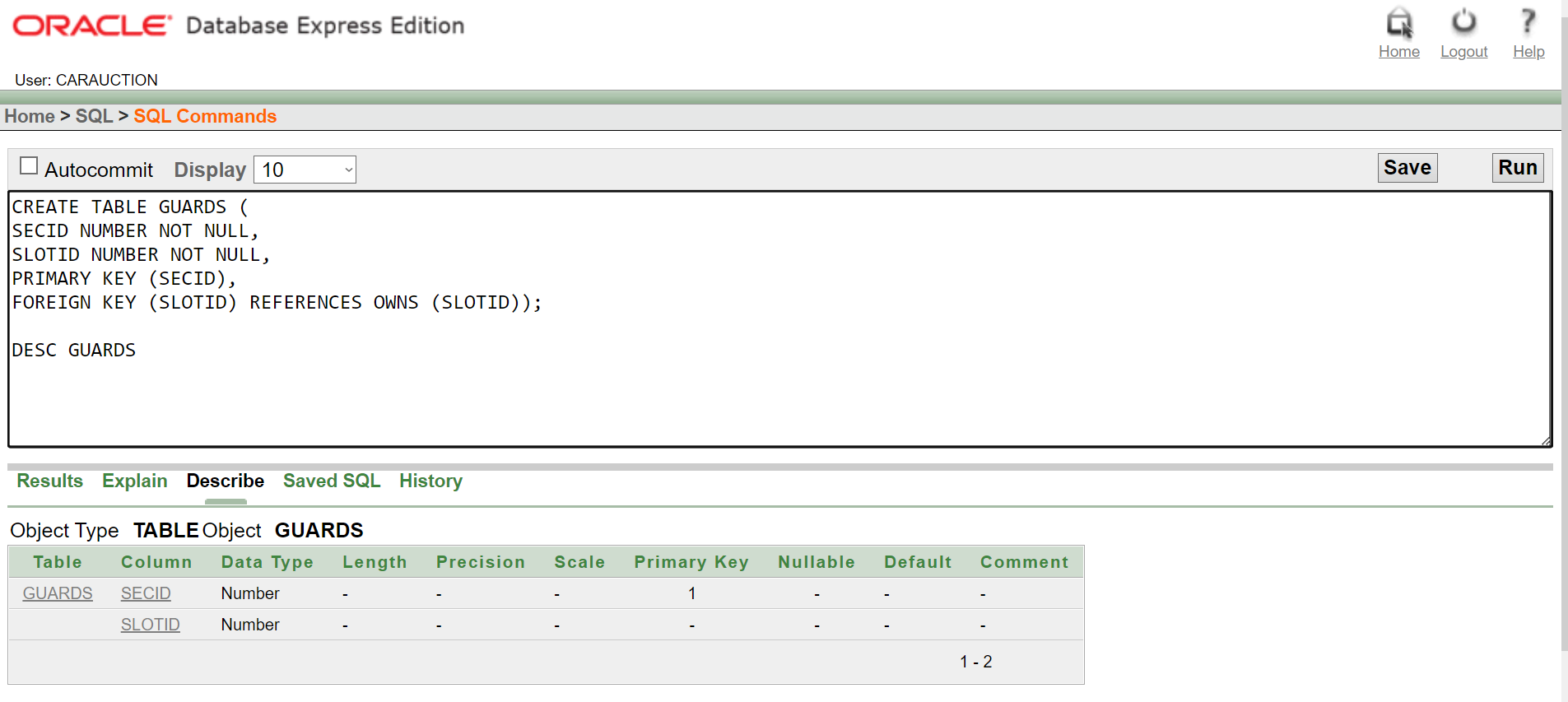
PRIMARY KEY (SECID) );



18) CREATE TABLE GUARDS (

SECID NUMBER NOT NULL, SLOTID NUMBER NOT NULL, PRIMARY KEY (SECID), FOREIGN KEY (SLOTID) REFERENCES GARAGEINFO(SLOTID) );

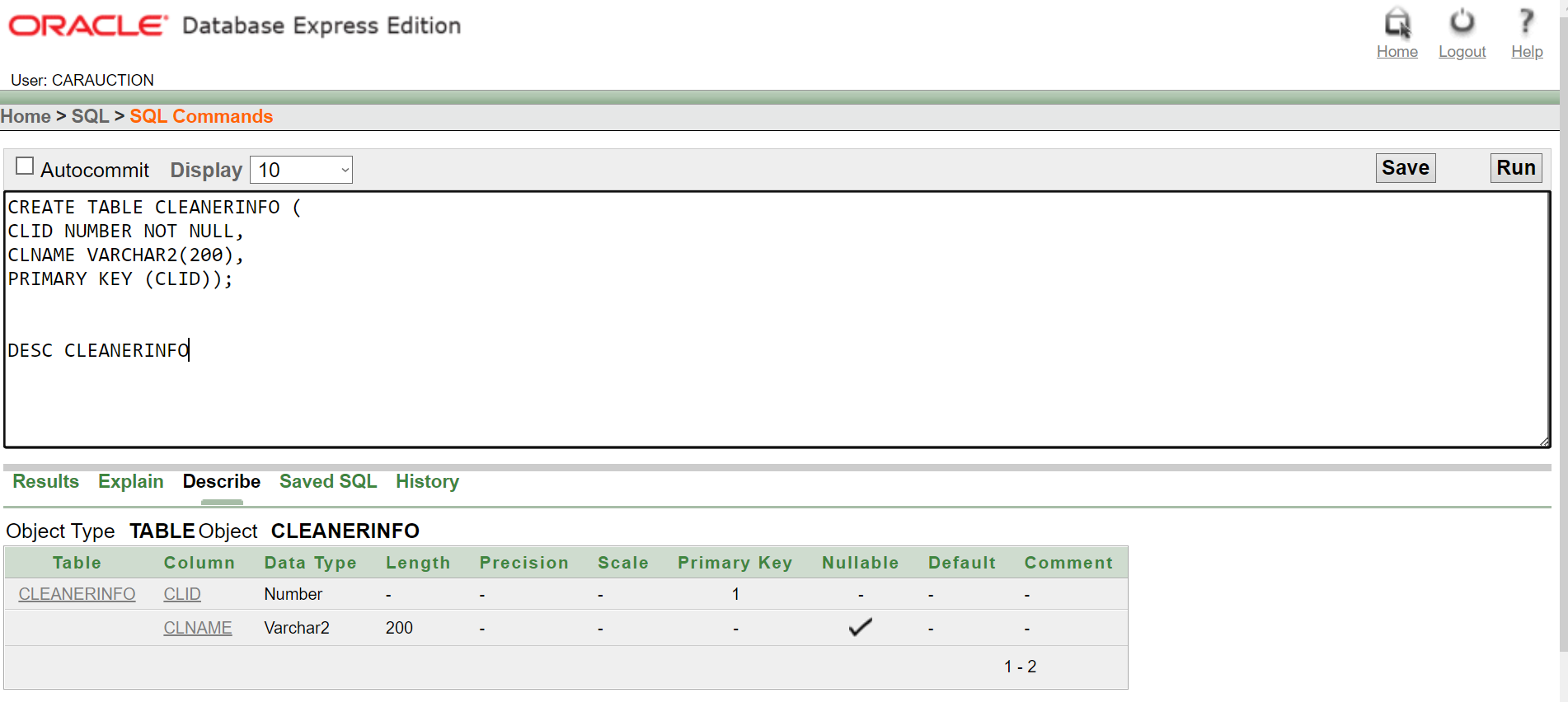
DESC GUARDS



19) CREATE TABLE CLEANERINFO (

CLID NUMBER NOT NULL, CLNAME VARCHAR2(200), PRIMARY KEY (CLID));

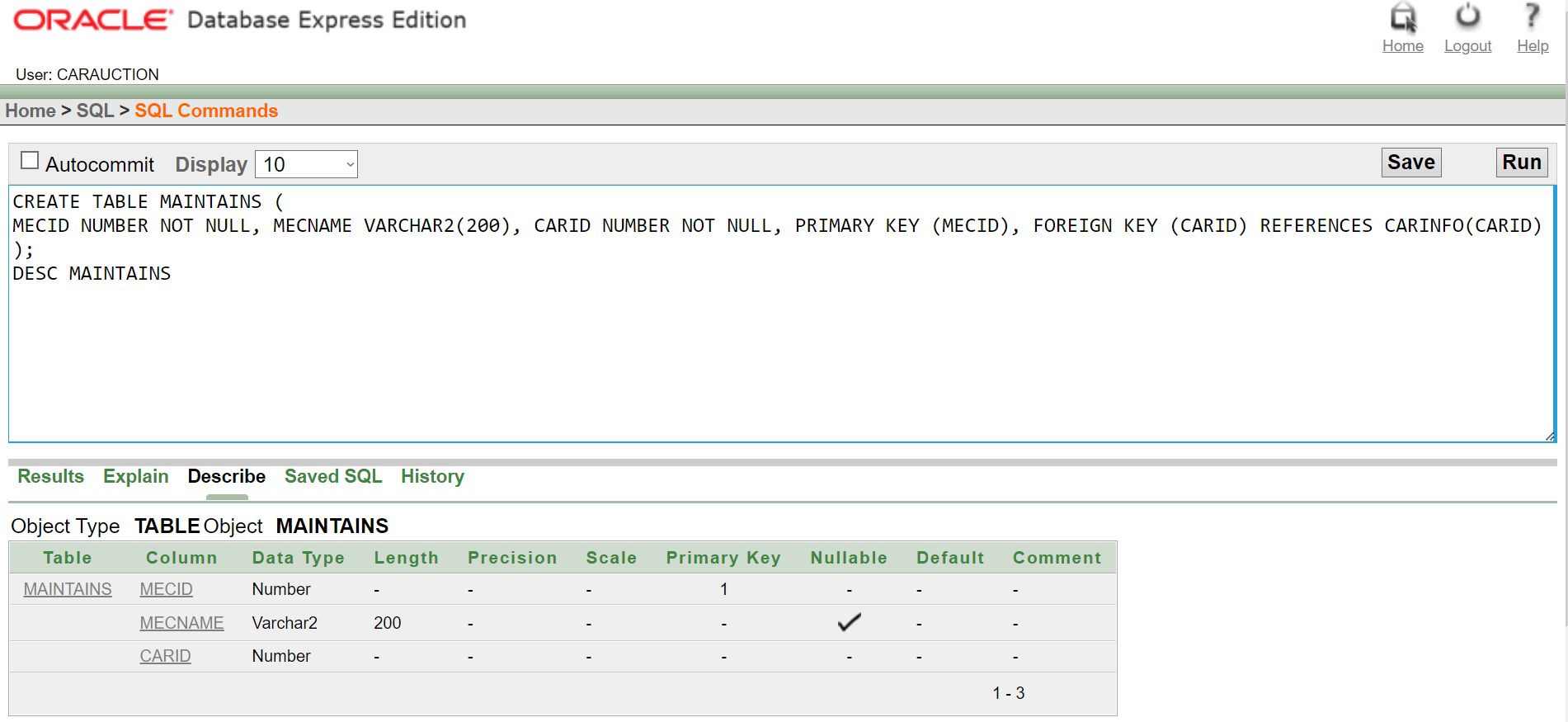
DESC CLEANERINFO



20) CREATE TABLE MAINTAINS (

MECID NUMBER NOT NULL, MECNAME VARCHAR2(200), CARID NUMBER NOT NULL, PRIMARY KEY (MECID), FOREIGN KEY (CARID) REFERENCES CARINFO(CARID) );

DESC MAINTAINS



**DATA INSERTION**

INSERT INTO COMPANYINFO (COMPID, COMPNAME, COMPPHONE)

VALUES (11045666,'CAR IMPO AND EXPO',880197222292)

SELECT\* FROM COMPANYINFO

****



INSERT INTO COMPANYADDRESS (COMPID, STREET, CITY)

VALUES (11045666,'TEJGAO','DHAKA')

SELECT\* FROM COMPANYADDRESS

Graphical user interface, application, email

Description automatically generated

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(99050601,'JOHN SMITH',2000,2, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(99050602,'WOAH GUY',1205,5, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(99050603,'WONG LEE',10000,2, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(66010601,'JAMES LUTHER',650,4, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(66010602,'SUSAN DENNINGS',4000,2, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(66010603,'SARA HOSSAIN',15000,1, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(990332201,'Bruce wayne',20000,1, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(990332202,'tony stark',11000,3, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(770332201,'NAIM UDDIN',1250,1, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(770332202,'FARUK SHIRAJ',1300,1, 11045666);

INSERT INTO HAS (ACCID, ACCNAME, Accbalance, ACCTRANSACTIONS, COMPID)

VALUES(770332203,'KAUSARUR ROHIM',800,2, 11045666);

SELECT\* FROM HAS

Graphical user interface, text, application, email

Description automatically generated

INSERT INTO SALESMANINFO (SMID, SMNAME)

VALUES (99050601,'JOHN SMITH')

INSERT INTO SALESMANINFO (SMID, SMNAME)

VALUES (99050602,'WOAH GUY')

INSERT INTO SALESMANINFO (SMID, SMNAME)

VALUES (99050603,'WONG LEE')

SELECT\* FROM SALESMANINFO

Graphical user interface, application

Description automatically generated

5.

INSERT INTO CARINFO (CARID, CARCONDITION, CARTYPE)

VALUES (8989005501,'MINT','SUV');

INSERT INTO CARINFO (CARID, CARCONDITION, CARTYPE)

VALUES (8989005502,'GOOD','SUV');

INSERT INTO CARINFO (CARID, CARCONDITION, CARTYPE)

VALUES (4343005501,'EXCELLENT','SEDAN');

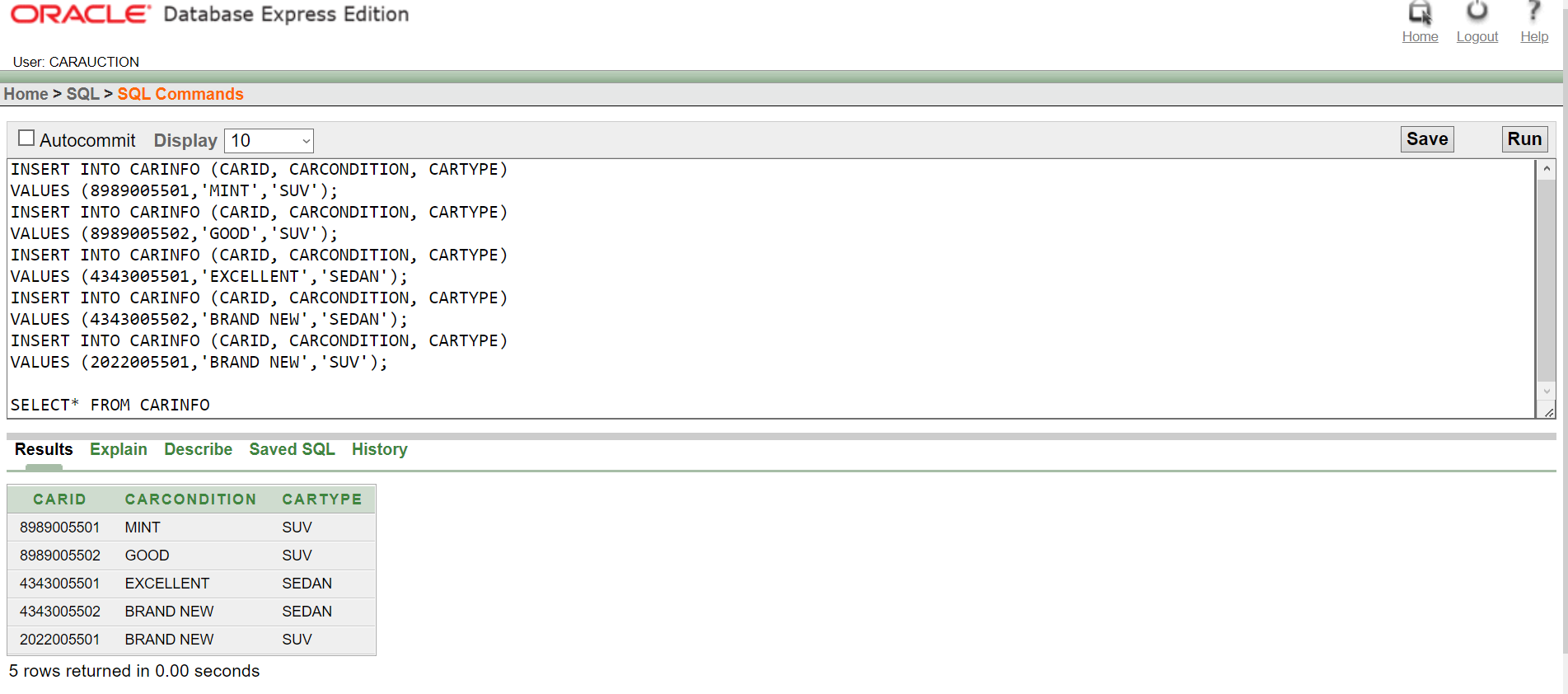
INSERT INTO CARINFO (CARID, CARCONDITION, CARTYPE)

VALUES (4343005502,'BRAND NEW','SEDAN');

INSERT INTO CARINFO (CARID, CARCONDITION, CARTYPE)

VALUES (2022005501,'BRAND NEW','SUV');

SELECT\* FROM CARINFO



6.

INSERT INTO CARREG (CARID, CARREG)

VALUES (8989005501,'BN369147');

INSERT INTO CARREG (CARID, CARREG)

VALUES (8989005502,'BN258456');

INSERT INTO CARREG (CARID, CARREG)

VALUES (4343005501,'TRO9137SE');

INSERT INTO CARREG (CARID, CARREG)

VALUES (4343005502,'GTR005121');

INSERT INTO CARREG (CARID, CARREG)

VALUES (2022005501,'VIP00001');

SELECT\* FROM CARREG



7.

INSERT INTO OWNS(SLOTID,GPHONE,COMPID)

VALUES(01,8801517464238,11045666);

INSERT INTO OWNS(SLOTID,GPHONE,COMPID)

VALUES(02,8801517464239,11045666);

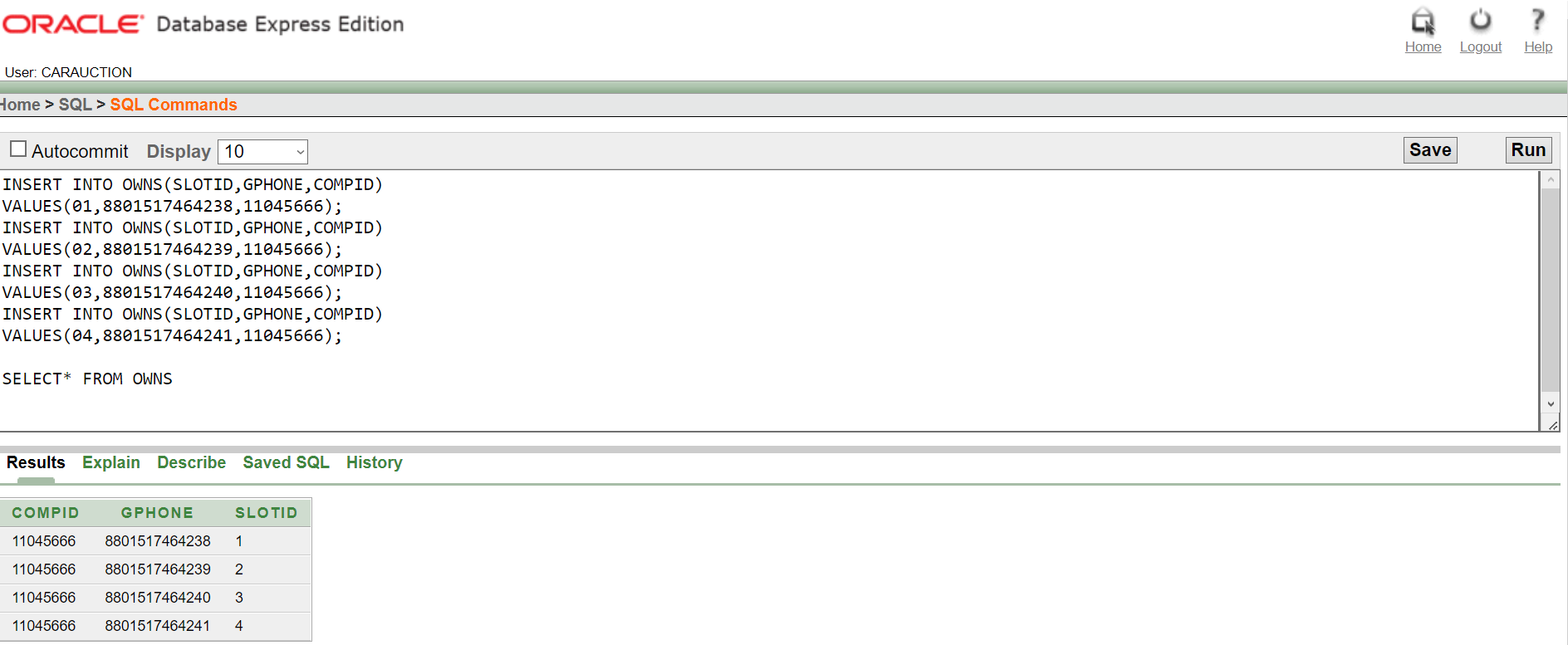
INSERT INTO OWNS(SLOTID,GPHONE,COMPID)

VALUES(03,8801517464240,11045666);

INSERT INTO OWNS(SLOTID,GPHONE,COMPID)

VALUES(04,8801517464241,11045666);

SELECT\* FROM OWNS



8.

INSERT INTO KEEPS(CARID,CARCONDITION,SLOTID)

VALUES(8989005501,'MINT',01);

INSERT INTO KEEPS (CARID,CARCONDITION,SLOTID)

VALUES (8989005502,'GOOD',01);

INSERT INTO KEEPS (CARID,CARCONDITION,SLOTID)

VALUES (4343005501,'EXCELLENT',01);

INSERT INTO KEEPS (CARID,CARCONDITION,SLOTID)

VALUES (4343005502,'BRAND NEW',02);

INSERT INTO KEEPS (CARID,CARCONDITION,SLOTID)

VALUES (2022005501,'BRAND NEW',02);

SELECT\* FROM KEEPS



9.

INSERT INTO WORKSFOR (EMPID,FNAME,LName,COMPID)

VALUES(99050601,'JOHN', 'SMITH', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(99050602,'WOAH','GUY', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(99050603,'WONG','LEE', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(66010601,'JAMES','LUTHER', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(66010602,'SUSAN','DENNINGS', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(66010603,'SARA','HOSSAIN', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(990332201,'Bruce','wayne', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(990332202,'tony','stark', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(770332201,'NAIM','UDDIN', 11045666);

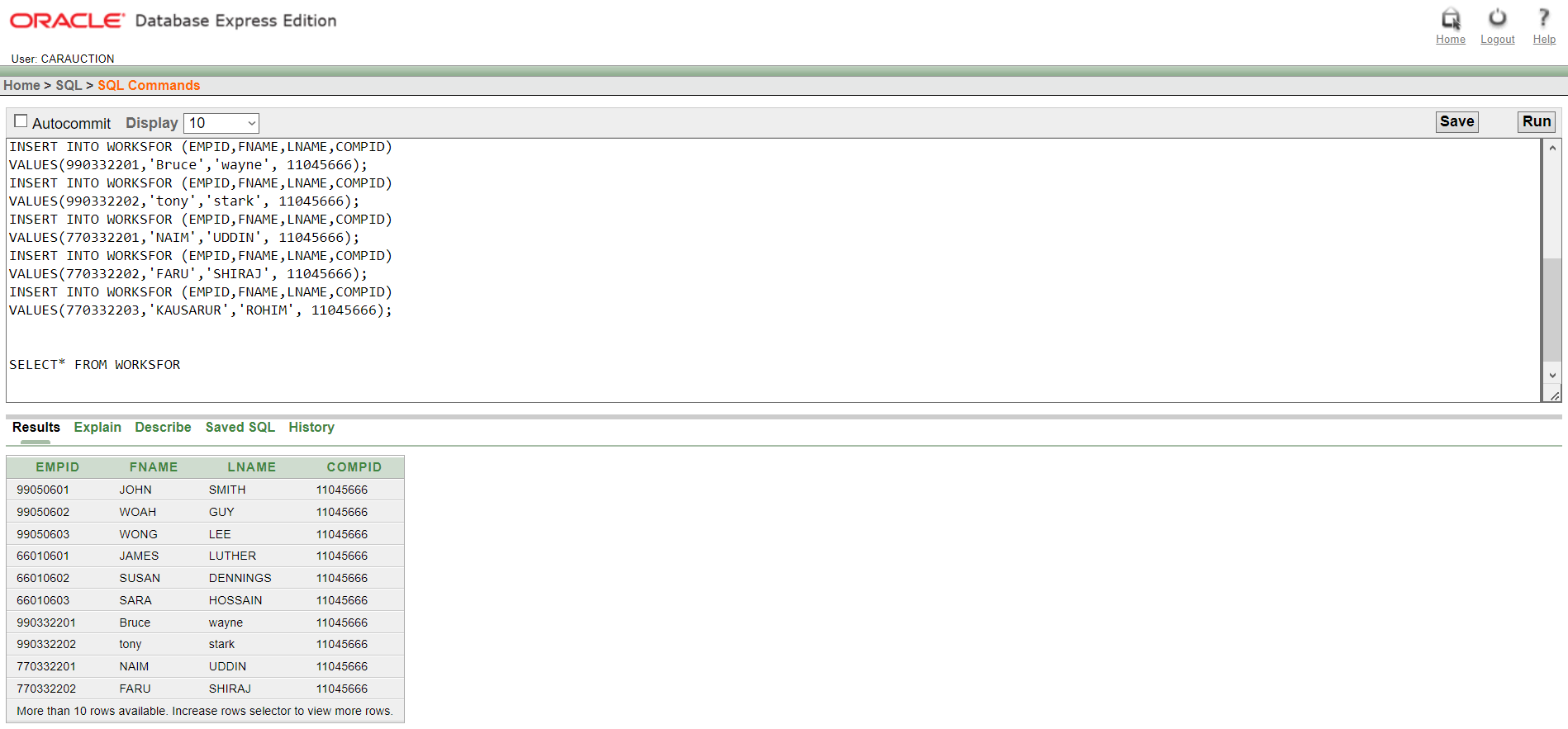
INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(770332202,'FARU','SHIRAJ', 11045666);

INSERT INTO WORKSFOR (EMPID,FNAME,LNAME,COMPID)

VALUES(770332203,'KAUSARUR','ROHIM', 11045666);

SELECT\* FROM WORKSFOR



10.

INSERT INTO DEALERINFO (DID,DNAME)

VALUES(66010601,'JAMES LUTHER');

INSERT INTO DEALERINFO (DID,DNAME)

VALUES(66010602,'SUSAN DENNINGS');

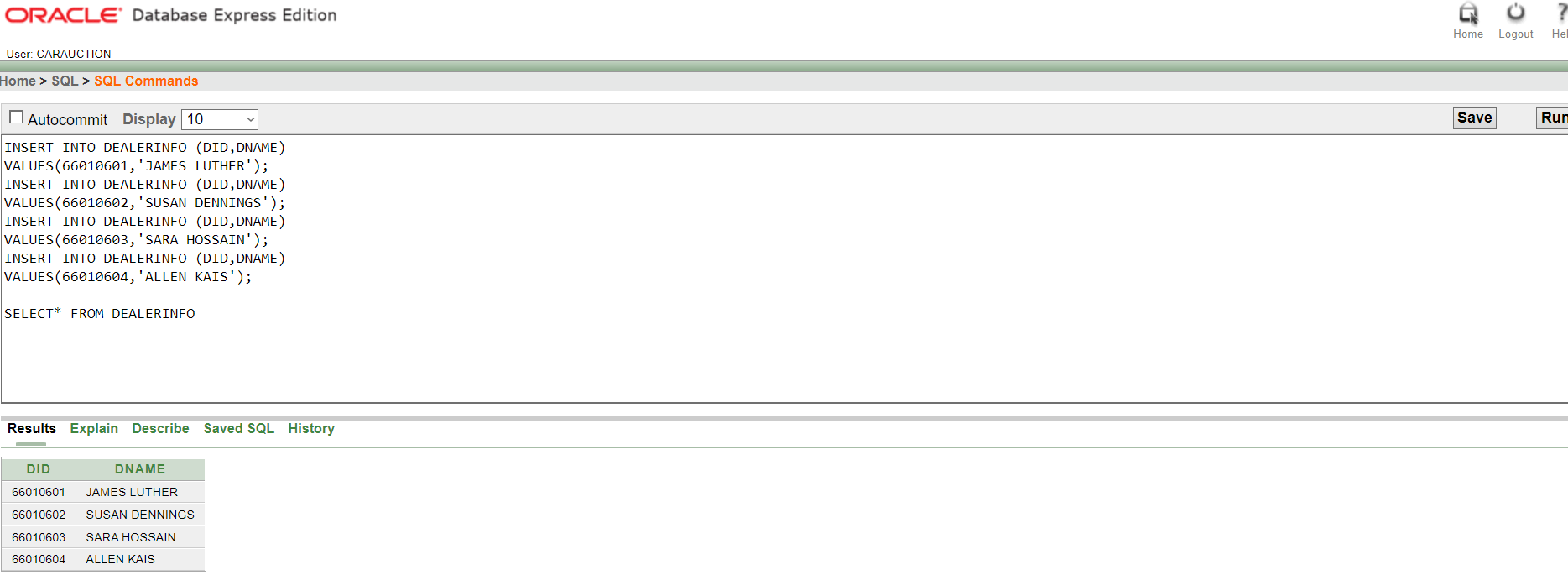
INSERT INTO DEALERINFO (DID,DNAME)

VALUES(66010603,'SARA HOSSAIN');

INSERT INTO DEALERINFO (DID,DNAME)

VALUES(66010604,'ALLEN KAIS');

SELECT\* FROM DEALERINFO



11.

INSERT INTO IMPORTSANDEXPORTS (DID, CARID)

VALUES(66010602, 8989005501);

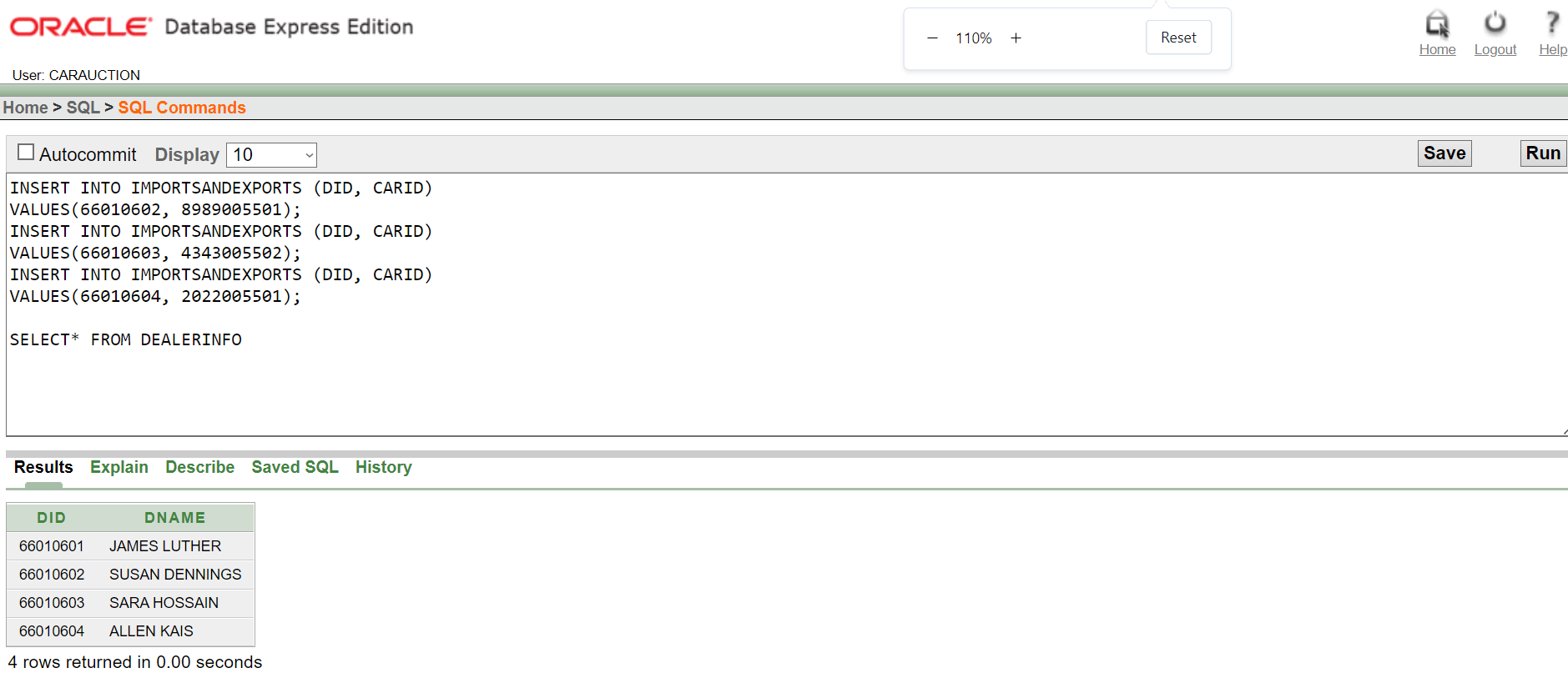
INSERT INTO IMPORTSANDEXPORTS (DID, CARID)

VALUES(66010603, 4343005502);

INSERT INTO IMPORTSANDEXPORTS (DID, CARID)

VALUES(66010604, 2022005501);

SELECT\* FROM DEALERINFO



12.

INSERT INTO MANAGERINFO (MGRID,MGRNAME)

VALUES (990332201,'Bruce wayne');

INSERT INTO MANAGERINFO (MGRID,MGRNAME)

VALUES (990332202,'tony stark');

INSERT INTO MANAGERINFO (MGRID,MGRNAME)

VALUES (990332203,'Jim Len');

SELECT\* FROM MANAGERINFO



13.

INSERT INTO MANAGERCONTACT (MGRID,MGRPHONE)

VALUES (990332201,88019178987611);

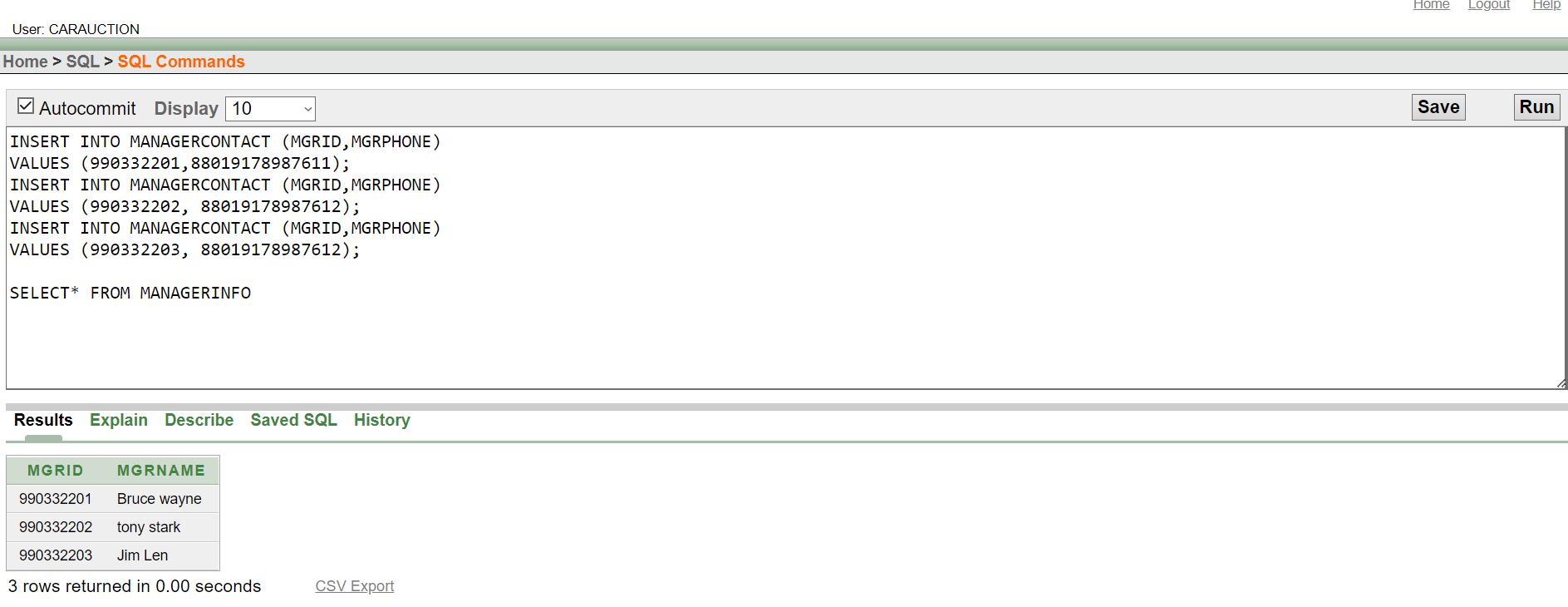
INSERT INTO MANAGERCONTACT (MGRID,MGRPHONE)

VALUES (990332202, 88019178987612);

INSERT INTO MANAGERCONTACT (MGRID,MGRPHONE)

VALUES (990332203, 88019178987612);

SELECT\* FROM MANAGERINFO



14. INSERT INTO MANAGES (MGRID,CARID)

VALUES (990332201, 8989005501);

INSERT INTO MANAGES (MGRID,CARID)

VALUES (990332201, 8989005502);

ERROR

15.

INSERT INTO CUSTOMERINFO (CID,CEMAIL,CNAME)

VALUES(7704,'SAKIB.H1212@GMAIL.COM','SAKIBAL HASAN')

INSERT INTO CUSTOMERINFO (CID,CEMAIL,CNAME)

VALUES(7705,'OBAIDUL.K@GMAIL.COM','OBAIDUL KAKA');

INSERT INTO CUSTOMERINFO (CID,CEMAIL,CNAME)

VALUES(7703,'SHIROOO@GMAIL.COM','PRINCE SHIRO');

SELECT\* FROM CUSTOMERINFO

