DBMS LAB ASSIGNMENT 02

Name:- Ashrith

Registration no:- 20BCE7236

Date:- 04/04/2022

Code:

```sql
CREATE TABLE EMPLOYEE_20BCE7236 (
FIRST_NAME VARCHAR(15) NOT NULL,
MID_NAME CHAR(2),
LAST_NAME VARCHAR(15) NOT NULL,
SSN_NUMBER CHAR(9) PRIMARY KEY,
BIRTHDAY DATE,
ADDRESS VARCHAR2(50),
SEX CHAR(1),
SALARY NUMBER(7),
SUPERVISOR_SSN CHAR(9),
DEPARTMENT_NUMBER NUMBER(5),
FOREIGN KEY (SUPERVISOR_SSN)
REFERENCES EMPLOYEE_20BCE7236(SSN_NUMBER)
ON DELETE SET NULL
);
CREATE TABLE DEPARTMENT_20BCE7236 (
DEPARTMENTNAME VARCHAR(15) NOT NULL,
DEPTNUMBER NUMBER(5) PRIMARY KEY,
MANAGERSSN CHAR (9),
MANAGESTARTDATE DATE,
FOREIGN KEY (MANAGERSSN)
REFERENCES EMPLOYEE_20BCE7236(SSN_NUMBER)
ON DELETE SET NULL
);
CREATE TABLE PROJECT_20BCE7236(
```

```sql
CREATE TABLE PROJECT_20BCE7236(
PROJECTNAME VARCHAR2(15) NOT NULL,
PROJECTNUMBER NUMBER(5) PRIMARY KEY,
PROJECTLOCATION VARCHAR2(15),
DEPARTMENTNUMBER NUMBER(5),
FOREIGN KEY (DEPARTMENTNUMBER)
REFERENCES DEPARTMENT_20BCE7236(DEPTNUMBER)
ON DELETE SET NULL
);
CREATE TABLE DEPT_LOCATIONS_20BCE7236(
DEPT_NUMBER NUMBER(5),
DEPT_LOCATION VARCHAR(15),
FOREIGN KEY (DEPT_NUMBER)
REFERENCES DEPARTMENT_20BCE7236 (DEPTNUMBER)
ON DELETE CASCADE
);
CREATE TABLE WORKS_ON_20BCE7236(
EMPLOYEE_SSN CHAR(9),
PROJECT_NUMBER NUMBER(5),
HOURS DECIMAL(3,1) NOT NULL,
FOREIGN KEY (EMPLOYEE_SSN)
REFERENCES  EMPLOYEE_20BCE7236 (SSN_NUMBER)
ON DELETE CASCADE,
FOREIGN KEY (PROJECT_NUMBER)
REFERENCES  PROJECT_20BCE7236 (PROJECTNUMBER)
```

```sql
REFERENCES  PROJECT_20BCE7236 (PROJECTNUMBER)
ON DELETE CASCADE
);
CREATE TABLE DEPENDENT_20BCE7236(
EMPLOYEE_SSN CHAR(9),
DEPENDENT_NAME VARCHAR(15),
SEX CHAR(1),
BIRTHDAY DATE,
RELATIONSHIP VARCHAR(8),
CONSTRAINT fk_EMPLOYEE_SSN
FOREIGN KEY (EMPLOYEE_SSN)
REFERENCES EMPLOYEE_20BCE7236(SSN_NUMBER)
ON DELETE CASCADE
);
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Doug', 'E', 'Gilbert', 554433221, '09-JUN-60', '11 S 59 E, Salt Lake City, UT', 'M', 80000, NULL , 3);
INSERT  INTO EMPLOYEE_20BCE7236 VALUES('Joyce',  NULL,  'PAN',  543216789,  '07-FEB-78',  '35 S  18  E, Salt  Lake  City, UT', 'F', 70000, NULL, 2);
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Frankin', 'T', 'Wong', 333445555, '08-DEC-45', '638 Voss, Houston, TX', 'M', 40000, 554433221, 5);
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Jennifer', 'S', 'Wallace', 987654321, '20-JUN-31', '291 Berry, Bellaire, TX', 'F', 43000, 554433221, 4);
INSERT INTO EMPLOYEE_20BCE7236  VALUES('Johny',  'B',  'Smith',  123456789,  '09-JAN-55',  '731  Fondren,  Houston, TX', 'M', 30000, 333445555, 5);
INSERT  INTO  EMPLOYEE_20BCE7236  VALUES('Ramesh',  'K',  'Narayan',  666884444,  '15-SEP-52',  '975  Fire  Oak,  Humble, TX', 'M', 38000, 333445555, 5)
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Joyce', 'A', 'English', 453453453, '31-JUL-62', '5631 Rice, Houston, TX', 'F', 25000, 333445555, 5);
INSERT INTO EMPLOYEE_20BCE7236 VALUES('James', 'E', 'Borg', 888665555, '10-NOV-27', '450 Stone, Houston, TX', 'M', 55000, 543216789, 1);
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Alicia', 'J', 'Zelaya', 999887777, '19-JUL-58', '3321 Castle, Spring, TX', 'F', 25000, 987654321, 4);
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Ahmad', 'V', 'Jabbar', 987987987, '29-MAR-59', '980 Dallas, Houston, TX', 'M', 25000, 987654321, 4);
INSERT INTO DEPARTMENT_20BCE7236 VALUES('Administration', 2, 543216789, '04-JAN-99');
```

```sql
INSERT INTO DEPARTMENT_20BCE7236 VALUES('Administration', 2, 543216789, '04-JAN-99');
INSERT INTO DEPARTMENT_20BCE7236 VALUES('Headquarter', 3, 554433221, '22-SEP-55');
INSERT INTO DEPARTMENT_20BCE7236 VALUES('Finance', 4, 987654321, '01-JAN-85');
INSERT INTO DEPARTMENT_20BCE7236 VALUES('Research', 5, 333445555, '22-MAY-78');
INSERT INTO DEPARTMENT_20BCE7236 VALUES('ACADEMIC', 1, 543216789, '05-JAN-99');
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectA', 3388, 'Houston', 1 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectB', 1945, 'Salt Lake City', 3 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectC', 6688, 'Houston', 5 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectD', 2423, 'Bellaire', 4 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectE', 7745, 'Sugarland', 5 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectF', 1566, 'Salt Lake City', 3 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectG', 1234, 'New York', 2 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectH', 3467, 'Stafford', 4 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectI', 4345, 'Chicago', 1 );
INSERT INTO PROJECT_20BCE7236 VALUES('ProjectJ', 2212, 'San Francisco', 2 );

INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(1,'HOUSTON');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(1,'CHICAGO');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(2,'NEWYORK');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(2,'SAN FRANCISCO');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(3,'SALT LAKE CITY');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(4,'STAFFORD');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(4,'BELLARIE');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(5,'SUGARLAND');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(5,'HOUSTON');
```

```sql
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(4,'STAFFORD');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(4,'BELLARIE');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(5,'SUGARLAND');
INSERT INTO DEPT_LOCATIONS_20BCE7236 VALUES(5,'HOUSTON');
 INSERT INTO WORKS_ON_20BCE7236   VALUES('123456789','3388','32.5');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN,PROJECT_NUMBER,HOURS) VALUES ('123456789','3388','32.5');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('123456789','1945','7.5');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('666884444','3388','40.0');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('453453453','7745','20.0');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('453453453','2212','20.0');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('333445555','7745','10.0');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('333445555','6688','10.0');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('333445555','4345','35.0');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('333445555','2212','28.5');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('999887777','2212','11.5');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('543216789','2212','17.0');
INSERT INTO WORKS_ON_20BCE7236 (EMPLOYEE_SSN, PROJECT_NUMBER, HOURS) VALUES('554433221','1945','21.5');
INSERT INTO DEPENDENT_20BCE7236(EMPLOYEE_SSN, DEPENDENT_NAME, SEX, BIRTHDAY, RELATIONSHIP) VALUES ('333445555','ALICE','F','05-APR-76','DAUGHTER');
INSERT INTO DEPENDENT_20BCE7236 VALUES('333445555','ALICE','F','05-APR-76','DAUGHTER');
INSERT INTO DEPENDENT_20BCE7236 VALUES('333445555','THEODORE','M','25-OCT-73','SON');
INSERT INTO DEPENDENT_20BCE7236 VALUES('333445555','JOY','F','03-MAY-48','SPOUSE');
INSERT INTO DEPENDENT_20BCE7236 VALUES('987654321','ABNER','M','29-FEB-32','SPOUSE');
INSERT INTO DEPENDENT_20BCE7236 VALUES('123456789','ALICE','F','31-DEC-78','DAUGHTER');
INSERT INTO DEPENDENT_20BCE7236 VALUES('123456789','ELIZABETH','F','05-MAY-57','SPOUSE');
```

Output:

```
Table EMPLOYEE_20BCE7236 created.


Table DEPARTMENT_20BCE7236 created.


Table PROJECT_20BCE7236 created.


Table DEPT_LOCATIONS_20BCE7236 created.


Table WORKS_ON_20BCE7236 created.




Table DEPENDENT_20BCE7236 created.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.


1 row inserted.
```

1) Perform thefollowing operationson the databaseto note the violations integrity constraints by anyof the following operations.

a)Insertion of the tuple('Robert', 'F', 'Scott', '987987987 ', '21-JUN-42', '2365 Newcastle Rd, Bellaire, TX',M, 58000, '888665555', 1) into EMPLOYEE.

```
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Robert','F','Scott',987987987,'21-JUN-40','2365 New Castle,Bellaire,Tx','M',58000,888665555,1);
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Ramez','F','Scott',NULL,'21-JUN-40','2365 New Castle,Bellaire,Tx','M',58000,888665555,1);
INSERT INTO WORKS_ON_20BCE7236   VALUES('677678989',NULL,'40.0');
INSERT INTO DEPENDENT_20BCE7236 VALUES('453453453','JHON','M','12-DEC-60','SPOUSE');
INSERT INTO DEPENDENT_20BCE7236 VALUES('343453453','VARUN','','12-DEC-60','SON');
DELETE FROM WORKS_ON_20BCE7236 WHERE
EMPLOYEE_SSN = 333445555;
UPDATE DEPARTMENT_20BCE7236
```

Script Output ×

Task completed in 0.047 seconds

```
1 row inserted.


Error starting at line : 120 in command -
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Robert','F','Scott',987987987,'21-JUN-40','2365 New Castle,Bellaire,Tx','M',58000,888665555,1)
Error report -
ORA-00001: unique constraint (SYSTEM.SYS_C008364) violated
```

b)Insertion of the tuple('Ramez', 'F', 'Scott', ' ', '21-JUN-42', '2365 Newcastle Rd, Bellaire, TX', M, 58000,'888665555', 1) into EMPLOYEE.

```
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Ramez','F','Scott',NULL,'21-JUN-40','2365 New Castle,Bellaire,Tx','M',58000,888665555,1);
INSERT INTO WORKS_ON_20BCE7236   VALUES('677678989',NULL,'40.0');
INSERT INTO DEPENDENT_20BCE7236 VALUES('453453453','JHON','M','12-DEC-60','SPOUSE');
INSERT INTO DEPENDENT_20BCE7236 VALUES('343453453','VARUN','','12-DEC-60','SON');
DELETE FROM WORKS_ON_20BCE7236 WHERE
EMPLOYEE_SSN = 333445555;
UPDATE DEPARTMENT_20BCE7236
```

Script Output ×

Task completed in 0.051 seconds

```
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Robert','F','Scott',987987987,'21-JUN-40','2365 New Castle,Bellaire,Tx','M',58000,888665555,1)
Error report -
ORA-00001: unique constraint (SYSTEM.SYS_C008364) violated



Error starting at line : 121 in command -
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Ramez','F','Scott',NULL,'21-JUN-40','2365 New Castle,Bellaire,Tx','M',58000,888665555,1)
Error report -
ORA-01400: cannot insert NULL into ("SYSTEM"."EMPLOYEE_20BCE7236"."SSN_NUMBER")
```

_cc)Insertion of the tuple('677678989', null, '40.0') into WORKS_ON.


```
INSERT INTO WORKS_ON_20BCE7236   VALUES('677678989',NULL,'40.0');
INSERT INTO DEPENDENT_20BCE7236 VALUES('453453453','JHON','M','12-DEC-60','SPOUSE');
INSERT INTO DEPENDENT_20BCE7236 VALUES('343453453','VARUN','','12-DEC-60','SON');
DELETE FROM WORKS_ON_20BCE7236 WHERE
EMPLOYEE_SSN = 333445555;
UPDATE DEPARTMENT_20BCE7236
```

Script Output ×

Task completed in 0.067 seconds

```
INSERT INTO EMPLOYEE_20BCE7236 VALUES('Ramez','F','Scott',NULL,'21-JUN-40','2365 New Castle,Bellaire,TX','
Error report -
ORA-01400: cannot insert NULL into ("SYSTEM"."EMPLOYEE_20BCE7236"."SSN_NUMBER")


Error starting at line : 122 in command -
INSERT INTO WORKS_ON_20BCE7236   VALUES('677678989',NULL,'40.0')
Error report -
ORA-02291: integrity constraint (SYSTEM.SYS_C008374) violated - parent key not found
```

d)Insertion of the tuple('453453453', 'John', M, '12-DEC-60', 'SPOUSE') into DEPENDENT.


```
INSERT INTO WORKS_ON_20BCE7236   VALUES('677678989',NULL,'40.0');
INSERT INTO DEPENDENT_20BCE7236 VALUES('453453453','JHON','M','12-DEC-60','SPOUSE');
INSERT INTO DEPENDENT_20BCE7236 VALUES('343453453','VARUN','','12-DEC-60','SON');
DELETE FROM WORKS_ON_20BCE7236 WHERE
EMPLOYEE_SSN = 333445555;
UPDATE DEPARTMENT_20BCE7236
```

Script Output ×

Task completed in 0.042 seconds

```
Error starting at line : 122 in command -
INSERT INTO WORKS_ON_20BCE7236   VALUES('677678989',NULL,'40.0')
Error report -
ORA-02291: integrity constraint (SYSTEM.SYS_C008374) violated - parent key not found


1 row inserted.
```

e)Insertion of the tuple('343453453', 'Varun','', '12-DEC-60', 'SON') into DEPENDENT.

```
INSERT INTO DEPENDENT_20BCE7236 VALUES('343453453','VARUN','','12-DEC-60','SON');
DELETE FROM WORKS_ON_20BCE7236 WHERE
EMPLOYEE_SSN = 333445555;
UPDATE DEPARTMENT_20BCE7236
SET MANAGERSSN = '123456789',MANAGESTARTDATE = '01-OCT-88'
WHERE DEPTNUMBER = 5;
ALTER TABLE EMPLOYEE_20BCE7236
ADD CONSTRAINT fk_SSN FOREIGN KEY (SUPERVISOR_SSN)
REFERENCES EMPLOYEE_20BCE7236(SSN_NUMBER) ON DELETE SET NULL;
ALTER TABLE PROJECT_20BCE7236
ADD CONSTRAINT UNQ_NAME UNIQUE (PROJECTNAME);
ALTER TABLE EMPLOYEE_20BCE7236
MODIFY SEX CHAR(1) NOT NULL;
ALTER TABLE EMPLOYEE_20BCE7236 MODIFY SALARY REAL;
```

Script Output ×

Task completed in 0.046 seconds

```
1 row inserted.


Error starting at line : 124 in command -
INSERT INTO DEPENDENT_20BCE7236 VALUES('343453453','VARUN','','12-DEC-60','SON')
Error report -
ORA-02291: integrity constraint (SYSTEM.FK_EMPLOYEE_SSN) violated - parent key not found
```
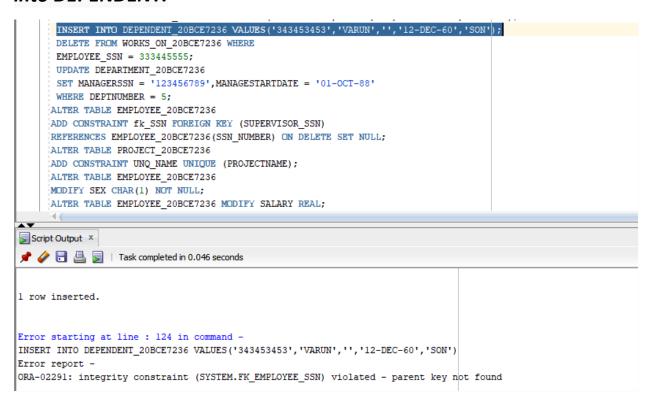
f)Deletion of tuples fromWORKS_ON with ESSN= '333445555'.

```
DELETE FROM WORKS_ON_20BCE7236 WHERE
EMPLOYEE_SSN = 333445555;
UPDATE DEPARTMENT_20BCE7236
SET MANAGERSSN = '123456789',MANAGESTARTDATE = '01-OCT-88'
WHERE DEPTNUMBER = 5;
ALTER TABLE EMPLOYEE_20BCE7236
ADD CONSTRAINT fk_SSN FOREIGN KEY (SUPERVISOR_SSN)
REFERENCES EMPLOYEE_20BCE7236(SSN_NUMBER) ON DELETE SET NULL;
ALTER TABLE PROJECT_20BCE7236
ADD CONSTRAINT UNQ_NAME UNIQUE (PROJECTNAME);
ALTER TABLE EMPLOYEE_20BCE7236
MODIFY SEX CHAR(1) NOT NULL;
ALTER TABLE EMPLOYEE_20BCE7236 MODIFY SALARY REAL;
```

Script Output ×

Task completed in 0.052 seconds

```
Error starting at line : 124 in command -
INSERT INTO DEPENDENT_20BCE7236 VALUES('343453453','VARUN','','12-DEC-60','SON')
Error report -
ORA-02291: integrity constraint (SYSTEM.FK_EMPLOYEE_SSN) violated - parent key not found


4 rows deleted.
```

g)Modify MGRSSN and MGRSTARTDATE of the DEPARTMENT tuple with DNUMBER=5 to'123456789' and '01-OCT-88', respectively.

```
UPDATE DEPARTMENT_20BCE7236
SET MANAGERSSN = '123456789',MANAGESTARTDATE = '01-OCT-88'
WHERE DEPTNUMBER = 5;
ALTER TABLE EMPLOYEE_20BCE7236
ADD CONSTRAINT fk_SSN FOREIGN KEY (SUPERVISOR_SSN)
REFERENCES EMPLOYEE_20BCE7236(SSN_NUMBER) ON DELETE SET NULL;
ALTER TABLE PROJECT_20BCE7236
ADD CONSTRAINT UNQ_NAME UNIQUE (PROJECTNAME);
ALTER TABLE EMPLOYEE_20BCE7236
MODIFY SEX CHAR(1) NOT NULL;
ALTER TABLE EMPLOYEE_20BCE7236 MODIFY SALARY REAL;
```

Script Output ×

Task completed in 0.042 seconds

```
INSERT INTO DEPENDENT_20BCE7236 VALUES('343453453','VARUN','','12-DEC-
Error report -
ORA-02291: integrity constraint (SYSTEM.FK_EMPLOYEE_SSN) violated - pa:


4 rows deleted.


1 row updated.
```

2.Alter the tables to

a)Enforce Foreign Keys using Alter command [if not done earlier].

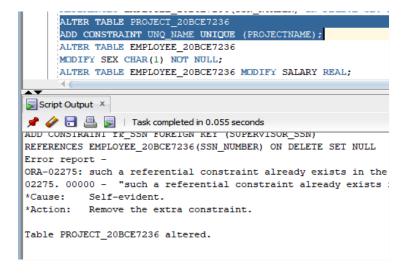*b)Remove foreign key defined on SuperSSN and enforce it again using Alter tablecommand.*

```
ALTER TABLE PROJECT_20BCE7236
ADD CONSTRAINT UNQ_NAME UNIQUE (PROJECTNAME);
ALTER TABLE EMPLOYEE_20BCE7236
MODIFY SEX CHAR(1) NOT NULL;
ALTER TABLE EMPLOYEE_20BCE7236 MODIFY SALARY REAL;
```

Script Output ×

Task completed in 0.055 seconds

```
ADD CONSTRAINT FK_SSN FOREIGN KEY (SUPERVISOR_SSN)
REFERENCES EMPLOYEE_20BCE7236(SSN_NUMBER) ON DELETE SET NULL
Error report -
ORA-02275: such a referential constraint already exists in the
02275. 00000 -  "such a referential constraint already exists :
*Cause:    Self-evident.
*Action:   Remove the extra constraint.


Table PROJECT_20BCE7236 altered.
```

c)Make name of Project as Unique and sex of employee as not null.

```
ALTER TABLE EMPLOYEE_20BCE7236
MODIFY SEX CHAR(1) NOT NULL;
ALTER TABLE EMPLOYEE_20BCE7236 MODIFY SALARY REAL;
```

Script Output ×

Task completed in 0.081 seconds

```
ORA-02275: such a referential constraint already exists in the table
02275. 00000 -  "such a referential constraint already exists in the table"
*Cause:    Self-evident.
*Action:   Remove the extra constraint.


Table PROJECT_20BCE7236 altered.


Table EMPLOYEE_20BCE7236 altered.
```

d)Make salary of employee to accept real values.

```
MODIFY SEX CHAR(1) NOT NULL;
ALTER TABLE EMPLOYEE_20BCE7236 MODIFY SALARY REAL;
```

Script Output ×

Task completed in 0.056 seconds

```
*Action:   Remove the extra constraint.

Table PROJECT_20BCE7236 altered.


Table EMPLOYEE_20BCE7236 altered.


Table EMPLOYEE_20BCE7236 altered.
```