Teaching-learning activities

1. Realise the physical design of the COMPANY database.

Figure 5.6
One possible database state for the COMPANY relational database schema.

EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000	333445555	5
Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000	888665555	5
Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000	987654321	4
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	4
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5
Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000	987654321	4
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	NULL	1

DEPARTMENT

Dname	Dnumber	Mgr_ssn	Mgr_start_date
Research	5	333445555	1988-05-22
Administration	4	987654321	1995-01-01
Headquarters	1	888665555	1981-06-19

DEPT_LOCATIONS

Dnumber	Dlocation
1	Houston
4	Stafford
5	Bellaire
5	Sugarland
5	Houston

WORKS_ON

Essn	Pno	Hours
123456789	1	32.5
123456789	2	7.5
666884444	3	40.0
453453453	1	20.0
453453453	2	20.0
333445555	2	10.0
333445555	3	10.0
333445555	10	10.0
333445555	20	10.0
999887777	30	30.0
999887777	10	10.0
987987987	10	35.0
987987987	30	5.0
987654321	30	20.0
987654321	20	15.0
888665555	20	NULL

PROJECT

Pname	Pnumber	Plocation	Dnum
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4

DEPENDENT

Essn	Dependent_name	Sex	Bdate	Relationship
333445555	Alice	F	1986-04-05	Daughter
333445555	Theodore	M	1983-10-25	Son
333445555	Joy	F	1958-05-03	Spouse
987654321	Abner	M	1942-02-28	Spouse
123456789	Michael	M	1988-01-04	Son
123456789	Alice	F	1988-12-30	Daughter
123456789	Elizabeth	F	1967-05-05	Spouse

Use the SQL language to carry out the exercise.

1. The following modifications must be made in the ***Company*** database:

- Remove the Adress field from the Employee table.

ALTER TABLE EMPLOYEE DROP COLUMN Adress CASCADE;

- Add a column in the Project table called Hours that will indicate the duration in hours for each project.

ALTER TABLE PROJECT ADD COLUMN Hours (int);

- Removes the Mgr_start_date field from the Department table.

ALTER TABLE DEPARTMENT DROP COLUMN Mgr_start_date CASCADE;

- Rename the Relationship column in the Dependent table to Family.

ALTER TABLE DEPENDENT CHANGE Relationship Family VARCHAR(8);

2. Carry out the physical design of the ***Startrek*** exercise worked on in previous units (without specialization)

- The tables should be created.

CREATE TABLE ACT-PER (

cod_actor	CHAR (25)	NOT NULL
nombre	VARCHAR (25)	NOT NULL
fecha	DATE	NOT NULL
nacionalidad	VARCHAR(25)	
cod_per	VARCHAR (25)	NOT NULL
super_per	CHAR (9)	
nombre_p	VARCHAR (25)	NOT NULL
raza	VARCHAR (20)	NOT NULL
grado	VARCHAR (20)	

PRIMARY KEY (cod_actor),
UNIQUE (cod_per),
FOREIGN KEY (Super_per) **REFERENCES** ACT-PER (cod_actor));

CREATE TABLE CAPÍTULO (

orden	INT	NOT NULL
temporada	INT	NOT NULL
titulo	VARCHAR (25)	NOT NULL
fecha	DATE	NOT NULL

PRIMARY KEY (orden, temporada));

CREATE TABLE APARECE (

orden	INT	NOT NULL
temporada	INT	NOT NULL
cod_actor	CHAR (25)	NOT NULL

PRIMARY KEY (orden, temporada, cod_actor),
FOREIGN KEY (orden, temporada) **REFERENCES** CAPÍTULO (orden, temporada)
FOREIGN KEY (cod_actor) **REFERENCES** ACT-PER (cod_actor));

CREATE TABLE PLANETA (

cod_planeta	VARCHAR (20)	NOT NULL
galaxia	VARCHAR (20)	NOT NULL
nombre	VARCHAR (20)	NOT NULL

PRIMARY KEY (cod_planeta));

CREATE TABLE VISITA (

orden	INT	NOT NULL
temporada	INT	NOT NULL
cod_planeta	VARCHAR (20)	NOT NULL
problema	VARCHAR (25)	NOT NULL

PRIMARY KEY (orden, temporada, cod_planeta)
FOREIGN KEY (orden, temporada) **REFERENCES** CAPÍTULO (orden, temporada),
FOREIGN KEY (cod_planeta) **REFERENCES** PLANETA (cod_planeta));

CREATE TABLE PELÍCULA (

cod_pelicula	VARCHAR (20)	NOT NULL
año	INT	NOT NULL
titulo	VARCHAR (20)	NOT NULL
director	VARCHAR (20)	NOT NULL
cod_actor	CHAR (25)	NOT NULL

PRIMARY KEY (cod_película),
FOREIGN KEY (cod_actor) **REFERENCES** ACT-PER (cod_actor));

CREATE TABLE APARECE2 (

cod_pelicula	VARCHAR (20)	NOT NULL
cod_actor	CHAR (25)	NOT NULL

PRIMARY KEY (cod_película, cod_actor),

FOREIGN KEY (cod_actor) **REFERENCES** ACT-PER (cod_actor),
FOREIGN KEY (cod_pelicula) **REFERENCES** PELICULA (cod_pelicula));

3. The following modifications should be made to the ***Startrek*** database created in the previous exercise.

- Add the City column to the PERSONAJE table.

ALTER TABLE PERSONAJE ADD COLUMN City VARCHAR (12);

- Add the column Birth_Date to the PERSONAJE table.

ALTER TABLE PERSONAJE ADD COLUMN Birth_Date (DATE);

- Remove the column galaxia in the PLANETA table.

ALTER TABLE PLANETA DROP COLUMN galaxia CASCADE;

- Rename the columns “grado” to “categoría” in PERSONAJE table.

ALTER TABLE PERSONAJE CHANGE grado categoria VARCHAR (20);