Lab Assignment 0

SS Chung

1. Creating a Relational Database Schema from ER Diagram, Populating the Database and Querying over the database with SQL

1. Creating the COMPANY database schema using SQL (DDL) statements.
The COMPANY database schema is depicted in Figure 5.7 in the back (in Page 75 in Text Book) from ER Diagram in Figure 7-2 in Page 204 in Textbook). Core data for this database is shown in Figure 3.6 in the back (in page 72 in Textbook).
Write the corresponding SQL commands (DDL) to create all 6 Tables as shown in Figure 5.7.

The typical SQL commands (DDL) for this lab are as follow:

```
Drop table Employee;
Create table Employee ( ....);
ALTER TABLE EMPLOYEE ADD COLUMN…
ALTER TABLE EMPLOYEE ADD CONSTRAINT…
ALTER TABLE EMPLOYEE DROP COLUMN…;
ALTER TABLE EMPLOYEE DROP CONSTRAINT…;
ALTER TABLE EMPLOYEE ALTER COLUMN…;
Select * From Employee;
…
```

2. Populating the COMPANY database using SQL (DML) statements.

The typical SQL commands (DML) to populate a table and show the rows inserted into the table for this task are like the following example.

```
INSERT INTO EMPLOYEE VALUES('John','B','Smith','123456789','9-Jan-55','731
Fondren, Houston, TX','M',30000,'987654321',5);
 …
Select * From Employee;
```

Show your SQL statements and the result in a Word document. Add screenshots showing your SQLs and the results to show the content of each table after populating it.

3. Write SQL as follow:

3-1) Write SQL using a view named `VDept_Headcount` that reports headcount for each department. The report includes 3 columns as follow:
Dept_Name, Dept_Number, No_Emp.
Include all the departments.

3-2)
1) Add yourself to the database (Employee, Dependent, Works_On). Enter some assignments, and family members.

2) Change your view to add one more info - Salary_Budget as total salary for each department. Include all the departments. Your report lists 4 Columns as follow:
Dept_Name, Dept_Number, No_Emp, Salary_Budget

3) Run the same query that you wrote in 3-1) to report the updated info after changes in the database.

Show your SQL statements and the result in a Word document. Add screenshots showing your SQLs and the results to show your report is updated before and after the changes in the database.

4. Update the following new changes into the database:

1) Joyce English with Ssn = 453453453 got married with John.
2) Jenifer Wallace with Ssn = 987654321 just had a new daughter named Erica.
3) Jenifer Wallace with Ssn = 987654321 is just assigned to a new project number '10' to work on.

Add these new entries into Dependent, Works_On tables in your database then Select * from Dependent and Select * from Works_On to show the updated table contents.

5. Write SQL Select statements to retrieve data in the followings:

Q1:
Make a list of all project numbers that Research department employees are working on, either as a worker or as a manager of the department that controls the projects.

Q2:
Get SSN and the last name of married female employees who work on three or more projects

Q3. Write SQL using View instead of Subquery (the part to find the employees who are working on three more projects) to express the same query Q2.

Q4:
Get the last name of married employees who only have daughters.

(Hint: Indentify connections between the following three sets.

Married : From Dependent table with relationship = 'spouse';
Girls : From Dependent table with relationship = 'daughter';
Boys : From Dependent table with relationship relationship = 'son';

6. Document your work.
For each query, add a screenshot showing your SQL and the results together.

1. Your query and the result of your query for each question
2. Make a screenshot of each query and its result returned in one window to show your query successfully returns the correct result.
3. Add comments, if needed, explaining the meaning of each component included in the report.
4. Turn in a Printout of your report in Class for grading
5. Submit your lab report files on Blackboard for a timestamp

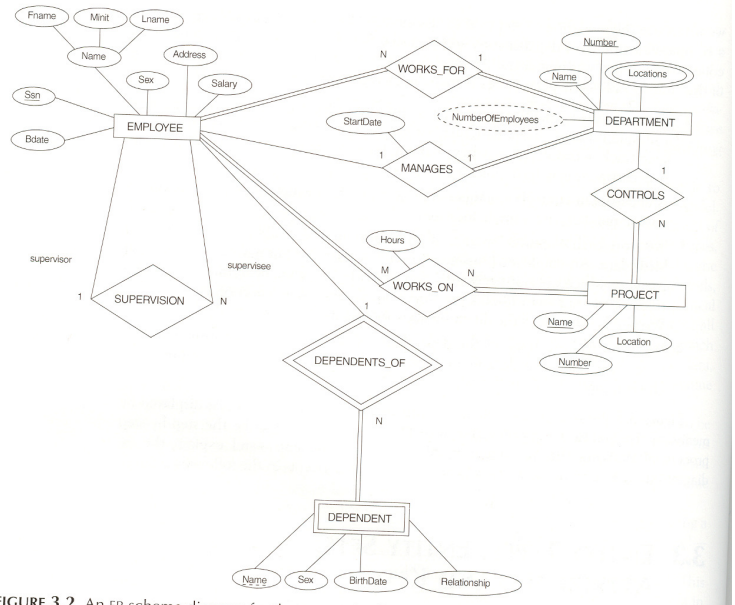


FIGURE 3.2 An ER schema diagram for the COMPANY database.

Figure 2. COMPANY SCHEMA - ER Diagram

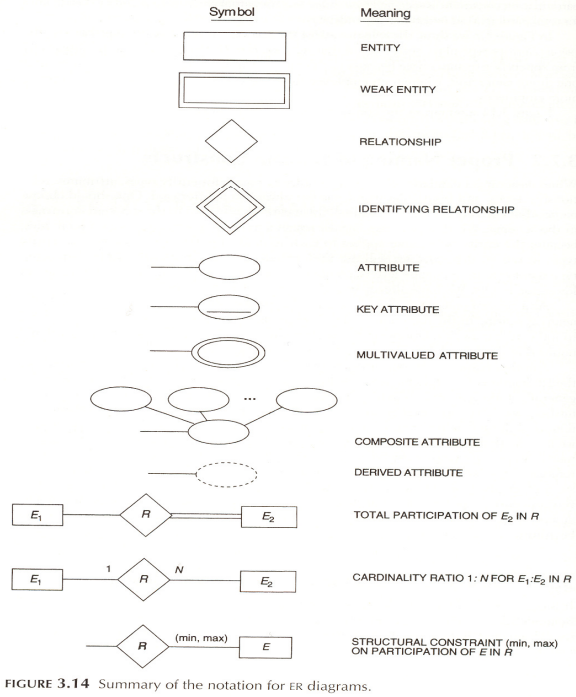
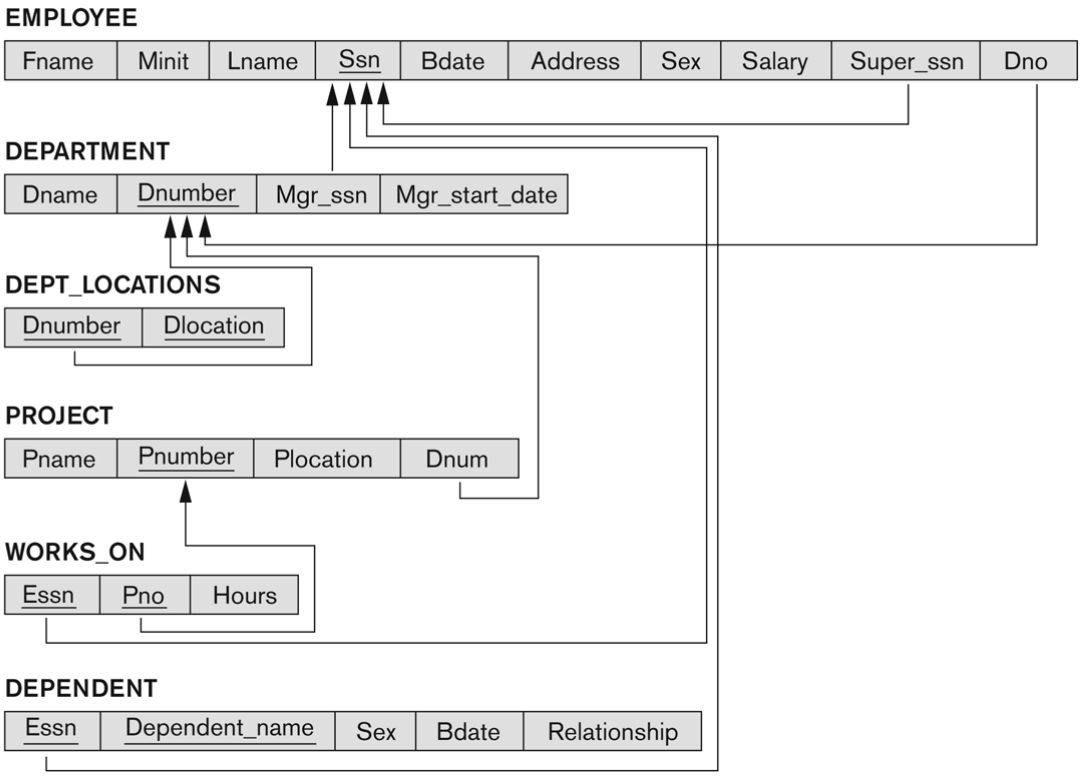


FIGURE 3.14 Summary of the notation for ER diagrams.

Figure 3. Symbols of ER diagrams

Figure 5.7
Referential integrity constraints displayed on the COMPANY relational database schema.



COMPANY DATABASE

EMPLOYEE

FNAME	MINIT	LNAME	SSN	BDATE	ADDRESS	SEX	SALARY	SUPERSSN	DNO
John	B	Smith	123456789	09-Jan-55	731 Fondren, Houston, TX	M	30000	987654321	5
Franklin	T	Wong	333445555	08-Dec-45	638 Voss, Houston, TX	M	40000	888665555	5
Joyce	A	English	453453453	31-Jul-62	5631 Rice, Houston, TX	F	25000	333445555	5
Ramesh	K	Narayan	666884444	15-Sep-52	975 Fire Oak, Humble, TX	M	38000	333445555	5
James	E	Borg	888665555	10-Nov-27	450 Stone, Houston, TX	M	55000		1
Jennifer	S	Wallace	987654321	20-Jun-31	291 Berry, Bellaire, TX	F	43000	888665555	4
Ahmad	V	Jabbar	987987987	29-Mar-59	980 Dallas, Houston, TX	M	25000	987654321	4
Alicia	J	Zelaya	999887777	19-Jul-58	3321 Castle, SPring, TX	F	25000	987654321	4

DEPARTMENT

DNAME	DNUMBER	MGRSSN	MGRSTARTDATE
Headquarters	1	888665555	19-Jun-71
Administration	4	987654321	01-Jan-85
Research	5	333445555	22-May-78
Automation	7	123456789	06-Oct-05

DEPENDENT

ESSN	DEPENDENT_NAME	SEX	BDATE	RELATIONSHIP
123456789	Alice	F	31-Dec-78	Daughter
123456789	Elizabeth	F	05-May-57	Spouse
123456789	Michael	M	01-Jan-78	Son
333445555	Alice	F	05-Apr-76	Daughter
333445555	Joy	F	03-May-48	Spouse
333445555	Theodore	M	25-Oct-73	Son
987654321	Abner	M	29-Feb-32	Spouse

DEPT_LOCATIONS

DNUMBER	DLOCATION
1	Houston
4	Stafford
5	Bellaire
5	Sugarland
5	Houston

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

WORKS_ON

ESSN	PNO	Hours
123456789	1	32.5
123456789	2	7.5
333445555	2	10
333445555	3	10
333445555	10	10
333445555	20	10
453453453	1	20
453453453	2	20
666884444	3	40
888665555	20	
987654321	20	15
987654321	30	20
987987987	10	35
987987987	30	5
999887777	10	10
999887777	30	30