

# ANKARA ÜNİVERSİTESİ BİLGİSAYAR MÜHENDİSLİĞİ BÖLÜMÜ

## BLM258 LAB8 2020 BAHAR Son Gönderme Tarihi: 03.05.2020 23:59

**Figure 3.6**

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

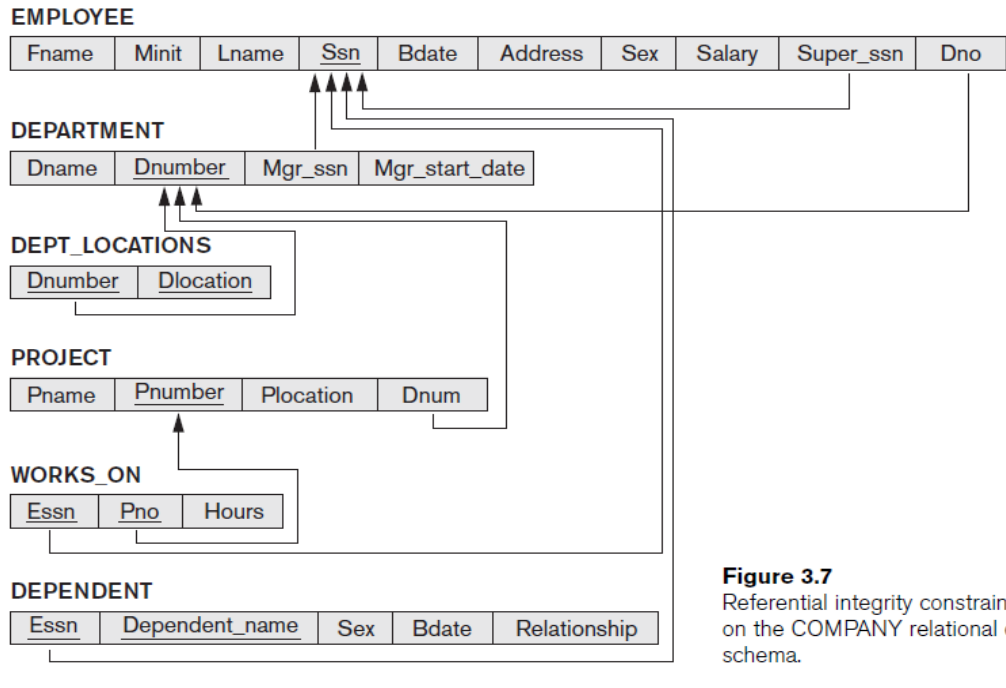
Essn	Pno	Hours
123456789	1	32.5
123456789	2	7.5
666884444	3	40.0
453453453	1	20.0
453453453	2	20.0
333445555	2	10.0
333445555	3	10.0
333445555	10	10.0
333445555	20	10.0
999887777	30	30.0
999887777	10	10.0
987987987	10	35.0
987987987	30	5.0
987654321	30	20.0
987654321	20	15.0
888665555	20	NULL

### 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



**Figure 3.7**  
Referential integrity constraints displayed on the COMPANY relational database schema.

(**RELATIONAL ALGEBRA**) Figure 3.7 de yer alan COMPANY relational veritabanı üzerinde gerçekleştirilecek aşağıda verilen sorguları, **6. Bölümde** verilen **relational algebra** operatörlerini kullanarak yazınız. Ayrıca her bir sorgu için; ilgili sorgu Figure 3.6 da yer alan database state üzerinde uygulandığında, elde edilecek sonucu yazınız. (Fundamentals of Database Systems, R. Elmasri, S. B. Navathe)

- 1.) ProductX isimli projede haftada 10 saatten fazla çalışan 5 numaralı bölümde yer alan çalışanların isimlerini bulunuz. (Retrieve the names of all employees in department 5 who work more than 10 hours per week on the ProductX project.)
- 2.) Her projede yer alan çalışanların isimlerini bulunuz. (Retrieve the names of all employees who work on every project.)
- 3.) Her bir bölüm için, bölümün ismini ve bu bölümde yer alan çalışanların ortalama maaşlarını bulunuz. (For each department, retrieve the department name and the average salary of all employees working in that department.)
- 4.) Herhangi bir projede yer almayan tüm çalışanların isimlerini bulunuz. (Retrieve the names of all employees who do not work on any project.)
- 5.) Tüm kadın çalışanların ortalama maaşını bulunuz. (Retrieve the average salary of all female employees.)