

Introduction to the relational model – some theory

A **relation** r on domains D_1, D_2, \dots, D_k is any subset of $D_1 \times D_2 \times \dots \times D_k$

For example, $r = \{ \langle 123-45-6789, \text{Deepthi}, \$95K \rangle, \langle 987-65-4321, \text{Brian}, \$88K \rangle \}$

More often presented as:

idNo	name	salary
123-45-6789	Deepthi	\$55K
987-65-4321	Brian	\$88K

Employees

Question – for each of the relation instances (aka “tables”) below, is it **very similar** or **equal** to the one above?

the first one:

idNo	name	salary
987-65-4321	Brian	\$88K
123-45-6789	Deepthi	\$55K

the second one (trick question!):

name	salary	idNo
Deepthi	\$55K	123-45-6789
Brian	\$88K	987-65-4321

Figure 3.2 ER schema diagram for the company database.

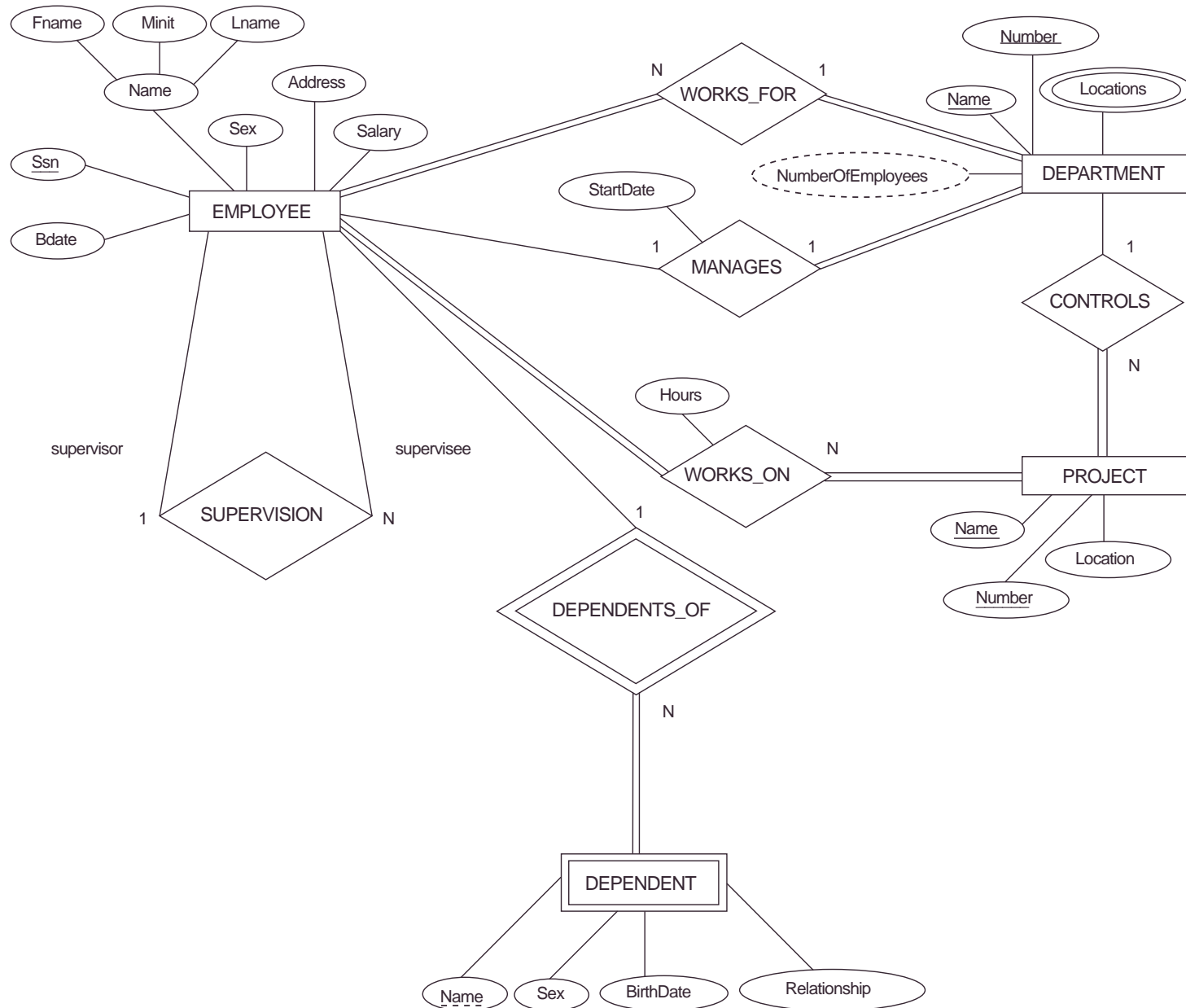


Figure 7.6 One possible relational database state corresponding to the COMPANY schema.

EMPLOYEE	FNAME	MINIT	LNAME	SSN	BDATE	ADDRESS	SEX	SALARY	SUPERSSN	DNO
John			Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000	333445555	5
Franklin			Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000	888665555	5
Alicia			Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000	987654321	4
Jennifer			Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	4
Ramesh			Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
Joyce			English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5
Ahmad			Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000	987654321	4
James			Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	null	1

DEPARTMENT	DNAME	DNUMBER	MGRSSN	MGRSTARTDATE
	Research	5	333445555	1988-05-22
	Administration	4	987654321	1995-01-01
	Headquarters	1	888665555	1981-06-19

DEPT_LOCATIONS	DNUMBER	DLOCATION
		Houston
		Stafford
		Bellaire
		Sugarland

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 7.7 Referential integrity constraints displayed on the COMPANY relational database schema diagram.

