

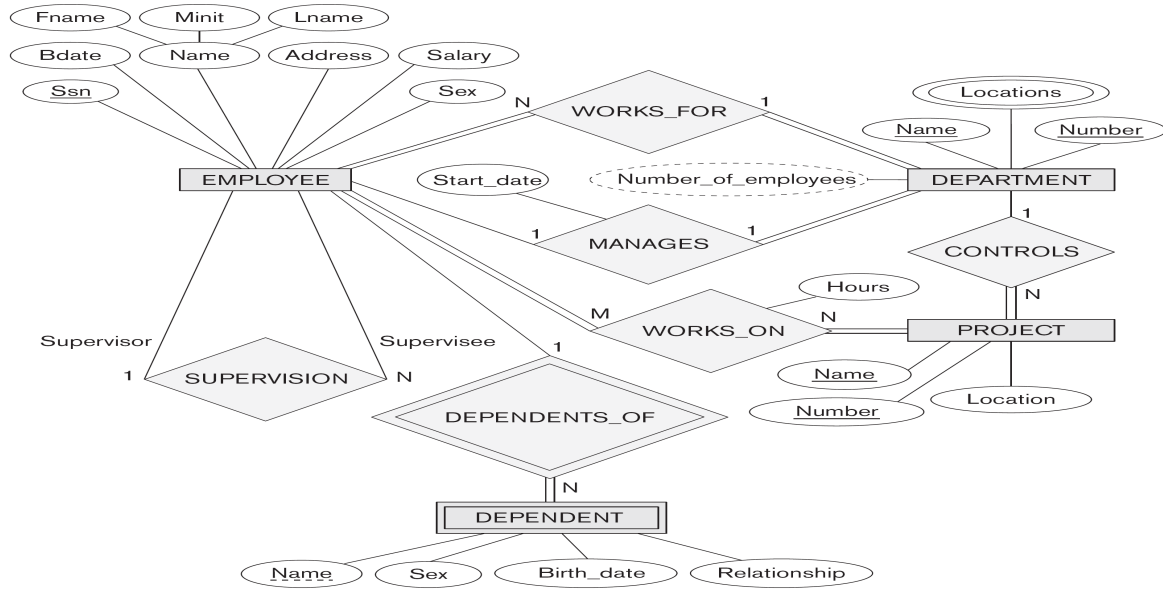
COSC344 Assignment 2 (Sample)

Group X

Leader: [put leader name here]

Members: [put names of all members here]

1. Revised ER Diagram



[Explain what has been changed]

2. Relational Schema

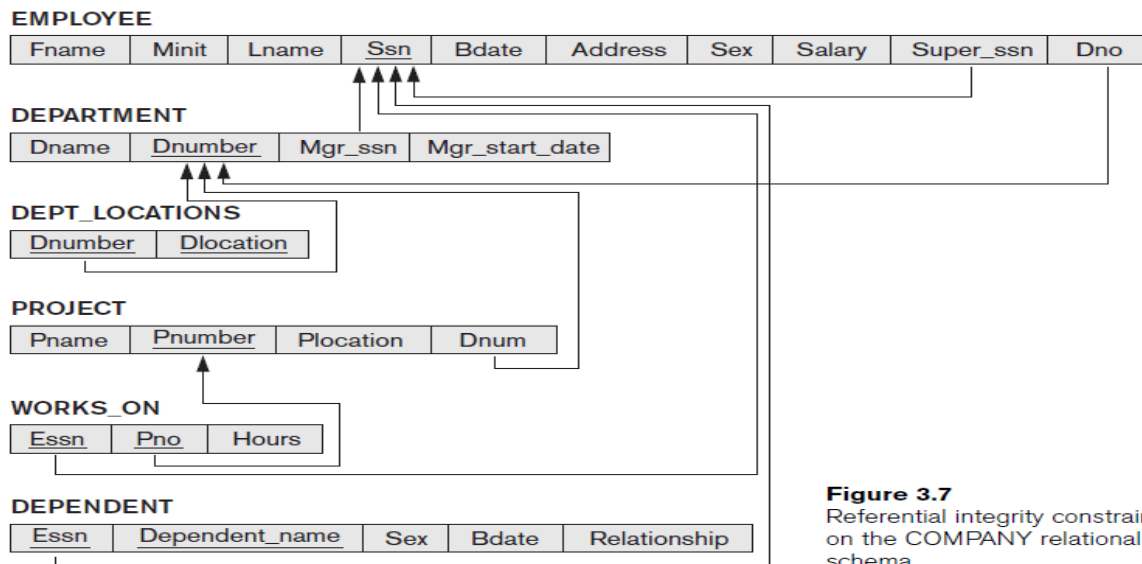


Figure 3.7
Referential integrity constraints displayed on the COMPANY relational database schema.

4. Normalization

Normalization should be done step by step from 1NF to BCNF.

Suppose your relation schema has the following relation where PHONES is a multivalued attribute and each office has a unique OFF#:

OFFICE

<u>OFF#</u>	AREA	<u>DEPT#</u>	PHONES

You should normalized it into BCNF as follows:

Step 1: 1NF

OFFICE is not in 1NF. To normalize it into 1NF, the multivalued attribute should be eliminated by dividing it into the following two relations:

```
OFFICE1( off#, area, dept# )
PHONE( phone#, off# )
```

Step 2: 2NF

PHONE is already in 2NF, but OFFICE1 is not in 2NF as area only depends on off#. To get it into 2NF, use only OFF# as the primary key, and we get the following relation in 2NF

```
OFFICE2( off#, area, dept# )
```

Step3: 3NF

Both relations are in 3NF. For OFFICE2, area is the only nonprime attribute, and it is not transitively dependent on the primary key. For PHONE, off# is the only nonprime attribute, and it is not transitively dependent on the primary key.

Step4: BCNF

Both relations are in BCNF.

5. Load.sql

```
DROP TABLE dependent;
DROP TABLE works_on;
DROP TABLE project;
DROP TABLE dept_locations;
DROP TABLE employee cascade constraints;
DROP TABLE department cascade constraints;
```

```
CREATE TABLE department
(dname      VARCHAR2(15) NOT NULL      UNIQUE,
 dnumber    INT         PRIMARY KEY,
 mgrssn     CHAR(9)    NOT NULL,
```

```
mgrstartdate DATE);
```

```
INSERT INTO department VALUES  
('Research', 5, '333445555', TO_DATE('22-05-1988','DD-MM-YYYY'));  
INSERT INTO department VALUES  
('Administration', 4, '987654321', TO_DATE('01-01-1995','DD-MM-YYYY'));  
INSERT INTO department VALUES  
('Headquarters', 1, '888665555', TO_DATE('19-06-1981','DD-MM-YYYY'));  
INSERT INTO department VALUES  
('Dummies', 0, '111100000', TO_DATE('31-12-2004','DD-MM-YYYY'));
```

```
CREATE TABLE employee  
(fname VARCHAR2(15) NOT NULL,  
  minit CHAR,  
  lname VARCHAR2(15) NOT NULL,  
  ssn CHAR(9) PRIMARY KEY,  
  bdate DATE,  
  address VARCHAR2(30),  
  sex CHAR,  
  salary NUMBER(6),  
  superssn CHAR(9)  
  CONSTRAINT superssn_cnst REFERENCES employee(ssn) DISABLE,  
  dno INT NOT NULL  
  CONSTRAINT dno_cnst REFERENCES department(dnumber) DISABLE);
```

```
ALTER TABLE employee ENABLE CONSTRAINT dno_cnst;
```

```
INSERT INTO employee VALUES  
('John','B','Smith','123456789',TO_DATE('09-01-1965','DD-MM-YYYY'),  
 '731 Fondren, Houston, TX','M',30000,'333445555',5);  
INSERT INTO employee VALUES  
('Franklin','T','Wong','333445555',TO_DATE('08-12-1955','DD-MM-YYYY'),  
 '638 Voss, Houston, TX','M',40000,'888665555',5);  
INSERT INTO employee VALUES  
('Alicia','J','Zelaya','999887777',TO_DATE('19-07-1968','DD-MM-YYYY'),  
 '3321 Castle, Spring, TX','F',25000,'987654321',4);  
INSERT INTO employee VALUES  
('Jennifer','S','Wallace','987654321',TO_DATE('20-06-1941','DD-MM-YYYY'),  
 '291 Berry, Bellaire, TX','F',43000,'888665555',4);  
INSERT INTO employee VALUES  
('Ramesh','K','Narayan','666884444',TO_DATE('15-09-1962','DD-MM-YYYY'),  
 '975 Fire Oak, Humble, TX','M',38000,'333445555',5);  
INSERT INTO employee VALUES  
('Joyce','A','English','453453453',TO_DATE('31-07-1972','DD-MM-YYYY'),  
 '5631 Rice, Houston, TX','F',25000,'333445555',5);
```

```
COMMIT;
```

6. Teamwork Summary

Put the summary of your team work here.