ER-to-Relational Mapping Algorithm

Step 1: Mapping of Regular Entity Types.

EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary

DEPARTMENT

Dname	Dnumber

PROJECT

Pname	Pnumber	Plocation

ER-to-Relational Mapping Algorithm

Step 2: Mapping of Weak Entity Types

Essn	Dependent_name	Sex	Bdate	Relationship

DEPENDENT

PK

PK
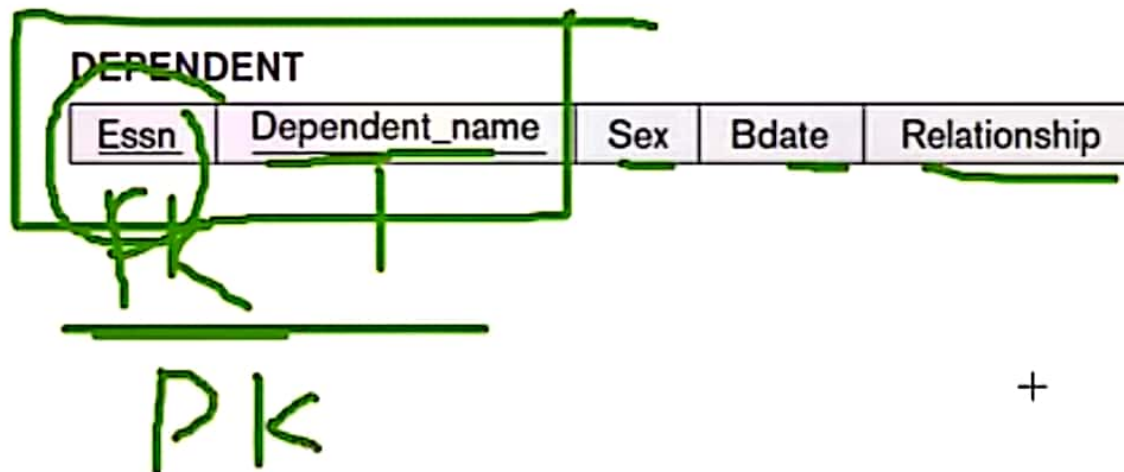
ER-to-Relational Mapping Algorithm

Step 3: Mapping of Binary 1:1 Relation Types

DEPARTMENT

Dname	Dnumber

DEPARTMENT

Dname	Dnumber	Mgr_ssn	Mgr_start_date

EMPLOYEE	Start_date	MANAGES	DEPARTMENT

1   1
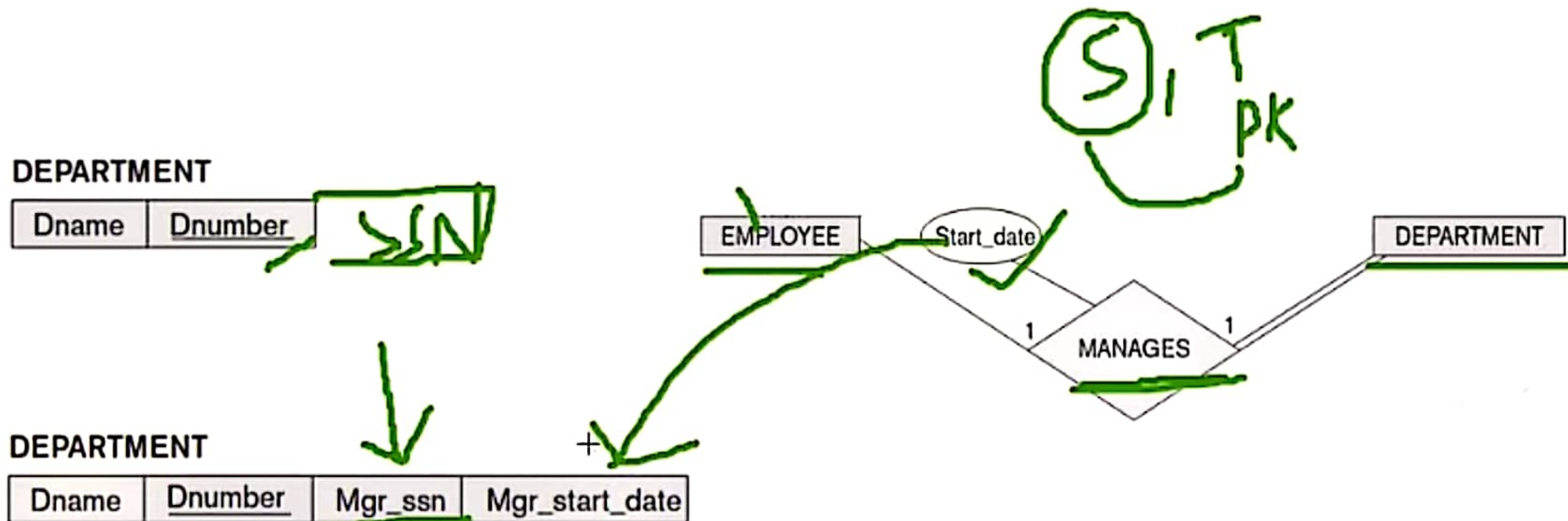
ER-to-Relational Mapping Algorithm

Step 4: Mapping of Binary 1:N Relationship Types.

EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary

EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno

FK

PROJECT

Pname	Pnumber	Plocation

PROJECT

Pname	Pnumber	Plocation	Dnum

FK

ER-to-Relational Mapping Algorithm

Step 5: Mapping of Binary M:N Relationship Types.

EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno

PROJECT

Pname	Pnumber	Plocation	Dnum

WORKS_ON

Essn	Pno	Hours
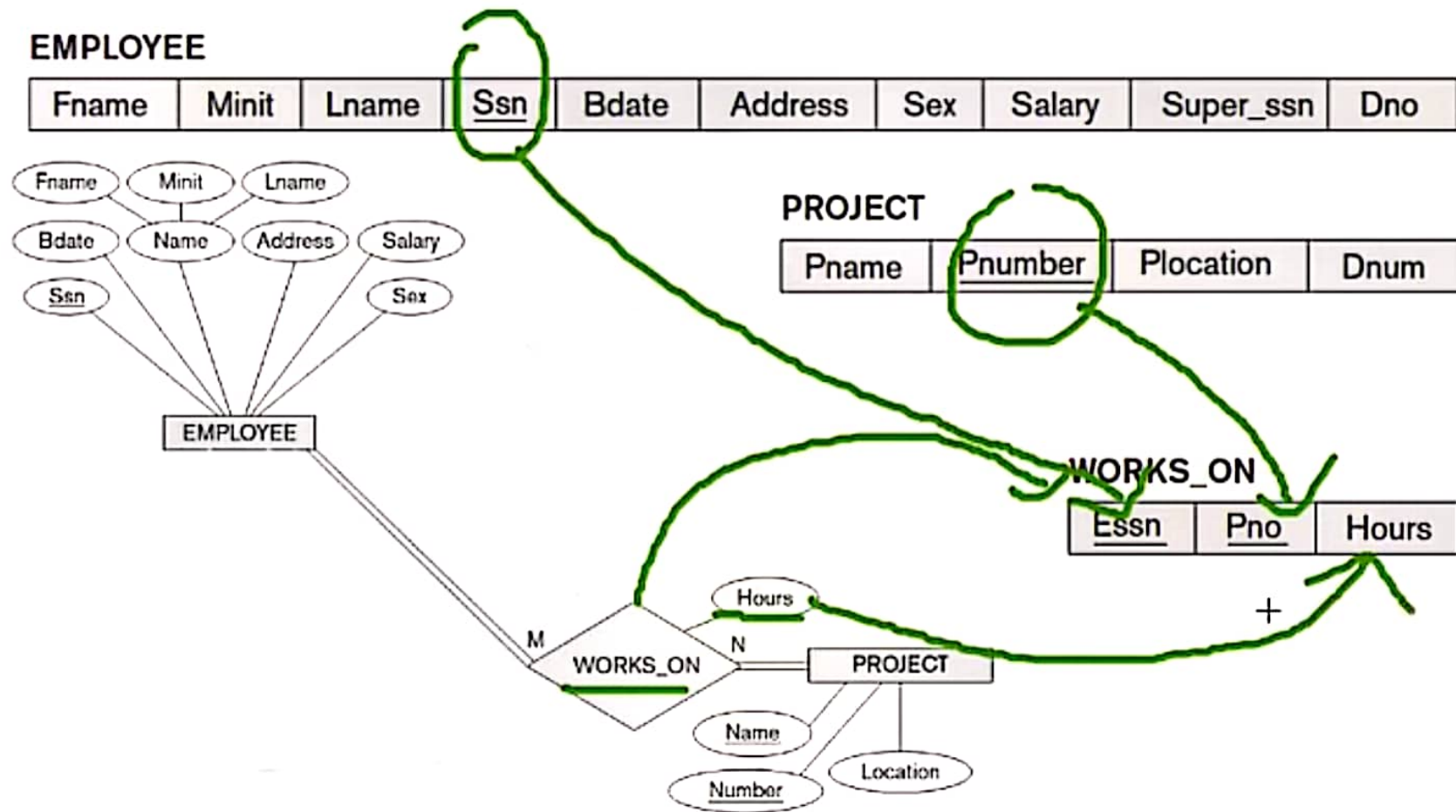
ER-to-Relational Mapping Algorithm

Step 6: Mapping of Multi valued attributes.

DEPT_LOCATIONS

Dnumber	Dlocation

+
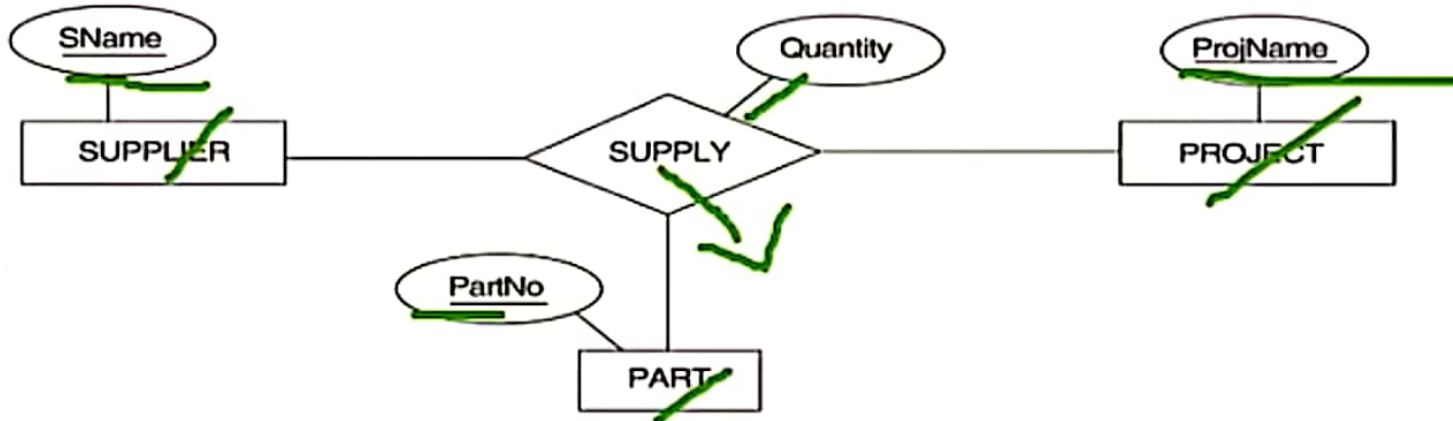
SUPPLIER

SNAME	
	. . .

PROJECT

PROJNAME	
	. . .

PART

PARTNO	
	. . .

SUPPLY

SNAME	PROJNAME	PARTNO	QUANTITY

EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno

DEPARTMENT

Dname	Dnumber	Mgr_ssn	Mgr_start_date

DEPT_LOCATIONS

Dnumber	Dlocation

PROJECT

Pname	Pnumber	Plocation	Dnum

WORKS_ON

Essn	Pno	Hours

DEPENDENT

Essn	Dependent_name	Sex	Bdate	Relationship
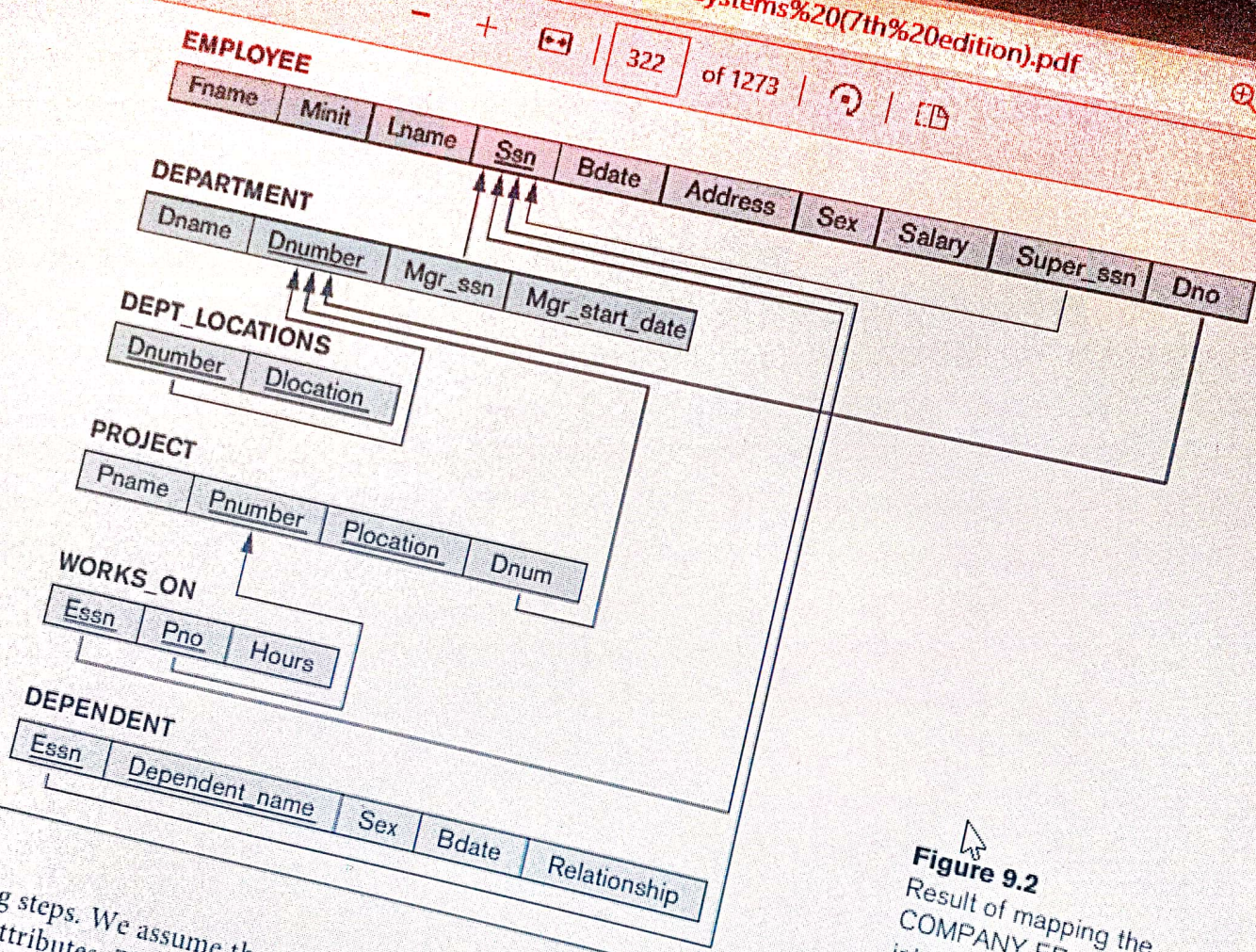
Figure 9.2
Result of mapping the
COMPANY ER schema
into a relational database
schema.

mapping steps. We assume that the mapping will create tables with simple single-valued attributes. The relational model constraints defined in Chapter 5, which include primary keys, unique keys (if any), and referential integrity constraints on the relations, will also be specified in the mapping results.

Step 1: Mapping of Regular Entity Types. For each regular (strong) entity type E in the ER schema, create a relation R that includes all the simple attributes of E. Include only the simple component attributes of a composite attribute. Choose one of the key attributes of E as the primary key for R. If the chosen key of E is a com-

Figure 9.1
The ER conceptual schema diagram for the COMPANY database.