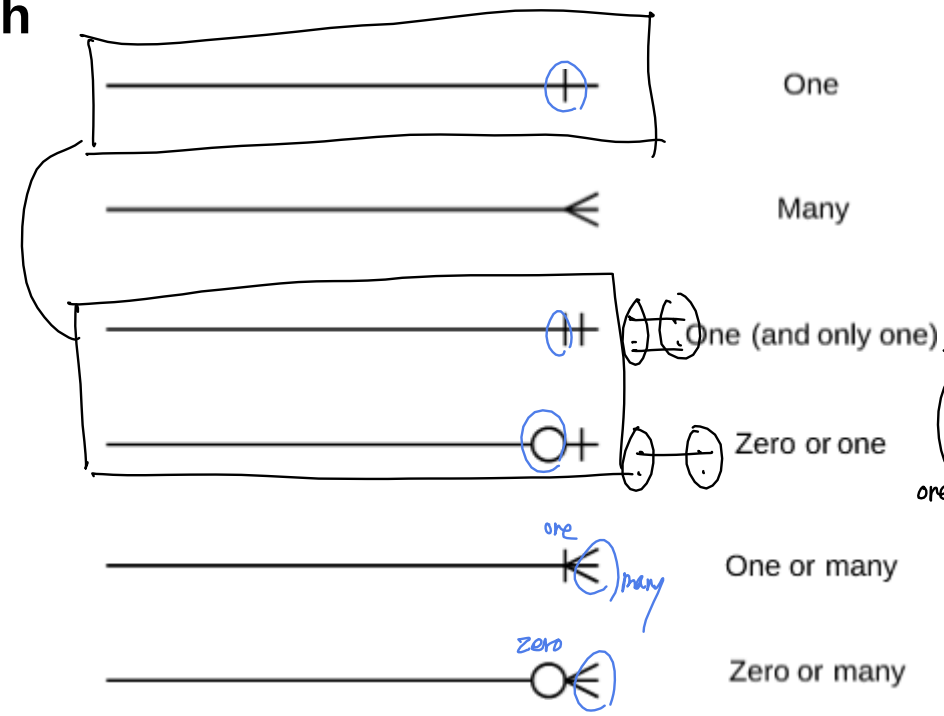
ER_supplementary. Data Modeling using MySQL Workbench

Install MySQL Workbench from https://dev.mysql.com/downloads/workbench/ (https://dev.mysql.com/downloads/workbench/)

- IE Notation 방법을 대회
- No composite or multi-valued attributes are allowed. You need to transform them manually.
- Weak entity is "identifying relationship" in IE notation
- To draw 1:1 relationship, first click 1-side (foreign key side) and then the other 1-side entity type (primary key side)
- To draw 1:M relationship, first click many-side (foreign key side) and then 1-side entity type
- M:N relationship will be automatically transformed into two 1:M relationships Many side 먼저 one side 먼저
- Ternay or more relationship is not supported. Designer need to transform them into binary relationships manually 수동으로 변경
- Superclass and Union type is not supported. Designer need to transform them manually. 지원 x 수동으로 변경.
- Relationship attributes are not supported. Move them into foreign key side.
- All these manual transformations are covered in the "Mapping" chapter.
- Cardinality and Optional/Mandatory participation notation of binary relationship is as follows:

One instance in an entity type is associated with

IE 표기법 Crow's Foot



instances in the other entity type.

Easy way to remember:

Consider **mother 1..1 <-----> 1..m children** relationship

- one mother has ONE or MANY children
- one child has ONE and ONLY ONE mother
- cardinality 값은 가까운 곳에 붙는다고 생각하면 기억하기 쉽다.

Chen's Notation으로 쓰여진 CompanyDB ER Diagram을 IE(Crow's Foot) Notation을 작성하여 보자.

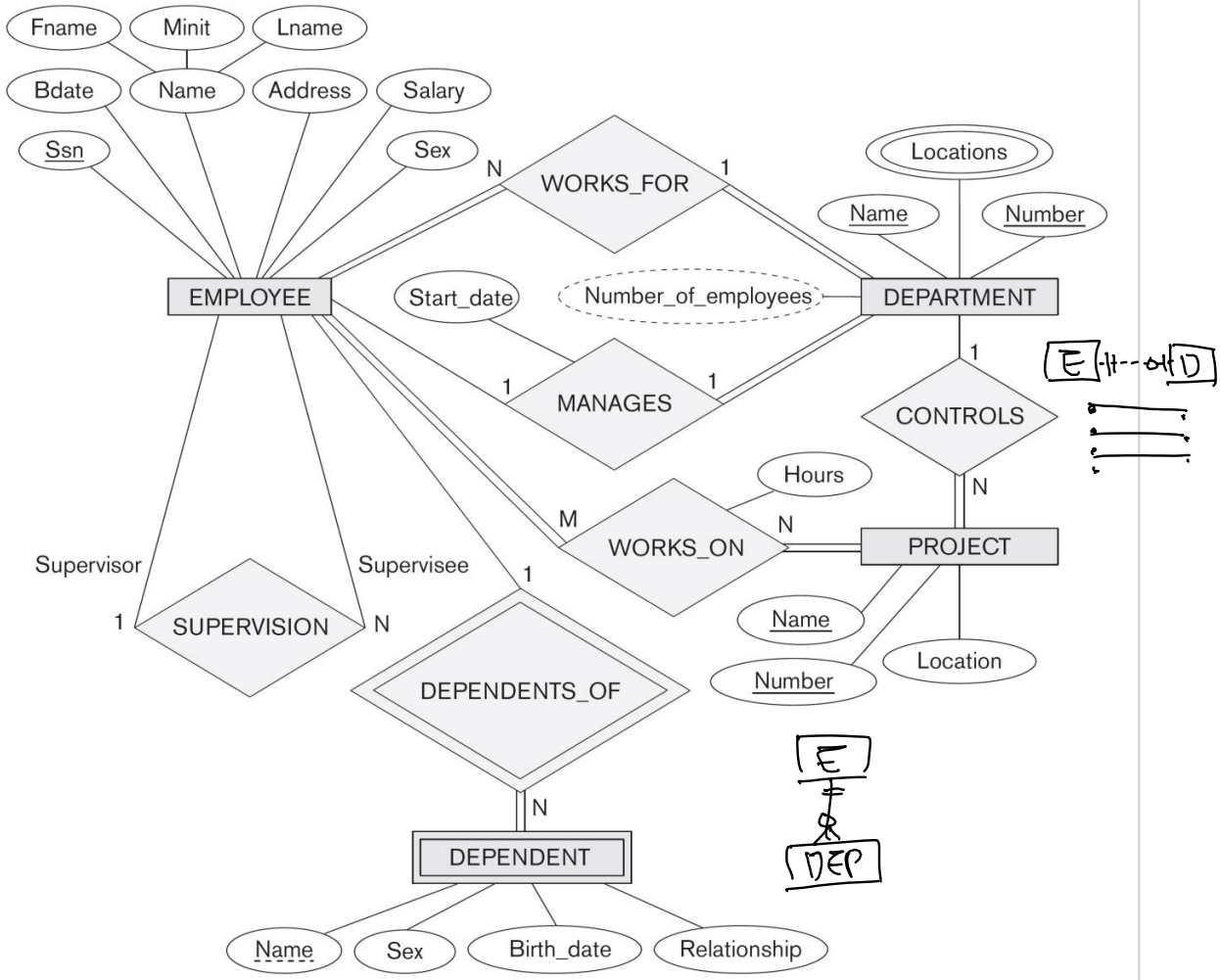
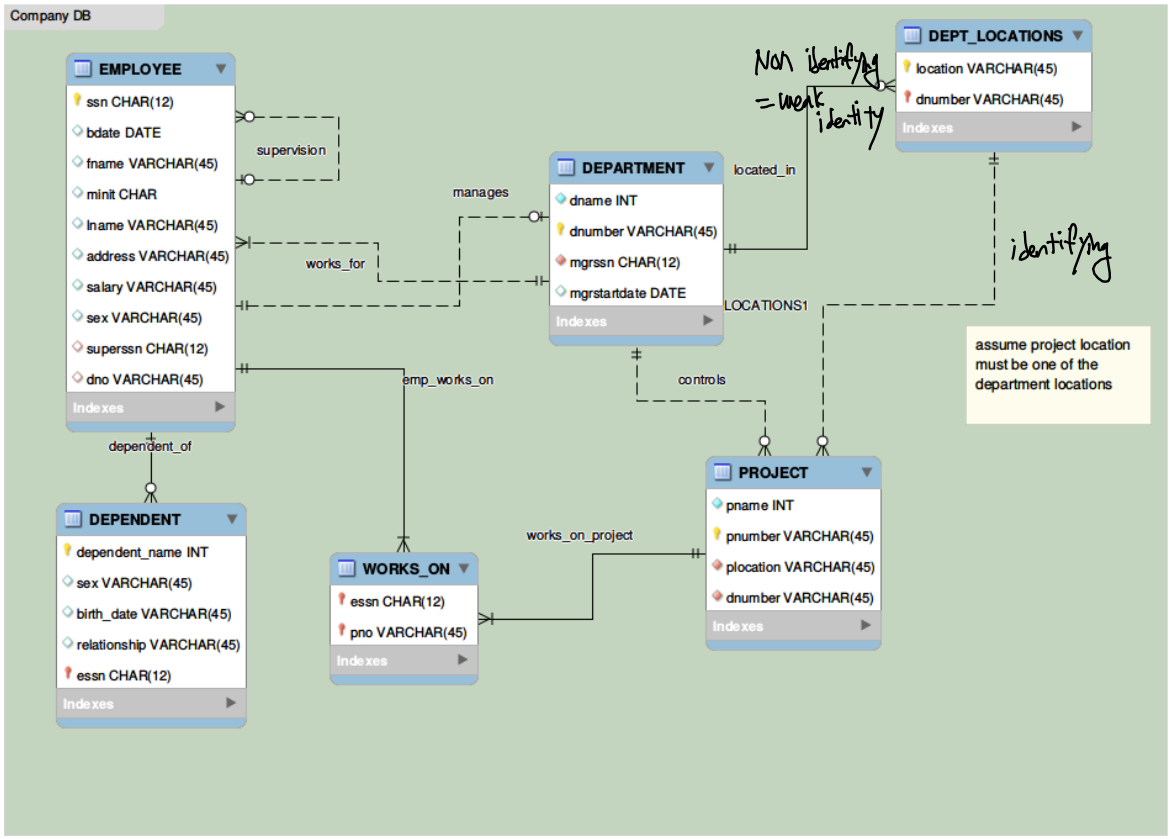


Figure 7.2
An ER schema diagram for the COMPANY database. The diagrammatic notation is introduced gradually throughout this chapter and is summarized in Figure 7.14.

- Relationship name을 표시하려면, Model->Model Option->Diagram->Show Captions에서 show caption을 check해야 한다.

각 테이블의 Foreign Keys탭에서 On Update/On Delete Foreign Keys Options에서 적절한 Option을 선택한다.

- RESTRICTED
- SET NULL
- CASCADE
- (NO ACION은 MySQL에서는 RESTRICTED)
- mandatory option may be overrided by taking 'set null'



Forward Engineering

```
...

-- -----------------------------------------------------
-- Table `mydb`.`DEPARTMENT`
-- -----------------------------------------------------
CREATE TABLE IF NOT EXISTS `mydb`.`DEPARTMENT` (
  `dname` INT NOT NULL,
  `dnumber` VARCHAR(45) NOT NULL,
  `mgrssn` CHAR(12) NOT NULL,
  `mgrstartdate` DATE NULL,
  UNIQUE INDEX `name_UNIQUE` (`dname` ASC),
  PRIMARY KEY (`dnumber`),
  INDEX `fk_DEPARTMENT_EMPLOYEE1_idx` (`mgrssn` ASC),
  CONSTRAINT `fk_DEPARTMENT_EMPLOYEE1`
    FOREIGN KEY (`mgrssn`)
```

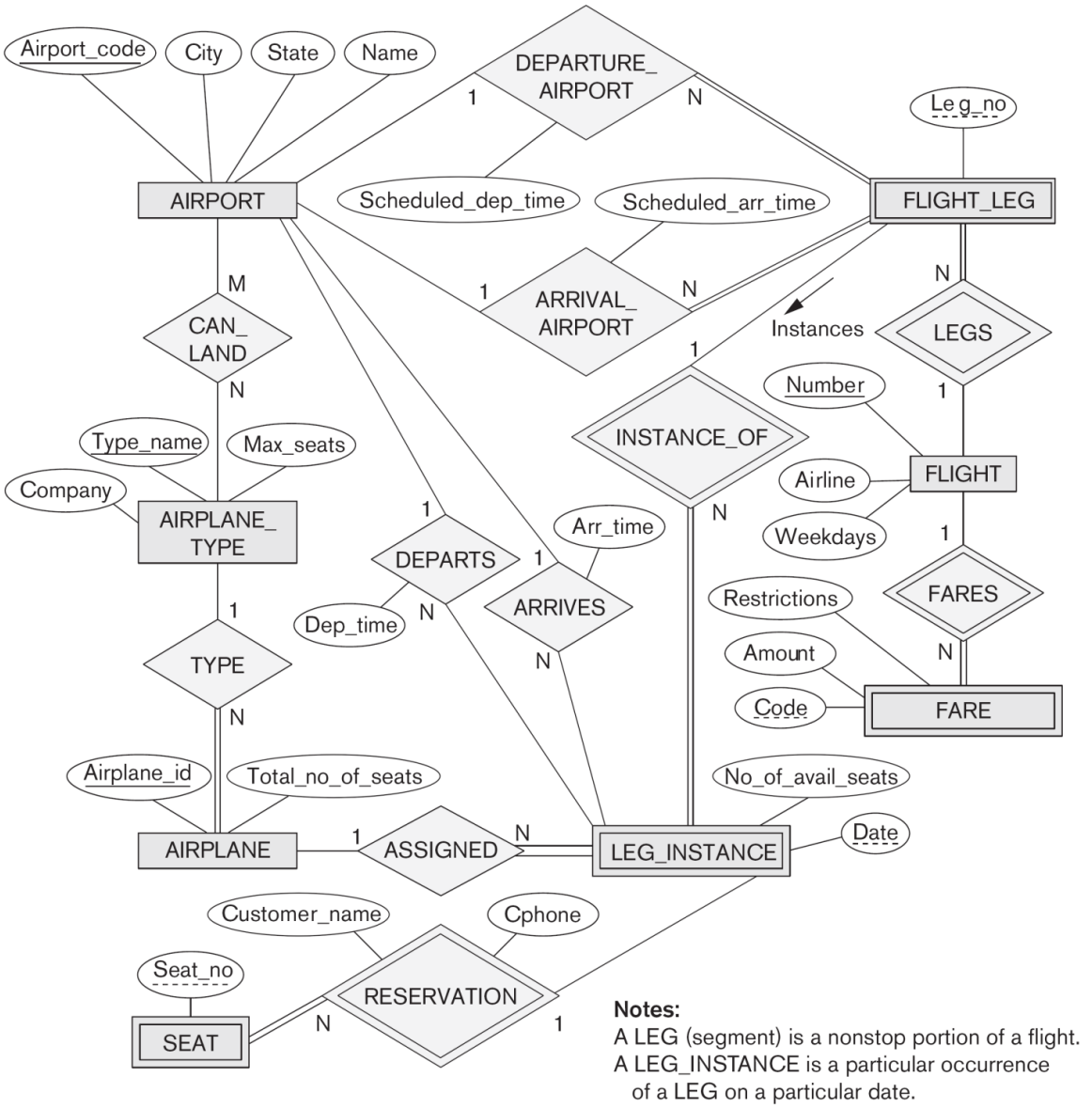
```
    REFERENCES `mydb`.`EMPLOYEE` (`ssn`)
    ON DELETE SET NULL
    ON UPDATE CASCADE)
ENGINE = InnoDB;

...
```

If project location must be one of the dept_locations,

- Pick "Relationship using existing columns"
- First, click plocation in PROJECT
- Then, location in DEPT_LOCATIONS

Homework

Figure 7.20
An ER diagram for an AIRLINE database schema.



- MySQL Workbench EER Modeling을 사용하여, AIRLINE DB에 대한 Crow's Notation으로 된 ER Diagram을 작성하시오. 데이터 타입도 어느 정도는 적절하게 선택되어애 한다.
- Forward Engineering Tool을 이용하여, MySQL Server에 schema를 생성하시오. SQL create table을 출력하시오.

- MySQL workbench ER Model is almost relational database schema.
- ERWin is more powerful, professional ER modeling tool (supports many-many, ternary, supertype-subtype relationship, and many more (You can download trial version at http://go.erwin.com/erwin-data-modeler-free-trial (http://go.erwin.com/erwin-data-modeler-free-trial)).