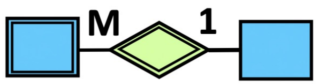
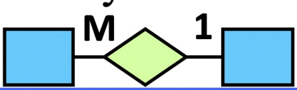
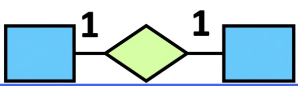
ER Diagram → Relational Schema

- General rules:
  - Each entity set becomes a relation
  - Each many-to-many relationship becomes a relation
- Special treatment needed for:
  - Weak entity sets
  - Subclasses



- Many-to-one and one-to-one relationships





① 모든 entity set은 relation으로 만들기

② M:N relationship은 relation으로

③ 

이러면 weak entity는

weak-entity relation에 추가하면 됨

④ Subclass는 -ER/OO/NULL Approach 따라 다르게

← superclass만 살리기

primary key 다 가져가기

⑤ M:1 과 1:1 은 entity 한쪽으로 몰아주기.

⑥ Multiple_value Attribute는 따로 relation

⑦ Composite-Attribute는 다 풀어서 개별 Attribute로 만들기

9.2. Map the UNIVERSITY database schema shown in Figure 3.20 into a relational database schema.

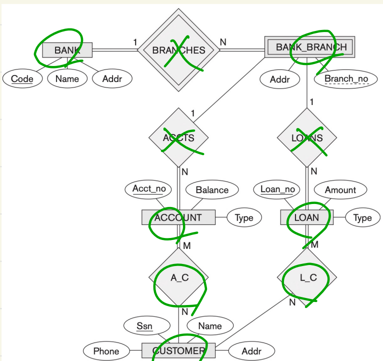
9.4. Figure 9.8 shows an ER schema for a database that can be used to keep track of transport ships and their locations for maritime authorities. Map this schema into a relational schema and specify all primary keys and foreign keys.

SHIP_TYPE (Type, Tonnage, Hull)

SHIP (Sname, Owner, Type , Pname)

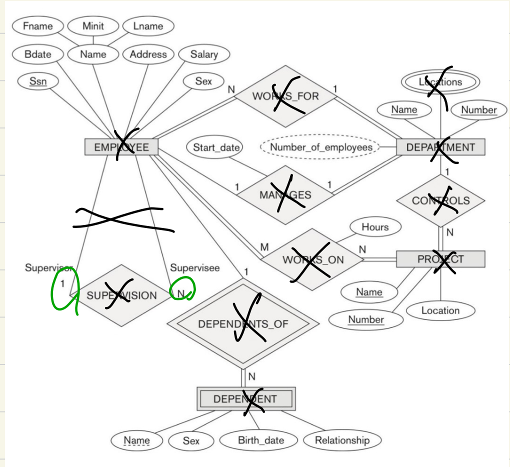
PORT (Pname , Name

9.5. Map the BANK ER schema of Exercise 3.23 (shown in Figure 3.21) into a relational schema. Specify all primary keys and foreign keys. Repeat for the AIRLINE schema (Figure 3.20) of Exercise 3.19 and for the other schemas for Exercises 3.16 through 3.24.



- BANK (Code , Name, Addr)
- BANK_BRANCH (Branch_no , BANK.Code , Addr)
- ACCOUNT (Acct_no , Balance, Type, BANK_BRANCH. Branch_no)
- LOAN (Loan_no , Amount, Type, BANK_BRANCH. Branch_no)
- CUSTOMER (Ssn , Name, Phone, Addr)
- A_C (Acct_no , Ssn)
- L_C (Loan_no , Ssn)

Q) Figure 3.15



EMPLOYEE (Ssn , Bdate, Fname, Minit, Lname, Address, Salary, Sex, Supervisor-Ssn , DEPARTMENT.Name , DEPARTMENT.Number)

SUPERVISION (Supervisor-Ssn , Supervisee-Ssn)

M:N이라 필요함 ... 아니면 필요X 생략다?

DEPENDENT (Name , Sex, Birth_date, Relationship, EMPLOYEE.Ssn)

PROJECT (Name , Number , Location , DEPARTMENT.Number)

X 아닌 이유?

DEPARTMENT (Name , Number , MANAGE.Ssn , MANAGES_Start_date)

DEPARTMENT_LOCATION (Location# , DEPARTMENT.Name, DEPART.Number)

WORKS_ON (EMPLOYEE.Ssn , PROJECT.Name , PROJECT.Number , Hours)

M:N relationship은 따로 Relation. 나누라는 방향

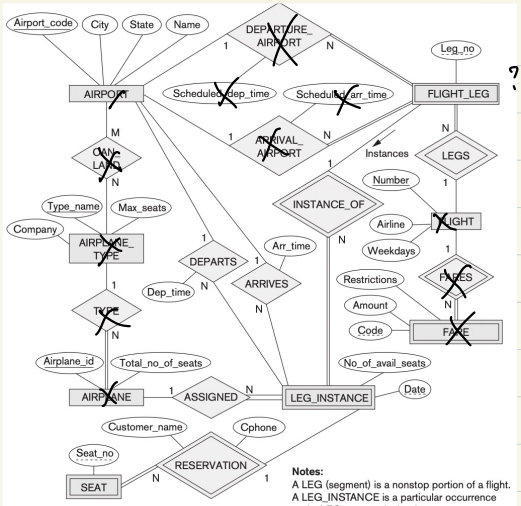


Figure 3.21
An ER diagram for an AIRLINE database schema.

AIRPORT (Airport_code , City , State , Name)

CAN_LAND (AIRPORT. Airport_code , AIRPLANE_TYPE. Type_name)

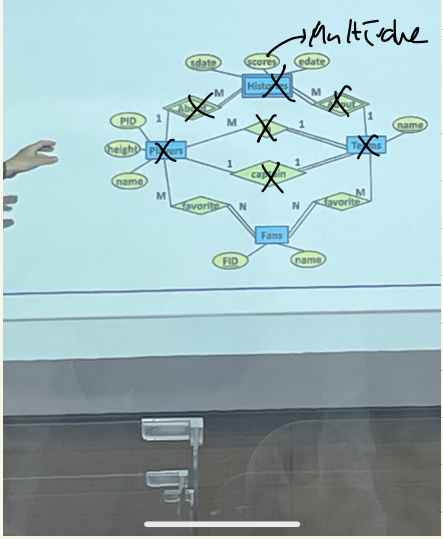
AIRPLANE_TYPE (Type_name, Max_seats, Company)

AIRPLANE (Airplane_id , Total_no_of_seats, AIRPLANE_TYPE. Type_name)

FLIGHT_LEG (Leg_no , Scheduled_dep_time, DEPARTURE_Airport_code
Scheduled_arr_time , ARRIVAL_Airport_code,
FLIGHT. Number)

FLIGHT (Number , Airline, Weekdays)

FARE (Code , FLIGHT. Number , Amount, Restrictions)



Multivalue = Scores (Score, PID, TID)

not primary key

Player (PID, height, name, Team_name)

Team (name, captain_player_id)

History (state, PID, Team_name, scores, Edate)

Fan (FID, name)

FavoriteTeam_player (FID, PID)

FavoriteTeam_team (FID, Team_name)

⇒ Weak Entity는 Relation 있는 Entity key 다 가져와야함