CGS 2545: Database Concepts
Spring 2012

Chapter 4 – In-class Exercises

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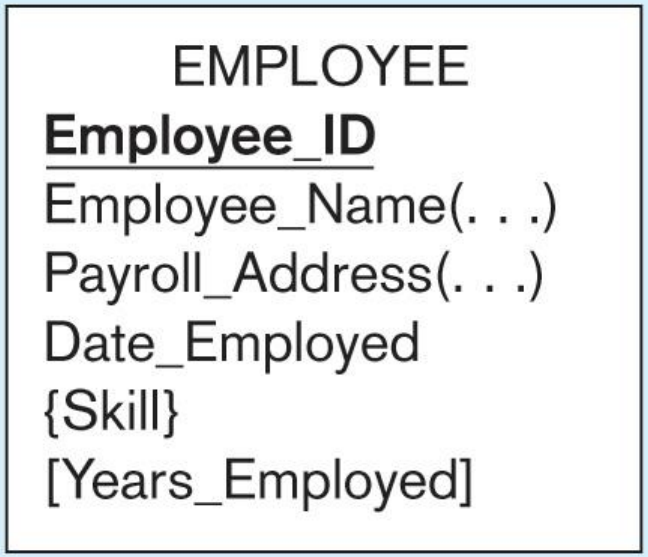
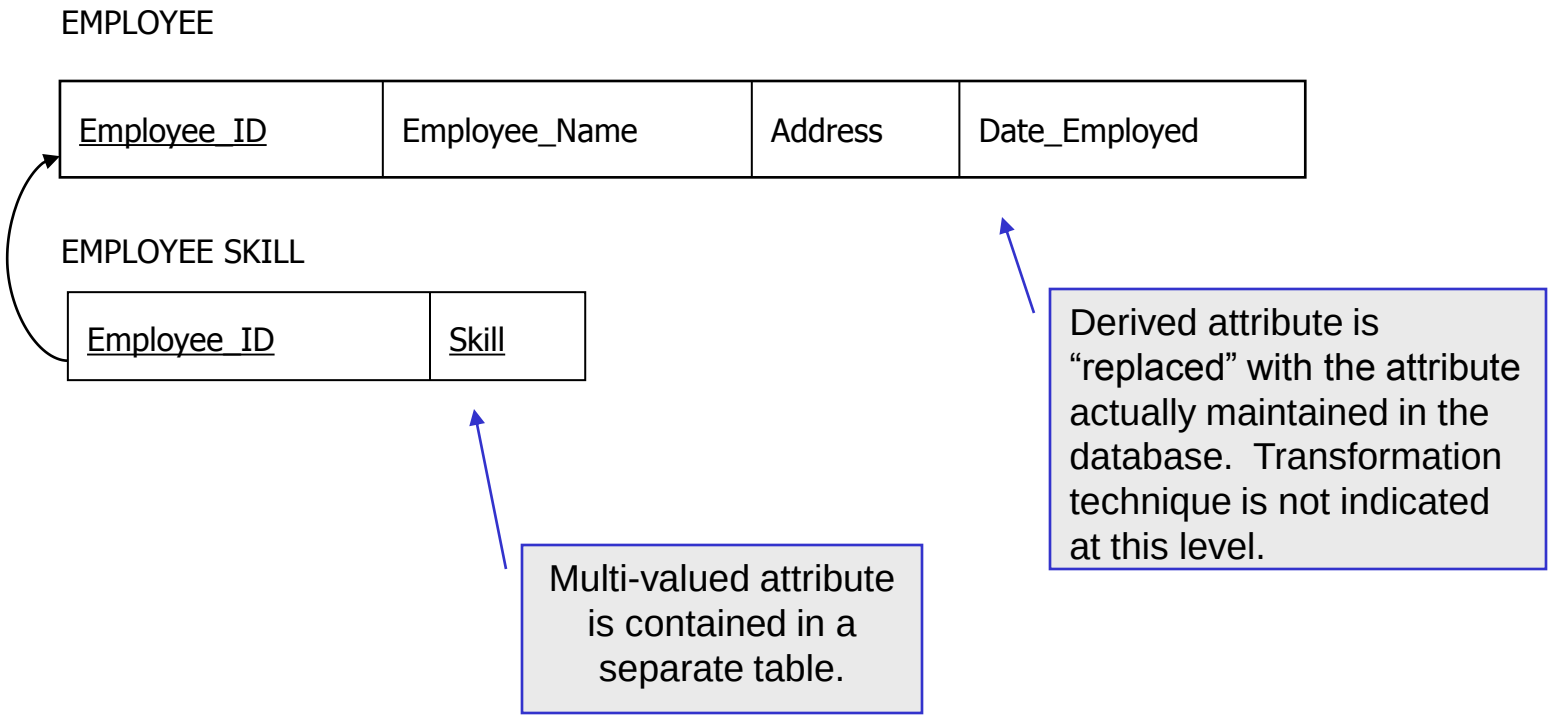
Introduction

- Transform each of the ER diagrams shown on this and the following few pages, into a set of relational schemas which show referential integrity constraints.

Problem #1



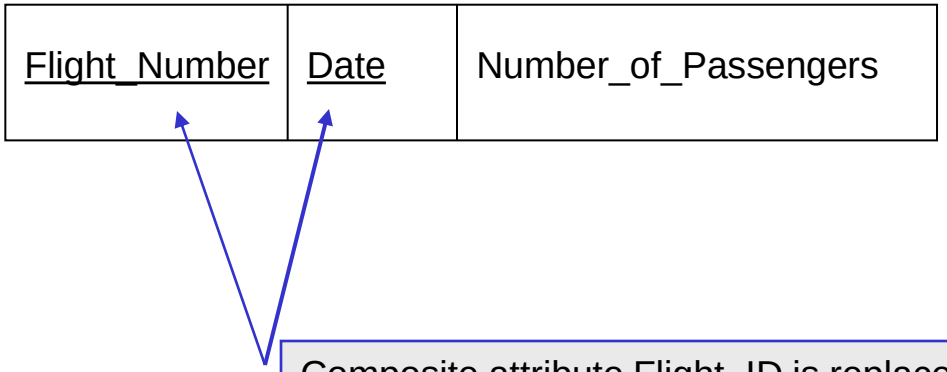
Solution for Problem #1



Problem #2

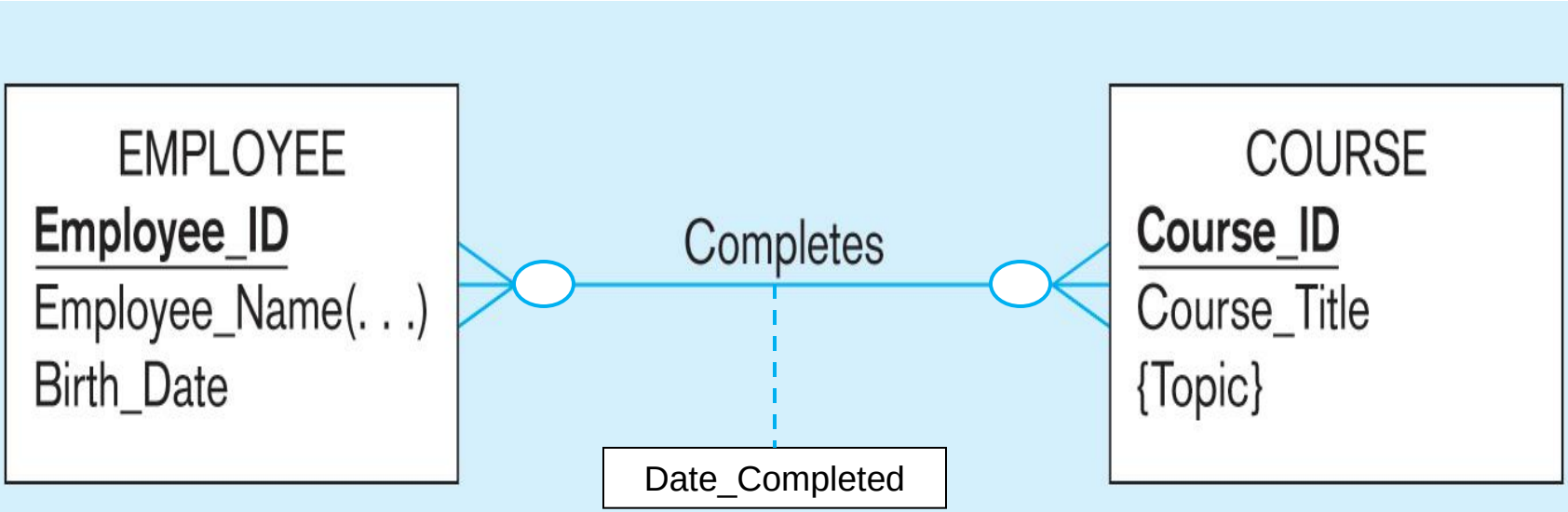
Solution for Problem #2

FLIGHT

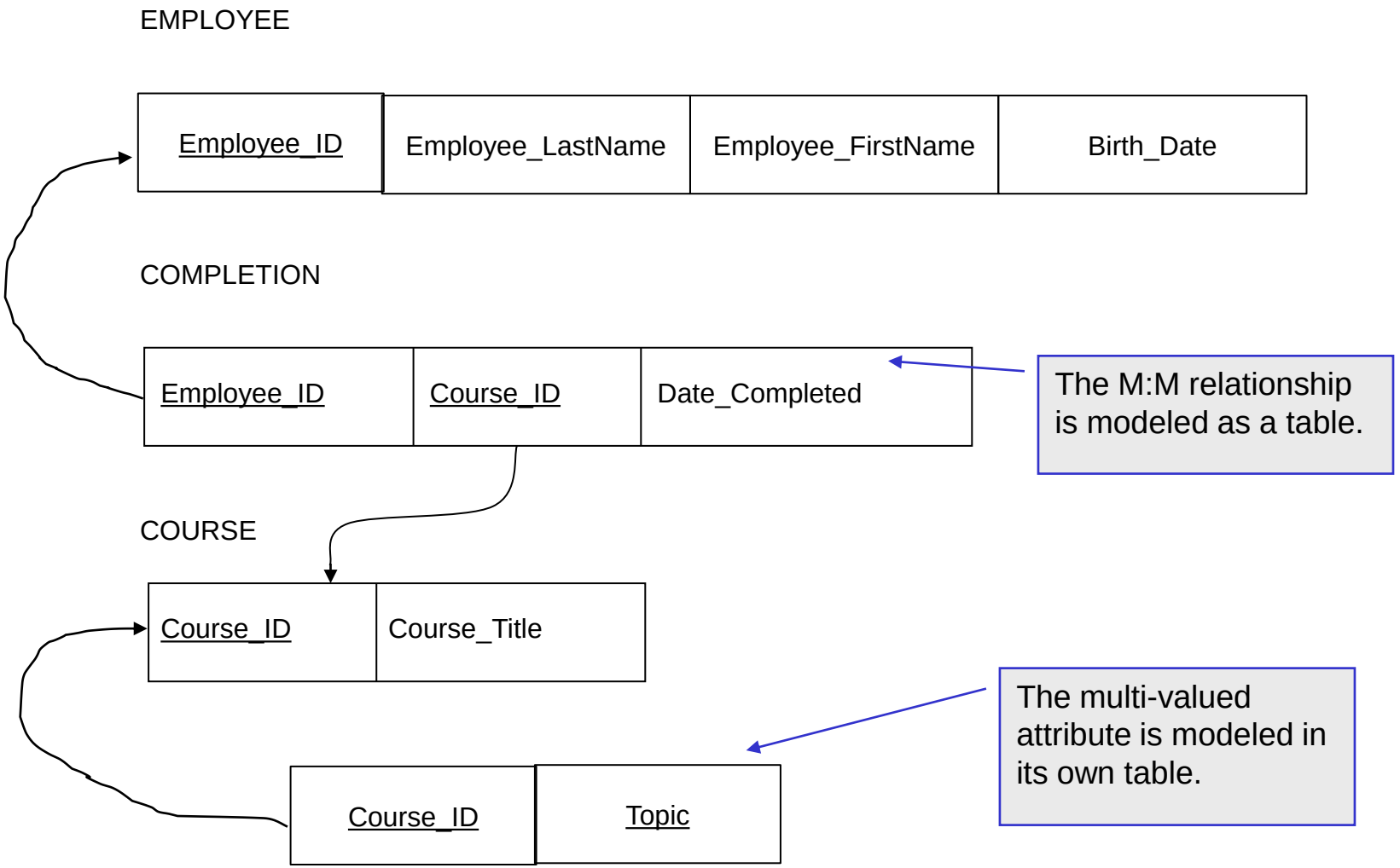


Composite attribute Flight_ID is replaced by both of the sub-component attributes of the original composite attribute. Note that since the original composite attribute was a key attribute that all of the sub-component attributes are now key attributes.

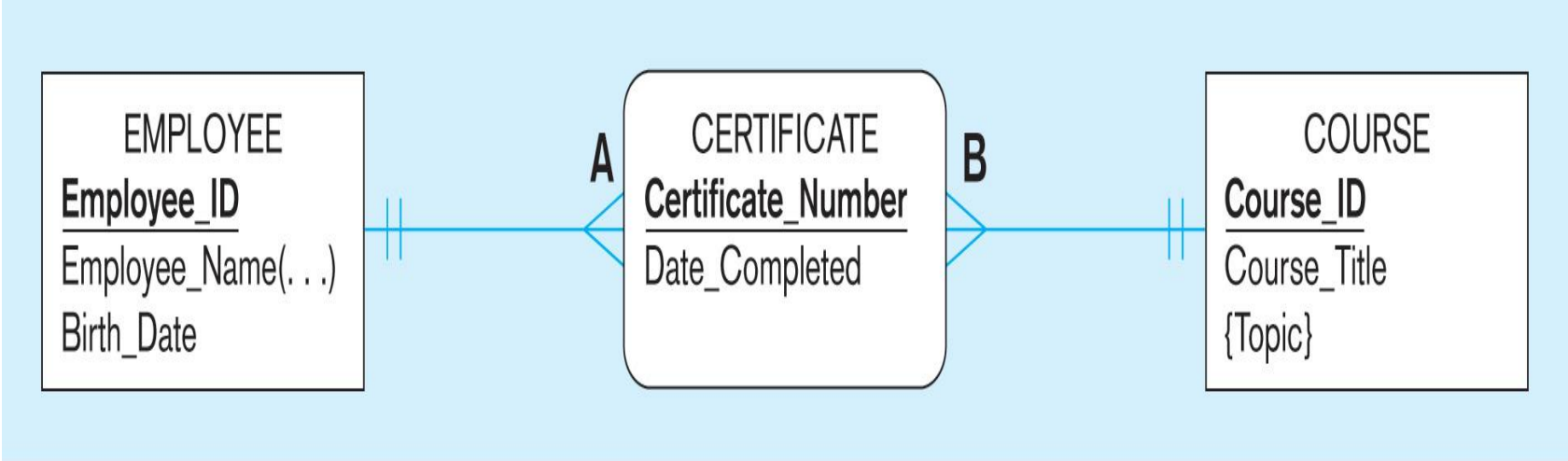
Problem #3


EMPLOYEE
Employee_ID
Employee_Name(. . .)
Birth_Date
Completes
Date_Completed
COURSE
Course_ID
Course_Title
{Topic}

Solution for Problem #3

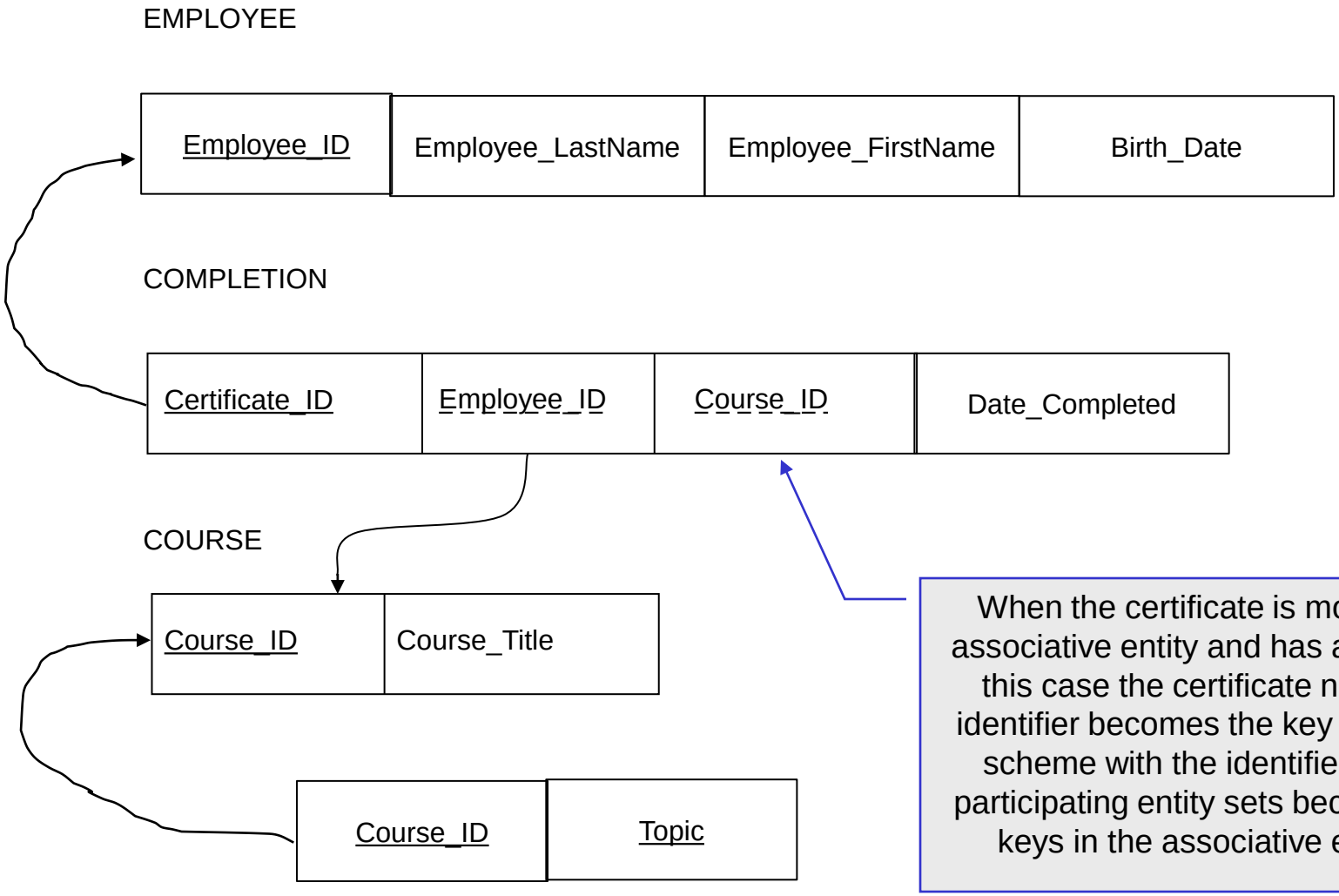


Problem #4

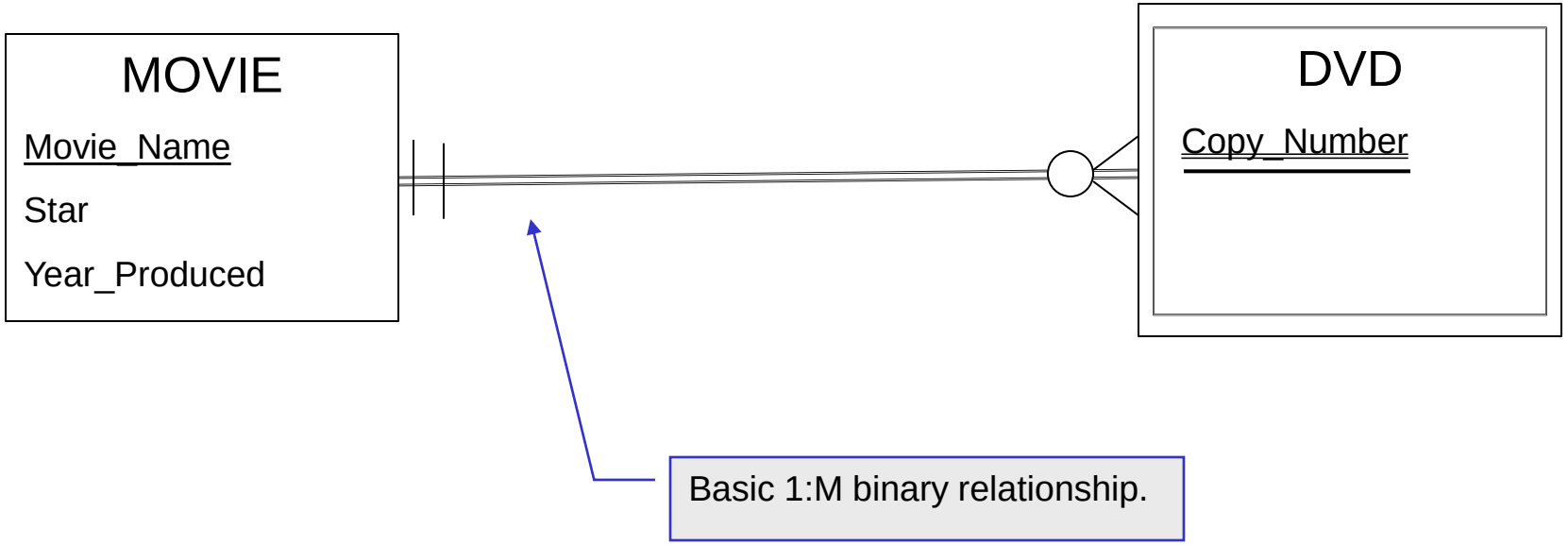


Note that this is the same problem as #3, however, this time the relationship has been modeled with an attribute and as an associative entity rather than as a simple M:M binary relationship.

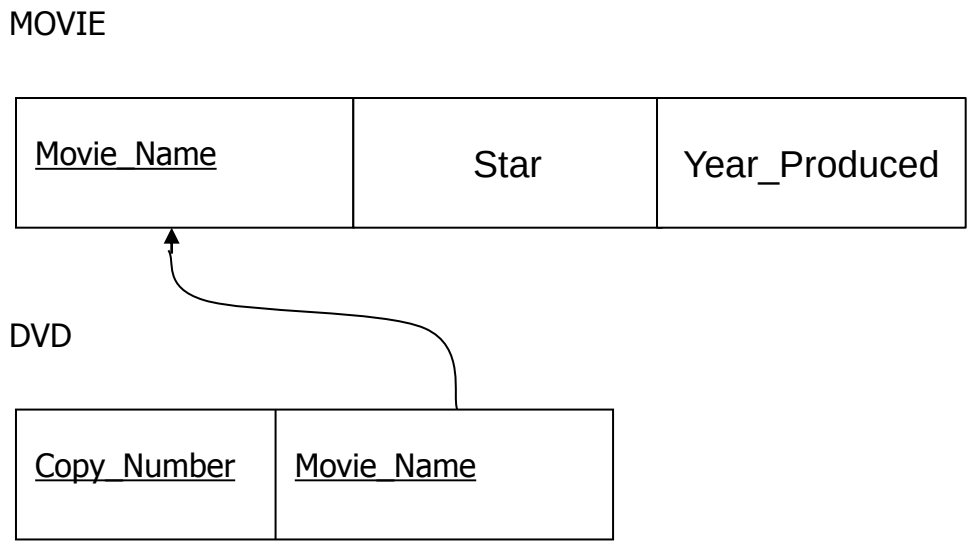
Solution for Problem #4



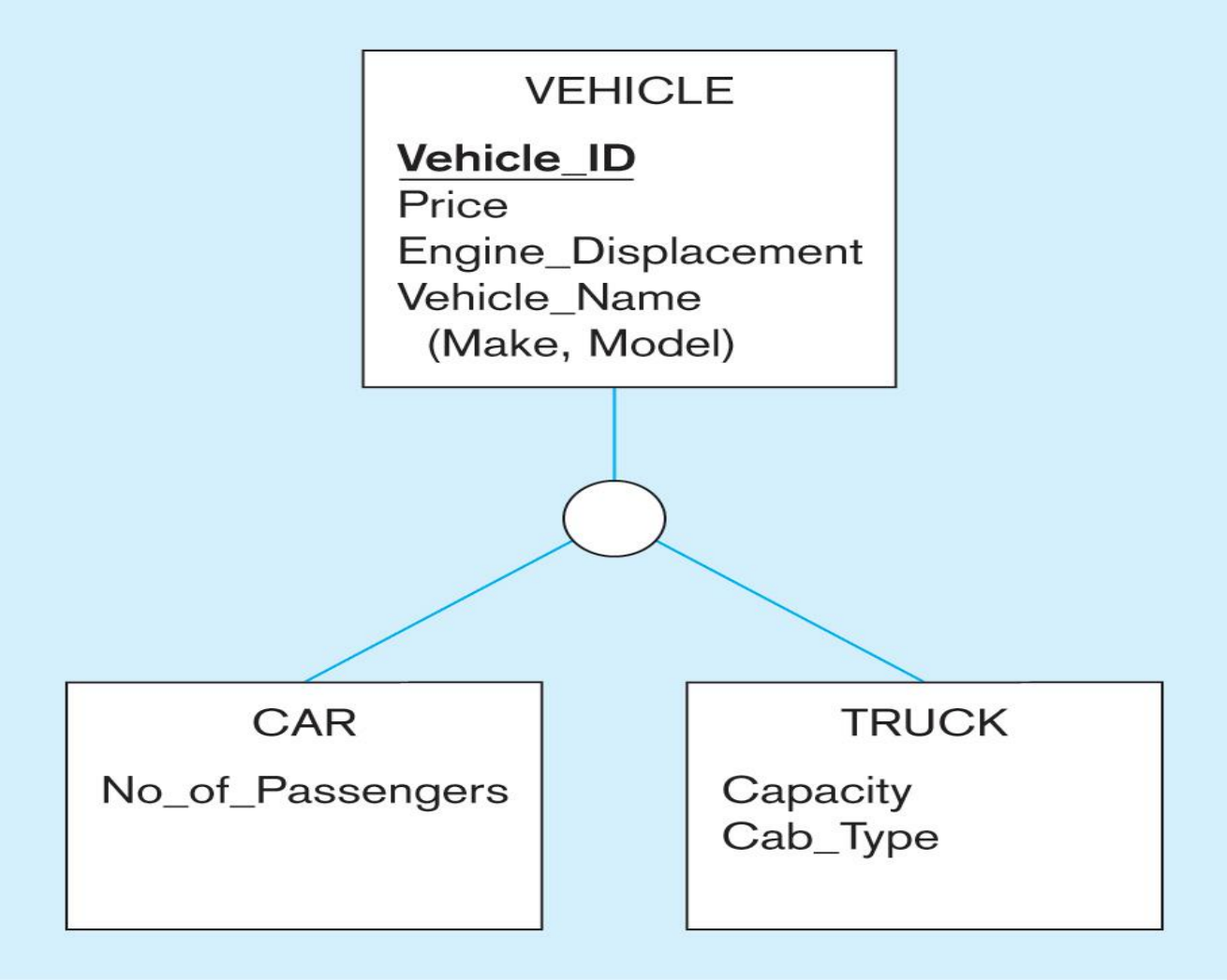
Problem #5


MOVIE
Movie_Name
Star
Year_Produced
DVD
Copy_Number
Basic 1:M binary relationship.

Solution for Problem #5

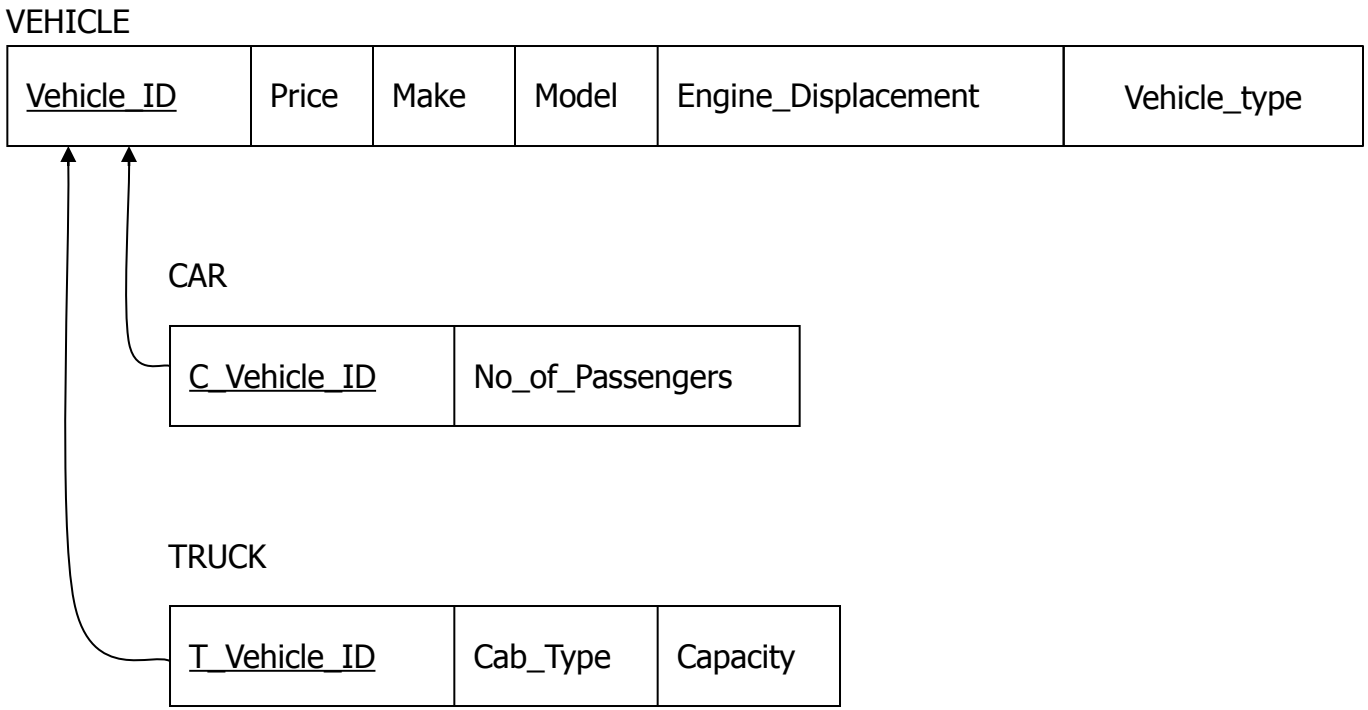


Problem #6


VEHICLE
Vehicle_ID
Price
Engine_Displacement
Vehicle_Name
(Make, Model)
CAR
No_of_Passengers
TRUCK
Capacity
Cab_Type

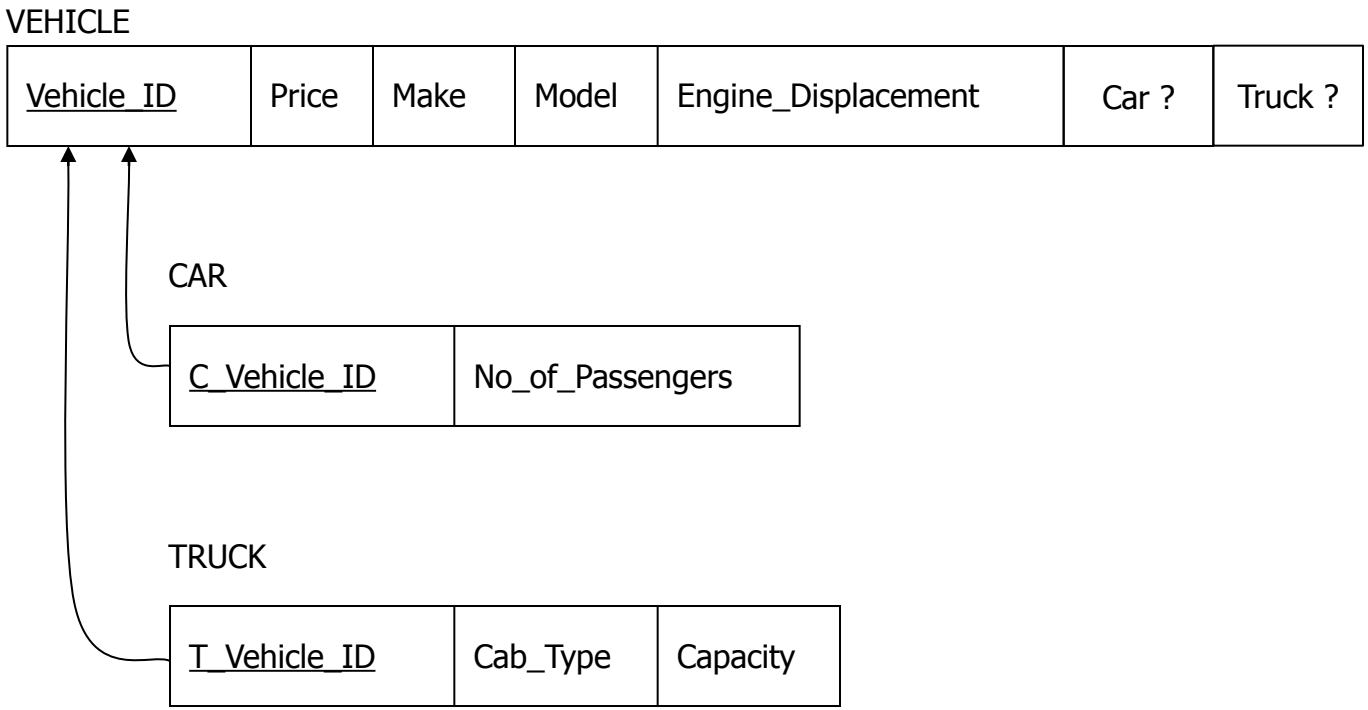
Solution for Problem #6

Assuming disjoint constraint

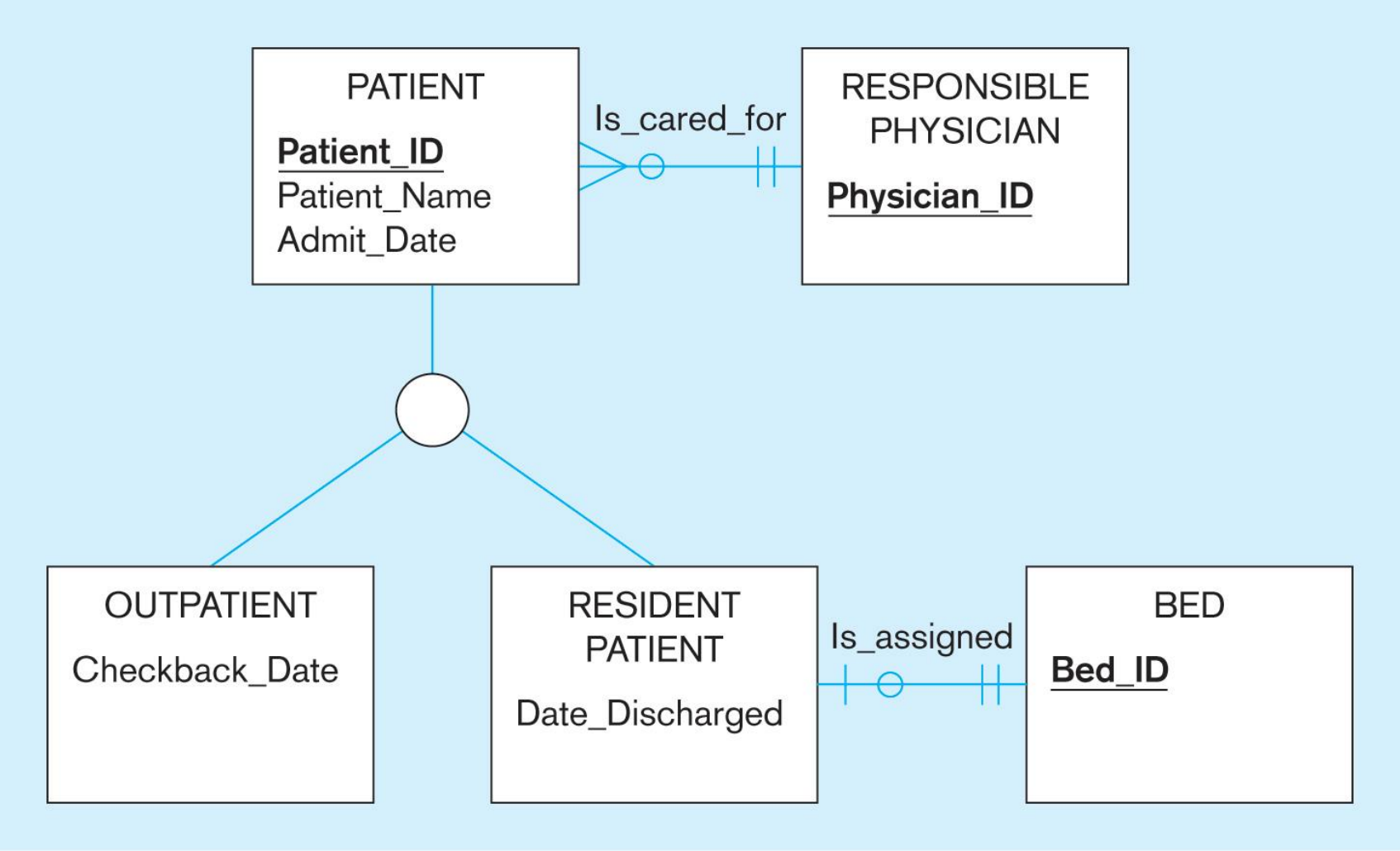


Solution for Problem #6

Assuming overlapping constraint

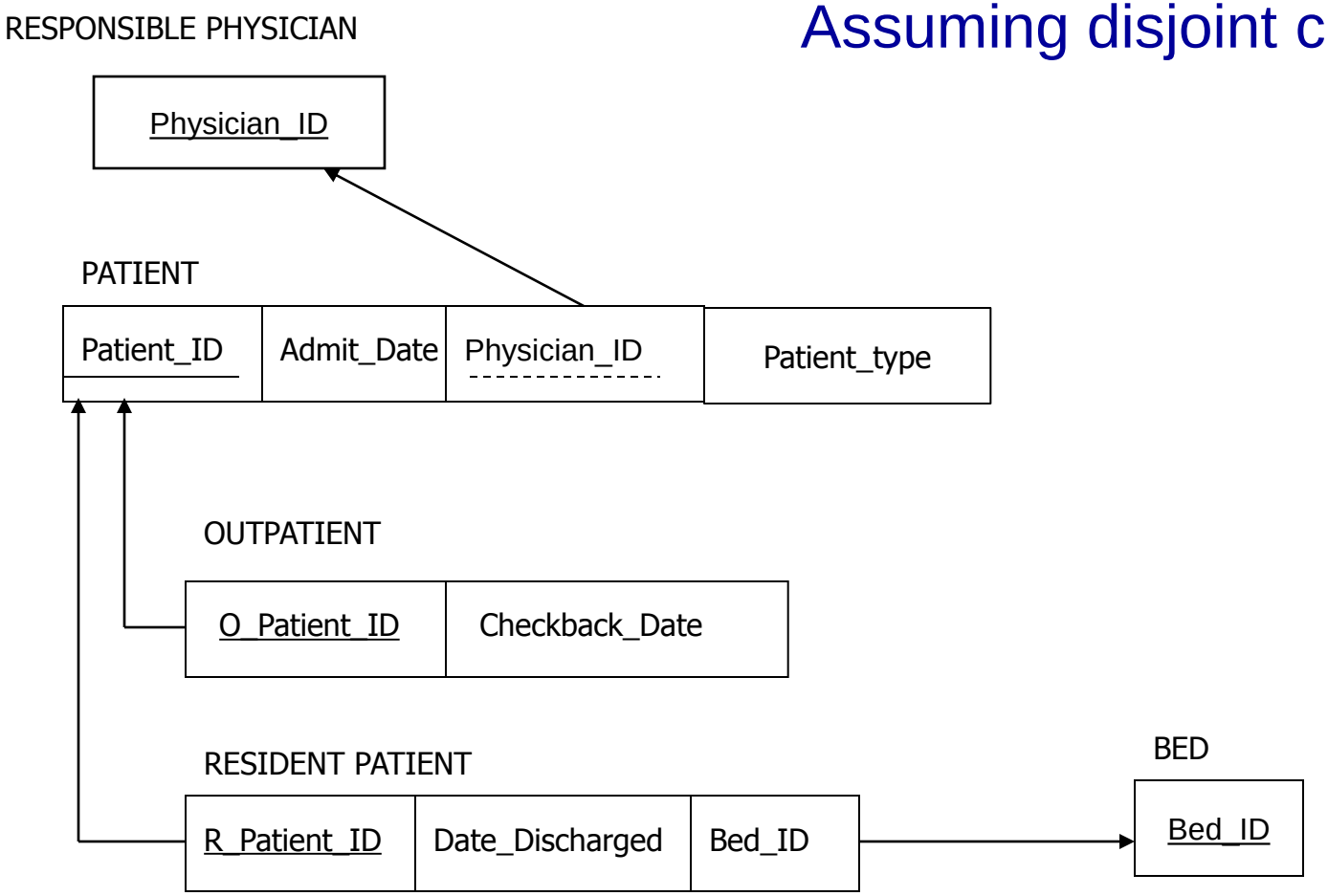


Problem #7


PATIENT
Patient_ID
Patient_Name
Admit_Date
Is_cared_for
RESPONSIBLE PHYSICIAN
Physician_ID
OUTPATIENT
Checkback_Date
RESIDENT PATIENT
Date_Discharged
Is_assigned
BED
Bed_ID

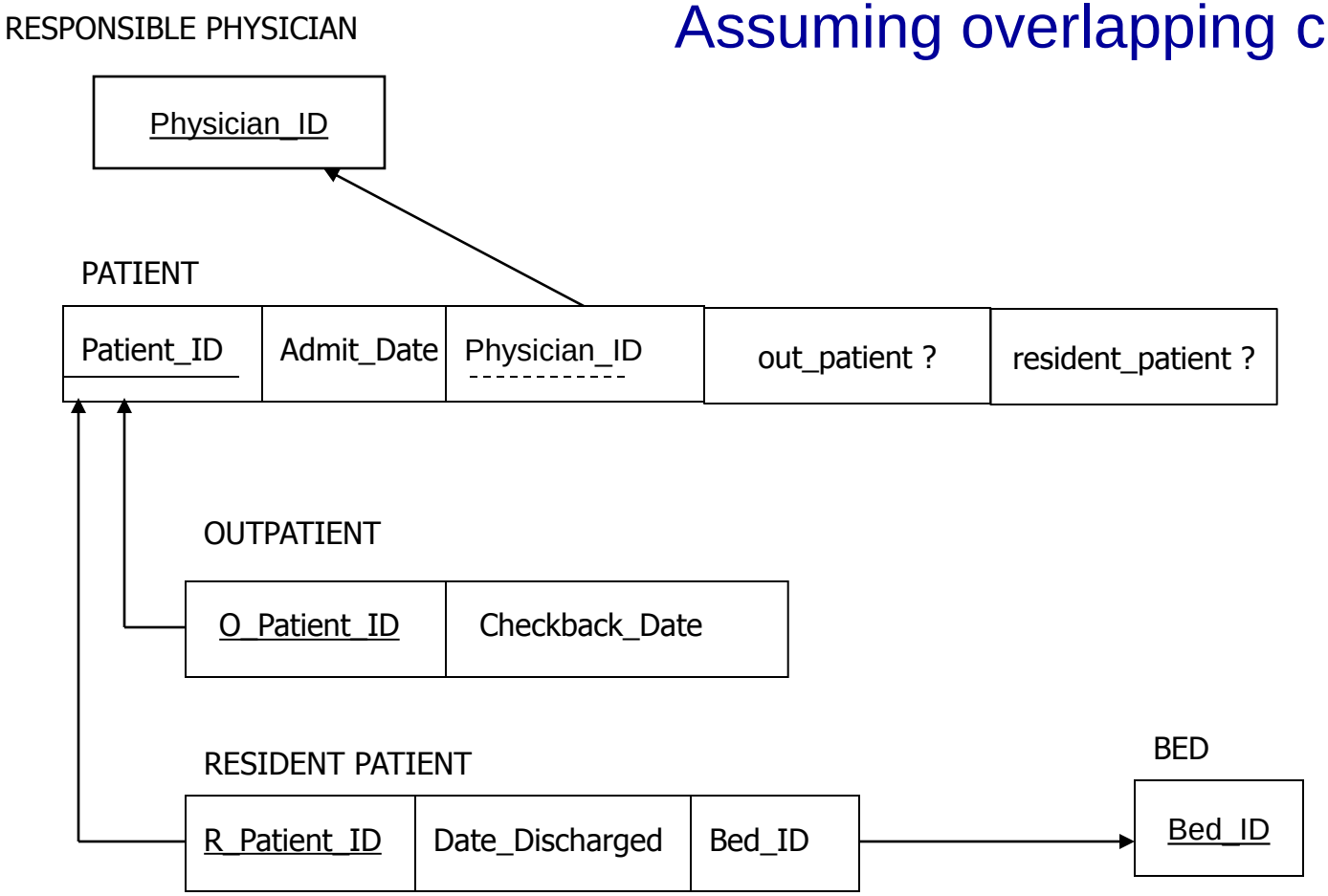
Solution for Problem #7

Assuming disjoint constraint

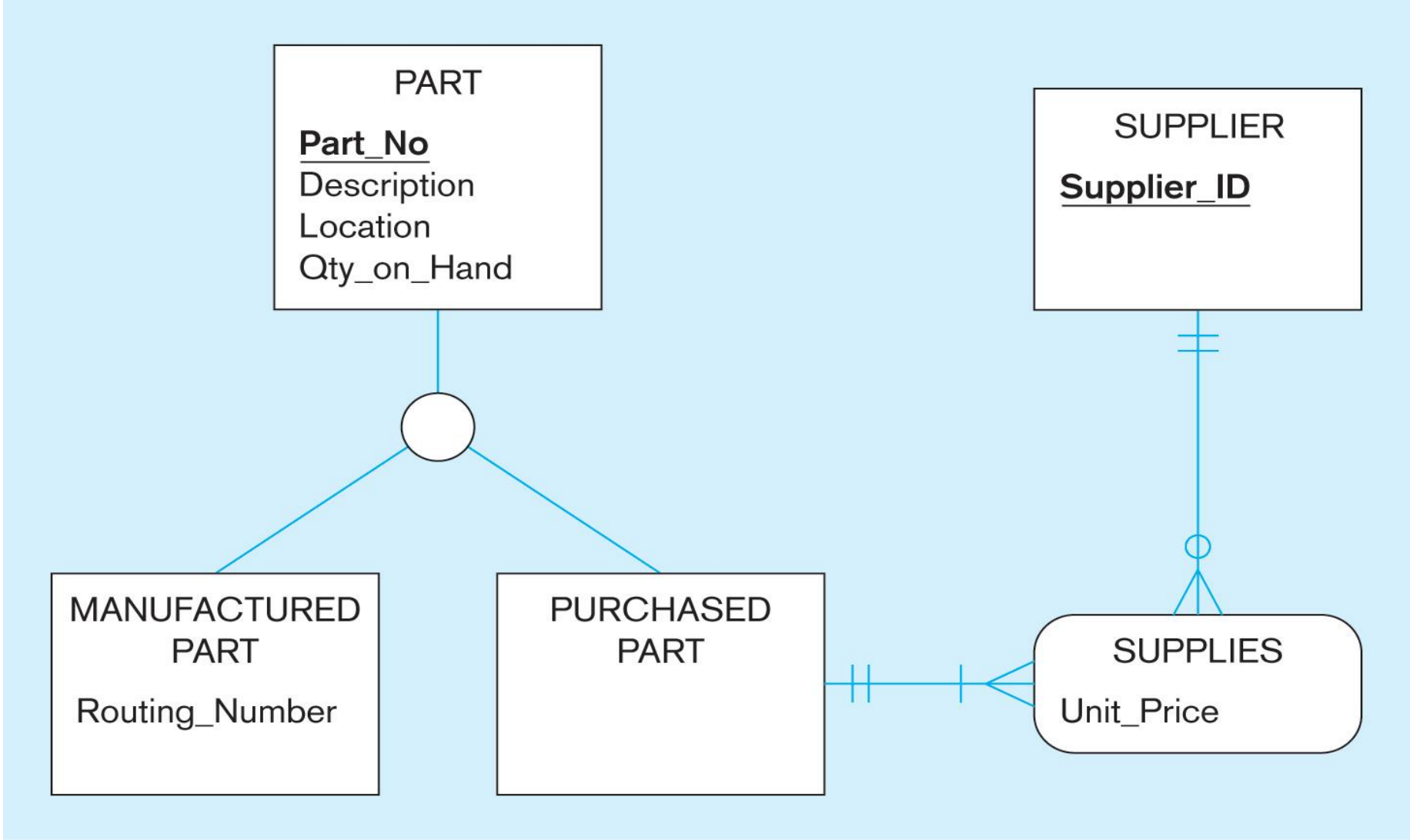


Solution for Problem #7

Assuming overlapping constraint



Problem #8


PART
Part_No
Description
Location
Qty_on_Hand
SUPPLIER
Supplier_ID
MANUFACTURED PART
Routing_Number
PURCHASED PART
SUPPLIES
Unit_Price

Solution for Problem #8

Assuming Overlapping constraint