COP 4710: Database Systems
Fall 2013

Chapter 3 – In Class Exercises

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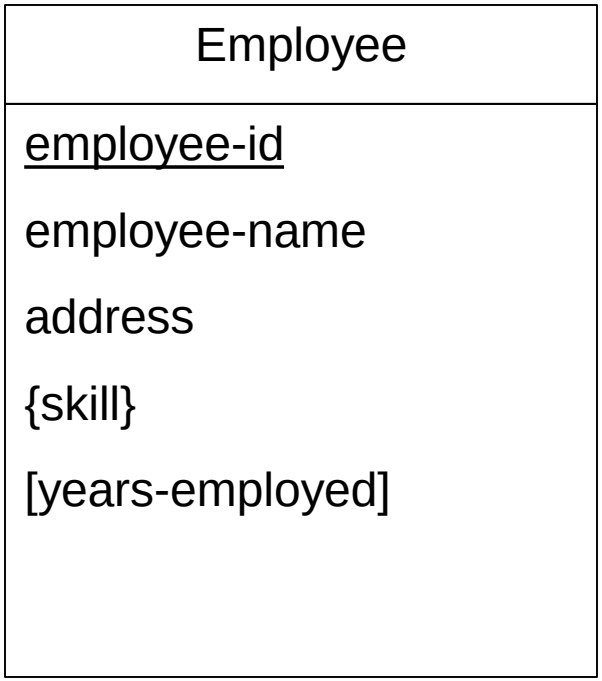
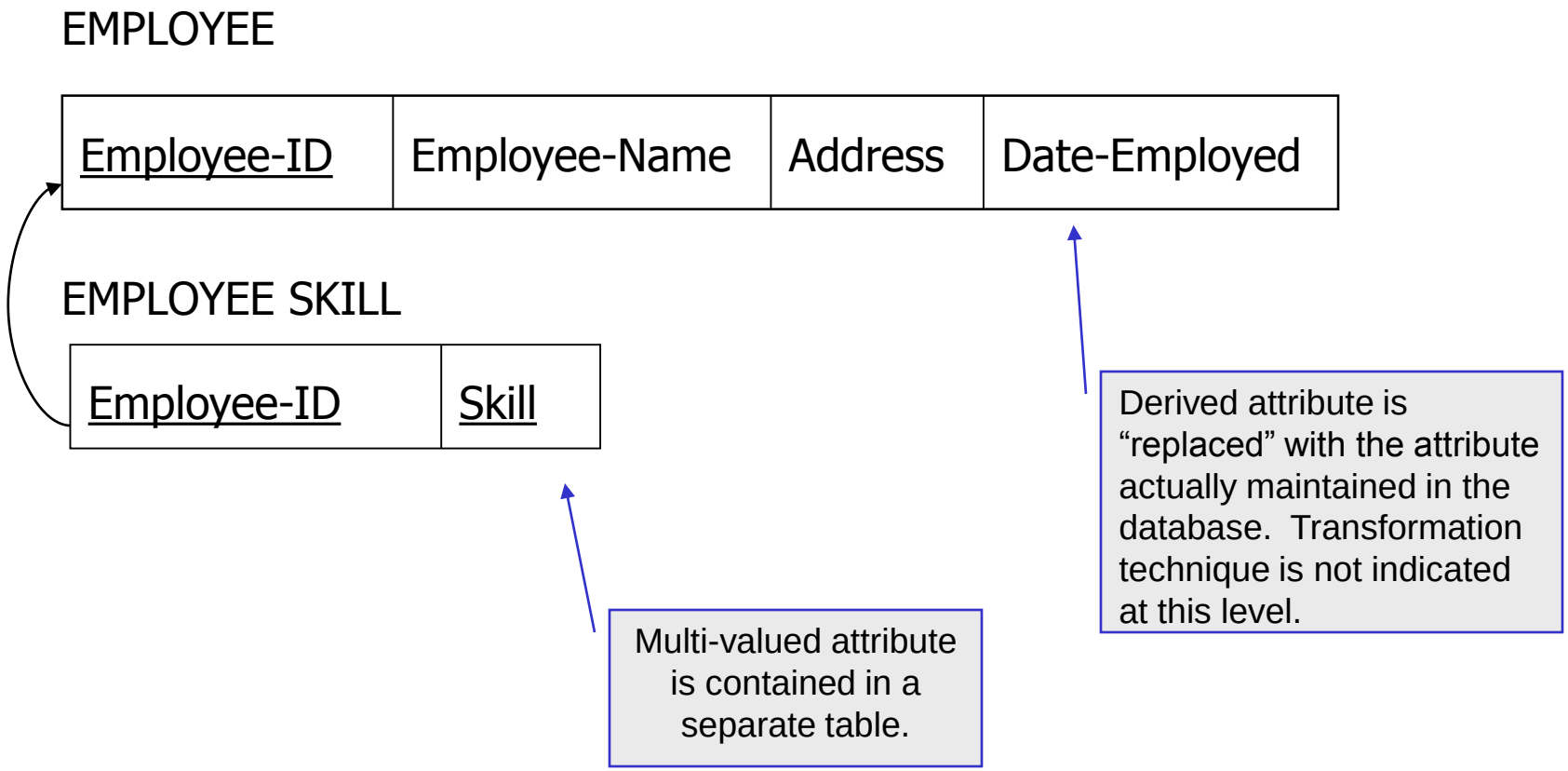
Introduction

- 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

Flight
flight-id (flight-number, date) number-of-passengers

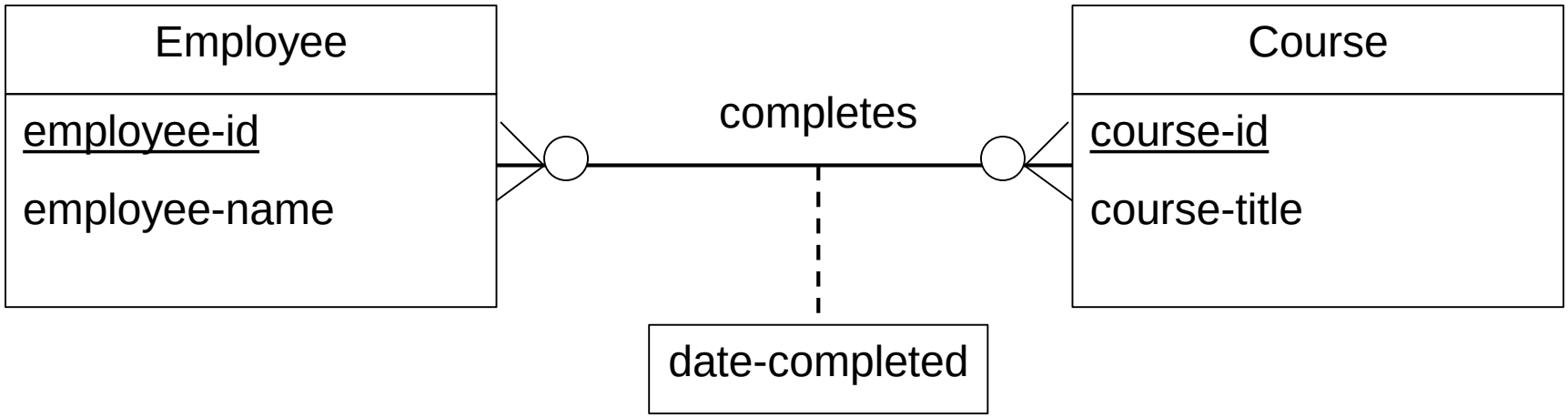
Solution for Problem #2

FLIGHT

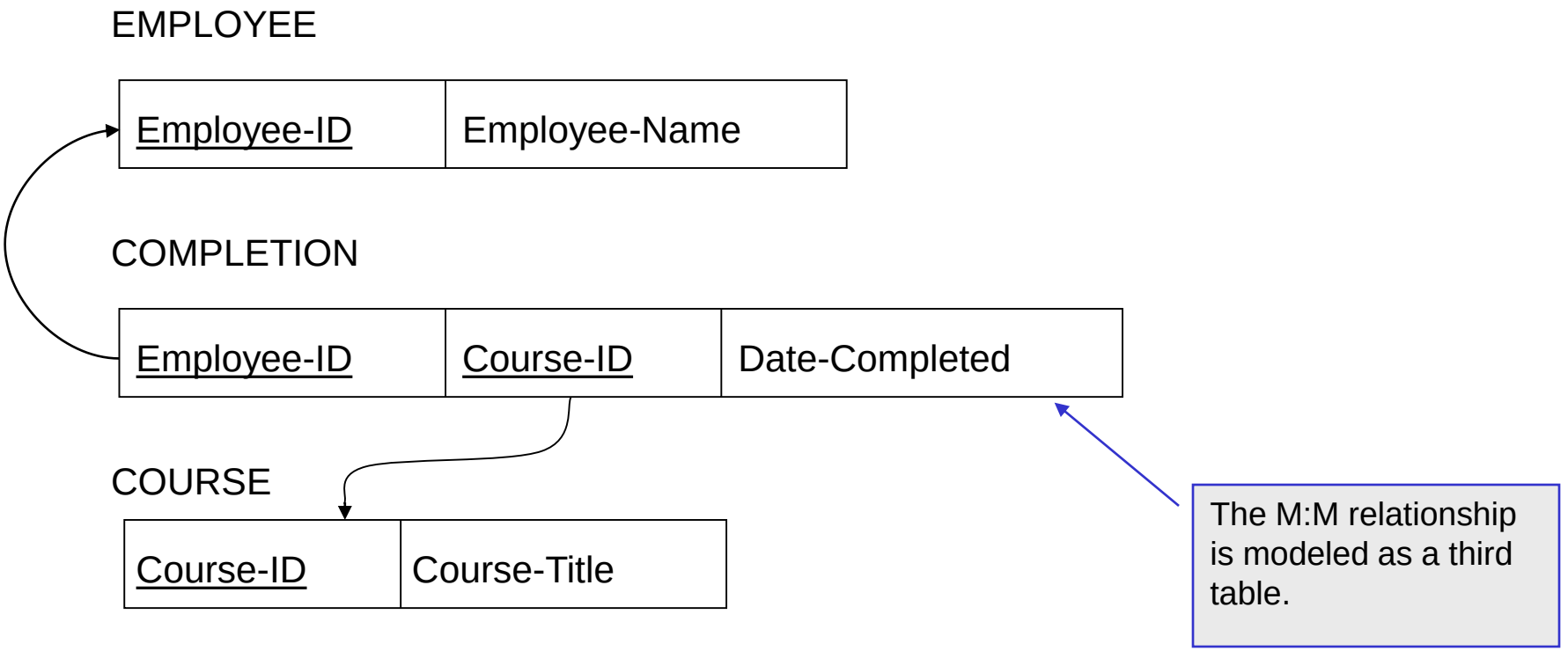
Flight-Number	Date	Number-of-Passengers

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.

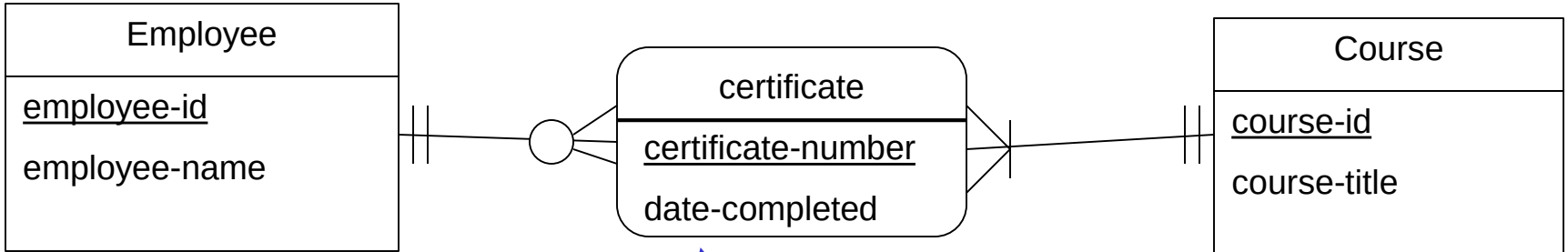
Problem #3


Employee
employee-id
employee-name
completes
Course
course-id
course-title
date-completed

Solution for Problem #3

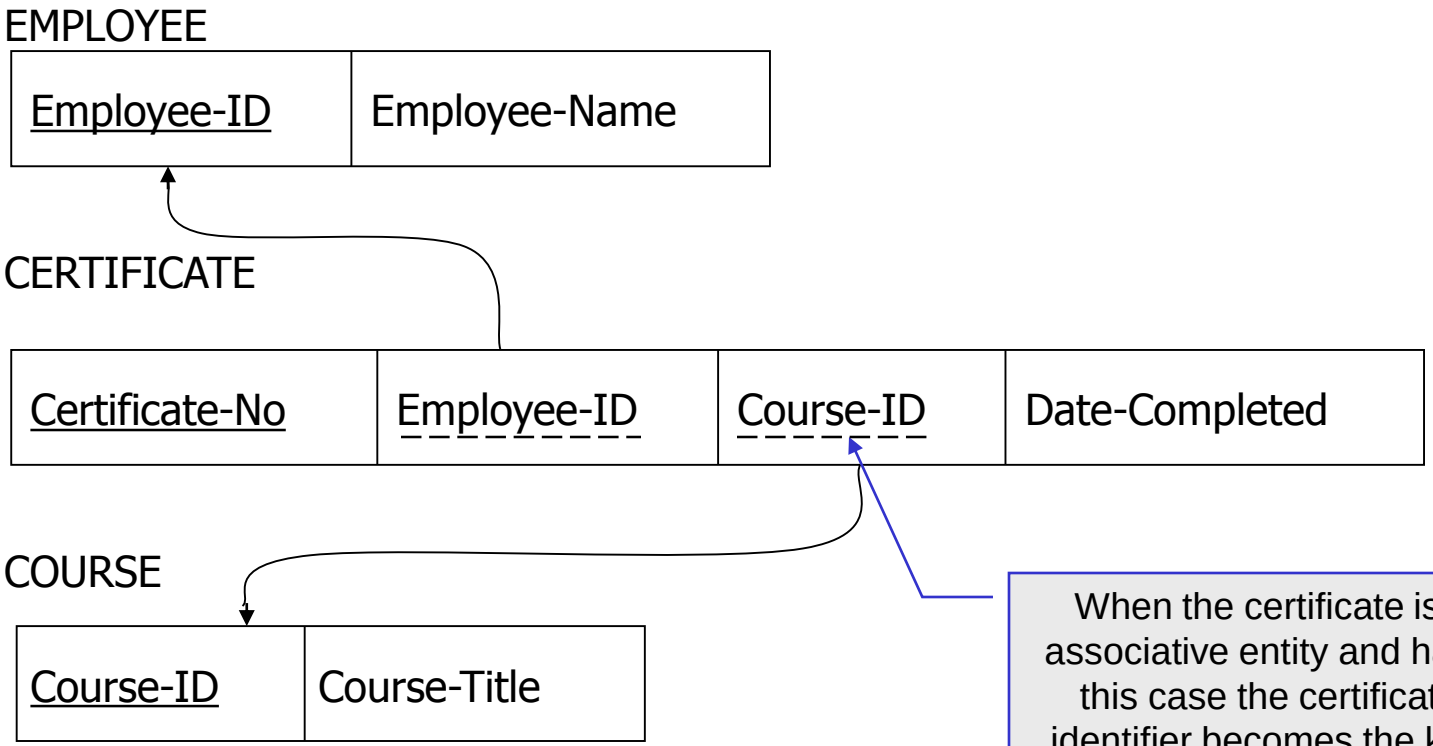


Problem #4



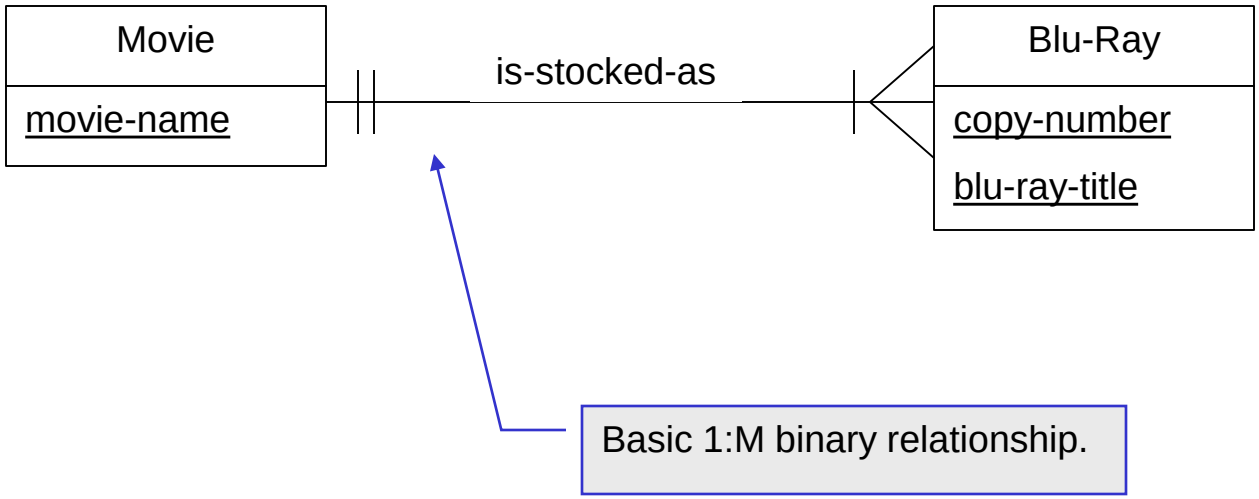
Note that this is the same problem as #3, however, this time the relationship has been modeled as an associative entity rather than as a simple N:M binary relationship due to the presence of an identifier in the associative relationship.

Solution for Problem #4

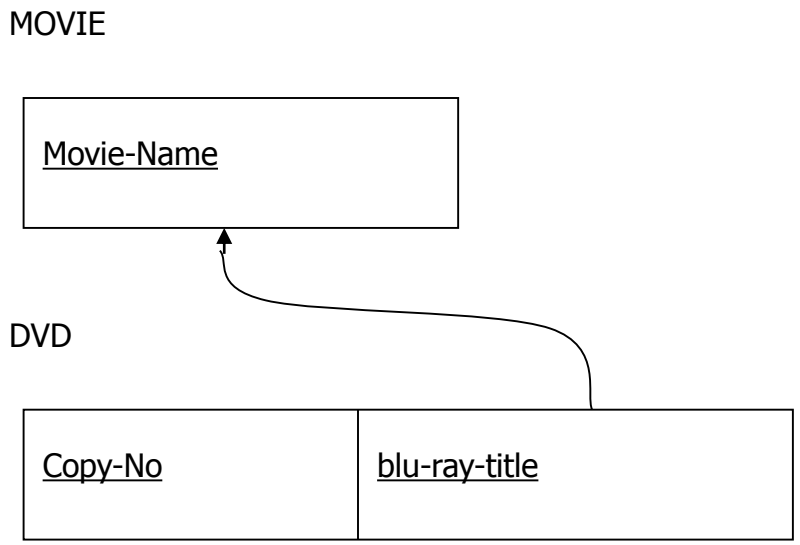


When the certificate is modeled as an associative entity and has an identifier (in this case the certificate number), that identifier becomes the key of the relation scheme with the identifiers in the two participating entity sets becoming foreign keys in the associative entity table.

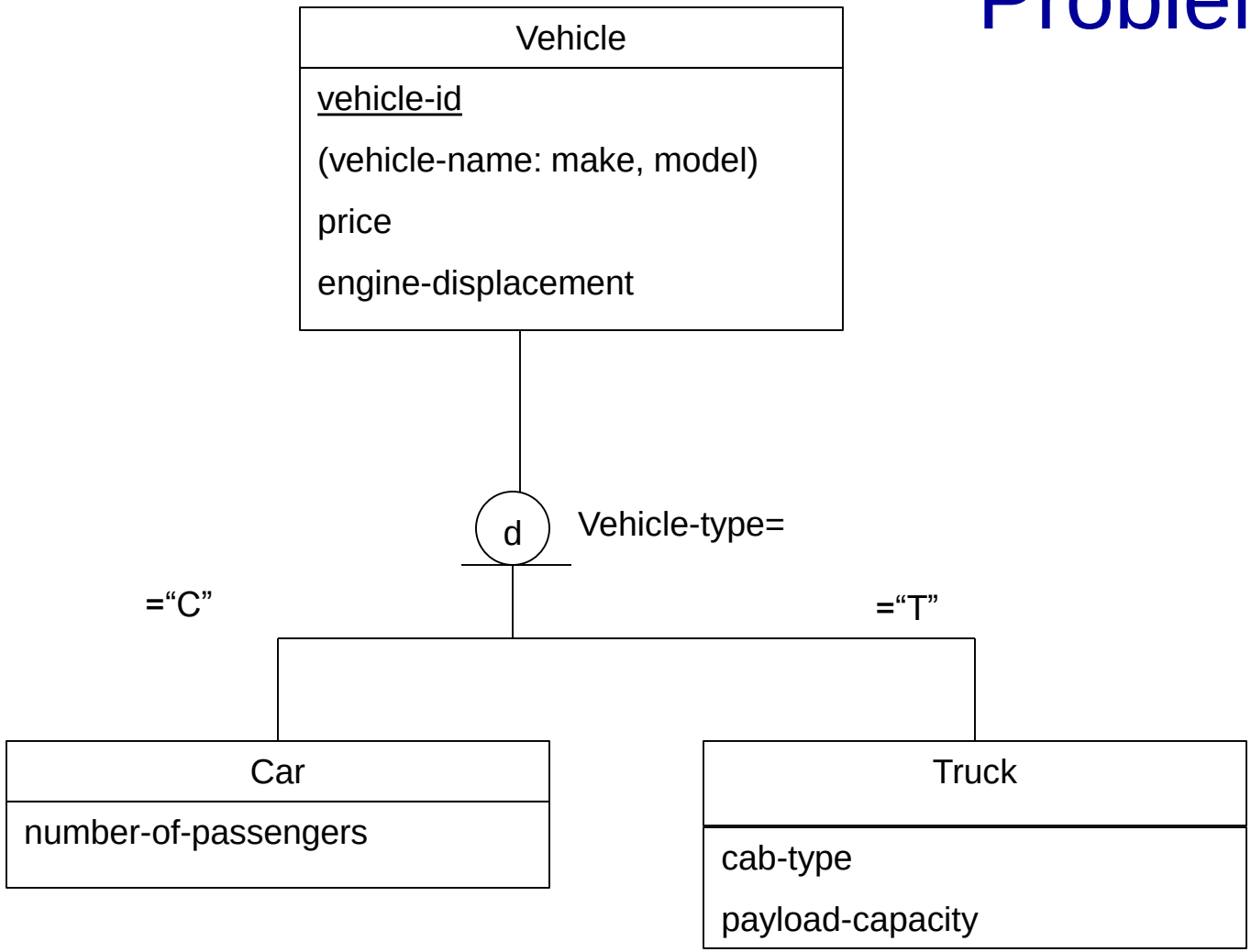
Problem #5


Movie
movie-name
is-stocked-as
Blu-Ray
copy-number
blu-ray-title
Basic 1:M binary relationship.

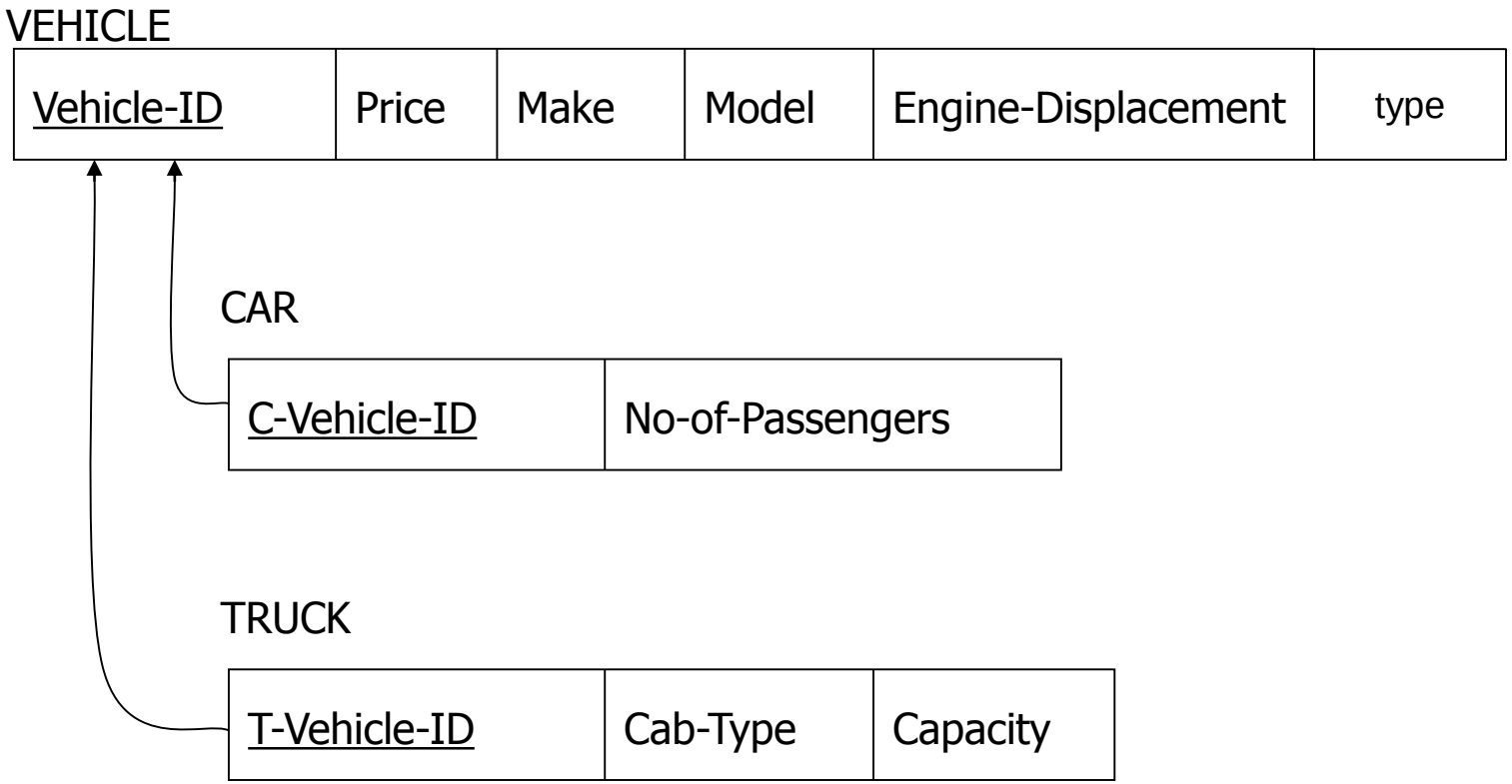
Solution for Problem #5



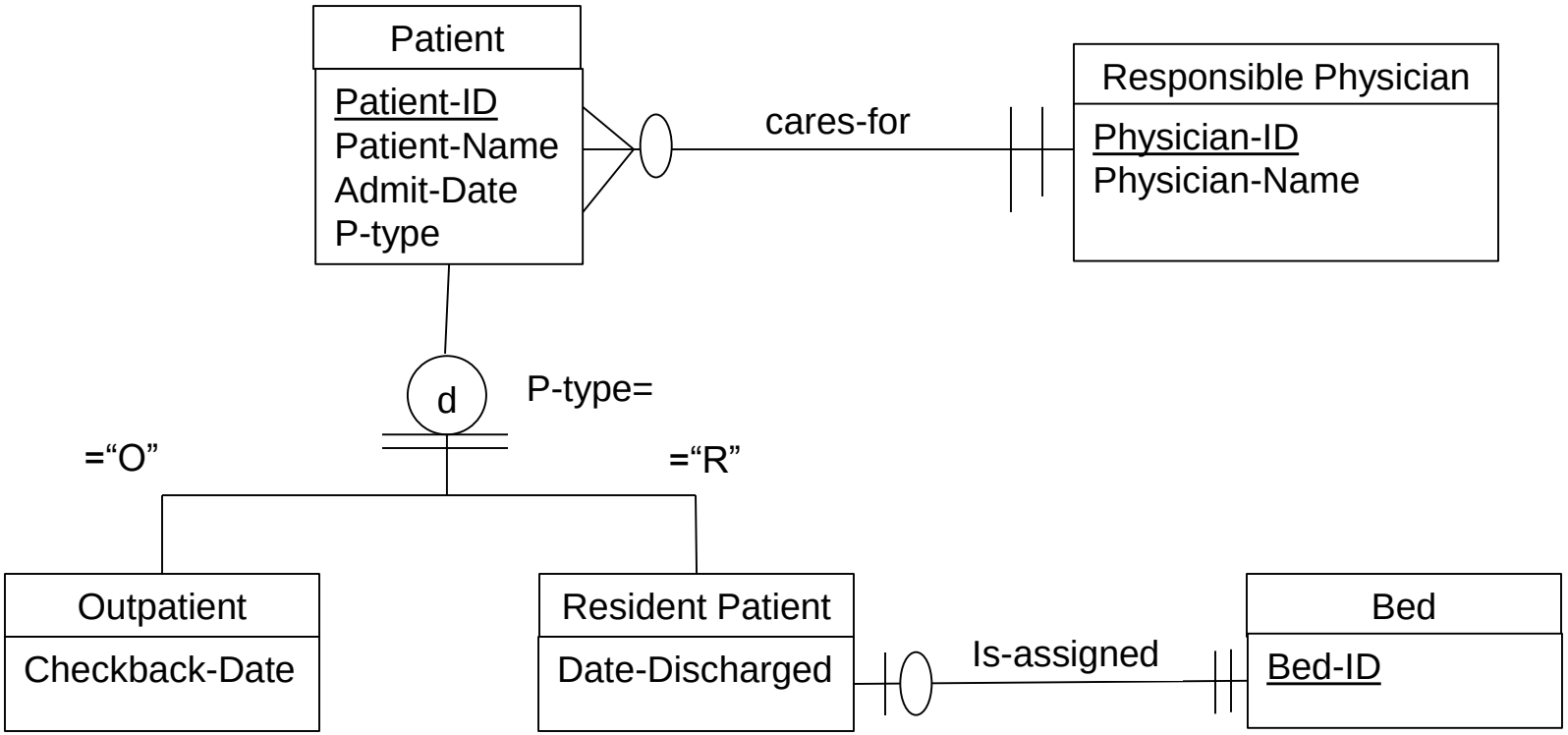
Problem #6


Vehicle
vehicle-id
(vehicle-name: make, model)
price
engine-displacement
d
Vehicle-type=
="C"
="T"
Car
number-of-passengers
Truck
cab-type
payload-capacity

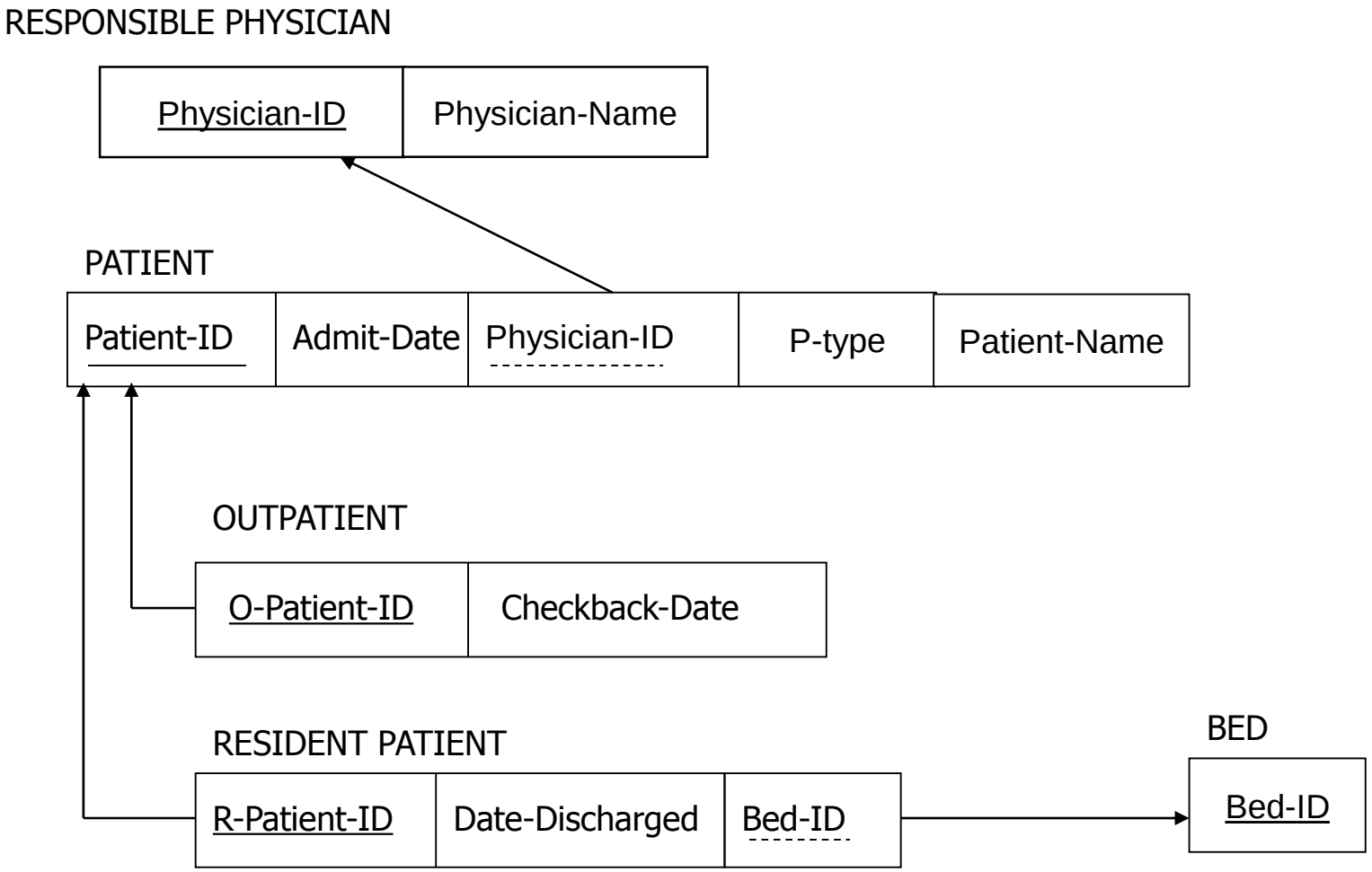
Solution for Problem #6



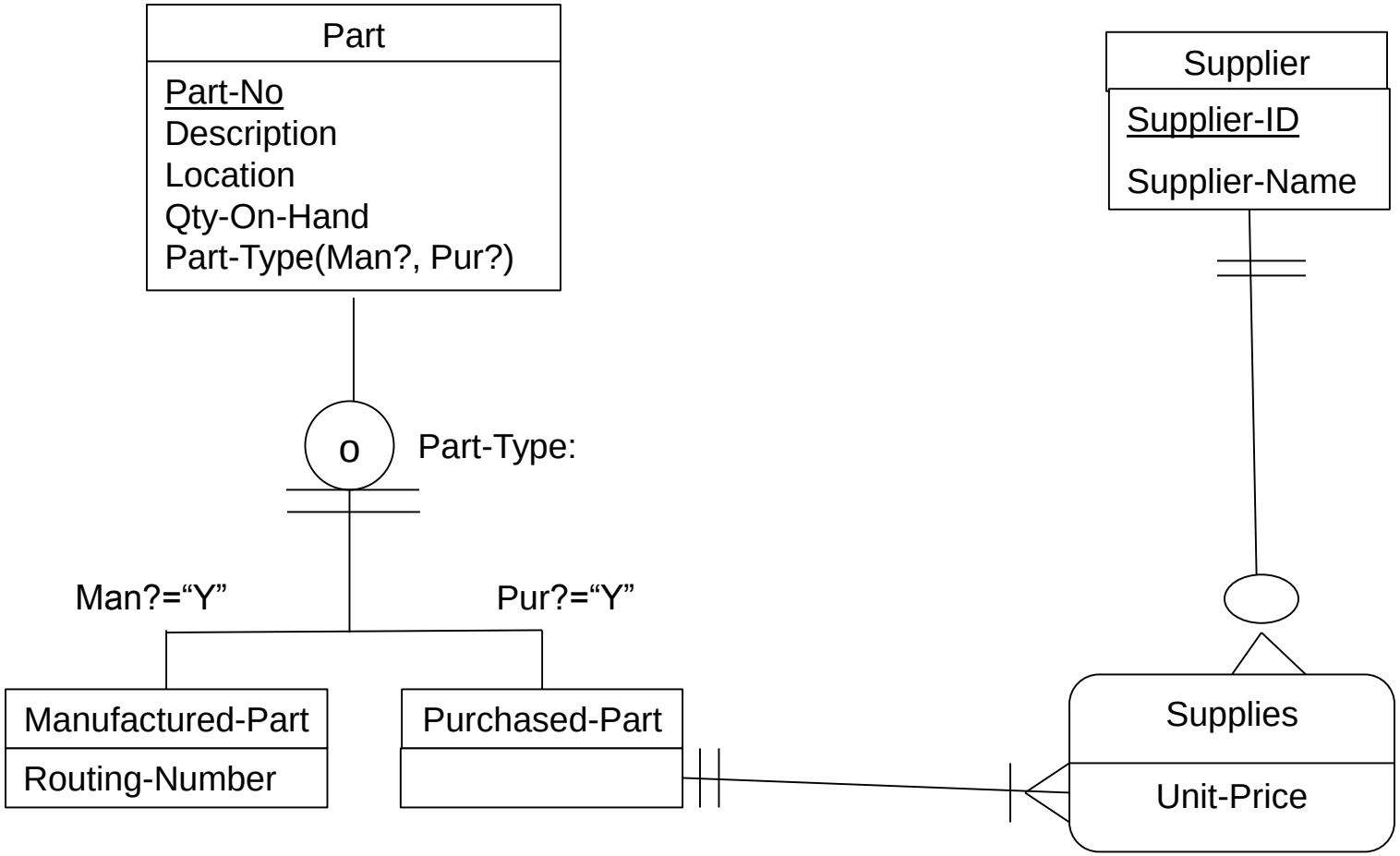
Problem #7


Patient
Patient-ID
Patient-Name
Admit-Date
P-type
cares-for
Responsible Physician
Physician-ID
Physician-Name
d
P-type=
="O"
="R"
Outpatient
Checkback-Date
Resident Patient
Date-Discharged
Is-assigned
Bed
Bed-ID

Solution for Problem #7



Problem #8


Part
Part-No
Description
Location
Qty-On-Hand
Part-Type(Man?, Pur?)
o
Part-Type:
Man?="Y"
Pur?="Y"
Manufactured-Part
Routing-Number
Purchased-Part
Supplier
Supplier-ID
Supplier-Name
Supplies
Unit-Price

Solution for Problem #8