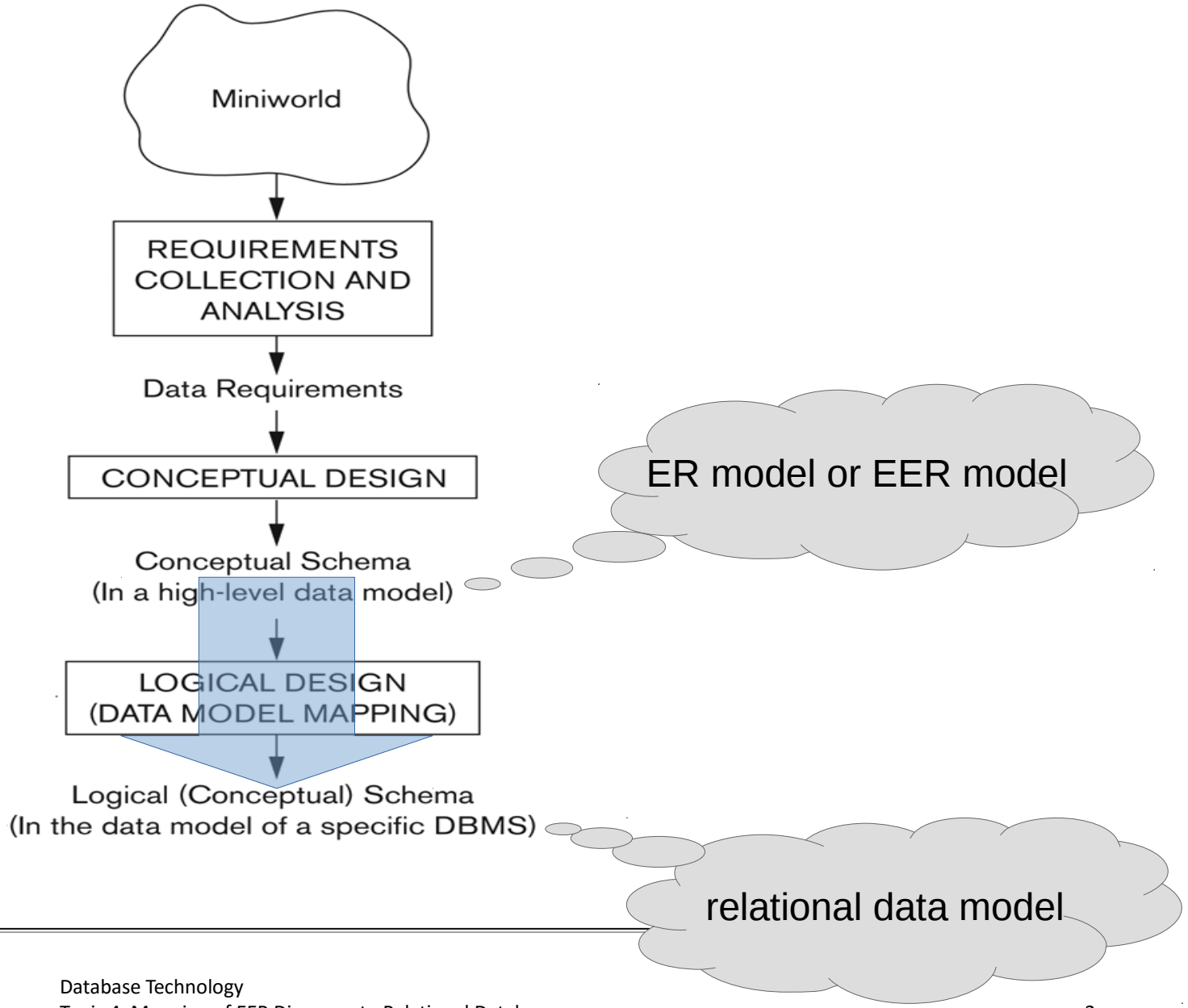
Database Technology

Topic 4: Mapping of EER Diagrams to Relational DBs

Olaf Hartig
olaf.hartig@liu.se

LINKÖPING UNIVERSITY

Recall: DB Design Process



Algorithm/Procedure for ER Diagrams

Step 1: Convert all regular entity types
- new relation, flatten composite attributes, ignore multivalued attributes

Step 2: Convert all weak entity types
- new relation, attributes as above, include identifying relationship type(s)

Step 3: Convert all 1:1 relationship types
- foreign key into either relation, include attributes of the relationship

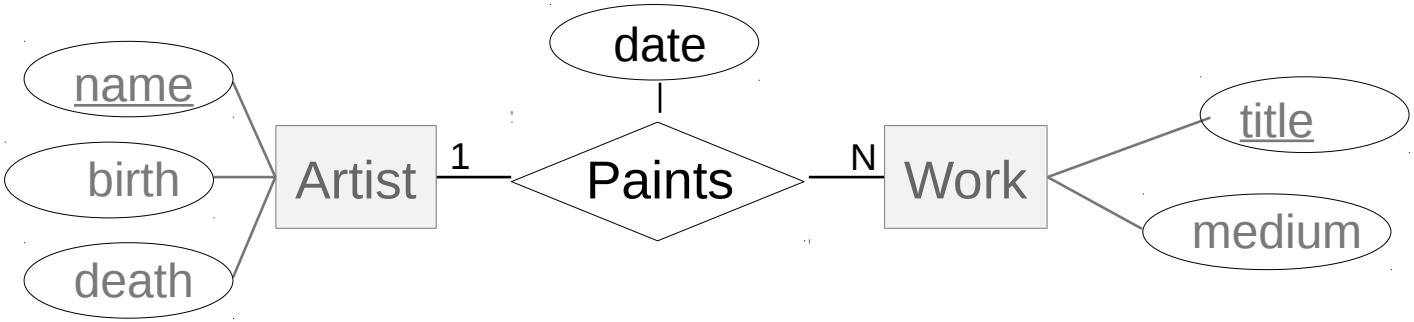
Step 4: Convert all 1:N relationship types
- foreign key into *N*-side relation, include attributes of the relationship

Step 5: Convert all remaining relationship types (N:M, ternary, 4-ary, …)
- new relation with foreign keys, include attributes of the relationship

Step 6: Convert all multivalued attributes
- new relation with foreign keys

Quiz

Consider the given ER diagram and relational DB schema



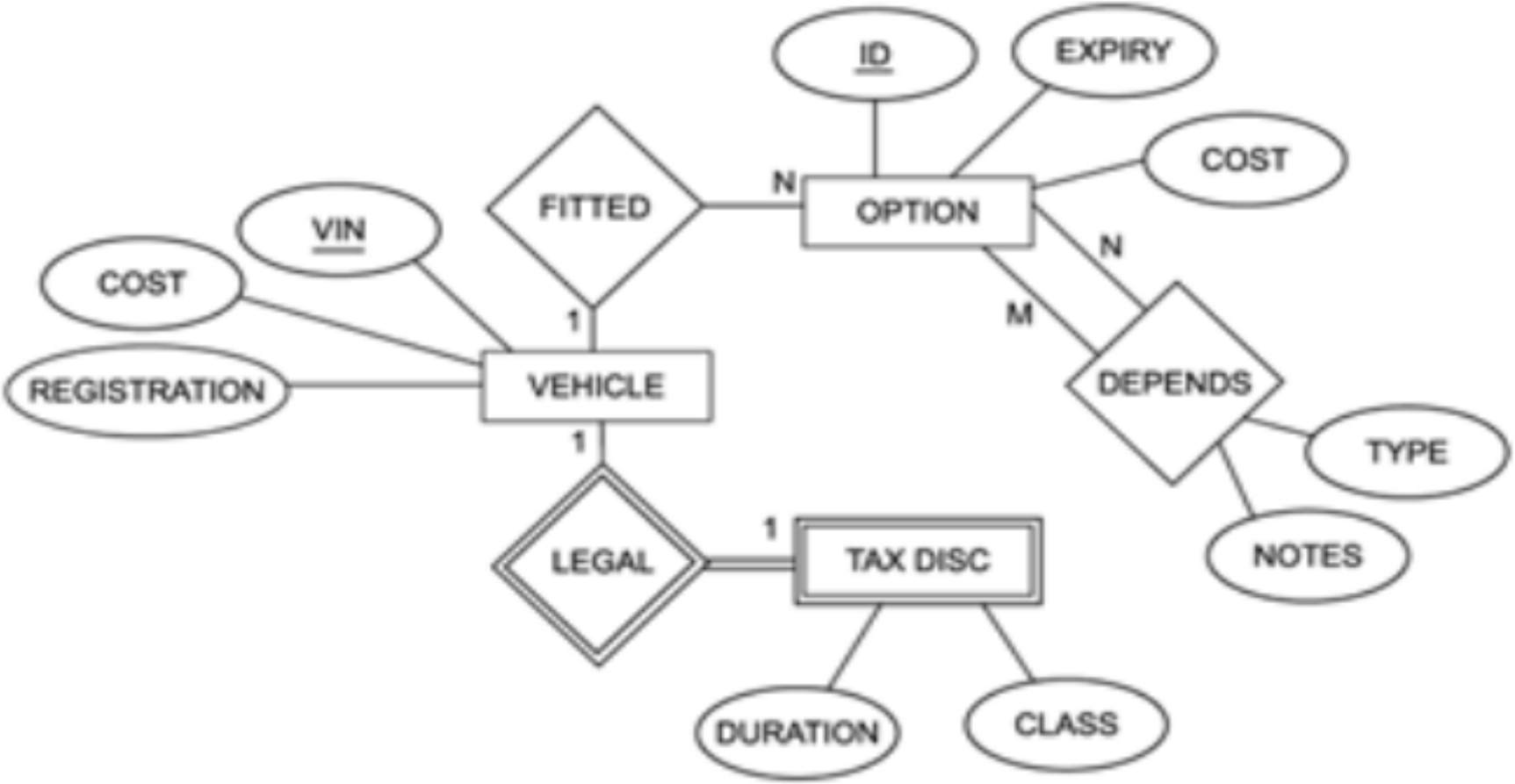
Artist(<u>name</u>,birth,death), Work(<u>title</u>,medium)

The Paints relationship can be represented by:

A. introducing a third schema: Paints(name,<u>title</u>,date)
B. extending the Work schema to be Work(<u>title</u>,medium,name,date)
C. extending the Artist schema to be Artist(<u>name</u>,birth,death,title,date)
D. either A or B above
E. either A or C above

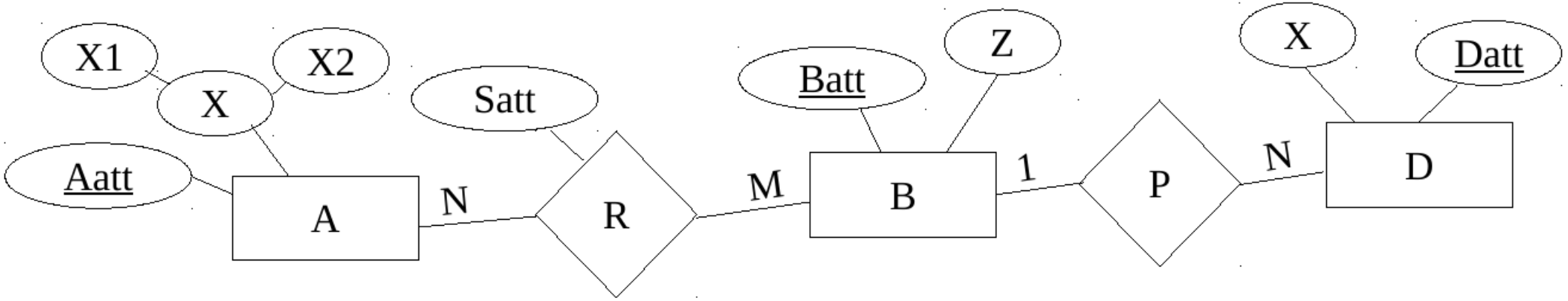
Example

Translate the following ER Diagram into a relational database schema.

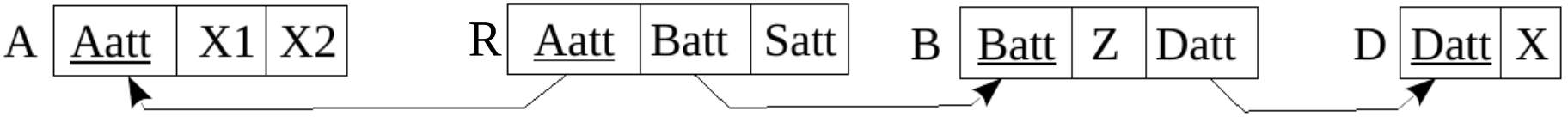


Exercise

Consider the following ER diagram.



Your friend tried to translate this ER diagram into a relation DB schema. The result is illustrated below. Unfortunately, your friend made *two mistakes*. Identify these mistakes.



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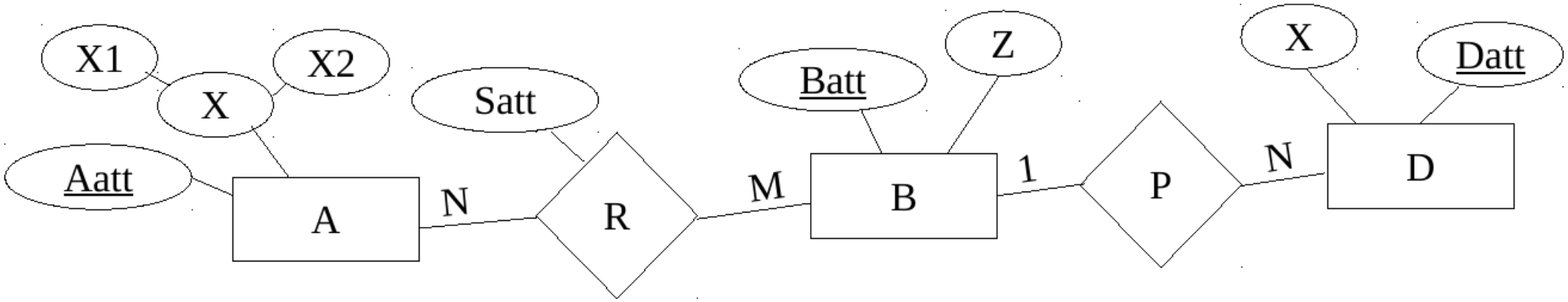

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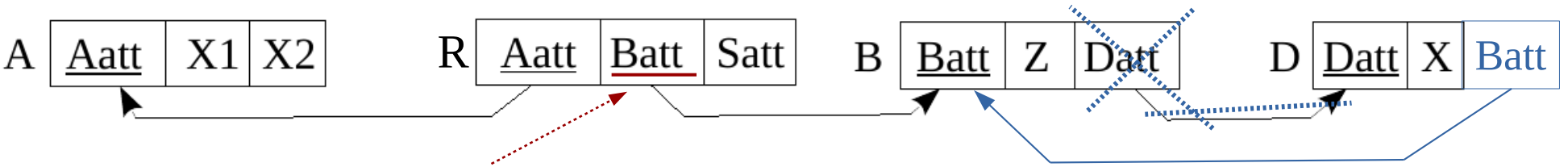
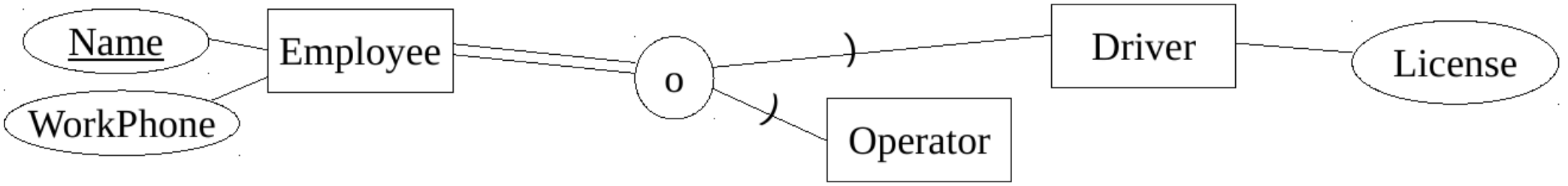


must be part of the primary key in S (together with Aatt)

Another Exercise

Consider the following EER diagram.



Possible translation into a relation DB schema: single relation with a Boolean-type attribute for every subclass.

Employee	Name	Workphone	isDriver	isOperator	License

Some information (such as constraints) captured in the EER diagram is not captured anymore in the relational DB schema.

Which?

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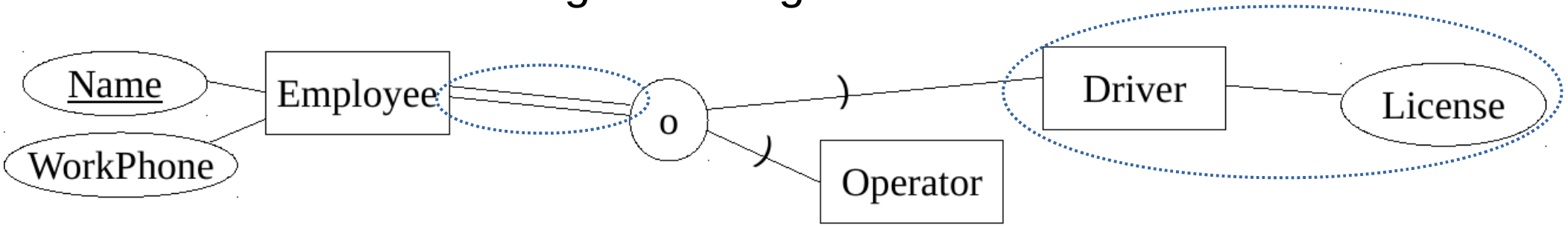
Consider the following EER diagram.



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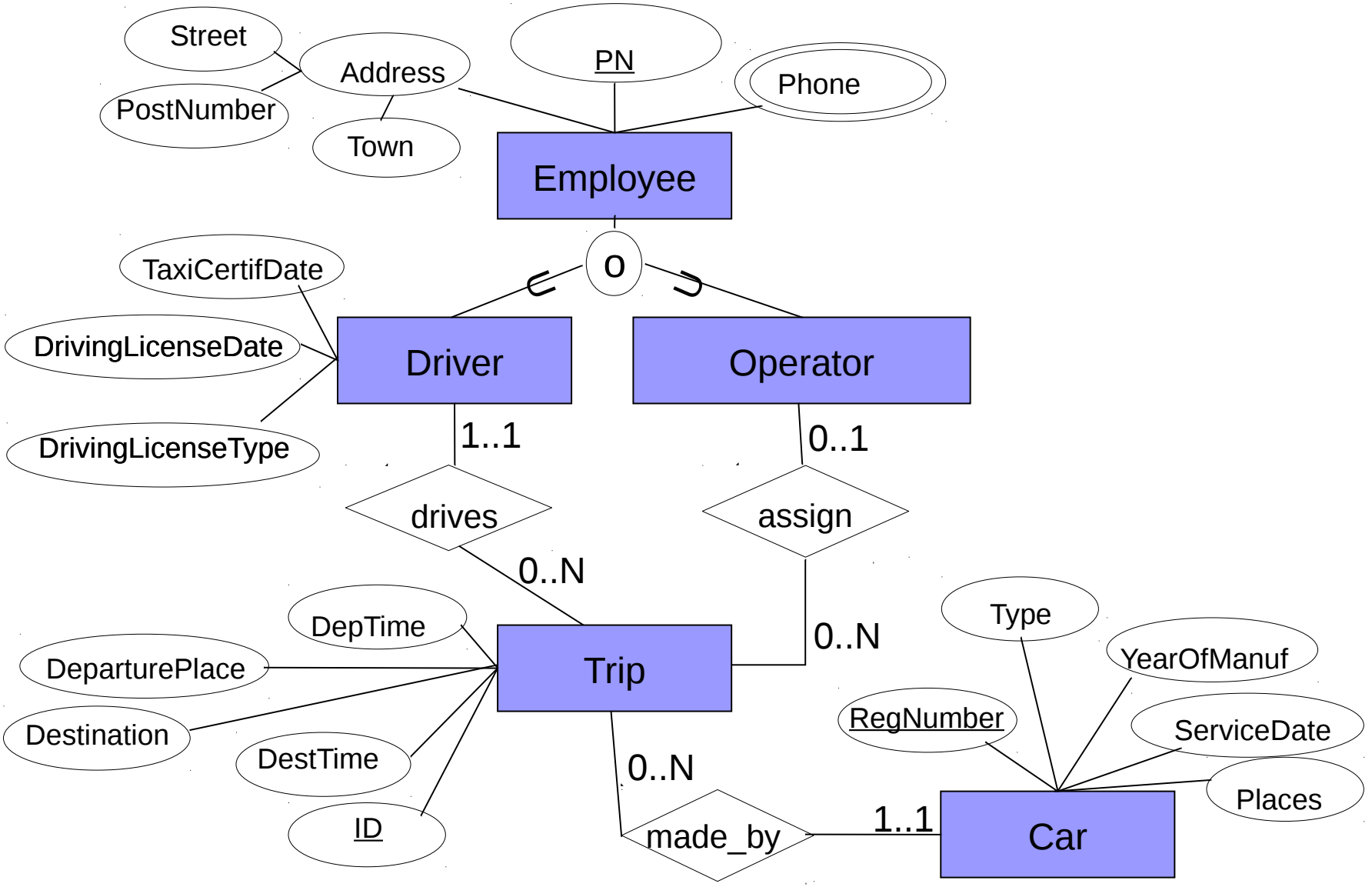
Example 2


Street
Address
PostNumber
Town
PN
Phone
Employee
o
TaxiCertifDate
DrivingLicenseDate
DrivingLicenseType
Driver
Operator
1..1
0..1
drives
assign
0..N
0..N
DepTime
DeparturePlace
Destination
DestTime
ID
Trip
0..N
made_by
1..1
Type
YearOfManuf
RegNumber
ServiceDate
Places
Car

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