Mandatory Business Rules in ORM

(Chapter 5)

Mustafa Jarrar

Birzeit University
mjarrar@birzeit.edu
www.jarrar.info

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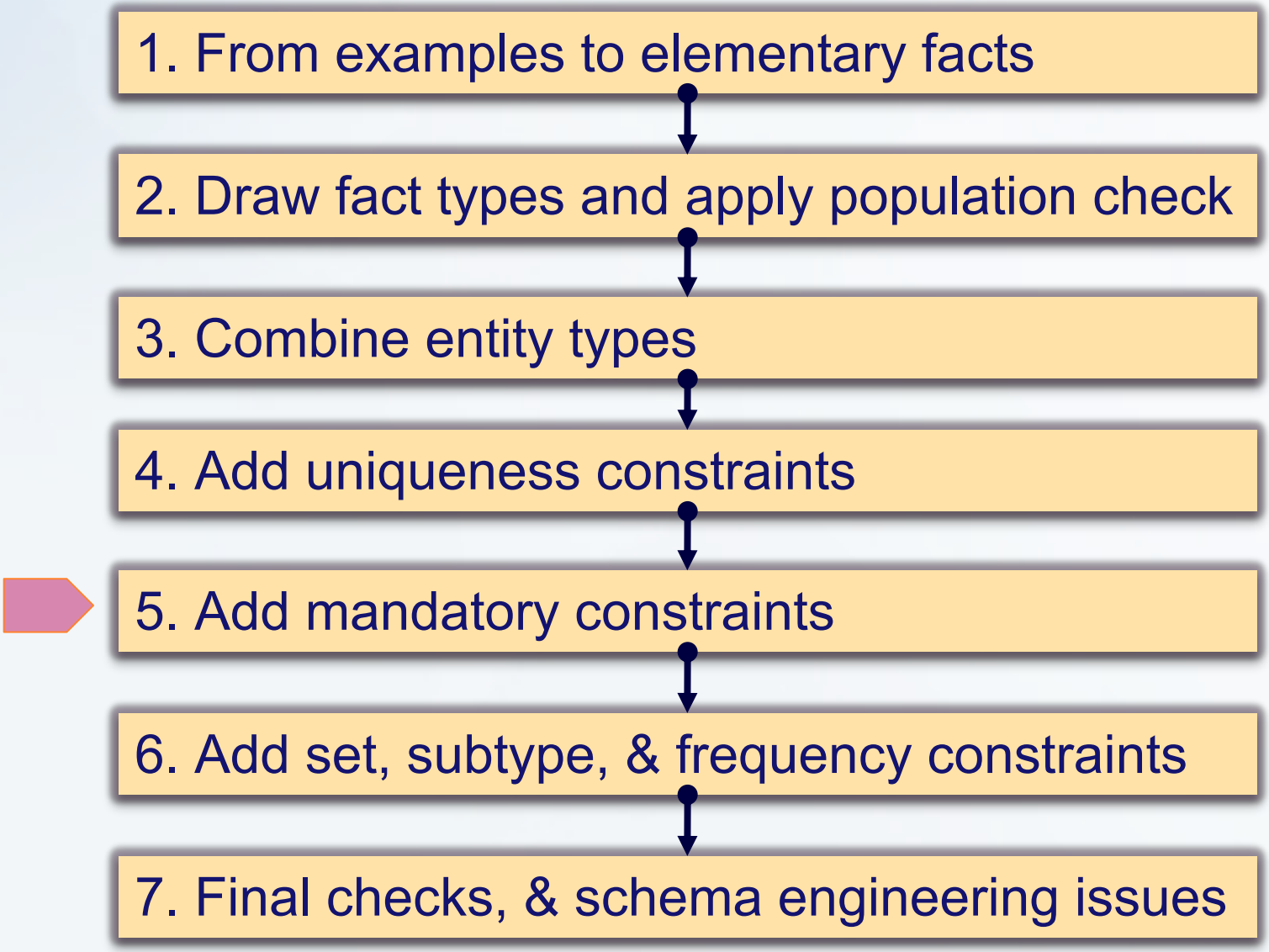
Keywords: Mandatory, Role Mandatory, Disjunctive Mandatory, Cardinality, Business Rules,ضرورة، اجباري

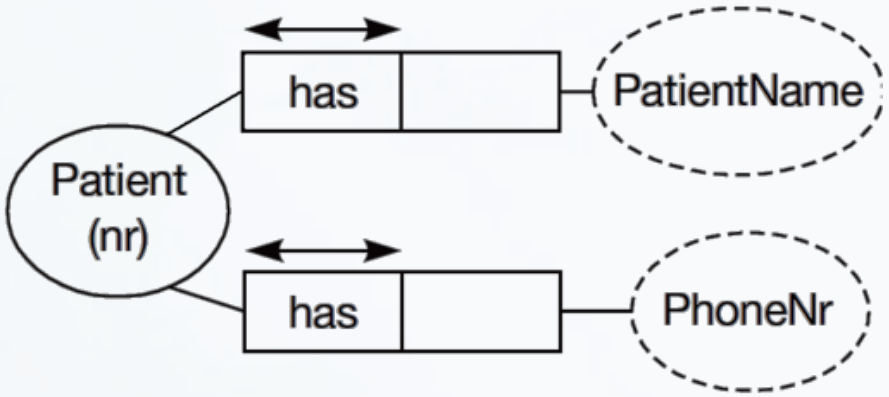
Conceptual Schema Design Steps



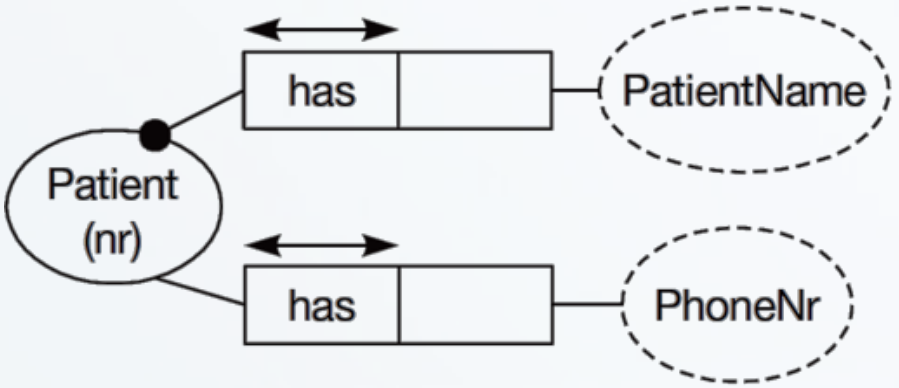
Mandatory Versus Optional

Any problem with this table?

PatientNr	*Patient name*	*Phone*
001	Adams C	2057642
002	Brown S	
003	Collins T	8853020

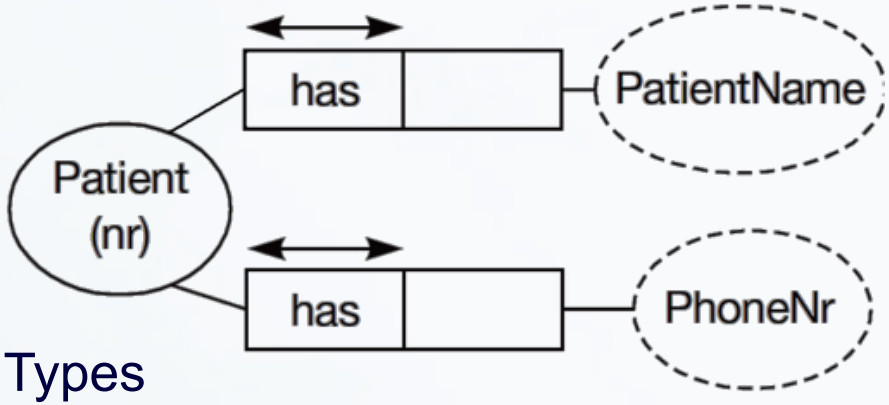


By default, all roles are optional.
How can we say that a role is mandatory?



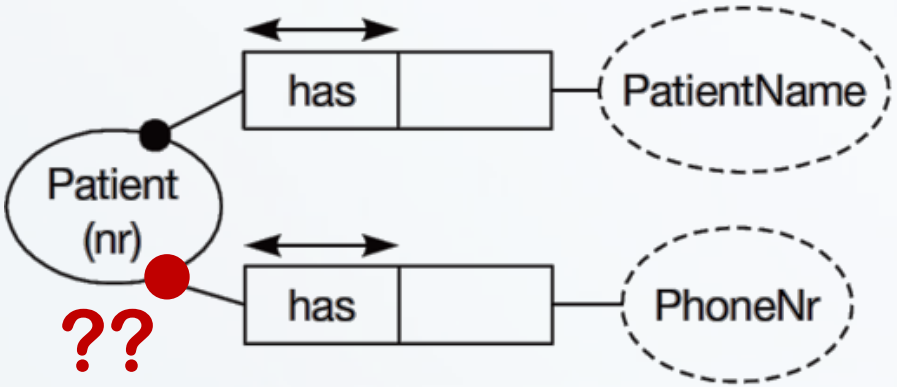
each Patient Has **at least one** PatientName

Mandatory Roles

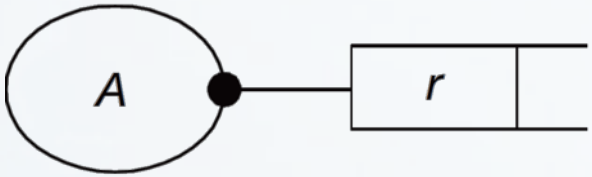


➔ Mandatoriness is implied with Value Types (by default).

For example: it is assumed that “each PhoneNr is for at least one Patient”, because PhoneNr is a Value Type.



Mandatory Definition



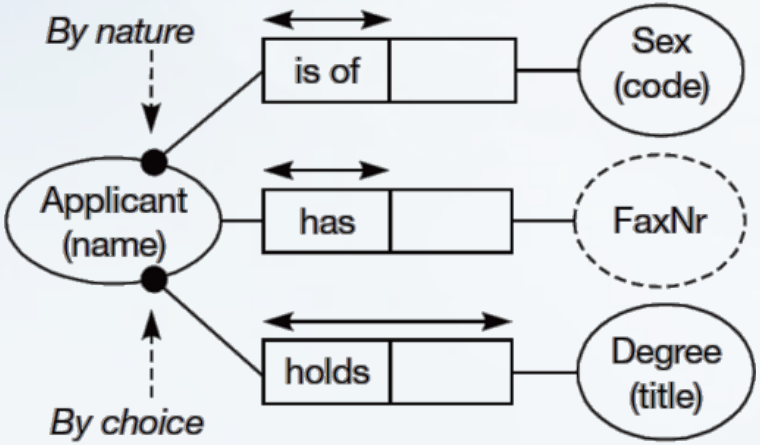
Role ***r*** is **mandatory** (for the population of ***A***)

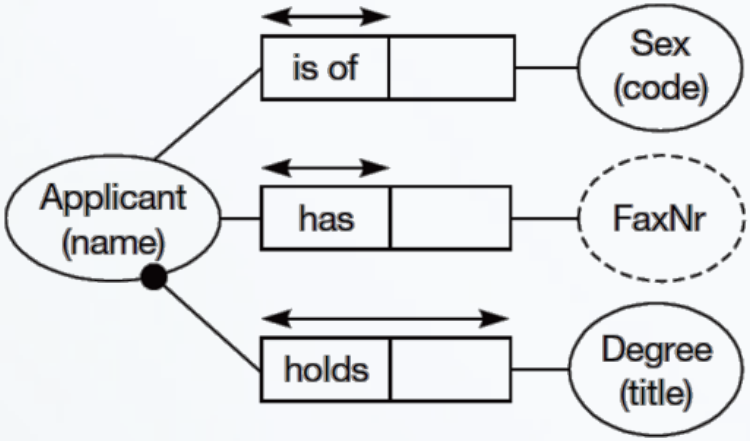
Each instance of type ***A*** that is recorded in the database is also recorded to play ***r***

pop(***r***) = pop(***A***)

Mandatory Roles

How can we decide to make a role mandatory?





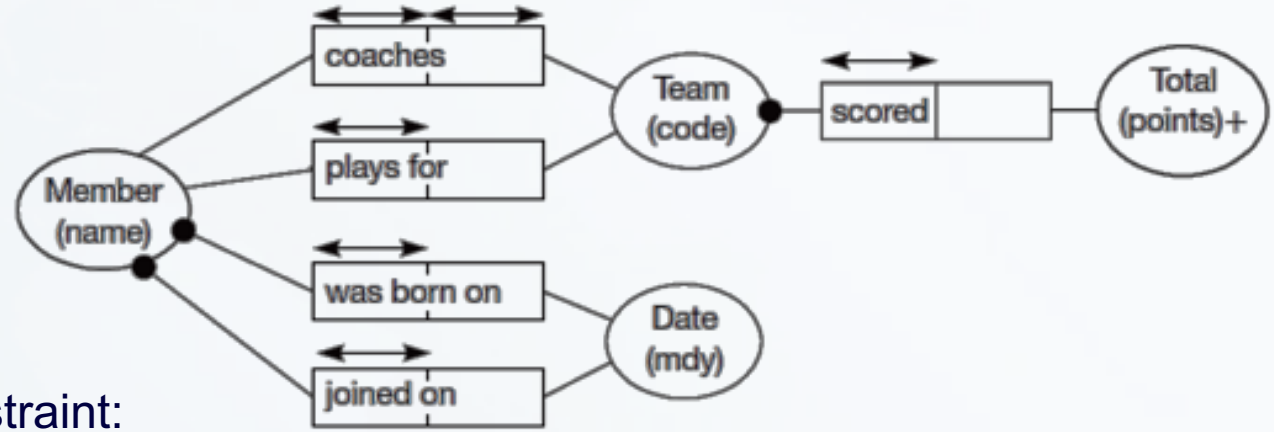
Recall our discussion on

(Conceptual data modeling) versus (conceptual modeling)

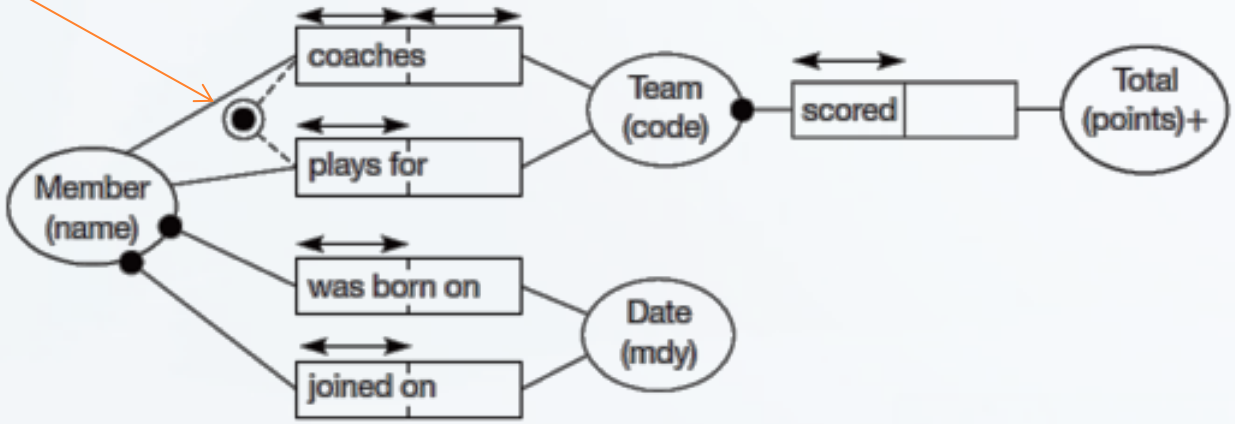
If a role is mandatory in the real world, it may be optional in the model.

Disjunctive Mandatory

How to say that it is mandatory for each member to (PlaysFor | Coaches) a team, or both. We cannot have both roles optional, at least one role should be played.

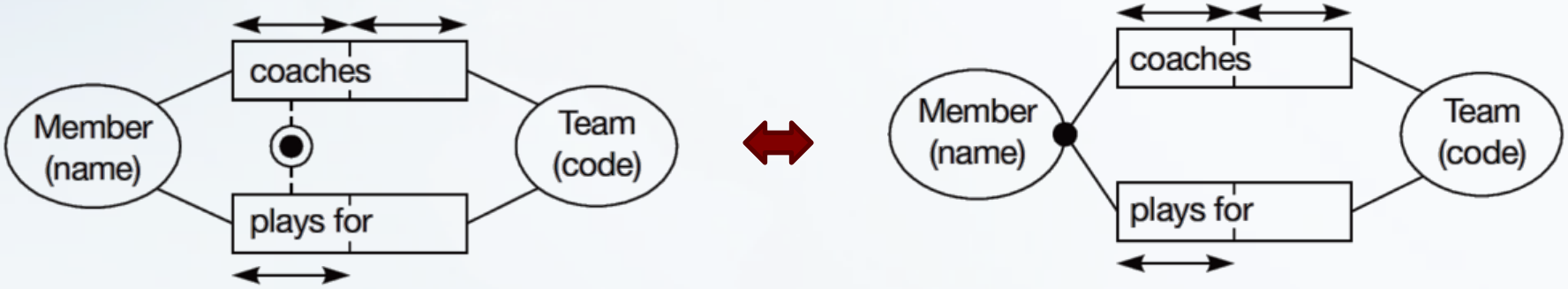


Disjunctive mandatory constraint:
Each Member coaches **or** plays **(or both)**.

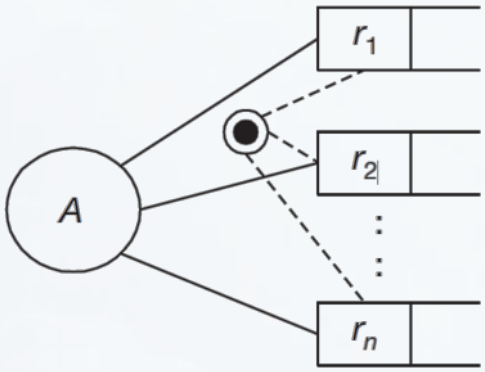


Disjunctive Mandatory

Alternative notations for disjunctive mandatory role constraint.



Disjunctive Mandatory



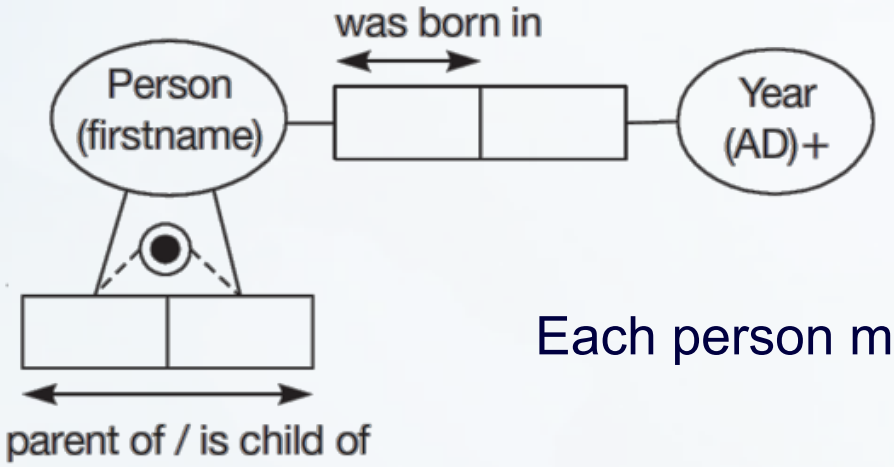
Disjunctive mandatory role constraint

The inclusive disjunction of roles $r_1 ... r_n$ is mandatory for A

i.e., each member of pop(A) plays r_1 or r_2 ...or r_n (or all)

i.e., each member of pop(A) plays *at least one of* $r_1 \ldots r_n$

Another Example



Alice	Terry
Bernie	Terry
Norma	Paul
Norma	Selena
Terry	Paul
Terry	Selena

Each person must be a parent or child.

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