

Relational Signature from Ontology

Handfill 22

Emp / 1 Mgr / 1 name / 2 salary / 2	Emp (mary) Mgr (mary, Mary) name (mary, 'Mary') salary (mary, 60000)
Dept / 1 works for / 2 manages / 2 Managed By / 2	dept (sales) works for (mary, sales) name (sales, 'Sales') manages (mary, sales) Managed By (sales, mary)

$\forall X, Y: \text{manages}(X, Y) \leftrightarrow \text{Managed By}(Y, X)$
 totality wrt. Depts: $\forall D: \text{dept}(D) \rightarrow \exists P: \text{Managed By}(D, P) \wedge \text{Emp}(P)$

$\text{managedOf} / f, 1$ $\text{managedOf}(\text{sales}) = \text{mary}$
 $\text{managedBy} / f, 1$ $\text{managedBy}(\text{mary}) = \text{sales}$

\Rightarrow in general partial functions
 $\text{managedBy}(\text{mary})$ undefined
 $\text{managedBy}(\text{sales})$ undefined

$\forall P, D: \text{managedOf}(D) = P \leftrightarrow \text{managedBy}(P) = D$

$\forall D: \text{dept}(D) \rightarrow \forall P_1, P_2: (\text{Managed By}(D, P_1) \wedge \text{Managed By}(D, P_2)) \rightarrow P_1 = P_2$

relational modeling (vertical arrow)
 functional (horizontal arrow)

functionality of ...

Mai 7-10:09

Interpretation:

constant symbol russia

$I(\text{russia}) = \text{the country that is}$
 $I(\text{somewhere})$ undefined $I(\text{Russia})$

$I(\text{somewhere})$ undefined
 $I(\text{somewhere})$ was undefined
 $I(\text{somewhere}) = \text{the former (un) SA}$

OF: in 1988: $\text{area}(\text{germany}, 267000)$ was true
 in 1990: $\text{area}(\text{france}, 267000)$ was wrong,
 $\text{area}(\text{germany}, 266000)$ was true

in 1988: $\text{cont}((\text{somewhere}))$ was true
 1990: " " " true
 1990: $\text{cont}(\text{russia})$ true

in 1988: $\text{capital}(\text{germany}) = \text{bonn}$
 $I(\text{capital}) \ni \{ \text{germany} \mapsto \text{bonn}, \text{france} \mapsto \text{paris} \}$
 in 1990: $I(\text{capital}) \ni \{ \text{germany} \mapsto \text{berlin}, \text{france} \mapsto \text{paris} \}$

relational modeling: capital / 2

cont	city
1988	$I(\text{capital}) \ni \{ (\text{germany}, \text{bonn}), (\text{france}, \text{paris}) \}$
1990	$I(\text{capital}) \ni \{ (\text{germany}, \text{berlin}), (\text{france}, \text{paris}) \}$

Higher-Order logics: predicates not only about
 but also about predicates:
 $\text{isfunctional} / 1$ Herbrand
 $\text{isfunctional}(\text{capital}) \Rightarrow \text{isfunctional}(\text{label})$

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