

SP 33 :

Emp( john ).

Dept( sales ).

Emp( alice ).

Dept( production ).

name( john, "john" ).

name( alice, "Alice" ).

salary( john, 50000 ).

⋮

mgr( john, sales ).

mgr( alice, sales ).

in FOL :

$$\mathcal{D} = (\mathcal{O}, \mathcal{I})$$

$$\mathcal{O} = \{ \text{john, alice, sales, ...} \} \cup \text{STRING} \cup \text{NUMBER}$$

$$\mathcal{I}(\text{Emp}) = \{ (\text{john}), (\text{alice}), \dots \}$$

$$\mathcal{I}(\text{name}) = \{ (\text{john}, \text{"john"}), \dots \}$$

Mai 5-14:13

Same in Description Logics

$$\left[ \begin{array}{l} \text{recall: } \text{Parent} \equiv \exists \text{child. Person} \\ \text{Person} \equiv \forall \text{child. Person} \\ \text{childless} \equiv \neg \text{Parent} \end{array} \right]$$

$$\text{Mgr} \sqsubseteq \text{Emp.}$$

$$\text{TMgr} \sqsubseteq \text{Mgr}$$

$$\text{Mgr} \equiv \text{TMgr} \sqcup \text{AMgr}$$

$$\text{AMgr} \sqsubseteq \neg \text{TMgr}$$

$$\exists \text{name.T} \sqsubseteq \text{Emp} \sqcup \text{Dept}$$

$$\exists \text{salary.T} \sqsubseteq \text{Emp}$$

$$\exists \text{sub.T} \sqsubseteq \text{Emp} \quad \text{Domain}$$

$$\text{T} \sqsubseteq \forall \text{sub. Mgr} \quad \text{Range}$$

Mai 5-14:48

SP45

Create view sibling as

Select c1.child, c2.child  
 from child c1, child c2  
 where c1.parent = c2.parent  
 and c1.child ≠ c2.child



Mai 5-14:52

SP 50

2 variables,  
 "grandfather"

$\forall x: \text{IsGrandfather}(x) \leftarrow (\exists y: \text{hasChild}(x,y) \wedge \exists z: \text{hasChild}(y,z))$

*uses only two variables*

$\forall x: \text{IsParent}(x) \leftarrow \exists y: \text{hasChild}(x,y)$

$\forall x: \text{IsGrandfather}(x) \leftarrow \exists y: \text{hasChild}(x,y) \wedge \text{IsParent}(y)$

$\text{Parent} \equiv \exists \text{child}. T$

$\text{GrandParent} \equiv \exists \text{child}. \text{Parent}$

$\text{grandparent} \equiv \exists \text{child}. (\exists \text{child}. T)$

only two variables visible



*→ tree structure of concepts!*

Mai 5-15:34