

Jeder Mgr managt höchstens Dept  
*genau*  
*mindestens*

FOL  $\forall x: (Mgr(x) \rightarrow \exists d: Dept(d) \wedge manages(x,d))$

Definition von mgr in FOL  
 $\forall x (Mgr(x) \leftarrow \exists d: Dept(d) \wedge manages(x,d))$

LP: mgr(x) :- Dept(d), manages(x,d)

Set Theory:  $Mgr \subseteq \{x: \exists d \in Dept \wedge (x,d) \in manages\}$

$Mgr \subseteq Emp \cap \exists manages. Dept$

$Emp \subseteq \{x: \exists d: Dept(d) \wedge wfp(x,d) \wedge \exists e: Dept(e) \wedge wfp(x,e)\}$

$Emp \subseteq \exists wfp. Dept \cap \exists \leftarrow \exists wfp. Dept$

$Mgr \equiv \exists manages. Dept$

Syntax-Comment  
 $C_1 \subseteq \exists P. (\exists P_2. (\forall P_3. C_4))$

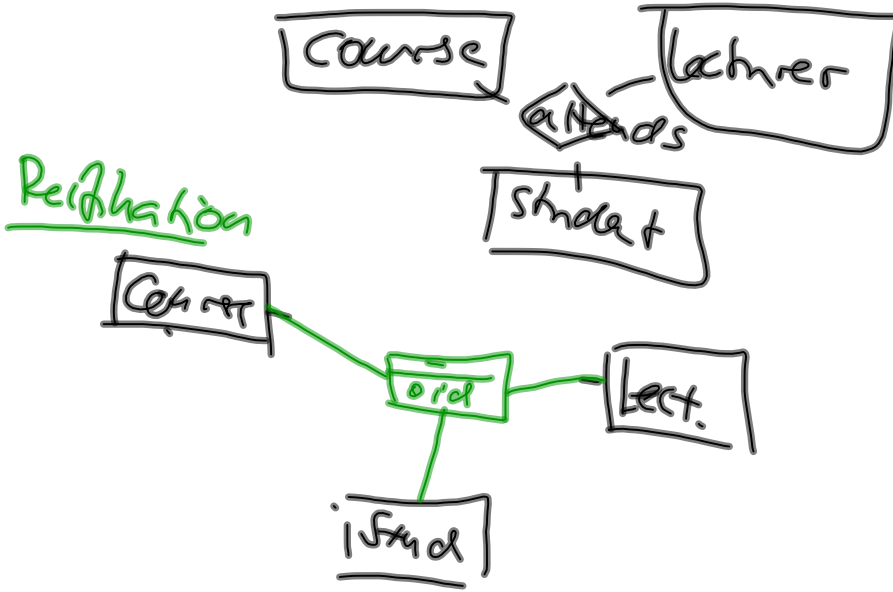
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$\forall x: Mgr(x) \rightarrow \exists! d: Dept(d) \wedge manages(x,d)$   
 FOL counting Quantifiers

$\forall x: Mgr(x) \rightarrow (\forall d_1, d_2: (manages(x, d_1) \wedge manages(x, d_2)) \rightarrow d_1 = d_2)$   
 FOL Equality

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# Aside: UML



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