Description Logic: Class-Forming Operations
e-Business Example in Description Logic: Classification - Before -

\[ s = \text{rdfs:subClassOf} \]
e-Business Example in Description Logic: Classification

\[ s = \text{rdfs:subClassOf} \]
Class Intersection: Example

\[ s = \text{rdfs:subClassOf} \]

\[
\text{TallThing} \sqcap \text{Man} = \text{rdfs:subClassOf} \quad \text{TallMan} := \text{TallThing} \sqcap \text{Man(x)}
\]

Intensional **conjunction** of classes: \( \text{TallThing} \sqcap \text{Man(x)} \iff \text{TallThing(x)} \land \text{Man(x)} \)

Intensional **disjunction** of classes similar but computationally more complex
Class Intersection and Definition: Example

\[ \text{TallMan} := \text{TallThing} \cap \text{Man} \]
Class Complement: Example

c = daml:complementOf
Class Complement and Subsetting: Example

\[ s = \text{rdfs:subClassOf} \]
\[ c = \text{daml:complementOf} \]
Qualified Role: Example

\[ t = \text{rdf:type} \]

\[ \exists \text{age} \text{.} \text{Over17} \]

Existential role: \[ \exists \text{age.Over17}(x) \iff \exists y \text{ age}(x,y) \land \text{Over17}(y) \]

Universal role similar
Qualified Role and Definition: Example

\( \exists \text{age}. \text{Over17} \)

\( \text{RipeThing} := \exists \text{age}. \text{Over17} \)

\( t = \text{rdf:type} \)
\( := = \text{daml:Class} \)