KDI **Knowledge and Data Integration**

Protégé

W8.L15.M5.T15.2.1

Contents

Ontology and Protégé

- "An ontology is a formal, explicit specification of a shared conceptualization"
  -by Gruber (1993) and modified by Studer et. al (1998)

- Ontologies are used to capture knowledge about some domain of interest. An ontology describes the concepts in the domain and also the relationships that hold between those concepts

- Like OWL, Protégé makes it possible to describe concepts but it also provides new facilities.

- Protégé [1], [2] is a free, open-source ontology editor and framework for building intelligent systems. It was developed by the Stanford Center for Biomedical Informatics Research at the Stanford University School of Medicine.

Ontology and Protégé

- OWL ontologies have similar components to Protégé frame based ontologies.

- An OWL ontology consists of Individuals, Properties, and Classes.

NOTE: We require Protégé for formally defining the SKG [L4] in OWL format, in the formal modeling phase of iTelos methodology (in consultation and alignment with the informal L4 schema consolidated in the informal modeling phase).
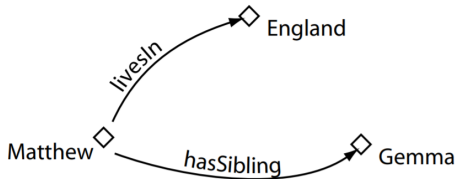
Individuals

Individuals, represent objects in the domain in which we are interested
(Also known as the domain of discourse (D')).

Properties

Properties are binary relations on individuals - i.e. properties link two individuals together.

For example, the property hasSibling might link the individual Matthew to the individual Gemma, or the property hasChild might link the individual Peter to the individual Matthew.

Classes

OWL classes are interpreted as sets that contain individuals. They are described using formal (mathematical) descriptions that state precisely the requirements for membership of the class.
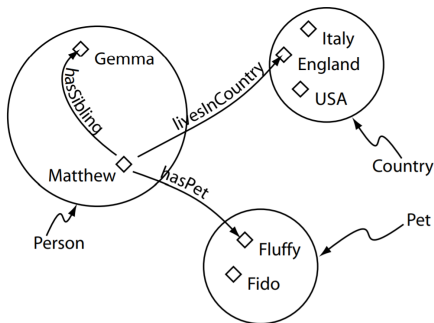
Contents

Protégé Desktop Interface (Active Ontology Tab)
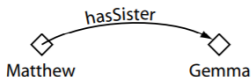
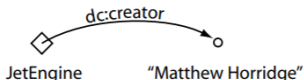# WebProtégé Interface

The Class Hierarchy Pane
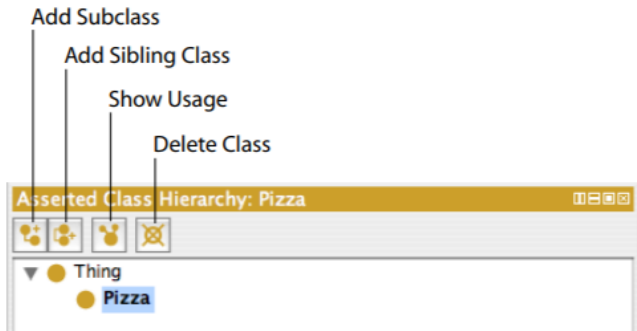
Class Hierarchy
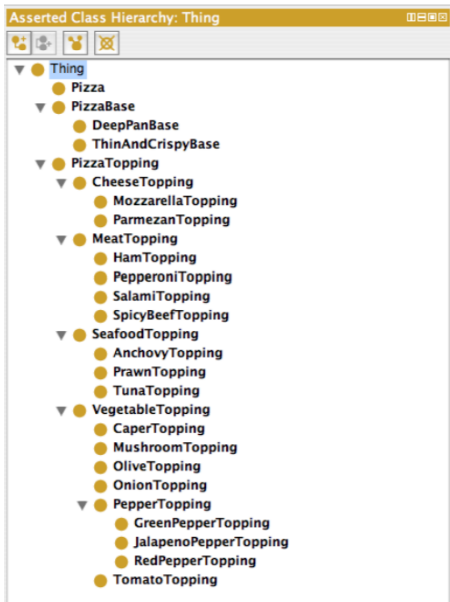
OWL Properties

An object property linking the individual
Matthew to the individual Gemma

A datatype property linking the individual
Matthew to the data literal '25', which has a type
of an xsd:integer.

An annotation property, linking the class 'JetEngine'
to the data literal (string) "Matthew Horridge".

Object Properties

Data Properties

Annotation Properties

Property Creation Buttons
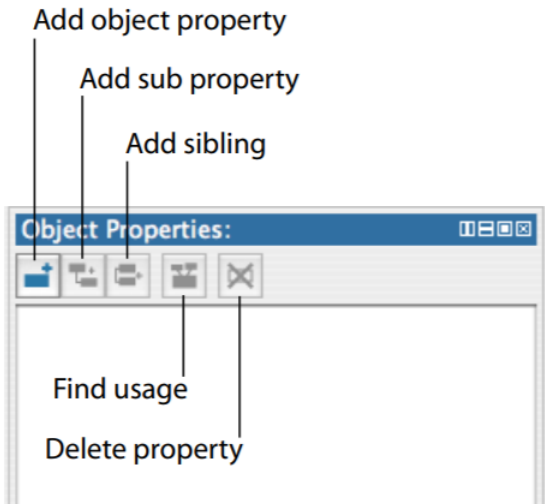
Property Characteristics Views

Inverse Property

Inverse Property View

Functional Property
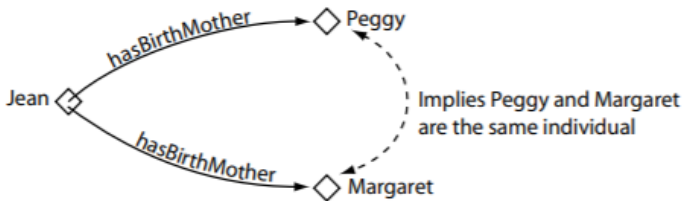
Inverse Functional Property
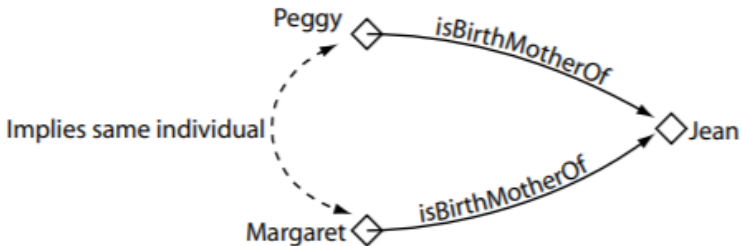
Transitive Property

Symmetric Property

Asymmetric Property
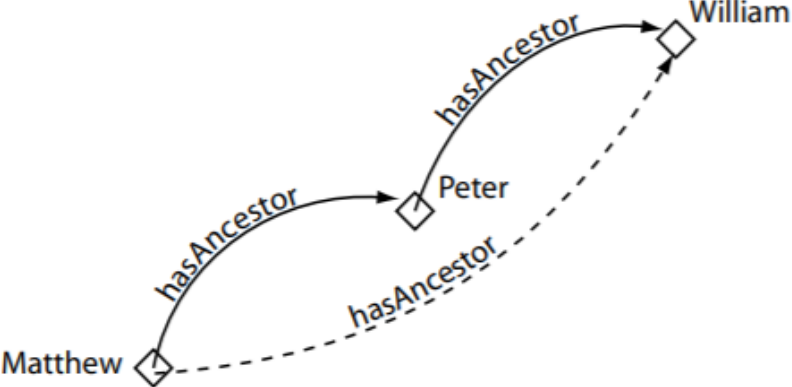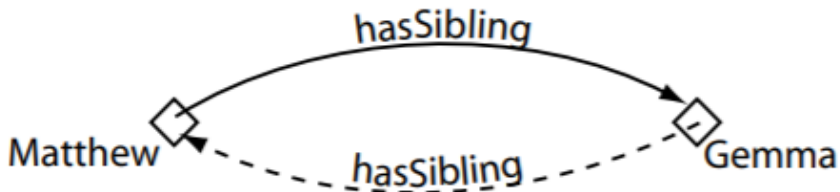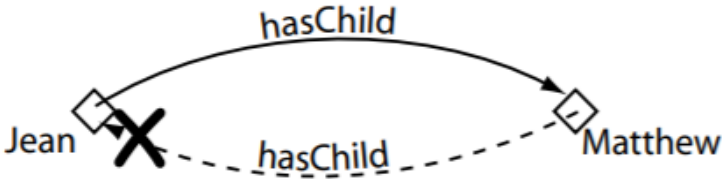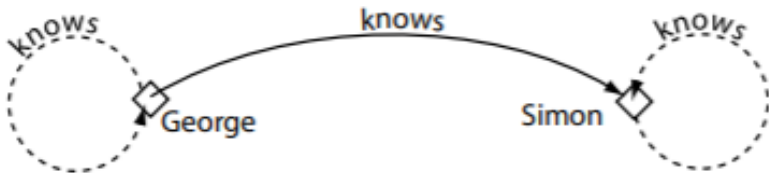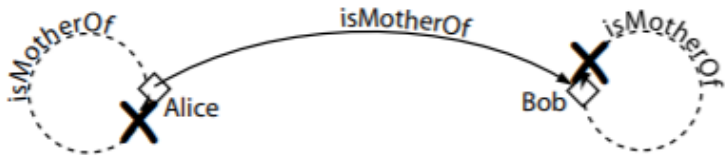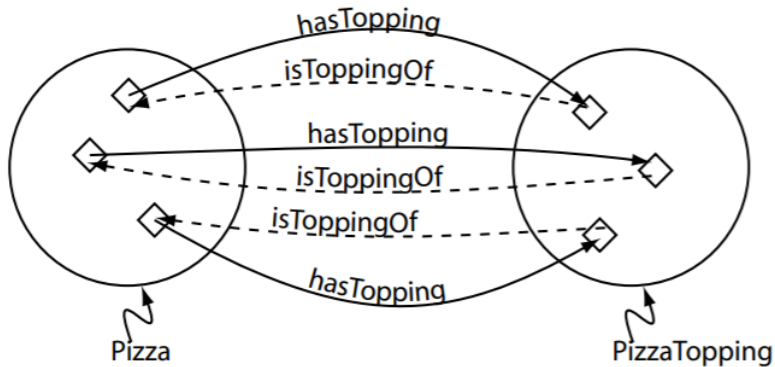
Reflexive Property

Irreflexive Property

Property Domains and Ranges

Existential and Universal (Property) Restrictions

- Existential restrictions describe classes of individuals that participate in at least one relationship along a specified property to individuals that are members of a specified class. For example, hasTopping some MozzarellaTopping

- Universal restrictions describe classes of individuals that for a given property only have relationships along this property to individuals that are members of a specified class. For example, hasTopping only VegetableTopping
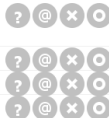
Class Description View

Inconsistency

Automated Classification
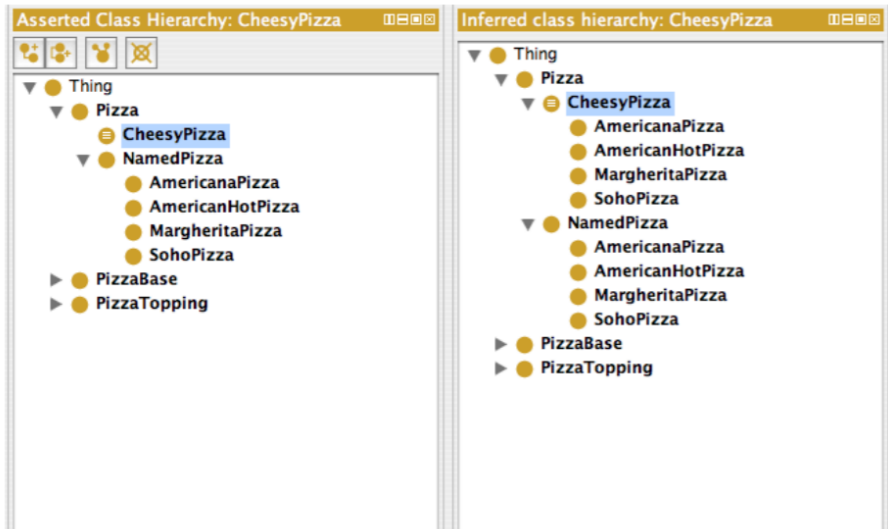
References

Exploration of the following references is highly encouraged:-

- Protégé 5 Documentation

- Protégé Tutorial (Manchester)

- Protégé Wiki

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