Lab "Semantic Technologies" WS 2019

Problem 5 (to be handed in Thursday, January 16, 2019)

In this problem you will have to model an ontology using the free ontology editor **Protegé** (available on the lab computers, or on your own machine). Central to your ontology is the town Merryville.

a.) Make yourself familiar with **Protege** and its constructs for classes, object properties and individuals. The top concepts of your ontology are
 • City
 • Person
 • Animal
 • Property

The class Person shall have the disjoint subclasses Man and Woman. To distinguish these, the concept of Gender must be added to your ontology. Finally, add Merryville as individual of class City to your ontology.

b.)Add relevant knowledge to your ontology by modeling relations between persons:
 • Jim is married to beautiful Jane
 • Jane has three children, Alice, Bob and Celia
 • Tom is married to rich Mary
 • Tom has two children, Thomas and Belinda
 • Carl is married to Eva
 • Eva has two sons, Evan and Bill
 • Ashton loves Alice, Alice loves Thomas, Thomas loves Belinda, Bill loves Bob

c.)The class MarriedCouple contains all men and women that are married to each other. For this you have to create a relation associating two persons. What are the properties of this relation? A similar relation, but pronouncedly different relation is the love between two persons.

d.)The class Mother contains any woman who has at least one child. Also, model a class for Father. The class Parent consists of the union of its subclasses Mother and Father. The class Child contains all persons that have a Parent. Note, that Parent-Child relations are inverse to each other. Add the proper relations to all persons.

e.)In Merryville each adult person is a mother (father) who is married to a father (mother). Add this knowledge to the class definitions of mother and father.

f.)Define the class of interesting persons. In Merryville, a person is interesting if and only if it is rich or beautiful or married to an interesting person. Refine the class definitions in this sense.

g.)In the world of Merryville, animals play an important role. Create classes and individuals for the dogs Tumble and Cutie, the cats Mimi and Garfield and the birds Tweety and Polly. Make sure, that dogs cannot be birds etc.

h.)Add the following knowledge to your ontology
- Thomas owns the birds Polly and Tweety
- Mary owns the cat Garfield
- Eva is an interesting person
- The dog Tumble is owned by Bob
- Bob is an interesting person, but does not love Bill.
- In Merryville all persons are considered animal lovers that have at least two animals.

i.)Check the consistency of your ontology using Fact++ (Menu *reasoner*).

j.)Export the ontology into OWL (XML).