EXERCISES WEEK 1 INF3580 SPRING 2011

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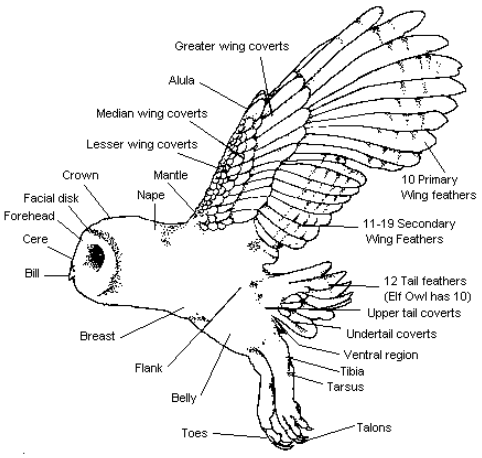

Figure 1: A bird.

1 Getting started

Each week's exercises will start by indicating the most relevant chapters from the curriculum to read.

Read

- Semantic Web Programming: chapters 1, 2.
- Foundations of Semantic Web Technologies: chapter 1.

1.1 Software

The task for the first week's exercises is to install all necessary software packages to get started, and to confirm that everything is set up correctly by running a first semantic web program.

1.1.1 Exercise

First install the latest versions of the following software.

- Java[1] SDK

[1] `http://www.java.com/`

- Eclipse[2] or an editor of your choice
- Protégé 4[3] or equivalent ontology editor
- Jena API[4]
- Pellet[5]

Note that if you are using a lab linux computer you can probably skip this exercise; all necessary software should be installed and the Jena API is “included” in the next exercise.

Tip To get Java working properly on Ubuntu I had to follow the instructions on Ubuntu Linux Install JDK and JRE[6] .

1.1.2 Exercise

Read through chapter 2 in the book, set up all software, import project from the book’s homepage[7] and execute the Hello Semantic Web World project as explained in the book.

Note you don’t need to understand everything in this chapter, but this chapter will give a good idea of what you will learn in this course, and having a functioning system is key for the rest of the course and the exercises.

1.2 Protégé and the pizza ontology

The set of exercises under this heading is written for the lectures on OWL, but are included here to introduce you to the ontology tool Protégé. This means that there are notions that you are not likely to understand, but try anyway. We will revisit this exercises when you have learnt about OWL.

The pizza ontology is a well-known ontology in the semantic web community. It is developed for educational purposes by the University of Manchester, which is a leading university in the development of semantic technologies.

The pizza ontology and a tutorial that uses it is found at

- http://www.co-ode.org/ontologies/pizza/2007/02/12/
- http://owl.cs.manchester.ac.uk/tutorials/protegeowltutorial/

The tutorial is primarily for learning how to use Protégé 4. Use it to get help on how to use Protégé in the coming exercises.

1.2.1 Exercise

Open the pizza ontology[8] in Protégé. Run Protégé on an Ifi linux computer with the command `protege`. The pizza ontology is found in the bookmarks in the “Open OWL ontology from URI”

[2] `http://www.Eclipse.org/`
[3] `http://protege.stanford.edu/`
[4] `http://jena.sourceforge.net/`
[5] `http://clarkparsia.com/pellet/`
[6] `http://www.cyberciti.biz/faq/howto-ubuntu-linux-install-configure-jdk-jre/`
[7] `http://semwebprogramming.org/code/Chapter2.zip`
[8] `http://www.co-ode.org/ontologies/pizza/pizza.owl`

menu.

Take some time to browse the class hierarchy, the property hierarchies and the individuals and note how the ontology describes the domain of pizzas.

1.2.2 Exercise

Find `hasIngredient`. What is the domain and range of this property? What are the subproperties of `hasIngredient`? What is the inverse property of `hasIngredient`? What property characteristics does `hasIngredient` have?

1.2.3 Exercise

Find Margherita and see how it is defined as a pizza with only cheese and tomato topping. Look at the definition of VegetarianPizza. Is a Margherita pizza a vegetarian pizza? Why / why not?

1.3 What is Semantic Web?

1.3.1 Exercise

Here is a list of links to movies or other media about or using semantic web technology.

- Realising the Full Potential of the Web[9] , Tim Berners-Lee, 1997(!)
- Semantic Web Road map[10] , /A road map for the future, an architectural plan untested by anything except thought experiments./ Tim Berners-Lee, 1998.
- TED talk by Tim Berners-Lee[11]
- Tim Berners-Lee on the Semantic Web[12]
- http://data.gov.uk/
  - http://data.gov.uk/faq
  - http://data.gov.uk/resources
- Twine 2.0, future semantic web powered search, consumer preview[13] and ontology editor preview.[14]
- Play around with http://trueknowledge.com , which uses semantic technology. As an example, when I ask the question “is København the capital of Norway?”, true knowledge replies: “No. There were two interpretations of your question, but they both resulted in the same answer. When you said “københavn “, I understood you to mean one of the following: the Danish city of Copenhagen, Københavns Amt, the Danish amt.”—which is quite cool.
- http://www.semanticuniverse.com/

[9] `http://www.w3.org/1998/02/Potential.html`
[10] `http://www.w3.org/DesignIssues/Semantic.html`
[11] `http://www.ted.com/talks/tim_berners_lee_on_the_next_web.html`
[12] `http://www.youtube.com/watch?v=HeUrEh-nqtU`
[13] `http://www.youtube.com/watch?v=jWF3m14i7Vk`
[14] `http://www.youtube.com/watch?v=Uto0OigDaQU`