HOMEWORK

You can work in groups of two and for questions you might have you can address them to Marios (mpitikak@inf.uth.gr) our instructor help in this coarse.

Part 1: Design of an ontology

You are required to design an ontology that is described below. For the development you must take into account (competency questions) in part 4, which the ontology must be able to answer. We consider an ontology to be able to answer a possible question when it contains the necessary knowledge. That is there exist (concepts/classes) and relations between concepts, such that the question can be answered. Design the ontology as a graph such that shows the various concepts relations as described.

At University of Thessaly, Professor John Papadopoulos is teaching the course "Introduction to the Semantic Web (CS850)" and course "Information Systems (CS910)". In the CS850 course, there are 3 assignments that cover the topic of Searching, Reasoning and Ontologies and the final exam, whereas in the CS910 course, the 3 assignments are on XML, Databases, and Multi-agent Systems, and there is also a final exam at the end.

Professor Papadopoulos advises several PhD students and diploma students on their theses. Both George Vasiliou and Jim Panagiotidis are PhD students advised by Prof. Papadopoulos. Diploma (last year) student Antony Karas is also advised by Prof. Papadopoulos. He works on the thesis "Bank Data Mining". George is working on thesis "Similarity Measurement" and Jim is working on thesis "Interactive Learning". George assists the CS910 course and attended the CS850 course in the winter term 04/05. Jim also assists the CS910 course and attends the CS850 course. Antony attends the CS850 course. Christian Oikonomou is also a diploma student, who attends both the CS850 and the CS910 course.

Typically, people who attend courses (or wrote theses) are not allowed to correct them. Only people who advise theses or assist courses do so.

Part 2: Modelling the ontology using OWL

Write the ontology using OWL. Aside from the ontology you must create some metadata (instances/individuals) such that the questions of part 4 return some answers. Describe the metadata using OWL.

For the development of the ontology you may use the ontology editor Protégé (ontology editor) of OWL plug-in. More information about Protégé, καθώς and instructions on how to use it you can find in URL: http://protege.stanford.edu/

Part 3: Creation of ontology using Jena

Create an ontology using Jena. Jena is a Java API (open source) from HP Labs for the creation of ontologies.

This step includes the creation of the model of classes and the introduction of individuals in it. Create a method which accepts as a parameter the class name of your ontology and presents analytically the individuals of this class. The use of Jena is part of the exercise.

Μέρος 4: Χρήση Inference Engine

Using the Racer reasoner (http://www.sts.tu-harburg.de/~r.f.moeller/racer/) and the language nRDF asewr the following questions:

1. Which assignments is George allowed to correct?
2. Which assignments Antony has to take?
3. Who has to pass the CS850 exam?
4. Which theses does Professor Papadopoulos supervise?
5. Is Jim allowed to correct the assignment about Ontologies?
6. Which exam of Christian Oikonomou could be corrected by George?
7. Is Jim allowed to correct Antonys' assignments?
8. Is George allowed to correct PhD theses?
9. Which courses Professor Papadopoulos teaches?

The use of Racer, and the use of (learning)of nRQL are part of the xercise.

Deliverables

The deliverables are as follows:

- The ontology in graphical format (on a piece of paper)
- The ontology and its metadata (instances/individuals) in OWL
- The .java files the contain the realization in Java
- The questions in nRQL and their answers according to the above created code.

Date of delivery

You have a month to do it, at the end of April. You can submit the project by email to (mpitikak@inf.uth.gr, mav@inf.uth.gr) in a zip file . An oral exam will take place after you submit the project.