Advanced Data Modeling

Summer Semester 2008
- Exercises II -

*To be handed in before **2008-04-26, 23:59** via e-mail to*
sschenk@uni-koblenz.de, subject line: [ADM] ...

1) Download and install SWI Prolog from
   http://www.swi-prolog.org/download.html
   Documentation and FAQ of SWI Prolog can be found at http://www.swi-prolog.org/
   As help when doing the first steps with SWI Prolog you can use for example
   http://en.wikibooks.org/wiki/Prolog
   or other resources linked from http://www.swi-prolog.org/

2) Model the following scenario using **Prolog**:

   Scenario: Planning of teaching at a university.
   There are different types of events: lectures, tutorials and seminars. Every event takes place
   in a certain room and has a start, an end time and a title. An event may have other events as
   prerequisites. Professors, students and research assistants are persons. Every person has a
   name and an e-mail address. Additionally, every professor has a working group and every
   research assistant works in a working group. Events are given by professors or research
   assistants. Every tutorial belongs to a lecture. Students attend events.

   Prof. Herbrand leads the working group of computational logic. Prof. Tarski leads the AI
   group. Mr Lloyd and Mr. Topor are Research Assistants of Prof. Herbrand. Prof. Herbrand
   gives the lecture on Advanced Data Modeling and Mr Lloyd gives the corresponding
   tutorial. There is a seminar about Datalog given by Mr. Topor. Joe attends the Advanced
   Data modeling lecture and tutorial. Jane attends the tutorial and the seminar. Jim attends a
   seminar called "Non-monotonic reasoning" by Prof. Tarski. Databases I is a prerequisite for
   Advanced Data Modeling. The Advanced Data Modeling tutorial is a prerequisite for doing
   the lecture and vice versa.

3) Formulate the following queries using **Prolog** and list the results.
   1. List all rooms for events, which are not tutorials.
   2. List all students of professor Herbrand (attending events offered by the professor's
      working group). Provide two different queries.
   3. List **all** prerequisites for the lecture on Advanced Data Modeling. Please note that a
      prerequisite course may in turn again have prerequisites.
   4. List all courses without any prerequisites.

4) How would you model the following integrity constraints? Write rules, which infer the term
   'inconsistent', if any constraint is violated.
   1. No Person is a Professor and a Research Assistant.
   2. Every student attends at least two events.
   3. No course has itself as a prerequisite.