Advanced Databases

CIS 4930 / CIS 6930

Markus Schneider

Department of Computer and Information Science and Engineering
CSE Building, Room E450
University of Florida
Preliminaries

- CIS4301 course web page
  [http://www.cise.ufl.edu/~mschneid/Teaching/CIS4930+CIS6930_Fall2016/CIS4930+CIS6930_Fall2016.html](http://www.cise.ufl.edu/~mschneid/Teaching/CIS4930+CIS6930_Fall2016/CIS4930+CIS6930_Fall2016.html)

- Syllabus available on CIS 4930 / CIS 6930 course web page

- My messages to the class are communicated by a class mailing list.

- Your questions ...
Course Contents and Objectives

- Exploration of a selected collection of advanced database systems such as Cassandra, Couchbase, CouchDB, MongoDB, Neo4j, ObjectStore, PostGIS, SciDB, SparkleDB, Tamino

- All systems are non-relational except one system

- Knowledge acquisition about their
  - underlying data models
  - query languages
  - concepts and principles
  - techniques
  - functionalities
  - architectures
  - special features

- Comparison to established relational database systems
Teaching Objectives (I)

- Teamwork
  - Students learn to work in and be responsible for a group since group work will be the basis of all deliverables.
  - This will increase their social competence as well as their communication and discussion skills.

- Installation and demonstration of an advanced database system
  - An advanced database system from a pre-defined list is assigned to each group. Group priorities will be taken into account.
  - Each group has to install the assigned advanced database system on a laptop or a PC. Note that laptops or PCs cannot be provided by the university or the CISE department for this task so that laptops or PCs have to be taken from group members.
  - Students learn how to install an advanced database system on a computer, cope with installation problems, and also provide installation requirements such as particular operating systems.
  - Each group will provide an in-class demonstration of their system.
Teaching Objectives (II)

- “Students teach students”
  - Only at the beginning the instructor will hold lectures. Afterwards, the student groups will take over.
  - Each group will learn how to present their assigned system to all the other students in class by means of a PowerPoint presentation. In this manner, students will teach students as well as practice and improve their presentation and communication skills.

- Performing a literature study
  - A topic or system requires to become aware of the state of the art.
  - Students learn how to perform a literature study and process the found references and papers.
  - The literature of interest can relate directly to the topic or system itself but also be centered around the topic or system. For example, if a system rests on a particular data model, scientific literature about this data model would be very helpful.
  - References will be kept in BibTeX format.
Teaching Objectives (III)

- Design and implementation of an application that showcases the special features of the assigned system
  - Each group will develop and implement a meaningful web-based application that demonstrates the particular features of the assigned advanced database system.
  - Students learn to perform software development and implementation on top of a new database software.
  - Each group will decide about the deployed programming languages and software packages.

- Writing a LaTeX document about the assigned system
  - At the end of the semester, each group will provide a well written and well formatted document that describes the main features of the assigned advanced database system as well as the designed and implemented application.
  - LaTeX is the only word processing tool that is allowed for writing this document. A LaTeX template will be provided.
Group Deliverables and Grading (I)

- *No* exams, *no* homework assignments

- *Six* deliverables
  1. Literature study about the group-assigned ADBS described in a text document written in LaTeX and with references in BibTeX format and papers in PDF format (5 %)
  2. ADBS installation and demonstration (10 %)
  3. PowerPoint presentation about the group-assigned ADBS in front of the class (25 %)
  4. Application design showcasing the outstanding features of the group-assigned ADBS and described in a text document written in LaTeX with references in BibTeX format (15 %)
  5. Application implementation and demonstration (25 %)
  6. Detailed overview text document about the group-assigned ADBS written in LaTeX with references in BibTeX format (20 %)
Group Deliverables and Grading (II)

- **Student’s performance** \( p \)

\[
p = 5 \cdot \frac{ls}{100} + 10 \cdot \frac{id}{100} + 25 \cdot \frac{pp}{100} + 15 \cdot \frac{ad}{100} + 25 \cdot \frac{ai}{100} + 20 \cdot \frac{td}{100}
\]

- **Letter grades**

<table>
<thead>
<tr>
<th>Student’s Performance ( p )</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;94-100</td>
<td>A</td>
</tr>
<tr>
<td>&gt;88-94</td>
<td>A-</td>
</tr>
<tr>
<td>&gt;82-88</td>
<td>B+</td>
</tr>
<tr>
<td>&gt;76-82</td>
<td>B</td>
</tr>
<tr>
<td>&gt;70-76</td>
<td>B-</td>
</tr>
<tr>
<td>&gt;64-70</td>
<td>C+</td>
</tr>
<tr>
<td>&gt;58-64</td>
<td>C</td>
</tr>
<tr>
<td>&gt;52-58</td>
<td>C-</td>
</tr>
<tr>
<td>&gt;46-52</td>
<td>D+</td>
</tr>
<tr>
<td>&gt;40-46</td>
<td>D</td>
</tr>
<tr>
<td>&gt;34-40</td>
<td>D-</td>
</tr>
<tr>
<td>0-34</td>
<td>E</td>
</tr>
</tbody>
</table>