COS 578: Advanced Java Technology

Fall 2009

Instructor: Suad Alagić

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1 Lecture Hours

Tuesday, Thursday 16:10 – 17:25 PM, SC-165

2 Office Hours

Tuesday, Thursday, 14:45 – 16:00 PM

3 Textbooks

- Ken Arnold and James Gosling, The Java\textsuperscript{TM} Programming Language, Addison-Wesley.
- More advanced topics are covered in papers to be discussed in the course.

4 Prerequisites

This course requires good background in programming languages. CS 360 (or an equivalent course) is the absolute minimum required for the course. Additional background in object-oriented programming languages and systems, or the Java programming language is very desirable.

5 Course Contents

- The first part of the course is an overview of the main design issues of the Java programming language.
- The second part of the course covers more advanced concepts such as programming with generic (parametric) classes, concurrent programming, and Java Core Reflection.
• The third part of the course will cover the extensions of Java such as persistence and assertions (Java Modeling Language).

• The fourth part of the course consists of a full coverage of the underlying software platform, the Java Virtual Machine.

Specific topics to be covered are:
• The Java type system
• Concurrent object-oriented programming, threads
• Java Core Reflection
• Persistence for Java
• Parametric polymorphism for Java
• Object-oriented assertions (time permitting)
• Java Virtual Machine

Programming assignments include concurrent programming, programming with parametric collection types, dynamic loading and compilation, usage of the Java reflective capabilities, and usage of persistent capabilities available in Java and in its extensions.

6 Course outcomes

• The general main outcome is the students’ ability to apply design and development principles in the construction of software systems of varying complexity.

• A specific outcome is the ability to use the totality of techniques and tools associated with the Java technology in accomplishing the above goal. This includes concurrent object-oriented programming, programming with generic classes, usage of object-oriented assertion languages (time permitting), complex usages of reflection and persistent objects, and the knowledge of the underlying virtual platform

• A specific outcome of this course is a high-level of professional expertise in the overall Java technology.

7 Grading

<table>
<thead>
<tr>
<th></th>
<th>Percentage of the overall grade</th>
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<tbody>
<tr>
<td>Programming Assignments</td>
<td>70</td>
</tr>
<tr>
<td>Mid-term Exam</td>
<td>10</td>
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<tr>
<td>Final Exam</td>
<td>20</td>
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8 Final Exam

The final exam according to the USM schedule.