Study programme(s): Computer Science (CS)

Level: master

Course title: Enterprise Systems Development (CS501)

Lecturer: Srđan M. Škrbić

Status: mandatory

ECTS: 8

Requirements: none

Learning objectives

The main objective of this course is to provide practical overview of component based development and its relationship to the object-oriented approach. Service oriented architecture is studied as prevailing approach to the component based development. EJB 3 technology, especially its aspects related to this topic, is introduced, together with development of distributed systems using web services. Cloud computing options are considered at the end of the course.

Learning outcomes

Minimal: At the end of the course, it is expected that students show clear understanding of theoretical concepts of component based development and be capable to apply appropriate techniques of implementation using EJB 3 technology. Besides, it is expected that students are capable of applying basic technologies related to web services.

Desirable: At the end of the course, it is expected that a successful student shows ability to critically discuss key concepts in component based development and influence of this topic to modern trends in business computing and software engineering. Additionally, detailed knowledge of aspects of EJB 3 technology that allow development of applications based on components and service oriented architecture. Additionally, detailed knowledge of all studied technologies and specifications related to web services, as well as knowledge of their use in development of complex applications is expected.

Syllabus

Theoretical instruction

Theoretical background of component based development, architecture of software based on components, relation to object-oriented approach, service oriented architecture. Basic concepts of EJB 3 technology, EJB 3 messaging, development of web services using EJB 3 technology, EJB 3 security. The course continues with web services, both SOAP and RESTful based, and their usage in development of distributed systems. Options related to usage of cloud computing in such scenarios are considered at the end of the course.

Practical instruction

Analysis of case studies through use of EJB technology and web services, Eclipse development environment and WildFly application server. Individual work on a comprehensive case study.

Literature

1. Debu Panda, Reza Rahman, Ryan Cuprak, "EJB 3 in Action", 2nd edition Manning, 2012.
2. Javid Jamae, Peter Johnson, "JBoss in Action", Manning, 2009.
3. Alan W. Brown, "Large-Scale, Component-Based Development", Prentice Hall, 2000.
4. George Coulouris, Jean Dollimore, Tim Kindberg, Gordon Blair, “Distributed Systems: Concepts and Design”, 5th edition, Addison Wesley, 2011.and Component-based Development: Using Select Perspective and UML", Addison-Wesley, 2003.
5. Vlada Matena, Sanjeev Krishnan, Linda DeMichiel, Beth Stearns, "Applying Enterprise JavaBeans: Component-Based Development for the J2EE Platform, Second Edition", Addison Wesley, 2003.
6. Andrew Lee Rubinger, Bill Burke, "Enterprise JavaBeans 3.1", O'Reilly, 2010.

Weekly teaching load				Other: 0
Lectures: 2	Exercises: 1	Other forms of teaching: 2	Student research: 0	

Teaching methodology

During theoretical classes classical methods of teaching with the use of a projector are used to present stated topics. On practical classes, classical methods of teaching with the use of a projector are used to analyze case studies and practically master the skills of usage of suggested tools. Students expand their knowledge by investigating every stated topic and test it through two colloquia that are related to the work on an individual case study.

Grading method (maximal number of points 100)			
Pre-exam obligations	**points**	**Final exam**	**points**
Two colloquiums	**25, 25**	Oral exam	*50*