Scalable Enterprise Applications

Description

The course presents some important application domains for distributed programming, with special regard to present software industry challenges and scientific computations. After the completion of the course the students will not only understand the theoretical issues of distributed computing, but they will also be capable of designing and implementing distributed applications in general, and distributed object systems in particular. They will also learn common technologies used in the software industry. The following topics will be addressed (related technologies that can be used for illustration purposes are in parentheses).
Multi-tier application model: Modularization of large software systems, optimal use of distributed architectures in the design of the components (with respect to efficiency and high availability). Transactional applications backed by information systems. (Java EE, JDBC, JPA, JTA)
Remote Procedure Call: (Java RMI, EJB)
Message-based communication: (JMS, PVM/MPI)
Web-programming: Web-applications (Java servlet, JSP, JSF) , web-services (JAX-WS)
Component lookup: (JNDI, Jini).
Code mobility: (Java applet)
Grid systems: fulfilling high computational requirements.
Aspect-oriented programming: Used in the implementation of the above technologies. (AspectJ)

Literature

- Jendrock, E., Ball, J., Carson, D., Evans, I., Fordin, S., Haase, K.: The Java EE 5 Tutorial, Third Edition (Addison-Wesley, 2007)
- http://java.sun.com/javaee/5/docs/tutorial/doc/
- Foster, I.: The Grid: Blueprint for a New Computing Infrastructure, 2nd Edition (Morgan Kaufmann, 2004)