

# Advanced Aspects of Object-Oriented Programming (SS 2009)

## Practice Sheet 12

Date of Issue: 14.07.09  
Deadline: 20.07.09  
(until 10 a.m. as PDF via E-Mail)

### Exercise 1 Inversion of Control Containers and Dependency Injection

*One of the entertaining things about the enterprise Java world is the huge amount of activity in building alternatives to the mainstream J2EE technologies, much of it happening in open source. A lot of this is a reaction to the heavy-weight complexity in the mainstream J2EE world, but much of it is also exploring alternatives and coming up with creative ideas. A common issue to deal with is how to wire together different elements: how do you fit together this web controller architecture with that database interface backing when they were built by different teams with little knowledge of each other. A number of frameworks have taken a stab at this problem, and several are branching out to provide a general capability to assemble components from different layers. These are often referred to as lightweight containers, examples include PicoContainer, and Spring.*

-Martin Fowler

- a) Inform yourself about *Inversion of Control Containers and Dependency Injection* at Martin Fowler's page <http://martinfowler.com/articles/injection.html>
- b) Use PicoContainer (<http://www.picocontainer.org/>) to implement the *Movie* example given by Martin Fowler.
- c) Explain the advantages of *Inversion of Control* and *Dependency Injection* using the example above.

### Exercise 2 EJB Programming

- a) Get and install the Open Source Application Server *GlassFish* v2.1 from <https://glassfish.dev.java.net/>
- b) Run the server (`asadmin start-domain -verbose domain1`) and deploy the Hello application from the "samples/quickstart" directory according to the documentation at <http://docs.sun.com/app/docs/doc/820-4334>. Run your web browser and test the application.
- c) Get the sources of additional examples at <http://java.sun.com/javaee/5/docs/tutorial/information/download.html>
- d) Follow the tutorial at <http://docs.sun.com/app/docs/doc/819-3669/bnb?a=view> to deploy and run the converter example. Add a new method `euroToDollar` method to the `Converter` interface.