

# Advanced Aspects of Object-Oriented Programming (SS 2011)

## Practice Sheet 13

Date of Issue: 12.07.11  
Deadline: 19.07.11  
(until 10 a.m. as PDF via E-Mail)

*"Problems worthy of attack; prove their worth by fighting back."*  
Piet Hein (1905–1996)

### Exercise 1 The OSGi Framework

In the following, we use the Equinox implementation of an OSGi Framework. The easiest way to work with Equinox, is using eclipse with the plug-in development tools. You find a tutorial on developing, building, and deploying OSGi bundles with eclipse at <http://www.vogella.de/articles/OSGi/article.html>. It is recommended to deploy and use your bundles in a standalone server, because inside eclipse a lot of exceptions might get thrown.

- a) Develop a dictionary service, that checks a word for its correct spelling. The Service should offer the following interface:

```
package Dictionary;
public interface Dictionary {
    boolean checkWord(String word);
}
```

It is enough, if your service can check the quote from above.

- b) Develop a client with a GUI, that allows a user to use the dictionary service. If the dictionary service is not available anymore (i.e. the bundle has been stopped), the client should show an error message. When the dictionary returns, the client should be functional again.

### Exercise 2 Extending Eclipse

- a) Inform yourself about the plugin architecture of eclipse. The eclipse homepage or <http://www.vogella.de/articles/EclipsePlugIn/article.html> may be good sites to start with.
- b) Compare OSGi-Bundles and Eclipse plug-ins. What is the relation between them?
- c) Implement a plugin that extends the package explorer with a mail action. When activated, the plugin should ask for a mail address and send an email to it, with the the object on which the plugin has been called as attachment. To send mails, you can use the JavaMail package provided by Oracle at <http://www.oracle.com/technetwork/java/javamail/index.html>.

### Exercise 3 EJB Programming

*Note: This exercise contains material that has not yet covered by the lecture.*

- a) Get and install the Open Source Application Server *GlassFish* from <http://glassfish.java.net/>
- b) You find the Java EE Tutorial at <http://download.oracle.com/javase/6/tutorial/doc/docinfo.html>. Follow chapter I.2 to get the sources for the tutorial examples.
- c) Follow the tutorial in chapter IV.23 to deploy and run the converter example. Add a new method `euroToDollar` method to the `Converter` interface.