	Course	**Databases and Information Systems 2017**		
	Exercise Sheet	**3**		
	Points	–		
	Release Date	**April 25 2017**	*Due Date*	**May 10 2017**

1 Hibernate Tutorial

If you don't have any experience using the persistence framework Hibernate, make yourself familiar with it by working through the Hibernate Tutorial:

http://docs.jboss.org/hibernate/core/3.3/reference/en/html/tutorial.html

For this purpose, create a new Eclipse project. The documentation as well as all libraries and example files required for the tutorial can be found in /usr/remote/lehre/dis/hibernate-3.6.1.zip. Use the DB2 instead of an HSQL database and create an example project without Maven, although it is used in the tutorial. In order to be able to work with the DB2, you have to add two DB2-specific driver files to the *Java Build Path* of the Eclipse project. You can find the driver files in /usr/remote/lehre/dis/DB2-libs/.
All libraries required for the exercises can also be found in /usr/remote/lehre/dis/hibernate-libs/.

Note: Working through the tutorial is not required for an approval.

2 Developing a relational database application with Hibernate

The goal of this exercise is to implement a Java application using Hibernate in the same domain as in exercise sheet 2. For the ER diagram, see exercise sheet 2 or the appendix.
As a starting point, you may use your own implementation from exercise sheet 2 or the non-persistent, object-oriented prototype implementation in /usr/remote/lehre/dis/Blatt3.zip. Another implementation using Derby instead of DB2 is also available:
/usr/remote/lehre/dis/Blatt3_Derby.zip.

Note: Both prototype implementations will be made available *after the deadline* for exercise sheet 2.

The prototype implementation is an Eclipse project which can be imported as usual (*File → Import → Existing Projects into Workspace → Select archive file*). It contains several packages:

- de.dis2013 contains the Main class with the main method used to start the application.

- de.dis2013.core contains the class ImmoService which simulates the database. It offers some functionality to store and query objects in the main memory. The goal of this exercise is to extend the application step-by-step, so that all objects are finally stored in the DB2 instead of the main memory.

- de.dis2013.data contains bean classes for all entity types.

- de.dis2013.data.mapping contains example mappings for Hibernate.

- de.dis2013.menu contains the implementation of some terminal-based menus.

- de.dis2013.editor contains the menu navigation of the application.

- de.dis2013.authentication contains classes that are used for user authentication: the class MaklerAuthenticator can authenticate an agent with the help of the class ImmoService. The class PropertiesFileAuthenticator authenticates an application user with the data stored in the file admin.properties, granting him or her the rights to administer the agents.

- de.dis2013.util contains little helper classes.

Before you can use the prototype implementation, you have to fill in your DB2 username and password into the Hibernate configuration file `hibernate.cfg.xml`. The default login for the application user is *admin* with the password *geheim*. There already is an agent account with login *max* and password *max*.

Appendix