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	Release Date	**April 7 2015**	*Due Date*	**April 22 2015**

Exercise 1: Development of a relational database application

In this assignment you will develop a DB-backed Java application for management of real estates. This is the domain model:
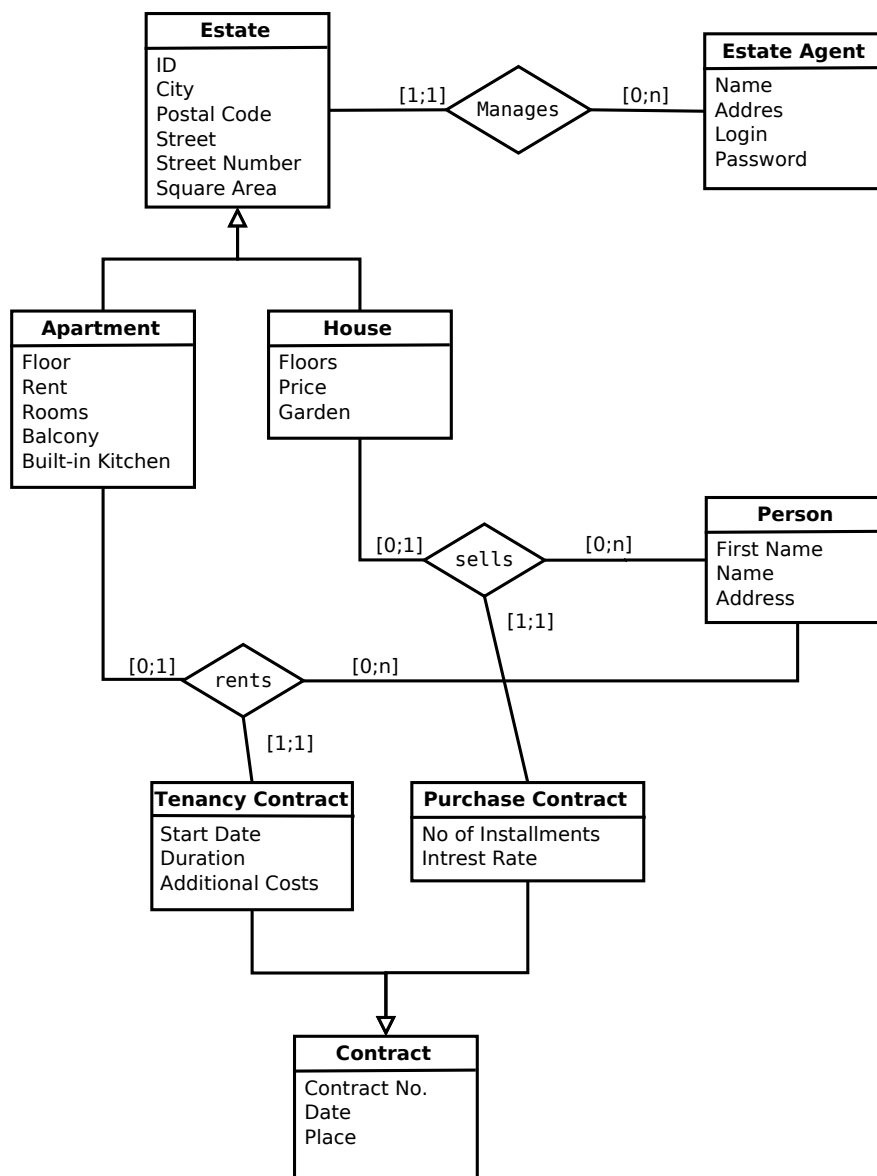
The central entity is an estate agent that manages estates. It has a unique login name as well as a password.

There are two basic types of estates: houses and apartments. Apartments are rented, whereas houses are sold. For each estate, some general information are stored: identification number, address (comprised of city, postal code, street and number) and square area. Additionally, each apartment has a floor number, a rent (price), a certain number of rooms, a flag indicating whether there is a balcony and a flag indicating whether there is a built-in kitchen. Houses on the other hand have a number of floors, a price and a flag for whether a garden is included.

For every tenancy and every sale, respectively, there is formal a contract which has a uniqe contract number, a contract date and a settlement place. Tenancy agreements (for apartments) have a start

date, a tenancy duration and extra charges (utilities). A house can be by paid by installments. The amount of installments and the interest rate are part of the sale contract.

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For every contract, there is only one renting/buying person, but each person can rent/buy an arbitrary amount of properties.

Exercise 1.1: DB-schema

Translate the above model to a relational model by defining the respective DB schema. Fulfill the following requirements:

- The commands for creating the DB objects are contained in SQL scripts.

- Choose an inheritance model (e.g. horizontal partitioning)

- Define a primary key for every relation (surrogate keys are ok). Define foreign keys.

- Initialize the tables with appropriate sample data. There should for instance be an estate agent account you can use to log in.

- Create the tables using Squirrel or the DB2 CLI

The tables created in this part of the assignment are the basis for the next part.

Exercise 1.2: Java application

Implement an estate management using the previously created DB schema. The realization of the UI (graphical or command-line interface) is up to you.

The application should support the following functionalitites:

- Management mode for estate agents

  - Account creation

  - Changing and deleting accounts

  To access this mode, the user has to enter a password, which is hard-coded in the application for simplicity.

- Management mode for estates

  - Estate agents can log in

  - Creating, deleting and updating estates

- Contract management

  - Insert persons

  - Sign (create) contracts

  - Overview of all contracts

There is a sample project /usr/remote/lehre/dis/Blatt2.zip. For your implementation you can either use this project or create your own. If you create your own, don't forget to add db2jcc.jar and db2jcc_licence_cu.jar to your classpath.

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Note

- On the pool PCs there are Eclipse installations you can use (/usr/remote/bin/eclipse361).

- When working at home, please use your own Eclipse installation

- The duration of this assignment is two weeks

- You don't have to submit your results. The completion of the assigment will be verified by practical demonstration in front of your device.

- Before executing the example, change `db2.properties` and create the example table `Makler`. The respective DDL script is in the `Makler` class. The character encoding is UTF-8. If you have problem with umlauts, please change the encoding in your Eclipse preferences to UTF-8.