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## **Tutorial 2 – A Simple Process for Component Development**

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### **Introduction**

This tutorial is about developing an architecture from a requirements specification. Based on the requirements specification below, you will be asked to develop a software architecture using the simple process we have discussed in last week's lecture. Note that due to the extreme brevity of the requirements specification given below there will be different viable solutions to each task.

### **Requirements**

A real estate management company maintains and lets various types of buildings on behalf of its clients. Each building holds a number of apartments, each of which has a certain size and price. The company has two types of customers: owners of real estate managed by the company, and tenants, who rented one (or more) of the apartments.

Design a web-based apartment management system. Concentrate on the following two use cases:

1. An apartment that is currently not let gets rented out to a tenant. The tenant may already be in the database, but it may also be a new tenant. The tenant must sign a lease for the rented apartment.
2. The real estate company needs to provide an owner of some buildings with a balance sheet with the financial status of all real estate managed for this owner.

### **Exercise 1 – Business Concept Model**

Create a business concept model from the description above! Remember to be inclusive (you can always remove or merge concepts at a later stage).

### **Exercise 2 – Use Case Model**

For each of the two use cases define a sequence of steps that need to be performed by an actor using the system to execute the use case and the corresponding system steps. Who are the actors for each use case?

### **Exercise 3 – System Interfaces**

Using your solution to Exercise 2, what system interfaces should there be and what operations should they contain? Explain how you have arrived at your solution!

### **Exercise 4 – Business Type Model**

Derive a business type model from your business concept model!

Identify the core types and derive corresponding business interfaces! Allocate responsibility for each type from the business type model to one business interface. What do you do with associations that cross component boundaries?

### **Exercise 5 – Initial System Architecture**

Summarise your results so far through a diagram of a rough system architecture! Discuss how you allocate interfaces to components! In particular, which components implement more than one interface, which only one?

## Exercise 6 – Business Interfaces

Use the use cases, your system interfaces, and your first system architecture to discover operations in the business interfaces. Use collaboration diagrams to describe how these operations are used.