02 Identifying Classes

Goal: You know the methods how to identify potential classes. You can apply this method for a specific example and create CRC cards.

From Analysis to Design

Use Cases and activity diagrams focus on how the user interacts with a system. We will look at this in a later stage.

Here we want to focus on creating class diagrams. In order to that, we have to read the system description carefully.

Verb / Noun Method

A fairly simple way to do an initial analysis of possible classes is with the verb / noun method.

This method is all about identifying classes and objects, and the associations and interactions between them. The nouns in a human language describe "things", such as people, buildings, etc. The verbs describe "actions" such as writing, eating, etc. From these concepts we can see that in a description of a system, the nouns will often correspond to classes and objects, whereas the verbs will correspond to the things those objects do – that is, methods.

Step 1: list down all nouns

Like in a brainstorming session, read the description, then list down all nouns. All nouns are noted down as possible candidates, nothing is ignored.

Step 2: list down all verbs

Verbs are potential methods for classes.

CRC Cards

Now, with a list of nouns and verbs, we can go into more detail and create CRC cards.

You can also combine the noun-search and CRC-method by noting down nouns directly into cards. Attributes of this class are noted down in responsibilities. Work with a partner when you're writing CRC cards.
Put these cards into a set, see what works and what doesn't work. CRC cards are a visual aid to discuss the principle design of a system.

Example:

Library	
- Accepts media - Hands out media	Media User

Step 3: What associations do the classes have between each other?

Objects communicate through associations.

Try to figure out which object communitates with whom. Verbs in the description can give you a hint about possible associations.

As we know, associations can be in the form of "has – a" which is either a composition or aggregation, or they are in the form of a hierarchy, hence "is – a" relationship.

See more about class diagrams and CRC:
https://www.fbi.h-da.de/labore/case/uml/klassendiagramm.html *(last accessed 14.5.18)*
http://www.dfpug.de/konf/konf_1998/02_oop/d_crc/d_crc.htm *(last accessed 14.5.18)*

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