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Exercises in Modeling Methods in Computer Science, Winter 2005/06
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Exercise 9 Submit until 10.01.2006, 4 p.m.

Task 19: Use case diagrams

Draw the use case diagrams for the following applications/situations.

(a) MP3-Player

Imagine that you would like to write a personal MP3-Player program.

- Who should be able to deal with it? (actors)
- What are the things that one can do with it? (use cases)

Illustrate at least one “uses” relationship between two use cases.

(b) Flower shop

Identify the various actors and their actions (use cases) in a flower shop. Give at least two actors. Use at least one generalisation relationship (“extends”) between two use cases.

5 + 5 = 10 Points

Task 20: Interaction diagrams

Imagine, that you would like to develop a meta search engine for the web, that is a program that sends search queries to different search engines on the web and later blends all the results together.

The engine should have an input window, wherein one can input the search query, and a processing module that sends the query to the different search engines simultaneously.

When the user has entered the search query in the input window, the input window sends the query to the processing module and is immediately ready again to accept new queries from the user.

The processing module starts a processing-thread for each search engine as soon as it receives a search query.

A processing-thread compiles the search query, sends it to its search engine and waits for the reply. Then it compiles the reply and sends it to the processing module and then ends itself.
Whenever the processing module gets results, it checks whether for the particular
query all the threads have replied or a time limit has been reached. If yes, then
it combines all the results together and displays the results in a new window.
If not all the threads have replied yet, and the time limit has not been reached
yet, then the processing module stores the results already received and waits for
the remaining ones.

Model the above sequence of events

(a) as Sequence diagram

(b) as Collaboration diagram

Define useful messages between the objects and keep in mind the activity phases
and the lifespans of the objects and also the difference between synchronous and
asynchronous messages.

\[ 5 + 5 = 10 \text{ Points} \]