TX00CK91-3001 Software Structures and Models

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Course target

In this course we will take a look at:

- Data Structures and Algorithms
- UML for modelling the design of an application
- Application development for Android devices
- Object-relational mapping (ORM) with Hibernate
- Academic writing in English

After completing this (and the previous) course the participants should familiar with the design and implementation of a service/product that has Java back-end implementation with persistence and, in addition to web, a native mobile application front-end. In addition, participants understand the design choices for different data structures in both server and client components.

Grading

Weekly exams	30%
Lab exercises	30%
Project	25%
Technical study	15%

Exams

Monday morning weekly exams cover topics from all parts of the course discussed during the previous week. One weekly exam out of total of seven will be omitted in the calculation of final exam score.

Labs

Labs are published during sessions. Labs will be evaluated during the classes. Deadline for labs is publish date + 1 week (exceptions arising from holidays etc are discussed separately). Every delay week will halve the lab points (exponential decay).

Project

Project consists of three parts:

- doing UML design for the project created in the previous course
- designing and creating an Android client for the project, and
- modifying the server to take advantage of ORM and Hibernate

Academic writing

Topics for academic writing exercise will be articles given by the instructors. The exercise can be done either alone or with a pair. Authors will need to take a look at some additional sources for information related to the subject.

Tentative schedule

Week	Data structures and algor.	UML	Android	Hibernate	Academic writing
1	Abstraction and algorithm	Astah, Use case diagrams	Activities, views, event handling		Basics of acad writing
2	Abstract data types	Sequence diagrams	Intents, threads		Structure, table of contents
3	Java collections (list, queue, stack)	Class and object diagrams,	Adapters, list view, threads		
4	Java collections (list, queue, stack)	-	Content provider, cursor loader, services	Setting up Hibernate, basics	Report draft available
5	More on DS&A	State diagram		Collections and inheritance	Report deadline
6	More on DS&A	Other UML diagrams		Queries	
7	More on DS&A				
8					