Programming Techniques, 2022-2023

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Lab session 7-12 : Android App

Goal

The goal of this lab session/project is to build your own Android app in Java. You will have to use the Android developer documentation often. We hope you will experience this as an instructive, enjoyable and challenging assignment.

Android app

You can build your own Android app:

- you are free to choose a topic (or pick one of the topics we provide if we have some); take the opportunity to develop "the app of your dreams" and to be creative
- work incremental/iterative: it is better to have fewer good working features, than a big application where almost nothing is working; if there is time, you can add features step-by-step; discuss with your lab session professor about the "must-haves" and the "nice-to-haves"
- think about an intuitive user interface (UI); let you inspire by good examples of existing apps; use your family and friends to test the UI of your app
- work in teams of two students

Android app: setup

To learn about the basics of an Android app, you can follow this tutorial:

- Android Tutorial V2023.2.pdf

And there are a couple of short videos to introduce the network setup (database, RESTful service) we provided for you. Setting up the database can be done with MySQL Workbench.

Android app: technical requirements

Code

- Use a Model: create classes that implement a single abstraction and use instances all over your app (see: “Android Tutorial V2023.2.pdf”); provide the UML diagram of your model
- Make use of the Java and Android API documentation; finding your way through the documentation is one of the goals of this course
- Choose the right collections
- Make use of lambda expressions
- Apply clean code principles: naming of classes, methods and variables should be as self-explanatory as possible, find and apply design patterns, refactor your code (small methods, small classes, …) often
- If possible, add something ”special” or “new” (in the sense of: “something where we did not offer an introduction for”) in your app (for instance: a map, an API that makes use of specific hardware in your mobile device, ...)

Database

- Create a small database (one to three tables is enough, but it depends on your app requirements). Provide the ER-diagram of your database.
- Make sure you add a primary key to each table.
- If necessary, define foreign keys between tables.
- Choose the proper data types for the columns.

RESTful service

- Define correct statements in your “api”; make for instance use of WHERE clauses to make sure that you do not carry the full table content over the network into your app; do the filtering by row in the query you send to the database (and not in your Java code).

Android app evaluation

- During a demo session we will evaluate the features and the “good working” of your app. This demo session will be scheduled on a moment before the examination period starts.
- The code and database will be evaluated, based on the technical requirements above.

Good luck and have fun!