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Course information Spring 2019

Code: SMB
Name: Smart Mobile development
Authors: Arjan Groeneweg, Marcel Veldhuijzen

1. Contents:

In the SMB semester you will work on a wide variety of developing techniques to make native apps for mobile platforms. You will work on both the concept, design and the interaction design, as well as a native prototype demonstrator of your app.
The idea is to apply the basic knowledge you acquired by independently creating a design based on your own idea, to turn it into a testable prototype with a native programmed proof-of-concept with a minimal set of requirements.
A new development, following demands and suggestions from the Mobile Development community, allows for either broadening and/or deepening of technical and design skills among students towards becoming a T-shaped professional. We therefore offer workshops and assignments based upon a students' choice. The platform for which we develop is chosen based upon a students' own preference, however it is mandatory to show technical skills on both the Android and iOS platforms on at least a basic level. This level should be demonstrated through a natively programmed app running on a mobile device, accompanied by a design portfolio. The student should involve the teachers in the learning process via weekly talks and a formative portfolio assessment. The feedback and conclusions are noted and curated by the student and added to their portfolio to reflect on.

For the Industry Project you will work on an app for an external commissioning party, preferably one of our PIEs (dCentralize, Peercode etc), together with other students. Initially it is essential that you know how to come up with a strong concept within the framework/themes of the clients and that you convince this client of its feasibility. Of course the idea is to come up with an app as impressive as possible. First of all this means you make optimal use of everything a mobile device has to offer, such as GPS, Camera, web services, compass etc. Additionally, don't forget to think outside 'the App'. The concept may be grand in its setup, with an App as the proof of concept. The knowledge and skills acquired in the workshops should be clearly applied in the prof assignment. There is a research element taking place simultaneously with the prof assignment. Students will carry out research for the prof assignment in duos.

There will be a focus on either:

- descriptive ethics and target group analysis, or,
- a proof of concept of an innovative feature that contributes to the group project.

Changes since fall 2018:

- *All course material and all students are now collected in a single Canvas course to make it more accessible to students and teachers. This will also make sure the entire semester is viewed as a coherent study unit.*
- *Workshops are now accessible and open for signup on beforehand to allow students to make a study planning and know what's coming and when and where.*
- *New developments like Kotlin and hybrid development frameworks (Flutter, React Native) are real choices, although students are still required to demonstrate native development skills on at least a basic level.*
- *Grading criteria are now course-wide and more consistent.*

2. Learning objectives:

The learning objectives of this course have been categorised in three different levels:

Basics:

- The student is able to work with a version management system in both individual and a group context.
- The student masters the basic principles of the mobile platform as well as the corresponding native programming language. This includes the following aspects: Hardware use (GPS, camera, microphone, environment sensor etc.), being able to read from a web service, a minimum of 3 screens with a transition, including data forwarding, data persistence, tableview/listview;
- The student is able to design the UI of a native mobile app using industry standard tooling (Android Studio, XCode etc);
- The student is able to create a simple technical design for the individual app (requirements and architecture);
- The student is able to map user goals and wishes and come to a concept that creates the right user-experience. This includes means such as: Personas, Scenarios or Storyboards, Paper prototypes, Style guide (based on native platform guidelines) and a native programmed Proof-of-concept.
- The student is able to present a new and interesting concept, using a wide array of techniques.
- The student knows how to create a prototype of a mobile solution for a client together with other students.
- The student is able to work structured and methodical adhering the research framework.

Intermediate:

- The student is able to apply more complex subjects, such as CollectionView/Gridview, (Local) Notifications, local database (SQLite), Bluetooth etc.
- The student can make the application write to, and read from, a web service asynchronously;

- Design and interaction model of the application demonstrably exceeds the bare necessities, because the student can motivate the functioning of the interface based on the theory. This may include: Use of complex design patterns and animations;
- The student masters more complex programming principles of the native programming language and the native framework.
- The student is able to translate an innovative concept into a working mobile application that offers additional value to stakeholders. This may involve principles such as Gamification and Persuasion.
- The student uses the knowledge and expertise from his/her main profile to add some depth to the individual application in terms of techniques and/or design. At the start of the semester the student makes a plan, in consultation with the teachers, how this depth will be implemented.In consultation with the teacher the student can deviate from his main profile expertise and choose which other expertise and on what level they want to focus on instead.

Advanced:

- The student comes up with additional learning objectives. These objectives have to be approved by the teachers.
- The student is responsible him/herself reaching these objectives.

3. Assessment and final grading:

3.1 How will SMB be assessed

The teachers will frequently provide the students with formative feedback on deliverables and demonstrations. The student shows the work, alone or in a group context, but will be given feedback on an individual base. The students' work will be discussed with a focus on interaction design and technical aspects, where the student will be informed whether the learning goals are achieved concerning the criteria. The student is expected to record his own feedback in Feedpulse. This feedback should be processed in further deliverables within reason.

3.2 Tools Laptop, network, means of presentation, additional hard- and software.

3.3 Retake and/or second chance

During the semester students are facilitated to process formative feedback on their learning goals in their deliverables and activities that are to be recorded in their portfolio (f.e. Canvas). All learning activities are related to the prof project. Therefore, according to OER2018/2019, it is not possible to do a retake for the semester.

3.4 How does final grading take place?

At the end of the semester the student will be assessed on their performance of the semesters. During the assessor meeting the teacher/examinators will use your semester portfolio as input. Both technical development as well as professional development skills will be assessed. Canvas can be seen as your personal portfolio. Based on this portfolio you will receive a grade based on the following scale: Unsatisfactory, Satisfactory , Good, Outstanding.

Criteria for passing (satisfactory**):**

- All learning goals on the level Basics are met.
- Student shows being able to apply the integrated course subject matters and the principles discussed in it.
- Student submitted all the professional products in time, giving the client and tutors the chance to provide feedback.
- Quality, quantity and complexity of the work are in balance. There is regular feedback on the status of this balance throughout the course period.
- Both the documentation and the presentation are orderly and complete.
- The student showed sufficient participation;
- Students prove their proportional participation in and contribution to the products.
- Student reflects on the process and the product individually.
- The level of detail, representativeness, reliability and depth of the research are of a sufficient level.

Criteria *good*:

- All learning goals on the level Basics and Intermediate are met.
- The work is of a high quality and the app offers extra complexity/functionality that was not part of the subject matters discussed in the workshops.
- Documentation is of high quality, complete and knows no, or few, style or spelling errors.
- High degree of commitment and motivation. Student showed a lot of initiative.

Criteria *Outstanding*:

- All learning goals at the level of Basics, Intermediate and Advanced are met. The work exceeds the level of Good, either in quality or quantity, the work will be designated Excellent. For instance if the app has been placed in the iOS App store.

4. Teaching material

Theory and practice

At the start of the course, the student will share their talents and ambitions in the form of a competence profile. The teachers will use this document to match the student with another student in order to create a complementary set of talents.
Lectures and practicals will be offered in the form of workshops. These workshops will deal with subjects related to techniques and design and students will work on a special case or their own concept. At the end of the day the teacher will provide them with feedback on their work. The products the students hand in are not mandatory, but once handed in they will serve as proof in the portfolio. Progress is shown and discussed on a weekly basis by the teachers. There will be a weekly tutor meeting to discuss the prof assignment and the duo research progress. During this meeting the professional development and group processes are also discussed.

Individual working sessions
Students are expected to work on their mobile products on Thursdays and Fridays even when nothing is rostered or scheduled.

5. Course material:

With regard to the theoretical part of the course, the students will be able to attend workshops in which they can work on their assignments together with the teacher or individually. The result of these workshops will be handed in at the LMS Canvas the same day and students will be able to view their own progress. Furthermore the student needs a laptop and software. For the prof assignment the student is allowed to create/choose their own development and project management environment.