Exam in Developing Mobile Applications

Course Code: ID2216

Date: 2023-03-16

Starting Time: 8:00

Total time: 34 hours (to 2023-03-17 at 18:00)

Examiner: Anders Västberg

Exam Information

Exam type: This is an individual exam, and the exam will be cross-checked, and its uniqueness and originality will be validated using tools for detecting plagiarism

No of problems: 6 problems of 6 points each

Questions
- Written up in your own words, i.e., quotes should be clear and limited.
- Answer each sub-question in min ¼ page to max 1 page
- Use clear academic reference **to the course literature**, **detailing location as closely as possible (section, figure, page, etc.).**
- Additional references should follow the same format, i.e., no simple web links

Grading: Each question is graded

Fail:	less than 2 points.
Pass:	at least 2 points.
Pass with distinction:	at least 4 points.

To pass the exam, all questions need at least a Pass grade; see the course grading criteria in the course memo.
One question with the grade of fail results in the grade Fx for the exam, while more than one is the grade F.

Best of success!

Problem 1

Mobile User-Experience

a) Explain the concept of "user-centric design" and "technology-centered design" and compare them. (2p)
b) Analyze and discuss how your group's application fulfills (or not) the Seven Cool Concepts from the book "Conceptual Design" by Holtzblatt & Beyer (4p)

Problem 2

Web Applications

a) Explain in a broad sense the use of HTML5, CSS, and JavaScript to build a responsive web app. (2p)
b) Explain the concept of mobile information architecture. Give examples of how you applied it to your group's application. (4p)

Problem 3

Native apps

a) Describe the functionality and use of the different app components and services in Android. (3p)
b) Show how to create, trigger, update, and cancel notifications. Make sure to include code snippets. (3p)

Problem 4

Mobile App Development

Your development team is to design a mobile app for managing a heating system for houses. The system should present data from the state of the heating system and data from its sensors and be able to control the heating system remotely.

a) Decide and motivate which type of app (web app, progressive app, native app, or cross-platform solutions) your team should use in the above case. (2p)
b) In the above case, suggest specific concrete development activities to design a user-centric app from idea to deployment. (4p)

Problem 5

Web Services and Web Service Composition (Mashups)

a) What is the "same origin policy," and how does that affect client-based mashups? Suggest a workaround. (2p)
b) Discuss when and how (code, architecture, services) to store data in a local database compared to web service alternatives. (4p)

Problem 6

Ecosystem problem: Public transport - To buy SL tickets using the mobile phone

Introduction

Public transport companies like SL continuously develop and modify the ticket and payment solutions. As indicated by the pictures above changes are currently introduced for the use access cards.

Task A (2p).

From 2021 you can use an ordinary credit card to buy a single SL ticket,
it is just to blip the card at the reader in a bus or at the gate for trains/subways.
You can also buy SL tickets using the mobile phone app. Please see SL web pages,
e.g. Res med betalkort | SL and Köpa biljett med appen | SL

- Make actor maps for these two payment solutions for single tickets, i.e. include the involved actors and what actors that have business relations with each other, Please also very shortly describe each business relation.
- Please comment on the main differences between these two solutions.

Task B (4p)

For some years, it was possible to buy and pay SL tickets using different types of SMS services. These SMS ticket solutions are no longer available.

- Make an actor map with actors and business relations for one type of SMS based service for buying single tickets. Note! No more than four actors are needed
- Compare the SMS solution with the current mobile app solution and highlight the key differences