

T-110.7111 Internet Technologies for Mobile Computing (2 or 4 cr)

9.4.2015 Examination

Choose 3 of the 4 topics below and write essays on them. Each topic has additional questions that should be considered in your essay. Discuss other relevant issues as well. Remember to consider what is important and what is not when writing your essay. You may write your essays in Finnish, Swedish, or English. You may not use additional materials (e.g. written notes, books, and printed articles) in the exam.

Remember to include the following information in your paper: the course name, date, student ID, name, and signature.

1. Design of a mobile application runtime

- a) Outline a design for a modern mobile application runtime for a smartphone. Present the key technologies and interfaces that are used and the highlights of your design (a diagram can be used to illustrate the design). Justify design choices. Address issues such as the requirements of the mobile environment, the requirements of applications, and the software developer viewpoint.
- b) What are the challenges of deploying the platform? You can motivate your choices by referring to existing platforms.

2. Design patterns and solutions for energy efficient mobile software

- a) Present two design patterns for energy efficient mobile software. Consider the benefits and liabilities of the patterns.
- b) Outline a system for crowdsourcing based collaborative energy analysis and discuss the benefits and limitations of the system.

3. Mobile cloud

- a) What are the benefits and limitations of mobile cloud computing?
- b) Discuss the tradeoffs between communications cost, energy, and latency in mobile cloud computing.
- c) Explain how computation offloading can support mobile applications.

4. Converged communications

- a) Draw a diagram of the modern communication environment with mobile devices, access networks, the Internet, and cloud services.
- b) Consider the benefits and limitations of the communications environment. How well is the end-to-end principle taken into account?
- c) Explain the key techniques for pushing content to mobile devices. Discuss the limitations of these techniques.