

T-106.5250 Distributed systems

Examination 2010-12-17

In each separate answer paper, write the name of the course, the date of the exam, the number of the answer paper and the total number of answer papers (in the form 'paper 1/2'), and your own name, study program, and student number.

Try to answer clearly. When preparing the answer for an essay, think first what you know about the subject and make some notes. Remember that the subject may have been described in several chapters of the book. Design an outline for your answer and only after that start writing. You can use subsection headers to make your answer clearer.

1. (12p) Give a short answer to following questions (max. 100 words per question):
 - (a) Give a definition of distributed system.
 - (b) What are the pros and cons of using threads instead of multiple processes?
 - (c) How can we sign digital documents?
 - (d) Why do we need middleware?
 - (e) What are the ACID properties of transactions?
 - (f) What are logical clocks and logical time, and why are they needed?
2. (6p) Essay: Distributed event-based systems and publish/subscribe. **Note! Tell in the beginning of your essay, are you answering based on the course text book or the article "The Many Faces of Publish/Subscribe" or both.**
3. (6p) Essay: Routing in peer-to-peer systems.
4. (6p) Essay: Multicast in distributed systems.