LINKÖPING UNIVERSITY
Department of Computer and Information Science (IDA)
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TDDD25 Distributed Systems / *Distribuerade System*

Reading directions / *Läsanvisningar*

The materials discussed at the lectures will be *directly* covered by the written examination; this material you have to understand and, at the same time, know how to apply to solve problems.

In order to prepare for the exam, you have to study:

1. **Lecture notes**: *all the material* presented in the lecture notes may appear in the examination.

2. **Textbook**: you find below chapters and paragraphs from the book by Coulouris et al., "*Distributed Systems – Concepts and Design*" (**fifth edition**), which are related to the examination topics and serve for a better understanding of the material.

Chapter 1. Characterization of Distributed Systems
1.1 Introduction
1.2 Examples of Distributed Systems
1.5 Challenges

Chapter 2. System Models
2.1 Introduction
2.3 Architectural models
2.4 Fundamental Models (without security model)

Chapter 3. Networking and Internetworking
3.4.6 TCP and UDP

Chapter 5. Remote Invocation
5.1 Introduction
5.2 Request-reply Protocols
5.3 Remote Procedure Call (without Sun RPC case study)
5.4 Remote Method Invocation

Chapter 6. Indirect Communication
6.1 Introduction
6.2.2 Group Communication; Implementation Issues
6.3 Publish-subscribe systems

Chapter 8. Distributed Objects and Components
8.1 Introduction
8.3 Case Study: CORBA

Chapter 10. Peer-to-Peer Systems
10.1 Introduction
10.2 Napster and its Legacy
10.3 Peer-to-Peer Middleware

Chapter 14. Time and Global States
14.1 Introduction
14.2 Clocks, Events, and Process States
14.3 Synchronizing Physical Clocks
14.4 Logical Time and Logical Clocks
14.5 Global States

Chapter 15. Coordination and Agreement
15.1 Introduction
15.2 Distributed Mutual Exclusion (without Maekawa's algorithm)
15.3 Elections
15.4.3 Ordered multicast (without implementing causal ordering, overlapping groups, multicast in synchronous and asynchronous systems)
15.5.3 The Byzantine Generals Problem in Synchronous Systems

Chapter 18. Replication
18.1 Introduction
18.5 Transactions with Replicated Data (without virtual partition algorithm)

Chapter 20. Distributed Multimedia Systems
20.6.2 BitTorrent

Notice: there are several issues discussed at the lectures, which are *not* covered in the textbook. The lecture notes should be sufficiently explicit to understand them.

Some other material related to the course topic:

* Andrew S. Tanenbaum: "*Distributed Systems*", Prentice-Hall International, 2002.

* Mukesh Singhal, Niranjan G. Shivaratri: "*Advanced Concepts in Operating Systems*", McGraw-Hill, 1994.

* http://www.omg.org/ (on OMG and CORBA).

The maximal number of points for the exam will be 40.

In order to pass the exam you have to collect a total of minimum 21 points.