

EXAMINATION QUESTION PAPER

Exam in:	Inf-3701
Date:	Wednesday 20 th of May 2020
Time:	09:00 – 13:00
Place:	Home Exam
Approved aids:	
Type of sheets (squares/lines):	
Number of pages incl. cover page:	2
Contact person during the exam:	Randi Karlsen
Phone:	
	Will a lecturer/person in charge visit the venue? NO: X

NB! It is not allowed to submit rough paper along with the answer sheets.

If you do submit rough paper it will not be evaluated.



Task 1: (35%)

- a) Assume a distributed database. Describe how and why partitioning is performed. Describe both horizontal and vertical partitioning.
- b) Correctness and concurrency control are important in distributed databases. Assume a database with distributed and replicated data, where a distributed-lock-manager is used. We do not assume autonomy. Describe how the lock-manager handles replica in the Primary Copy approach, and the Majority Protocol approach. Compare advantages and disadvantages.
- c) Compare a search in an information retrieval system to a search in a relational database system. Describe similarities and differences.

Task 2: (35%)

- a) Describe the characteristics of in-memory databases and how they are different from traditional RDBMS. Describe the in-memory “Oracle times ten” architecture.
- b) Describe the Resilient Distributed Datasets (RDDs) in Apache Spark and their characteristics?

Task 3: (30%)

- a) Which are the challenges of modern data management applications compared to traditional applications of relational database? Describe also the Big Data challenges.
- b) You have been hired by a company who is expanding the business and who now needs to handle streaming data. What is streaming data? Make some examples. How would you suggest them to query such type of data?