Final Week

Overview: Database Design

- Data models: ER, Relational Data Model and their mapping
- Relational Algebra: be able to use relational algebra to answer question.
- Database Languages: SQL, PLpgSQL (final exam: need be able to determine the meaning of a SQL or PLpgSQL)
- Relational Database Design: Functional Dependency, Normal Forms, Design Algorithms for 3rd normal form and B-C normal form (3.5 normal form)

Overview: RDBMS + Other DB

- Disk, Files, Buffer Replacement Policy
- Index: Introduction.
- Transaction Management
  - ACID properties
  - conflict-serializable vs serializable
  - concurrency control (locking, time-stamp ordering) --- for multi-versioning, optimistic, only need to know the basic idea.

Other DB

- Spatial DB: Models, Design, Languages
- Graph DB: Big Graph, Cloud Systems

Final Exam

- 2 hrs
- Based on your understanding
- **If you do not feel well on the exam day, please not attend the exam. If you attend the exam, no sup-exam will be given!**
- **Consultation: One week prior to the final exam.**
- **Sample questions will be out soon. Please note that sample questions just reflect the difficult degree but not the scope nor the similarity.**

Final Exam

- **Things excluded from the exam:**
  - **PLpgSQL, SQL but we may ask yes or no questions in the exam**
  - **Multi-versioning and Optimistic Concurrency Control**
  - **Graph DB (week 10 and 11)**
- **Final Exam Marks distribution:**
  - **Q1: Yes or No (20 marks); Correct: 2 marks, wrong: -1 mark.**
  - **Q2: DB design – ER and Relational DB (20 marks)**
  - **Q3: Relational Algebra & FD & NFs (30 marks)**
  - **Q4: Transactions & Indexes (20 marks)**
  - **Q5: Spatial Data: use relational algebra to answer a Q (10 marks)**