4411

Database Management Systems

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4411 vs 3421

- 4411 :: System point of view; how a DMBS is implemented.
- 3421 :: User point of view; how a DMBS is used.

This course has 3 parts

- **Part 1**: data storage and access (Part III of textbook)
  - Where data is stored?
  - How data is stored?
  - How data is accessed?
  - How efficient is the storage?
    - space-wise
    - time-wise for later retrieval
    - Resilience to system crashes

This course has 3 parts …

- **Part 2**: query processing (Part IV of textbook)
  - For any submitted query, the DBMS devises a "query execution plan".
  - How efficient is the plan?
  - Given two plans, how much better is plan A vs plan B?
  - How to design a good plan?

This course has 3 parts …/

- **Part 3**: transaction management (part V of textbook)
  - Make sure that data updates are done correctly in the DB.
  - Make sure that concurrent transactions do not interfere with each other to corrupt the DB.
  - Make sure that the DB is not corrupted when a system crash occurs.

Why do we care how a DMBS is implemented?

- It is unlikely that any single individual is going to ever implement a DBMS (too complex).
- However … if you understand the internals of a DMBS, you will be
  - a better DB designer.
  - a better DB programmer.
  - a better DB Administrator.
  - able to use the ideas and techniques used in DBMS construction in several other areas (such as when building applications that do not use a DBMS but they need to process data).
  - one course closer to graduation!

Data storage and access

- …disks …(transparencies)
- …tapes …(transparencies)