



Carnegie Mellon Univ.
Dept. of Computer Science
15-415/615 - DB Applications

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Midterm Review



Administrivia – Midterm

- **Who:** You
- **What:** Midterm Exam
- **When:** Wed Oct 21st 3:00pm - 4:20pm
- **Where:** DH A302
- **Why:** You were recruited to work on Hillary Clinton's presidential campaign as a data scientist.



Administrivia – Final Exam

- **What to bring:**
 - CMU ID
 - Calculator
 - One page of notes (double-sided)
- **What not to bring:**
 - Live animals



Extended Office Hours

- **Christos:**
 - Tuesday Oct 20th @ 11:00am-12:00pm
 - Tuesday Oct 20th @ 12:00pm-1:00pm
- **Andy:**
 - ~~– Monday Oct 19th @ 9:00am-10:00am~~
 - ~~– Monday Oct 19th @ 12:00pm-1:00pm~~



Entity Relationships

- Cardinalities
- Total vs. Partial Participation
- Strong vs. Weak Entity Set
- Primary Key vs. Partial Key



Relational Model

- Integrity Constraints
- Relation Algebra
- Relational Calculus



SQL

- Basic operations:
 - SELECT / INSERT / UPDATE / DELETE
 - WHERE predicates
 - Output control
- More complex operations:
 - Joins
 - Aggregates
 - Common Table Expressions



Storage

- Buffer Management Policies
 - LRU / MRU / CLOCK
- Understand high-level trade-offs of different approaches.



Indexes

- B-Tree vs. B+Tree
- Basic Operations:
 - Insertions / Deletions
 - Splits / Merges



Hashing

- Extendible Hashing
- Linear Hashing



Sorting

- Two-way External Merge Sort
- General External Merge Sort
- Cost to sort different data sets with different number of buffers.