B561 Advanced Database Concepts

Final Review

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Part 0: Introductions
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Part 1 & 2: Basics
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Part 1 & 2: Basics

- SQL, Relational Algebra, Datalog, Relational Calculus
- Data Models, Storage, Indexing
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Part 1 & 2: Basics

- SQL, Relational Algebra, Datalog, Relational Calculus
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Part 3: Optimization
The First Half

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Part 1 & 2: Basics

• SQL, Relational Algebra, Datalog, Relational Calculus
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Part 3: Optimization

• Query Processing, Algorithms for Joins,
• Query plans, optimization using dynamic programming
• Optimal Join Algorithms
The First Half

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Part 4: Transactions
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• Query Processing, Algorithms for Joins,
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Part 4: Transactions

• Using Logs for Recovery.
• Locks for Concurrency Control, (Strict) 2PL
• The Tree Protocol
Part 5: I/O-Efficient Algorithms
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- Sorting.
- List Ranking
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Part 6: Streaming Algorithms
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• Sampling
• Distint Elements
• Heavy Hitters
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Part 7: Data Privacy
The Second Half

Part 5: I/O-Efficient Algorithms

- Sorting.
- List Ranking

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- Sampling
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Part 7: Data Privacy

- $k$-Anonymity, $\ell$-Diversity
- Differential Privacy