

Database

2010-07-19

Database Normalization

- 1NF
- 2NF
- 3NF
- OLTP

No Rules

- Rules need to be broken

Denormalization

- OLAP
- Copies/Replications
- Load Balance
- Consistent
- WWW 2008. Service-Oriented Data Denormalization for Scalable Web Applications

Internals

- Page
- Page Structure
- Index Structure

Data Structure

- B+-Tree
- R-Tree(Sqlite): The R*-tree: An Efficient and Robust Access Method for Points And Rectangles
- Hash
- Bitmap
- T-Tree

Index

- Clustered index
- Non-clustered index
- Sparse index
- Dense index

Index

- Choose: how to access(SUDI)
- Trade-offs

Query Type

- Point query
- Mutipoint query
- Range query
- Prefix Match query
- Ordering query
- Grouping query
- Join query

Benchmark

- **TPC-W:** W. D. Smith. TPC-W: Benchmarking an ecommerce solution. White paper, Transaction Processing Performance Council.
- **RUBBoS:** Bulletin board system benchmark
- **RUBiS:** C. Amza, E. Cecchet, A. Chanda, A. Cox, S. Elnikety, R. Gil, J. Marguerite, K. Rajamani, and W. Zwaenepoel. Specification and implementation of dynamic web site benchmarks. In Proc. Intl. Workshop on Workload Characterization, Nov. 2002.
- **TPC-C**

MySQL Store Engine

- MyISAM(Speed, Recovery)
- InnoDB(Transaction, Lock)
- Heap Table(Memory)
- NDB(Distributed)

Oracle

- Compress
- RAC

Sharding

- Partition
- View / Merge
- Share Nothing: Michael Stonebraker. University of California Berkeley, Ca.**The Case for Shared Nothing**