

Relational Design Theory

CSE462 Database Concepts

Demian Lessa

Department of Computer Science and Engineering
State University of New York, Buffalo

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Overview

How does one design a relational schema?

- From requirements, high-level notations, etc.
- Initial schemas tend to combine too much into one relation.
 - This creates redundancy in the data.
 - Redundancies can be eliminated systematically.
- Relational theory.
 - Provides the foundation for designing good relational schemas.
 - Involves the study of dependencies involving data elements.
 - Permits us to distinguish good from bad schemas.
 - Gives us the means to fix flawed designs.

Overview

- Certain dependencies in relation schemas may cause problems.
 - Often referred to as anomalies.
- Data dependencies.
 - Functional dependencies generalize the notion of key.
 - Multivalued dependencies identify sets of independent attributes.
- Dependencies are used to define **normal forms** for relation schemas.
- Normal forms are used in a process called **normalization**.
 - Decompose relations into two or more relations to remove anomalies.
 - Each decomposition targets a particular normal form.
