Physical Database Design

Adapted from Chapter 18 (Connolly & Begg)

Physical database design

Goal: create a relational database schema from the relational model that can be implemented in the target DBMS.

Physical database design: defining the description of the database on secondary storage.

It describes the base relations, the file organization, the indexes, the integrity constraints, and security measures.

Steps to the physical database design

1. Define base relations for the chosen DBMS
2. Design representation of derived data
3. Design general constraints for the table
    a. Not supported in MySQL
4. Design file organizations and indexes
    a. MySQL uses the InnoDB structure a version of B trees
    b. Indexes: storage mechanism used to speed up data retrieval
    c. We will study indexes and B trees later in the semester
    d. Estimate disk space requirements
5. Design user views
6. Design security mechanism

Design base relations

1. Specify unique name for each relation
2. Specify list of simple attributes and domains, default values, NULLs permitted
3. Specify primary key and foreign keys
4. Specify referential integrity constraints

Design representation of derived data

1. Ensure data needed to derive field is present
2. If data is difficult to derive, some designers may choose to store the derived field as a simple field and define rules for it to be updated

Classwork: design relations for model