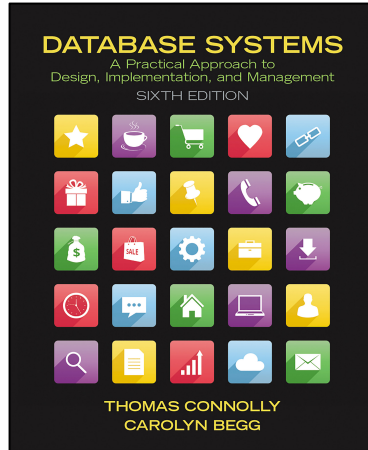

Physical Database Design

Topic 2 Lesson 6 – creating a database on disk

Chapter 18 Connolly and Begg



Step 3: Physical database design

Once the logical model is created, we need to choose the targeted DBMS (vendor) and determine the best method for physically implementing the logical model.

Physical database design describes the base relations, file organizations, and indexes and any associated integrity constraints and security measures.

Each vendor provides different data storage mechanisms, constraint representation, etc...

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
4. Choose 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

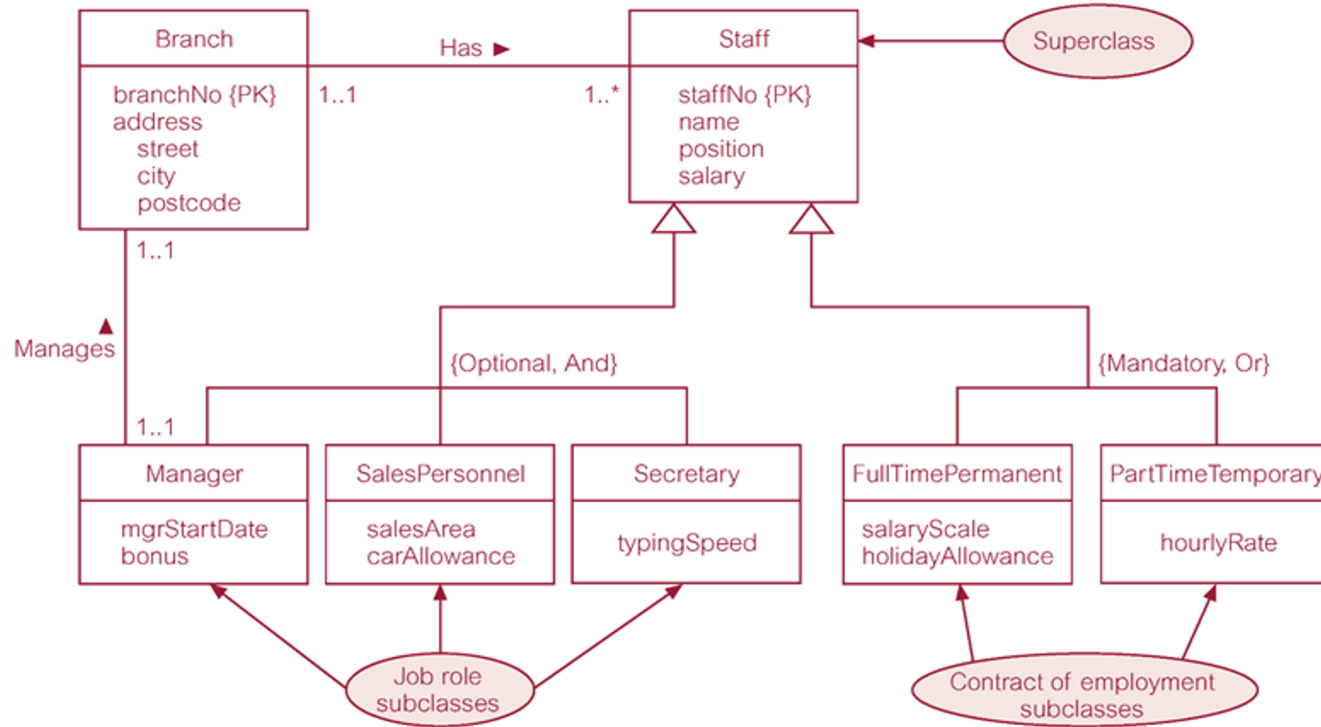
Summary (Physical Design)

The database schema is created, including support for the derived fields.

The file organizations, and indexes and any associated integrity constraints and security measures are chosen.

User views and security constraints are chosen.

Classwork: create relations for UML



Classwork: convert to a logical db design

