

Session 1-3 Three-schema Architecture

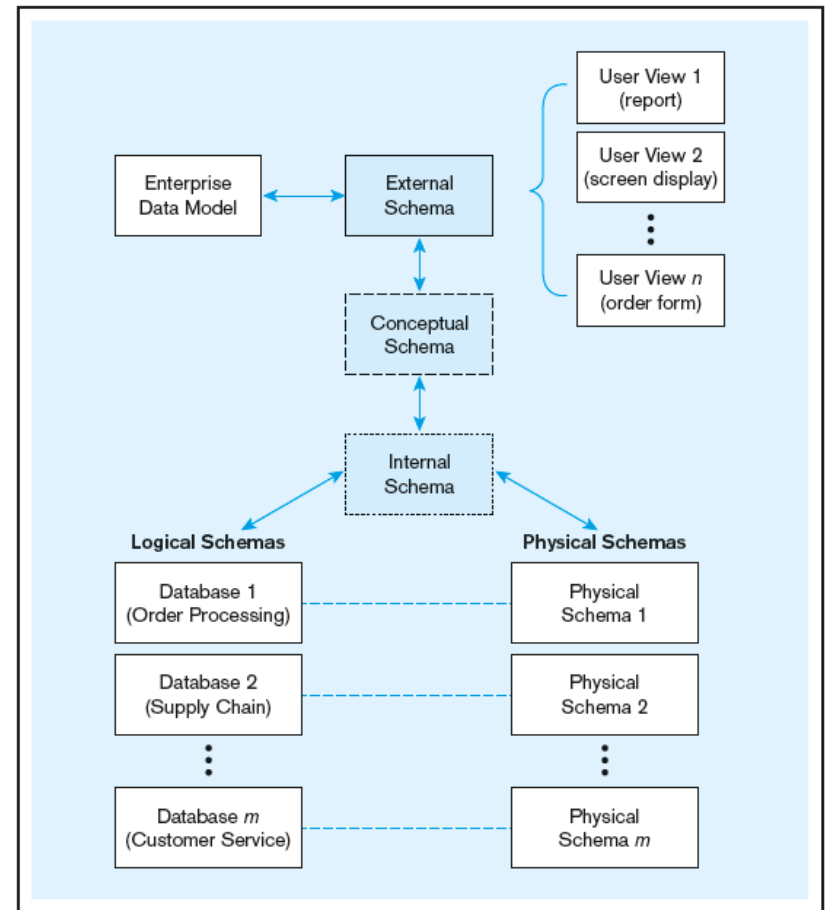
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Three-schema Architecture

- A guideline for describing the structure of data
- Consisted of three schemas – external, conceptual, and internal schemas
- Each schema visualizes the structure of the same database for different stakeholders



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Three-schema Architecture

- External Schema
 - User Views
- Conceptual Schema
 - Detailed technology-independent specification of the overall structure of organizational data (e.g., ER models)
- Logical Schema (Internal schema 1)
 - Representation of a database for a particular database model (e.g., relational data models)
- Physical Schema (Internal schema 2)
 - Specifications for how data from a logical schema are stored by a DBMS (e.g., organization of physical records, choice of file organizations, uses of indexes, etc.)



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Example of External Schema

Figure 2.2 Bruce's External View

The 'RIVER' window displays a form for river information and an observation table. The form fields are: River Name (Columbia), Location Description (Astoria, OR), Average Flow (127), and Peak Flow (235). The observation table has columns for Date, Count, and Fish.

Date	Count	Fish
5/17/2002	412	King Salmon
7/3/2002	117	King Salmon
7/3/2002	84	Silver Salmon
7/3/2002	9	Chinook Salmon
	0	

Record: 1 of 5

Figure 2.3 Zelda's External View

The 'FISH' window displays a form for fish information and an observation table. The form fields are: Species Name (King Salmon), Description (Large and delicious!), Scientific Name (Oncorhynchus tshawytscha), and Responsible Agency (Fish and Game). The observation table has columns for Date, Count, and River.

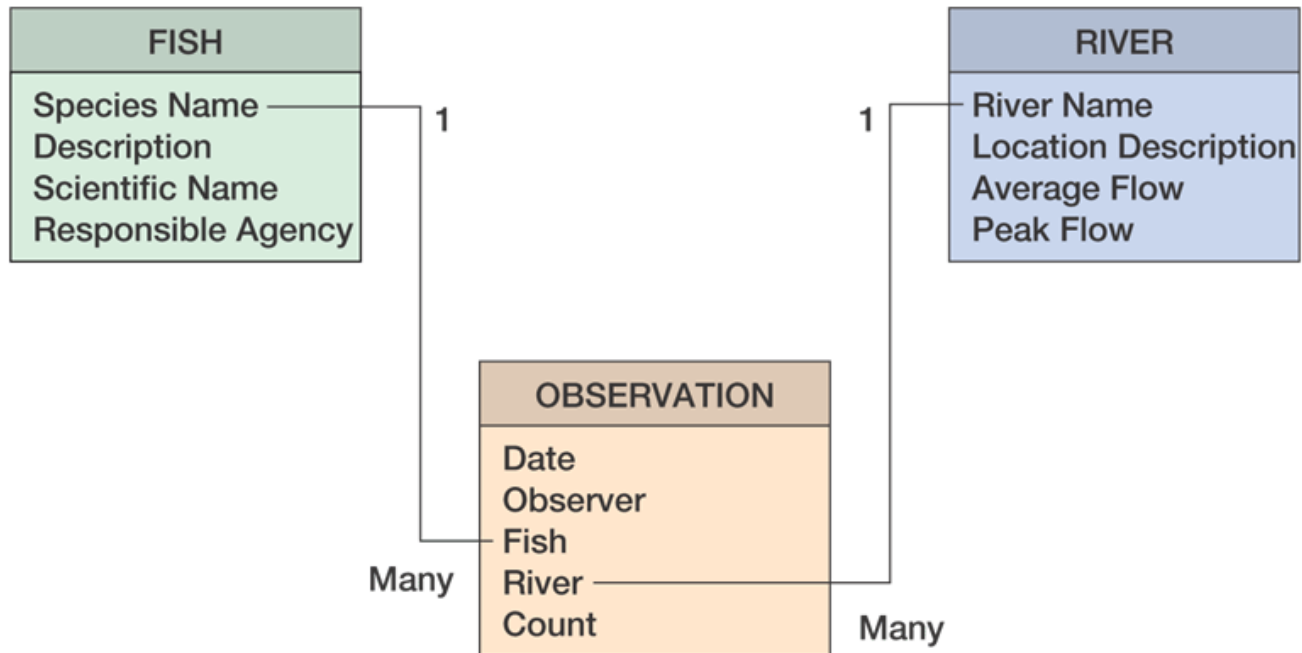
Date	Count	River
5/17/2002	412	Columbia
7/19/2002	17	Skagit
7/3/2002	117	Columbia
9/5/2002	76	Quilceda Creek
	0	

Record: 2 of 3



Example of Conceptual Schema

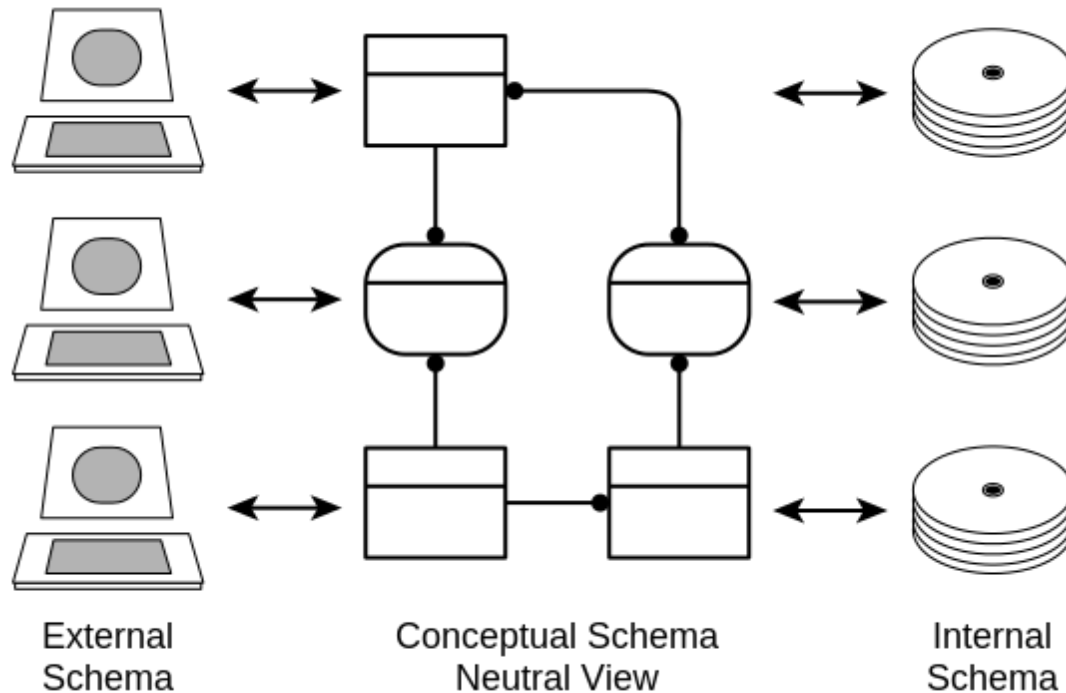
Figure 2.4 Conceptual Schema for Observation Database



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Three-schema Architecture



Wrap-up

- Differentiate the three schemas
- Explain the role of the conceptual schema in database development project



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