Database Design

Conceptual and Physical Models

Objectives

This lesson covers the following objectives:

- Explain the importance of clearly communicating and accurately capturing information requirements
- Distinguish between a conceptual model and its physical implementation
- List five reasons for building a conceptual data model
- Give examples of conceptual models and physical models

Purpose

When you are able to recognize and analyze information, you can better understand how things work and potentially make them better. For example:

- How to make the line at the food counter go faster
- How to successfully exchange an item at the store
- How to organize and keep track of your growing CD collection

Also, recognizing and analyzing information helps prevent mistakes and misunderstanding. For a business, this is important because it saves time and money.

What is a Conceptual Model?

A conceptual model:

- Captures the functional and informational needs of a business
- Is based on current needs but it may reflect future needs
- Addresses the needs of a business (what is conceptually ideal), but does not address its implementation (what is physically possible)
- Is called an “Entity Relationship Model”
- Is illustrated using an “Entity Relationship Diagram” (ERD)
- Is the result of completing the Data Modeling process

What is a Conceptual Model? (cont.)

Businesses use data to increase sales and/or reduce costs. In order to accurately collect this data, a business must create a conceptual model of the data it considers important.

What is a Conceptual Model? (cont.)

A conceptual model is important to a business because it:

- Describes exactly the information needs of the business
- Facilitates discussion
- Prevents mistakes and misunderstandings
- Forms important “ideal system” documentation
- Forms a sound basis for physical database design
- Documents the processes (also known as the “business rules”) of the business
- Takes into account regulations and laws governing this industry

Conceptual and Physical Models

It is the art of planning, developing, and communicating that produces a desired outcome.

Data modeling is the process of capturing the important concepts and rules that shape a business and depicting them visually on a diagram. This diagram becomes the blueprint for designing the physical thing.

The client's dream (conceptual model) will become a physical reality (physical model).

Terminology

Key terms used in this lesson included:

- Conceptual model
- Data
- Data modeling
- Physical model

Summary

In this lesson, you should have learned how to:

- Explain the importance of clearly communicating and accurately capturing information requirements
- Distinguish between a conceptual model and its physical implementation
- List five reasons for building a conceptual data model
- Give examples of conceptual models and physical models