Release Date: August, 2015

Updates:

Database Design

2-1
Conceptual and Physical Models

ORACLE ACADEMY

In this lesson, students will learn the concept of modeling and to recognize models – conceptual vs. physical. This lesson provides reasons for creating a data model in the first place, as opposed to just going ahead and building a database.

Have you ever had trouble finding a document in a filing cabinet or folder that someone else organized? The files may have been organized to meet that person's needs, but not your own.

Data modeling attempts to capture the needs of the business users so that the resulting database is one that everyone can use. The final product of this process is a data model, or more specifically a conceptual model known as an Entity Relationship Diagram.

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.

If you were the manager of a fast-food restaurant, why would you want to collect information about how to make the customer lines at the food counter go faster?

Answers include:

The faster you can serve people, the greater the profits are for your store!

What would be the profits if it could only serve one customer per hour?

A business and its customers both suffer when inefficient processes are used. You would not return to a restaurant that could serve only one person per hour, would you?

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)

Conceptual model: A data model, usually represented by an entity relationship diagram.

Physical model: A design for an object (a car, a house, a database, etc.) which includes implementation details such as size, volume, weight, etc.)

What is a Conceptual Model?

A conceptual model:

- Is called an “Entity Relationship Model”
- Is illustrated using an “Entity Relationship Diagram” (ERD)
- Is the result of completing the Data Modeling process
- 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.

Conceptual model: A data model, usually represented by an entity relationship diagram.

Physical model: A design for an object (a car, a house, a database, etc.) which includes implementation details such as size, volume, weight, etc.)

What is a Conceptual Model?

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

What is a Conceptual Model?

A conceptual model is important to a business because it:

- 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 allows a group of people to work together to achieve 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


ORACLE
ACADEMY