Case Studies

Each chapter includes a Chapter Case, a Continuing Case, a Capstone Case, and an Online Case Simulation. You can learn more about the Online Case Simulation in the MIS CourseMate Features section.

Chapter Case: Scenic Routes

Scenic Routes operates a bus company that specializes in travelling on secondary roads, rather than Interstate highways. Their slogan is: “It Takes a Little Longer, But It’s Scenic.” The firm needs to update its passenger reservation system.

Background

Data items must include reservation number, Route Number, Date, Origin, Destinations, Departure Time, Arrival Time, Passenger Name, and Seat Number. For example, Route 97 leaves Monroe, VA, daily at 8:00 A.M. and arrives in Spencer, VA, 100 miles away, at 11:00 A.M. Scenic wants to use an alphabetic reservation code, similar to the codes that airlines use.

Tasks

1. Identify the entities and their relationships. Then create an ERD for the reservations system.
2. Create 3NF table designs for the system.
3. For each of the entities identified, design tables and identify the possible candidate keys, the primary key, a probable foreign key, and potential secondary keys.
4. Use sample data to populate the fields for three records.

Continuing Case: Personal Trainer, Inc.

Personal Trainer, Inc. owns and operates fitness centers in a dozen Midwestern cities. The centers have done well, and the company is planning an international expansion by opening a new "supercenter" in the Toronto area. Personal Trainer's president, Cassia Umi, hired an IT consultant, Susan Park, to help develop an information system for the new facility. During the project, Susan will work closely with Gray Lewis, who will manage the new operation.

Background

After evaluating various development strategies, Susan prepared a system requirements document and submitted her recommendations to Cassia Umi, Personal Trainer's president. During her presentation, Susan discussed in-house development and outsourcing options. She did not feel that a commercial software package would meet Personal Trainer's needs.

Based on her research, Susan felt it would be premature to select a development strategy at this time. Instead, she recommended to Cassia that an in-house team should develop a design prototype, using a relational database as a model. Susan said that the prototype would have two main objectives: It would represent a user-approved model of the new system, and it would identify all systems entities and the relationships among them. Susan explained that it would be better to design the basic system first, and then address other issues, including Web enhancements and implementation options. She proposed a three-step plan: data design, user interface design, and application architecture. She explained that systems analysts refer to this as the systems design phase of a development project.

Cassia agreed with Susan's recommendation, and asked her to go forward with the plan.

Tasks

1. In your discussion of the systems design phase, you mentioned normalization to Cassia. She would like you to explain the basics of normalization in plain English to help her understand the data design tasks.

2. Review the Personal Trainer fact-finding summary in Chapter 4 and draw an ERD with cardinality notation. Assume that system entities include members, classes, merchandise, and fitness instructors.

3. Design tables in 3NF. As you create the database, include various codes for at least three of the fields.

4. Use sample data to populate the fields for at least three records in each table.

Capstone Case: New Century Wellness Group

New Century Wellness Group offers a holistic approach to healthcare with an emphasis on preventive medicine as well as traditional medical care. In your role as an IT consultant, you will help New Century develop a new information system.

Background

After completing the user interface, input, and output design for the new information system, you will now focus on the data design of the DBMS that will support the system. Begin by reviewing the DFDs that you prepared in Chapter 5 and the object models that you created in Chapter 6.

Tasks

1. Create an initial ERD for the new system that contains at least eight entities.
2. Analyze each relationship to determine if it is 1:1, 1:M, or M:N.
3. Normalize your designs for all tables to ensure they are 3NF, and verify that all primary, secondary, and foreign keys are identified properly. Update your ERD to reflect any changes.
4. Review the Data Dictionary you created in Chapter 5 and double-check all data dictionary entries. Make sure that the entries for data stores, records, and data elements are documented completely and correctly. Determine what codes, if any, will be used and be sure they are documented in the data dictionary.