

CSE462 Database Concepts
Fall 2000
Project #1
Conceptual Database Design using E-R Model

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1 Objective

To enable the students to

- Analyze a problem and represent its data requirements using an E-R model.
- Convert the entity sets and relationship sets in the E-R model into tables.
- Implement a relational database with the tables derived using SQL* and Oracle DBMS.
- Write SQL queries to retrieve information from this database.

2 Problem Statement

The Outpost Traders Sales Order Database: This business markets a line of clothing and sporting goods via mail-order catalogs, and a site on the World Wide Web. This company accepts orders via phone, mail and fax. The company recently experienced substantial growth, and as a result decided to offer 24 hours customer order service.

When a customer orders an item, the sales representative must check to see if the ordered item is in stock. If the item is in stock, the representative must update the available quantity on hand to reflect that the item has been sold. If the item is not in stock, the representative needs to advise the customer when the item will be available. When new inventory shipments are received, a receiving clerk may update the inventory to show the new quantities on hand. The system must produce invoices that can be included with the customer shipments and reports showing inventory levels, possibly using charts and graphs. Marketing managers would like to be able to track each order's source (particular catalog number or web site) to help future promotions.

1. (25 points) Analyze the problem and design the E-R model. (Read Chapter 2 from Siberchatz's text.)
 - (a) Identify the **entity sets** for the problem described. Each entity set should be highly cohesive unit. Identify the attributes and determine the primary key. Also determine if the entity set designed is a weak or string entity.
 - (b) Identify the **relationship sets**. Identify any attributes of the relationship set.
 - (c) Draw the **E-R diagram**. Clearly indicate the various parts of the diagram using the standard notations used in ER diagrams.
2. (20 points) Obtain the tabular representation of the E-R model, the entity sets and the relationship sets. Provide any description needed to explain your tables. Weak relationship sets need not have any tables.
3. (35 points) Implement the tables using SQL and Oracle DB.

- (a) Using SQL statements for table creation, define the tables the database (Oracle 8) supported by the CSE department.
 - (b) Make up some sample data and insert them into the table into the tables. The data should be reasonably realistic.
4. (20 points) Query the database.
- (a) List all the tables.
 - (b) List the names of all customers of Outpost Traders.
 - (c) List the items sold by Outpost Traders.
 - (d) List the items that need reordering.
 - (e) Add a attribute to customer that indicates if the customer is a frequent buyer or not. Insert data into this attribute. List the names of all frequent buyers.

3 Material to be Submitted

1. Prepare the ER diagram using any of your favorite text processor. Convert it to .pdf (Adobe) format and submit it.
Pay attention to grammar, spelling etc. Prepare a professional solution so that it could become a part of job search dossier.
2. Submit on-line, along with a README file that gives details of your submission.
3. All the database related files should be submitted and for the list of files take a look at the sample files discussed in the recitation this week.

4 Due Date

9/27/2000 by mid-night.