CSCI3287 Database Systems

Homework Four – Case Study

Overview

This project is worth 100 points (out of 1000) toward your final grade. It is due on Sunday, March 14, at 11:59 p.m. Late submissions will be penalized 20% during a 3-day grace period up until Wednesday, March 17, 11:59 p.m. After that time, no late work will be accepted. Your submission should be a document saved and submitted as a PDF file via the link found in the assignment section of the "Week 8, March 1 - 7" in Canvas -- which is the same place where you found this file.

This project will give you hands-on practice in working with MySQL Workbench (or similar tool) to create a key-based, fully attributed, 3 NF data model. In this project you will design a database, draw a data model to represent the design, then create and execute DDL (table create statements.) Finally, you will populate the database with a few rows of test data and run some queries against it.

You may use a "pair programming" approach on this assignment. When you turn in the assignment, the document must contain the names of all students who worked on the project together. Each student must turn in a copy of the team's final document.

Objectives

1. Familiarize yourself with an unfamiliar company via the Case Study
2. Gain an understanding of the unfamiliar company's data as presented in the Case Study
3. Use a data modeling tool to design a database to meet the needs of the client company
4. Use the data modeling tool to generate the DDL to create the database you have designed
5. Create the database you have designed by executing the DDL you have created
6. Insert data into the database you have created, and run some queries against your database

Deliverables

1. A key-based, fully-attributed data model depicting your database design using the information in the case study as your input. Your model should include:

    - All tables with primary key attributes defined
    - All attributes with data type, length, and constraints defined
    - Proper table names, key names and attribute names
    - All relationships between tables showing captions (1-way is OK), and proper optionality and cardinality

2. The output of a DESCRIBE <table> for each of the tables in your database.

3. The SQL and the output of four SELECT queries against your database as described in detail requirement # 10 below. PDF

Submission

Use the submission link in the **HOMEWORK 4** section of the **Week 8 Canvas March 1 – 7** -- which is the same place where you got this file.

Your results for this project assignment can be captured in a document (such as a .txt file, MS Word or similar tool.) Please then save your final deliverable document as a **PDF** for submission. The final PDF deliverable document you submit for this project must consist of three sections:

- The first section is a picture of your complete data model.
- The second section is text containing the results of a DESCRIBE command for each table in the database you have designed and created.
- The third section contains your SQL and the output of four queries against your database.

Case Study Scenario

For this assignment, you must read and analyze the Eden Landscaping Case Study. As you read the Case Study, you must pay close attention to every reference to the data that is collected and used by Eden Landscaping.

For this assignment, you must play the role of a consultant who has been hired by a client (Eden Landscaping) to design and create a database for them.

The SCOPE of this assignment includes your database design for ONLY the inventory kept by Eden for their **LIVE PLANT STOCK** and **LANDSCAPING MATERIALS**.

Your scope for this project excludes:

The scope of this assignment specifically **EXCLUDES** the tracking of any items kept in inventory for the purpose of retail sales through Eden's **retail store** (like shovels, rakes, seeds, bags of fertilizer, hoses, etc.)

The scope of the assignment **EXCLUDES** any inventory of tools and equipment used by Eden's crews as they go out to customers' locations and do landscaping jobs (like the backhoe, wheelbarrows, chain saws, shovels, etc.)

Your scope for this project includes:

- **Plants** and **landscaping materials** that are sold to customers who come to the store, make a purchase, and pick up and carry out their purchased items

- Plants and landscaping materials that are sold to customers who come to the store, make a purchase, and have Eden deliver their purchased items to their home

- Plants and landscaping materials that are sold to customers as part of a landscaping service contract ("job"), where Eden loads up a truck and sends a crew to the customer's home to do a landscaping project

The case study includes in-depth descriptions of the business processes that center around the keeping of inventory, including business activities that **ADD** items into inventory (such as Orders and receiving Shipments) and the business activities that **SUBTRACT** items from inventory (such as sales, landscaping jobs, and deliveries of purchased items to customers.)

Your database design must support the following business processes at Eden
- The ordering of plants and landscaping materials from suppliers
- Taking physical inventory to see what's in stock
- Receiving incoming shipments of plants and landscaping materials from suppliers
- Fulfilling customer orders and purchases, including landscaping jobs

Step-By-Step Instructions

1. Read the entire Case Study for Eden Landscaping (you do NOT need to read the Fairbanks Veterinary Clinic Case Study)

2. As you read the case study, document the ENTITIES and ATTRIBUTES you observe as you learn about how Eden keeps track of its inventory of LIVE STOCK and LANDSCAPING MATERIALS. (Suggestion: use a spreadsheet like HW # 1.)

3. As you read the case study, you must consider each ***business process*** that affects inventory. That is, consider the processes that ADD plants and materials into inventory. And, consider those processes that REMOVE plants and materials from inventory.

4. As you finish identifying entities and attributes, then you can begin to design the Inventory Database that will become the foundation of the Inventory Tracking System that your consulting firm will build for Eden in the next phase of this project.

5. Draw a data model that includes all entities and attributes, primary keys, foreign keys, relationships (with at least one caption for each relationship), cardinality and optionality. Use meaningful entity names, attribute names. Your data model should have resolved all many-to-many relationships. All entities/attributes should be in third normal form.

6. Walk through the data model and compare it to each business process to ensure that it contains all entities and attributes necessary to support the business processes described by the staff at Eden.

7. Once the data model is complete, generate the DDL to create the database.

8. Execute your DDL to create the database

9. Populate (via SQL INSERT statements) each table in your database with several rows of test data of your own creation:

- Add some Plants in inventory (at least 8)
- Add some Landscaping Materials in inventory (at least 6)
- Add some Customers (at least 4)
- Add some Suppliers (at least 2)
- Add some Retail Sales Tickets and Details (at least 4 tickets with 4 items each)

10. Create and run queries to show the following:

A. A list of Customers showing name, address, city, state, zip, phone1 and phone2

B. A list of plants in inventory showing category (trees, shrubs, perennials), SKU, plant description, and size (where known.) Be sure to include the quantity currently in inventory.

C. A list of materials in inventory showing category (gravel, mulch, stone, etc.), SKU, and description. Be sure to include the quantity currently in inventory based on the Unit of Measure for each material. Gravel, mulch, topsoil and sand are measured in cubic yards. Stone and pavers are by pallet. Timbers are per each, sold by size.

D. A list of retail sales ticket details showing the ticket number, date, customer name & address, quantity, SKU, unit price and total price in dollars, sales tax, and ticket total in dollars.