

CS 445 Database Assignment #1

E-R Diagram: Due: September 19, 2019, 11:59 pm 8 points
Database & Queries Due: October 3, 2019, 11:59 pm 12 points

For this assignment, you are to produce an E-R diagram for the database described below. After that you are to build the database in MariaDB (in PUNetID_a1 on db.cs.pacificu.edu). Finally, you are to write SQL queries to answer the questions listed below.

You are encouraged to schedule an appointment with me to review your E-R diagram before the due date. Be sure to have an electronic copy of your diagram shared with the instructor. Also bring a paper copy of the diagram. Make sure your E-R diagram will allow you to answer the queries listed below!

The Problem

You have been hired to design a database for a computer software company. The company sells various software products to various clients. The company wants you to build a database that will allow the company to track its employees and business transactions. Employees have a first and last name, email address, phone number and salary. An employee can work on multiple software products. An employee, however, can manage only one software product. Each software product must be managed by a single employee, and has a name and current version (of the form #.##). The company only cares about the most recent version of the software (clients receive automatic updates). Some software products the company sells depend upon other software products the company sells. No software product depends on third party software. Clients have a phone, email, first and last name, and date of first contact with the company. The company likes to reward long-time customers occasionally. A client may use many software products but is removed from the database if they quit using all software products (and hence lose their long-time customer standing). A single employee is marked as the Point of Contact for each customer/product pairing. A different employee may be assigned to as Point of Contact for the same software product for different customers, and vice versa. Each customer may purchase one of various service plans for each piece of software they use. Each service plan varies by cost and the level of service provided.

The Data

Once you build your database you need to fill it with the posted data! The data will be in a series of comma separated files.

The Database

Build appropriate indexes to support the queries. Be sure to use the proper constraints (FOREIGN KEY, PRIMARY KEY, UNIQUE) as necessary.

The Queries

You must be able to answer all of the following queries using your data model. The required output is listed. The customer will likely provide more queries later as they think of them.

1. List all of the employee's first and last names. (First Name, Last Name)
2. List all software products (Name)

3. List the Name of all clients that have been with the company since before 10-10-10 and the products they use (First Name, Last Name, Product Name, Start Date).
4. Find the average salary for all employees who are a point of contact for the “Stellar Teller” software product. (Average Salary)
5. Find the maximum salary for employees who work on software with a version number of 1.0, 2.0, or 3.0 (version number, salary: return three rows, one per version number).

The Submission

You must produce the E-R diagram in UMLet. You must put all of your files in a directory called CS445f19_A1_PUNetID. This directory must be in revision control. **Send me a link to your revision control on zeus, GitHub, or GitLab well before the ER diagram is due.** SVN or Git are both acceptable.

The directory listed above must contain:

The ER Diagram in: A1_ER_PUNetID.uxf

The SQL Create Table statements in: A1_Create_PUNetID.sql

The SQL Statements in: A1_SQL_PUNetID.sql

A full copy of the database produced by mysqldump in A1_Full_PUNetID.sql

Your database must be created in PUNetID_a1 on db.cs.pacificu.edu. The database must be built and the data loaded by the due date. Do not access this particular database again until you receive your grade for this assignment. You may continue to access PUNetID_test.

You must print out the SQL statements to answer each query as well as the result of running the query and hand in a hard copy when the database is due.

Notes

Start early! You have plenty of time but errors in the E-R diagram may complicate or make impossible some of the queries.

Ask questions! Don't assume!

I am not giving you the data in electronic format until after the E-R Diagrams are due so as to not constrain your database implementation.

Good Luck!

This is an individual project!