CS 445 Database Assignment #1

E-R Diagram: Due: Sept 30, 2009, 11:45 am   8 points
Database & Queries Due: Oct 12, 2009, 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 MySQL (in PUNetID_AssignmentOne on db.cs.pacificu.edu). Finally, you are to write SQL queries to answer the questions listed below.

You are welcome to schedule an appointment with me to review your E-R diagram before you submit it. Be sure to have an electronic copy of your diagram somewhere that I can get to it during a review. Placing it on Turing is a good option. 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 realty company, Century 10101. The company sells both undeveloped parcels and parcels containing houses. Each parcel has an asking price, street address, and size. Undeveloped parcels can be zoned for residential, commercial, agriculture, or wilderness use. Houses have a number of rooms and number of stories. Customers can make an offer a parcel which consists of a down payment and total payment. Only the latest offer from a customer on a particular parcel needs to be stored. When properties are sold a down payment, total payment, and date are recorded, as well as the agent who sells it. Agents and customers both have first and last names. Agents make a commission on each sale: 5% for wilderness, 10% for agriculture, 20% for commercial, and 7% for residential parcels.

The Data
Once you build your database you need to fill it with the posted data!

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.
1. List all of the agents (First Name, Last Name)
2. List all houses. (Street Address, Levels, Rooms, Asking Price)
3. List all houses with an asking price under $250,000. (Street Address, Asking Price)
4. Calculate the average total price for all offers. (average total price)
5. List all wilderness zoned property (Street Address) Sort these by size (smallest to largest).
6. Count the number of houses of each size (number of stories). (number of stories, total number) Order by number of stories (highest to lowest).
7. Find all sales that occurred before 2008 or had a down payment of over $10,000. (Date, Total Price, Street Address, Down payment, Agent Last Name, Customer Last Name). Order by Date (Latest to earliest).
8. Find each unsold house with an asking price between $100,000 and $200,000. (Street Address,

Asking price) Sort by asking prices (lowest to highest).

9. Calculate the total commission for each agent. (First Name, Last Name, Commission) Sort by Last Name (A → Z). For agents with the same last name, sort by First Name (Z→A).
10. Calculate the commission earned by Joe Smith in 2008.
    BONUS QUERY:
11. Find the customer who made the largest down payment as a percentage of total price (First Name, Last Name, DownPayment, Total Price, % of total price that is the down payment).

Additionally, you must create a reasonable query that a user may want answered and post the description and the result (but not the SQL solution) on the CS Messageboards. This query must use at least two Entities and at least one of ORDER BY or GROUP BY. Post this query by **September 28th, 11:45am**.

You must choose 2 queries posted to the CS Messageboards and provide SQL statements to solve them. You must also provide an SQL statement to solve your posted query. Do not post a duplicate query!

The Submission

You must produce the E-R diagram in Visio and hand in a hard copy at 11:45 am, September 30.

Your database must be done in PUNetID_AssignmentOne on db.cs.pacificu.edu. The database must be built and the data loaded into it by 11:45am on the day this assignment is due. Do not access this particular database 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 at 11:45am, Oct 12.

Additionally, you need to submit an electronic copy of the Visio diagram (PUNetID_AssignmentOne.vsd) and SQL statements (a text file named PUNetID_AssignmentOne Q.sql) in a file named PUNetID_AssignmentOne .tar.gz (tar czf PUNetID_AssignmentOne .tar.gz PUNetID_AssignmentOne .vsd PUNetID_AssignmentOne Q.sql). Submit this file to the drop box on Turing (CS445Drop)

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! Use the CS Messageboards!

I am not giving you the data in electronic format so as to not constrain your database implementation.

You are welcome to schedule an appointment with me to review your E-R diagram before you start implementing the database. Be sure to have an electronic copy of your diagram somewhere that I can get to it during a review. Placing it on Turing is a good option. Also bring a paper copy of the diagram.

In my experience, writing the queries is significantly harder than creating the E-R diagram or implementing the database.

The IP address of db.cs.pacificu.edu is 64.59.233.234

In the future we will build a web front end for this database in class.

Good Luck!