Real-estate Project

IS-201

Fundamental Database Management Systems

August, 2023

- **Due Monday September 11, 2023**
- **Checkpoint 1: Thursday August 31, 2023**

(relational design and their features, development schedule), meet with teachers

Goal: The goal of this project is to provide a realistic experience in the conceptual design, logical design, Query implementation, and maintenance of a relational database. First, I shall describe the application, then the categories of requirements, and then some suggestions on how deeply you need to go in each category. A real project of this sort would require a substantial development team working for several months (or more). You will do this alone over several weeks. I have chosen to go with group projects because the goal of this project is to have you specialize in just one aspect (and rely on others for the rest).

The project can go well beyond the minimal requirements I outline at the end. I encourage such extensions. They could turn into a senior design project or other independent work.

Application description: The application consists of the operations of a real-estate office. The office needs to keep track of agents, buyers, sellers, properties on the market, and recently sold properties. This office focuses on homes rather than business real estate. The management of this real-estate office is not very computer literate. You are being asked to design the database, populate it with sample data (the management won't allow you to test with live data because of privacy concerns), and to write several SQL queries to demonstrate the system. The real-estate office is soliciting approximately 50 proposals, which it will evaluate starting April 12, 2005.

To learn more about the application domain look at some real-estate web sites. We're not pointing you to a specific one (lest we overload some small agent with a 8MB Pentium II) but the site

- http://www.lehighvalleypa.org/default.aspx?pageid=8

has links to several local offices that may help you. Please do NOT email these organizations. Just reverse engineer the database requirements from the data presented on the web sites. The queries we list below provide some useful hints as well.

Data Generation: For simplicity, I will not require realistic data. You can just create some names or get real ones from the car company web site.

Client Requests:

1. E-R Model

• Construct an E-R diagram representing the conceptual design of the database.

• Be sure to identify primary keys, relationship cardinalities, etc.

2. Relational Model

• After creating an initial relational design from your E-R design, refine it based on the principles of relational design.

• Create the relations in Mysql database you used.

• Create indices and constraints as appropriate.

• If as you refine your design, you discover flaws in the E-R design, go back and change it (even if the earlier design passed the checkpoint.) Your final E-R design must be consistent with your relational design.

3. Populate Relations

• Include enough data to make answers to your queries interesting and nontrivial for test purposes.

4. Queries:

Construct and execute SQL queries for the following:

a) Find addresses of homes for sale in the city "Bethlehem" costing between $200,000 and $250,000.

b) Find addresses of homes for sale in the school district "Parkland" with 4 or more bedrooms and no swimming pool.

c) Find the name of the agent who has sold the most property in the year 2004 by total dollar value.

d) For each agent, compute the average selling price of properties sold in 2004, and the average time the property was on the market. Note that this suggests use of date attributes in your design.

e) Show a picture of the most expensive house(s) in the database.

f) Record the sale of a property that had been listed as being available. This entails storing the sales price, the buyer, the selling agent, the buyer's agent (if any), and the date.

g) Add a new agent to the database.

Add additional queries to cover interesting data that you captured that we did not consider above.

The final version of the project is to be turned in as a book of hard copy.

Collaboration: Your project design is to be your own work.