

Homework and CRM Project

Dr Ali Obaidi and Dr Harry Wechsler

George Mason University—Department of Computer Science

GEORGETOWN Apartments Database System

General Purpose:

You have been asked to design a database for GEORGETOWN Apartments (GTA). GEORGETOWN Apartments complex is located in Washington DC. It consists of two buildings (south and north), each of which contains 16 floors.

Structural Requirements:

Your database should include the following entities:

1. Apartment

Apartments are classified according to the number of bedrooms, number of baths and if they are luxury or not. The following define all possible apartment classifications:

Apartments with

- ♦ One bedroom and 1 bath,
- ♦ Two bedrooms and either 1.5 or 2 baths
- ♦ Two bedrooms and a Den with 2 or 2.5 baths
- ♦ Three Bedrooms and 3 baths

Also note:

- ♦ Luxury apartments are located on floors 14-16 (mixture of the above)
- ♦ Each Apartment has at least one balcony
- ♦ One and two bedroom apartments come with one garage space while three bedroom apartments come with two garage spaces

The database design should account for the apartment area (in Square foot), the apartment floor plan as well as the apartment max occupancy. The design should also collect the date when the apartment was leased and the current name of the residents.

2. Resident

Resident attributes are: Resident name, date of birth, address, daytime phone number, apartment phone number, occupation, employer name, employer address, and the number of dependents living in the apartment. For each dependent provide first name, age and relationship to the main resident.

Resident guests should report at the front desk and include their name, the apartment number, and the car registration number (if applicable).

3. Amenities

GTA provides the following amenities for all residents:

1. Olympic-size swimming pool - no reservation required
2. Two modern athletic clubs (South and North) - no reservation required
3. Two party halls (South and North) - reservation required (\$500 deposit)
4. One card room - no reservation required
5. Two billiard rooms (South and North)- no reservation required
6. One library and computer room - no reservation required

Each amenity has a

- Location (e.g. south building Room 123) and
- Schedule time of operation. (i.e. open from, to, during period from, to).
For example swimming pool is open from 8 AM to 8 PM during period from Memorial Day to September 15.

In order for the residents to use any of the amenities, they need to register at the front desk. Front desk employee will record the time they sign in, key number, resident name, apartment number and later the time when they sign out (when they return the keys back).

Amenities have restrictions and all residents must adhere to them. For example, eating is not allowed in Fitness or billiard rooms.

To reserve a party hall, residents need to fill a form and pay a nonrefundable fee. The form has the resident name, hall location, party start time, party end time, max number of people attending the party, no of security guards needed, and the occasion description (e.g. wedding/Birthday etc.). For each 50 guests, one security guard must be present at the party and resident should pay \$15 per hour per guard. The GTA management assigns security guards. The total cost should be recorded in the form. South Building Party room can hosts up to 250 people while the North one hosts up to 200.

4. Management

Management entity contains the management team and the responsibility for each team member. Details of individual manager or staff should be recorded (e.g. name, office phone, email, working hours, etc.)

5. Feedback

Residents should be able to write feedback in case of a complaint. Residents should provide their name, unit number and the full description of the complaint.

6. Request for repairs

Resident can fill a form to request a repair to their apartment. We need to capture the resident details, repair category (e.g. plumbing, broken glass, etc.), when the repair was

reported, when the repair is scheduled and when the repair is done plus the final cost of the repair.

Homework Requirements:

1	Study the requirements above for the project and write a short introduction (1/2 to 1 page).	HW 1
2	Provide an ER and EER design for the system and clearly identify all objects, their attributes and relationships on the design	HW 1
3	Draw a Schema diagram based on ER/EER design and clearly show the referential integrity constraints on the diagram	HW 1
4	Write an SQL program to contain all the necessary DDL statements and execute it on the database server. Make sure that DDL contains all the constraints necessary (nulls, unique, primary key, checks, etc).	HW 2
5	Populate the database using SQLLDR ORACLE Utility	HW 2
6	Completion of data requirements A. Total of 20 Apartments, 10 in each building B. Total of 20 Residents, 10 in each building C. All Amenities D. All management object fields E. All Contact object details F. At least 6 events during November and December 2003 G. Two party room schedules, Two feedbacks from residents	
7	Write the necessary SQL and PLSQL procedures to provide a solution to queries in the analysis section	HW 3, 4
8	The CRM assessments	

Analysis: HW3

Solve the following queries in SQL and RA

1. Find all residents that are living in two bedrooms and above but not in luxury apartments. For those residents, provide the name, phone number, occupation and apartment number.
2. Find the schedule time for each amenity, the sum and the average of residents that used each amenity during a specific time period (e.g. November 1st, 2005 to November 30th, 2005). Also, find the total number of residents for all amenities.
3. Write a view to find the apartment number, the resident of that apartment, the number of dependents and the maximum number of occupancy. Sort the result by the total number of people living in the apartments. Do not count for residents who have no dependents.

Analysis: HW4

1. Write a PLSQL program to provide a report of the units that are currently available to lease. For each unit provide the square footage, current date, no of rooms and number of baths, floor number, agent or resident name and any additional comments provided. At the End of the report provide section to accommodate the general contact information for the building and a set of general rules for occupancy. Also provide a list of amenities available.
2. Write a PLSQL program to remove a party hall schedule, request for repair, or unit for lease from the database. In the case for repair or party room schedule provide the name of resident and the total cost apply.

CRM Assessments:

Customer Relationship Management is a business philosophy, describing a strategy which places the customer at the heart of an organization's processes, activities and culture. The main objective is to improve customer satisfaction and maximize profits. We would like you to assess the above project in line with CRM definition and within the following:

Information on CRM can be found in the following zip file located at http://cs.gmu.edu/~aobaidi/fall_05/index_files/PROJECT/CRM.zip

A. Background

1. Define customers and user profiles, marketing and sales, data warehouses and data mining, web services, reporting and workflow, and relate them to CRM.
2. In what ways is CRM more business than software and IT?
3. Why are HCI (human-computer interaction), business rules and cross-selling, customer loyalty and empowerment, and metrics important to CRM?

B. Requirement Analysis and Modeling

1. Define specific CRM goals for the Georgetown Housing Database System
2. Gather the information needed and profile the tenants and services provide.
3. Update the EER design and repopulate the database.

C. Decision Making and Reporting- Proof of Concept

1. Use PL/SQL or embedded SQL to meet CRM goals.
2. Generate reports and metrics.

D. Demo

1. Project management and team participation.
2. Show CRM in operation and prove its usefulness.

Rules

1. You implement the Homework part individually, the project in groups of 4-5 students
2. Use GMU ORACLE server only
3. Homework and project should have a front page and include your name, student number and the following

HONOR CODE PLEDGE: "On my honor I have neither given nor received aid on this report"

Signature: _____