

Database Design**ERD: Project 1**
100 points**Fall 2015**

You have just started a new position on the database design staff at Gizmonic Consultants, Inc. Your first project is to translate the database requirements for the *Paisley University Accommodations Office* into an ER schema.

You will be assigned a partner for this project. Please take the partner preference survey using the link provided on Blackboard.

Later you will derive a relational schema and implement the schema, populate it, and query over it.

Requirements:

Develop an ERD to capture the entities and relationships specified in the requirements documentation below. Use only the conventions covered in class and described below:

1. Show keys [partial keys] for each entity [weak entity]. Weak entities should also have total participation in their identifying relationship.
2. Give cardinality (1:1, 1:m, m:n) and participation constraints (partial, total) for each binary relationship.
3. Your whole ERD should not be more than one page in length, although you can show complete attributes in a separate diagram and just keys/partial keys on the main diagram.
4. You should have at least 5 entities and you may have several relationships between them.
5. Keep a list of assumptions that represent any modeling decisions you have to make in order to have a well-formed schema.
 - Your assumptions should not contradict any information given in the requirements, and you should strive to make as few additional assumptions as possible.
 - Anything you model that is not explicitly stated in the requirements should be stated in your assumptions.

Dates:

assignment	due date	time	details
partner preference survey	Tuesday 10/6/15	10:00pm	online surveymonkey
initial (solo) submission	Thursday 10/8/15	11:30am	blackboard assignment
exam 1	Monday 10/12/15	6:00-8:00pm	Rec Center 3240
team working session	Tuesday 10/13/15	12:30-1:50pm	Old Chem 840
final (team) submission	Monday 10/19/15	10pm	blackboard assignment and hardcopy next day

For the initial solo submission:

1. (1-2 pages) An ER diagram that is a conceptual schema for the requirements. You must use the ER package in Dia, a public domain graphical editor, to create your diagram.
2. (1 page) A list of your design decisions (any additional assumptions beyond what is given explicitly in the problem). Organize your assumptions in 3 categories:
 - related to entities and attributes,
 - related to relationships, and
 - miscellaneous.
3. (1 page) Log solo work [and team meetings after teams are assigned]:
 - name(s),
 - time, location, duration,
 - topics of discussion,
 - action items (who is assigned what tasks outside of team meetings, and what the tasks are), and
 - the total number of hours spent working on this phase (alone and together). Be honest.

For the final submission:

Include 1-3 above and also:

4. (1 page) Translation of team ERD into RDB (tables) using the algorithm and conventions discussed in the class notes.

Submit one pdf document with all items in it via Blackboard.

Only one partner should submit the project.

Turn in a hardcopy in class on 10/20/15.

Description of the application:

The director of the Paisley University Accommodation Office would like a database to assist her staff in managing students who reside in campus housing. She has compiled a list of requirements and some sample queries that her staff would like to be able to run.

The data stored for a student includes their matriculation number (aka mnumber), first and last name, permanent address (number, street, city, state, zipcode, and apartment number, if any), date of birth, gender, nationality, category (UG or G), special needs, additional comments, current status (placed or waiting), and academic department.

The academic department has a unique department number and a faculty member who serves as the student's academic advisor. Each student has a year in the department (1, 2, 3, 4, or 5). Each student is associated with a single department, and the department designates one person to serve as the advisor. The advisor's contact information is stored.

Students may rent a room in a residence hall. Each residence hall has a name, address, telephone number, and hall manager. A room may be a single room or it can be room that is part of a suite. A suite can have 3, 4, or 5 students. Each suite lists how many bedrooms are available (one per student). Each suite has a unique number (across all residence halls) and each room has a unique place number across all residence halls. A suite or a single room also has a door number. For example, one hall has a room 100 and another hall may also have a room 100, but each has a unique place identifier as well. Each room has a monthly rental rate.

A student may lease a room for 1, 2, or 3 semesters (fall, spring, and summer). Each lease agreement has a unique number. A lease agreement contains the student's mnumber, duration (number of semesters), which semesters, suite (if any) and place number, residence hall and door number, move-in date, and move-out date.

The staff information includes a university employee number, first and last name, home address, date of birth, gender, job title (e.g., hall manager, administrative assistance, director, housekeeper) and location (residence hall and office number).

***** DO NOT WRITE QUERIES FOR THE FOLLOWING DATA REQUESTS *****

These are examples of queries the director would like to run. Use them to check that your ER schema can satisfy the request, but there is no need to actually write the queries for this assignment.

1. List all staff who are not currently managing a residence hall but whose job title is hall manager.
2. List graduate students (category G) who lived in a suite with 5 bedrooms in their 5th year in a department.
3. For students who have been in a residence hall for their first 4 years with the same department (e.g., for years 1, 2, 3, and 4), give the total number of students and the total amount of rent paid.
4. List students with the same birth date as staff with offices in their current residence hall (Fall 2015).

[adapted from *Database Systems*, Thomas Connolly and Carolyn Begg, Addison-Wesley, 4th edition, 2005, pp. 155-1258.]