



Spring 2023
Assignment 2
[CLO-3]

(ER/EER Modeling)

Instructions

Please go through the instructions very carefully.

- Draw an E/ER diagram for the high level conceptual schema specifying all constraints that should hold on the database.
 - **Note any unspecified requirements, and make appropriate assumptions to make the specification complete but clearly state your assumptions along the diagram.**
 - You are required to submit the hardcopy of your assignment during our class on **5th Apr 2023 (Wednesday)**.
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Question-1:

(a) Draw an ER diagram for the following requirements:

Your client is the University Accommodation Office which requires you to design a database to underpin a website needed to help with administration of the office. The requirements collection and analysis phase of the database design process has provided the following requirements specification for the Accommodation Office database:

The data stored on each full-time student includes the registration number, name (first and last name), home address (street, city/town, and postcode), date of birth, gender, category of student (for example, first year undergraduate (1UG), postgraduate (PG)), nationality, special needs, current status (placed/waiting), and what degree program the student is enrolled in.

The Accommodation Office also stores a limited amount of information on the degree programs run by the University including the degree program title, office telephone number and department name. Each student is associated with a single degree program. The student information stored relates to those currently renting a room and those on the waiting list.

Students may rent a room in a university owned hall of residence. Each hall of residence has a name (unique), address, telephone number, and a hall manager who supervises the operation of the hall. The halls provide only single rooms, which have a room number and monthly rent rate. The room number within a hall is unique and is used when renting a room to a student.

A student may rent a room in a hall for various periods of time. New lease agreements are negotiated at the start of each academic year with a minimum rental period of one



semester (16 weeks) and a maximum rental period of one year, which includes Semesters 1, 2, and the Summer Semester. The data stored on each lease includes the duration of the lease (given as semesters), name, and registration number of the student, hall, room number, address details of the hall, the date the student wishes to enter the room, and the date the student wishes to leave the room (if known).

Some information is also held on members of staff of the Accommodation Office and includes the staff number (unique), name (first and last name), position (for example, Hall Manager, Administrative Assistant, Cleaner).

(b) Draw an EER diagram for the following requirements

Your client HeritagePK Ltd has a new website (www.heritagebiz.pk) and they want a backend database system to underpin their business activity with an efficient and flexible information system. Their charter is to classify and register all buildings, gardens and trees in Pakistan which are of national significance. The client has an existing series of small databases that were implemented in Microsoft Access by different people – which worked fine with their internal LAN when only staff members used it. However, now that they are intending to open aspects of their system to all users of the world-wide-web via internet browser/mobile app and those earlier systems are no longer adequate. They want to integrate the existing simple databases into one large database system.

Some artifacts from Buildings of significance from existing database

Below are some aspects about Buildings of significance which are captured

Field	Description
RegistrationNum	Number allotted to the building
Name	Name of the property
Address	Complete street address, city and province needed for reporting purposes
Architect	Name of architect (if known)
Style	Architectural style
Class	Classification status
ClassDate	Date classified
Photos	Images of the property
Notes	Any further description

In addition to the general information in the table above, a number of other documents are collected for a given property:

- An inspection of the property can sometimes be arranged from time-to-time after which the following information is usually recorded: present use (of the property), present condition (of the property), internal or external inspector, report notes.
- A statement of significance (SoS) can be prepared by the client, which includes date, level-of-significance (local, provincial or national), nature-of-significance (historical, architectural, cultural), statement itself, recommended classification.
- These reports are often triggered by events, for example, somebody may submit a request that a property be registered in the system as a property with heritage value. Before it can be formally classified, a consultant is hired to do a report. An inspection of the property will be arranged, if the current property owners consent to it. A meeting of the client staff will consider all input and then produce a statement-of-significance with



the recommended classification. The owner is notified of the outcome. The property may be deemed "classified" via a meeting. Note: Many of the properties that are registered never reach "classification", i.e., a register entry begins when someone submits details of a property to our client with a request for classification.

Each register entry has a physical file (with a file_no) that holds the various accrued documents received and created by the client, over time.

Artifacts from the Gardens MS Access Database:

Field	Description
RegistrationNum	Number allotted to the garden
Name	Name of the garden
Type	Garden Type (one of the values given below)
Address	Complete street address, city and province needed for reporting purposes
Class	Classification status
ClassDate	Date classified
Photos	Images of the garden
Notes	Any further description

Garden Types:

TypeID	Type
1	Aboretum & Nursery
2	Botanic
3	City Mansion
4	Hill Station & Summer Retreat
5	Homestead
6	Industrial
7	Institutional
8	Landscape Estate
9	Memorial Place, Cemetery & Churchyard
10	Public
11	Suburban Villa
14	Utilitarian & Acclimatisation
15	Zoological

A number of documents need to be kept for Gardens similar to those for buildings and other categories of heritage property e.g. statement of significance.

Artifacts from the Trees-of-significance MS Access Database

Field	Description
RegistrationNum	Number allotted to the tree
ComName	Common Name of the tree
Notrees	number of trees (it might be an avenue of trees)
Address	Complete street address, city and province needed for reporting purposes
Class	Classification status
ClassDate	Date classified



Photos	Images of the garden
Estage	Estimated age of the tree in years
Girth	Girth of the tree
Height	Height of the tree

The client believes that the new system should correctly reflect the relationship between the various classifications e.g. Gardens have trees, Buildings sometimes have gardens. The client also keeps a list of people (name, address and contact details) that are involved in the various activities many of whom are volunteers. These include: inspectors, person who proposes a classification etc.