

San José State University
Department of Computer Science

CS/SE 157B

Section 3

Database Management Systems II

Spring 2018

Instructor: Ron Mak

Assignment #1

Assigned: Tuesday, February 6

Due: Monday, February 19 at 11:59 pm

Team assignment, 100 points max

Design a database

Design and implement a relational database. You choose the application and the data.

Requirements

Give five database requirements. The requirements should answer questions such as

- What entities need to be in the database?
- What major attributes will the entities have?
- What relationships will be between entities?

Conceptual model

Use ERDPlus to draw an ER diagram. Your diagram must have:

- At least 5 entities including at least one weak entity.
- Different types of relationships (1:1, 1:M, M:N).
- A hierarchical relationship, such as university → school → department.
- Optional and derived attributes
- Multivalued attributes (e.g., phone numbers)
- Composite attributes (e.g., address)

Logical model

Map your ER diagram to a relational schema. Your tables must be in 3rd normal form. You may use ERDPlus's automatic mapping feature, but make sure it does the mapping correctly and that you rearrange the components have few crossing lines.

Physical model

Create a MariaDB/MySQL database. Populate the tables with sample data, about a half dozen records per table. You can use phpMyAdmin.

Short report

Describe your application in a few paragraphs. Include the database requirements, your ER diagram and relational schema. Show the data in each table by using either output from executing `select *` or a screenshot of the data from phpMyAdmin.

How will your application use the database? Describe in words or SQL code what types of queries your application can make.

What to turn in

There should be one submission per team. Your report can be a single file or multiple files. Create a single zip file containing the report. Name the zip file after your team. Example: **SuperCoders.zip**. Submit to Canvas: **Assignment #1**

Rubric

Your database design will be graded according to these criteria:

Criteria	Maximum points
Database requirements (at least 5)	15
Conceptual model (ER diagram) <ul style="list-style-type: none">• at least five entities with at least one weak entity• different types of relationships (1:1, 1:M, M:N)• hierarchical relationship• optional and derived attributes• multivalued attributes• composite attributes	55 <ul style="list-style-type: none">• 10• 10• 5• 10• 10• 10
Logical model (relational schema) <ul style="list-style-type: none">• tables in 3rd normal form• good table arrangement	10 <ul style="list-style-type: none">• 5• 5
Physical model (MariaDB/MySQL database) <ul style="list-style-type: none">• physical tables• sample data• sample queries	20 <ul style="list-style-type: none">• 5• 5• 10