

CS-GY 6083-A, Principles of Database Systems, Fall 2021

Course Project: A database application with a Web front-end

General Information

This assignment is worth *25% of the overall grade*, and is roughly equivalent to 3 homeworks in terms of workload. Do not wait until the last day to get started on the project. You will not be able to finish the project one or two days before the deadline.

In this assignment you will build a database application of your choice. In part 1 you will develop a conceptual design of your application with an ER model and translate the ER model to a relational schema. We will give you feedback on part 1, which you should incorporate when working on part 2 of the project. In part 2 you will make any necessary adjustments, populate your database schema with data, and implement a simple Web application that queries and updates your database using the python package streamlit.

This assignment is to be completed in teams of two. Consult the course syllabus for a description of our academic honesty policy. Both partners are expected to equally participate in all parts of the project. You may discuss all aspects of the project with your partner. However, you may not discuss project details with your other classmates.

Action Items and Deliverables

1. **Part 1: by October 29 @ 5pm ET**, submit a text description of your application, an ER diagram, and a translation of your ER diagram to the relational model.
2. **Part 2, by December 13 @ 5pm ET**, submit your final project report, code, and presentation (slides and recording). Additional details about part 2 will be available on October 29.

Part 1 details

- Be sure to choose an application that you will enjoy working with, as you will be committed to this choice for a significant part of the course. Think about whether it will be easy to find real data for this application, or to create some realistic data. We do not require that your application work with real data, but that usually makes the application more interesting.

- You should submit a brief **text description** of the application. The text description of your application should be around 2 pages. You should:
 - (a) give a high-level description of your application,
 - (b) explicitly list all entity sets, relationship sets, and business rules that hold in your application; as you describe the business rules, you should describe all key and participation constraints,
 - (c) explain how you plan to acquire data for your application, and
 - (d) discuss how the user will interact with your database - what kinds of questions they will be able to ask.
- Your ER model should be based on the project description. **It should have 7-10 entity sets and a similar number of relationship sets.** If you are worried that your design is too simple, or too ambitious, you are more than welcome to discuss this with the instructors by email or **during office hours**. We will check the correctness of your ER diagram against your specification of the entity sets, relationship sets, and business rules, described above.
- We recommend drawing the **ER diagram** by hand and scanning it in. Use ER notation we covered in class, do not use any other notation, or any software that generates ER diagrams if it does not output the same notation as what we covered. Remember to include the names of both team members in your submission.
- Translate your ER model into a relational schema. Load this schema into your PostgreSQL database to check for correctness. As a result of this step, you should create a file called **schema.sql**, containing the right drop table and create table statements. Submit that script along with the project description and the ER diagram.

We will give you feedback on your submission for Part 1. You should revise your submission using this feedback and use this revised version as the basis for Part 2 of the project. You will be required to submit a revised project description, ER diagram, and relational schema as part of the final project report.

Submission instructions

For part 1, submit your assignment on BrightSpace. Both project partners should submit part 1 of the project by the deadline, with identical submissions. Submit all parts of the assignment (including schema.sql) as a single PDF file, and also include schema.sql as a separate file.