**Project (Milestone 4)**

CSC 261/461 Introduction to Databases, Fall 2020, University of Rochester

**Due Date**: 11/30/2020 (11:59 pm)

**Introduction**

This is the final milestone for this semester-long project! This time, you will culminate your project with the semester-long learning. Remember the beginning of the semester, when most of you had a little knowledge about how to build a database and create a web-interface. As the end of the semester approaching, you probably are realizing how much you have learned in the process beginning with milestone 1 and ending with this last milestone. This is the time when you deliver what you had proposed in milestone 1. I believe that Milestone 1 had gone through many additions, modifications, corrections, and enhancements throughout the semester through rigorous analysis (ER diagram and BCNF decomposition) and enhancements and reached to the current stage. We have gone through all the steps required for designing a successful relational database, starting from requirement analysis to organizing the tables, creating relationships among tables, and refining (normalizing) the design. In this concluding milestone, you will deliver a full-fledged website that can interact with the underlying database system and perform necessary CRUD (create, read, update, delete) operations.

**Build the complete website**

In milestone 3, you have provided us your relations in your database, plus a couple of examples of connecting your website to your database. You will need to extend those examples into a complete prototype website that fulfills your goal in milestone 1. You may use any external frameworks, but please remember to give them credits in your report. The report that you are going to submit should include only a single URL which takes us to the home page of your site. (Note, for a few of you, who are maintaining a different site for admin, you are allowed to submit two URLs.). From this homepage, there should be options to go to different pages. All the forms and reports (showing query results) should be working. Your website must validate input and report errors whenever necessary.

**Desired requirements**

Here are some requirements for your last milestone:

1. Consider all the corner cases. For example: when you create a new account, the username is already in the database; The username you entered is too long; The username is empty; The password is too long or too short; illegal characters in password; and so on. Try your best to consider those corner cases. We will test some and you will lose points if your system fails. (8 points)

2. Think like a user. In milestone 3, the web servers in many teams are very hard to use. For instance: there is no instruction; no return button; no hints and so on. Please think like a user who is going to use your system. It’s important to design a user-friendly database server. (16 points)

3. Database functions. Last time, you were asked you to implement insert/delete/search functions. For this milestone, you need to show some new functions/relations in your database. Simple add/delete/search one single data is the minimum required. You need to design a better database system this time to get a better grade. (40 points)

4. Other user experience. We will use your database web like any other online application. Show us your unique places rather than simply create a user account or create a single data in your database. Try something interesting. (20 points)

5. Show some database techniques. When you build your system, you need to think about why you need a database to manage your data rather than using excel or txt. Please show some exciting cases that can demonstrate the unique parts of your database system. (16 points)

**Project Report**

You report should contain the following components:

1. Project Description: Give a short description of your project. Many of these components can be used from milestone 1 as it is.

2. Summary: Summarize your learning from this project. Include which part was the most challenging to implement, and which part was most fun (yes, the same component might be both fun and challenging). Did you achieve whatever you planned in Project 1 Milestone 1. If you have drifted from the original plan, why did that happen? All we want to see is how your project got evolved over time.

3. Future Works : How will you enhance your website if you get another semester? Note that this section is no excuse for submitting an incomplete website.

**Submission Instructions**

You need to submit your report and your code on Blackboard. Only one member in each team needs to submit it.