

CS 410/510 Cloud and Cluster Data Management

Spring 2018 Quarter

Assignment 6: VoltDB Stored Procedures

Due: Thursday, 7 June 2018 at the beginning of class

You should do this assignment individually or in pairs of two students. (Pairs should be from the **same section**.) You should only talk to the instructor, TA or your partner about this assignment. You may also post questions and comments to the course discussion list on Piazza.

Please turn in your completed assignments on paper. Put your last name, first name, the assignment number in that order in the first line of your assignment.

This assignment is based on the class activity during the VoltDB lecture, where you have to structure an application with using stored procedures that are not allowed to interact with the user (or other non-database services).

Consider an application for registration that uses the following tables, which talk about course offerings, students and registrations:

Offering(CRN, Course#, CName, Limit, Days, Time)

Registered(CRN, SID)

Student(SID, First, Last, Status)

The application scenario is as follows:

1. Assume the student is logged in and we have the SID.
2. The student searches for courses by number or name.
3. The student gets a list of courses matching the search.
4. The student chooses a course.
5. The application shows the enrollment status of the course: how many open slots remain.
6. If the course is not full, the user is allowed to register, if he or she isn't already in the course.

Requirements: If the student is shown space in the course in Step 5 and responds within 3 minutes, the student should be allowed to enroll. (The application can't give the last slot in the course to another student.) Also, the application shouldn't let any course be over-enrolled.

(a) (20 points) Describe a set of VoltDB-style stored procedures (each to run

as a separate transaction) that the application can use to interact with the database. In particular, say what SQL commands each procedure issues.

Note 1: You can't interact with a student from within a stored procedure.

Note 2: If your application needs any sort of "clean up" procedure, be sure to describe that.

Note 3: You can add columns or tables to the database if you want. Just explain your changes.

(b) (10 points) Explain what each of your stored procedures will do during a session where student 1226 successfully enrolls in CS 486.

(c) (10 points) Explain what happens in your application if the student does not complete Step 6 within 3 minutes.

(d) (10 points, 510 only) Explain what happens in your application if the student is already registered for the course and tries to register in Step 6.