The final week of a semester is hard for professors as it is for students. Grading senior projects at the end of the semester can be very hectic and time-consuming using the current successful method. Judges currently use score sheets and keep track of all the pertinent data being used by the judges and the evaluations being generated. Grades, grading questions, judges information, students information and more. Judges used a rubric based on a set of criteria and standards. One student would be graded by multiple judges, and each student would receive an average score from the scores received from each judge. This method still leaves room for human error, data inaccuracy and is very time-consuming.

Our system contains 12 main functional requirements. Each of the requirements make a direct use of the database.

**FR1:** Allow Admin to send Invitations.
**FR2:** Allow Judges to register in the system.
**FR3:** Allow Judges to identify conflict of interest with Students.
**FR4:** Randomly assign Students to Judges.
**FR5:** Allow Admin to set Students distribution rule.
**FR6:** Allow Admin to add/remove questions.
**FR7:** Allow Admin to set Students location.
**FR8:** Allow Admin to set event map.
**FR9:** Allow Judges to grade Students assigned to them.
**FR10:** Allow Admin to accept/reject each Judge evaluation.
**FR11:** Allow Students to view their grades.
**FR12:** Allow Admin to send Invitations.

Our verification process was divided into three different stages:

1) **Unit testing:** During this stage queries were tested internally in the database in order to make sure queries returned correct data.
2) **System Integration Testing:** At this level all tests cases were generated from the UI in order to make sure the user will be able to request and retrieve the desired data from the UI.
3) Acceptance testing: At this level the system as whole was tested by our mentor, in order to make sure the systems meets his expectations.

The picture to the right is a screenshot of the DB during our Integration Testing. It shows our invitations table with a few invitations that were sent during our integration testing.

We decided to go with the three-tier system design architecture for this project. The three tiers are as follows: 1) Client Tier, 2) Business Logic tier, 3) Database tier. Most of my work was done on the Database tier, but I was also involved in helping develop the business logic tier.

The Online Judge App Version 2 was successfully developed during the Fall 2013 semester. The back-end of the system is completely implemented with a working DB. With our system design architecture it will be easy for future groups that will be working on this project to implement new functionalities and expand the database if needed. Today for the Showcase the Judges are utilizing the system on several different type of handheld devices in order to grade the different projects. Each student registered in the class also has an account and they will receive their grades as soon as Prof. Masoud accepts the grades from the judges and makes them available for us students.

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