

Webreg: An Online System for Registration and Grade Distribution

Erwin Aitenbichler
erwin@informatik.tu-darmstadt.de

Guido Rößling
roessling@acm.org

Technische Universität Darmstadt
Dept. of Computer Science
64289 Darmstadt, Germany

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1. WEBREG

The administration of courses can be quite time-consuming. This is especially true for the less interesting aspects, such as tracking how many students registered for a given lecture, lab, seminar or exam, dividing students up into groups, and publishing grades or points for homework assignments and exam results. All of these are in high demand by the students, who expect support for their (legitimate) interest in easy enrollment and quick access to their results.

The final grades for exams are usually published at a time when most students who live away from the university have already left, leading to requests for others to “take a photo of the grades and post it on the web”. This is totally unacceptable for several reasons, not the least being privacy concerns. However, the interest of students to know their grade, without being forced to travel more than one hour only to look at a piece of paper for 2 minutes, is also understandable.

To resolve the problem, we have developed the web-based registration tool *Webreg*. The tool uses MySQL and PHP and makes it easy for educators to add or modify their courses, set the limit of students who can enroll in the course, and activate or deactivate the registration. If group building is required, student registrations can also be merged automatically. This is especially useful for our undergraduate exercise groups, each of which has about 20-25 students. Because some courses have 30 such groups, the assignment of students to groups is either not very fair or results in much work for the educators. In many labs, students are required to form groups of typically 4 persons. Webreg can also automatically merge registrations from students that register alone or with only one or two partners, according to the intended group size set by the educator.

The tool can be used by educators, tutors, and students. For privacy reasons, each user has to login in first. Educators can create or modify existing courses or exercise groups, and open or close the registration. After closing the registration, the educator only has to click on the “assignment” link to assign the registered students to groups. This process can also take into account the already assigned exercise slots for other lectures. Thus, a student who was assigned to an exercise on Monday at 10 AM in one lecture will not be assigned to another exercise at the same time slot - provided that both courses use Webreg.

Tutors can enter or adjust the points achieved by students in their exercise groups. It is up to the educator how much information he or she wants to publish; e.g., individual points per task versus only the final grade. Students immediately see their results.

Students can register for a given course or exam either individually or as a learning group. They can then select which exercise groups they would prefer to be in, and which they cannot take, for example due to other parallel classes. Students can also see their exercise points and grade after logging in to Webreg. The results of other students are inaccessible. The login uses either the CS department login, the university-wide ID chipcard, or a local account. The latter also allows the use by external participants.

Compared to learning management systems such as Moodle, Webreg focuses only on the administrative aspects described above. This makes it comparatively compact and easy to use, even in addition to another LMS. Apart from storing all relevant student data, such as individual exercise points, Webreg can generate a set of PDF documents for the educator, such as grade lists.

The main distinguishing feature of Webreg is the automatic assignment of students to exercise groups according to their preferences. Because students may form learning groups of usually 2-5 students, the assignment problem is NP hard. For that reason, Webreg uses a graph-based optimization algorithm. After the assignment, the course administrator can use a statistics function to determine the quality of the assignment and tune parameters, if necessary.

Compared to pen-and-paper or online-based first-come-first-serve registrations, Webreg is significantly more “fair”. We have received very positive feedback from students and students are actually pushing more and more lecturers to adopt the system. On April 4, 2008, Webreg had 8,893 student users, and has managed 53,949 registrations for a total of 419 courses over the last six years. The platform has a total of 378 course administrators and tutors.