



Master Thesis

Interactive Feedback for Programming Courses

Short title: Interactive Feedback

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The goal of this thesis is the development of a support system for teaching computer classes at universities or schools. The assumption is that both the teacher and the students are equipped with laptop computers and are present in the same room, where all of them have access to the Internet. The teacher's computer is attached to a projector.

The teacher prepares the questions in advance and makes them available on a web server. During the course, he presents challenges to the students, who can then answer the questions, correct issues in erroneous programs, fill in blanks in source code fragments, tell what the output of a given program would be, etc.

The students' answers are collected anonymously and are finally automatically evaluated on the server. The system shall enable the teacher to quickly review the answers, present selected answers on the screen and discuss them with the students.

The system will need to consist at least of the following parts:

- web interface for flexible offline administration of questions.
- server for storing the questions and collecting the answers.
- teacher's web interface for presenting the questions and discussing the results.
- students' web interface for working on the questions and submitting answers.
- semi-automatic evaluation of free-form questions (e.g., by comparing the submitted answers with given correct answers and outlining the differences).

An important requirement is short turnaround time; presenting the questions, collecting the answers and discussing the results shall be done "live" within a few minutes. After a course, students shall receive a copy of the questions, their input and the correct answers.

The system shall be designed for stock web servers (with Apache, MySQL, PHP, etc.). The web interfaces shall be as browser-independent as possible, so students with all sorts of computers can participate without installing extra software. Preparation of the questions by the teacher should be simple, but may require technical knowledge. In particular, description of the questions in XML or a domain-specific language is acceptable.

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