Mathematical aspects of grading students' homework in on-line web applications

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Abstract

Automatic grading of students' homework improve quality of teaching at the university. There are many commercial companies which provide on-line web application for doing that (Webassign, MyMathLab etc.). It is also possible to get some free software (e.g. WeBWorK).
In this presentation the author would like to show example on-line grading system, which was written in asp.net (Web Forms), C#, and MSSQL Express. Structure of the system can be very easily customized in order to satisfy the needs of each particular subject. That feature is particularly important in teaching of graduate courses.
Homework can be created using C#, VB, and LATEX. In order to efficiently grade on-line homework it is necessary to estimate the quality of students' answers. That process require special mathematical tools. The grade is a measure which tell the teacher how well the knowledge of the student is close to the knowledge which is necessary in order to pass each particular test. Because of that the process of online grading can be described by **using the fuzzy sets theory** and **the theory of imprecise probability**. The system which automatically grade students' homework has the following internet address http://webapp.math.utep.edu/Homework/Login.aspx