

Web Based Grading/Rubric Application

<http://csci491-01.cs.montana.edu/~g28p546/groupProject/>

Group #20

Group Project

for

CSCI 491
Web Development

Objective

The idea behind this project is to provide a tool for instructors and grader that will result in more consistent and timely feedback for students. Depending on the subject, grading can take an exorbitant amount of a teaching assistants (TA) time. While this is part of their 'job' as a graduate student, I have found that many don't have time or, possible, the desire to give students useful and timely feedback on assignments. A TA's grading techniques may come under scrutiny if all of their students grades are A's or not passing at all. I've noticed that many TA's will create an artificial average grade based on what the instructor for the course expects. This rewards students that have less than average understanding of the topic or students that just don't care. On the other end of the spectrum, the students that are skilled in a particular subject or take the time to put in the hard work to succeed don't get the grades they've earned. This kind of apathy creates a vicious circle of frustration and a feeling that no one cares on either side of the teaching/student side of things. This tool is meant to reduce the time it takes to return grades and feedback to students while making it easier for the instructors and TA's to provide this information to the students. Instructors, lab coordinators, and TA's can create a grading rubric for others to use that touches on all the important points of an assignment and awards points accordingly. This will give a more consistent grading style across a large body of TAs or an easier way for an instructor to communicate their expectations to a single TA. Often assignments will span several iterations of a class and this tool will be able to be used several times with little or no revisions needed.

Summary

This tool, when all is said and done, should accommodate two different types of users; administrator and grader. The administrative user will be the one that creates the rubric pages for all the graders assigned to a class. This could be several different rubrics for a single class or several rubrics for different classes that they are in charge of. The administrator will be able to assign graders to specific rubrics for specific classes. Instructors/administrators will be able to use the rubrics they've created since grading duties are often shared in some part by the instructors of the class. Once the graders have been assigned a set of rubrics for the assignments they are responsible for, they will be able to login and view all the options they have. Eventually these will be linked to the gradebook that is used by a particular instructor or institution and a single click will submit the grade and feedback to the proper student.

The goal is to have two different levels of access depending on the type of user that logs into the system. The rubrics will be created using a single page that prompts for the sections and section items along with points awarded for each. Once the rubric is finished, a simple javascript method will then iterate over the page and save the result as a JSON object in the database along with the id of the administrative user and ids of graders that will be accessing it. When a rubric is accessed from the database it will be rendered and served as a regular web page with the properly associated CSS and JavaScript files and run completely on the users machine.

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Grading Web Application Project for CSCI-491 is a proposed solution to make grading among TAs more consistent.

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Rubric Creation Tool

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We chose the LAMP stack for this project as it was the most recently familiar to all members of the group. Apache, the web server of the LAMP quintet of technologies, processes requests and serves web assets through the HTTP protocol. As long as the pages being served are on a public domain the assets can be served over a simple web URL.

Since Apache is open-source software, meaning that anyone can view the source code and collaborate on it for free. Open-source tools are generally popular with developers that prefer to configure modules for themselves in an attempt to improve functionality for themselves. Web servers are considered to be part of backend development and programmers that create websites generally don't interact directly with the servers.

Besides being free, the Apache server has several things going for it. It's functionality can be adjusted to the developers needs by adding different features and improving functionality with modules. Apache is mature and therefore will generally perform in an excellent manner and be very reliable. There are no constraints on the operating system that Apache can run on and since it is upgraded and maintained by an active community, the changes made are recorded immediately.

As with all things, there are a few downsides to using Apache. Insecure gates can be opened when modifying the configuration to get certain functionalities. Also, time consuming new errors and bugs may be introduced during the customization process. Apache is good for serving web sites that see small amount of parallel users

but developers of site that may see a hundred thousand users at once will need to make a different choice of server.

After reviewing different database systems, weighing their pros and cons, and ease of learning enough in a short timeframe to be useful, it was clear the best course of action was to stick with MySQL with the LAMP stack. Given its overwhelming popularity and its ability to function well with small or huge datasets, MySQL provides our project with a good basis from which it can scale up. Since our coursework included working with tables and making queries we're able to utilize that knowledge in building out future rubrics and maintaining the data which will come from administrators and graders.

We decided to split the tasks up as evenly as we could; I was given the tasks of learning PHP front end development, UI design, and CSS functionality. In order to create a working web application in time we chose to build off of the LAMP stack assignment.

Since we adapted the LAMP stack assignment there wasn't much that needed to be accomplished with the front end development on my part. Some of the CSS and PHP files needed to be modified in order to create the functionality we were going for as well as to get rid of the unnecessary pages and styling that we did not need for our project. The challenge there was finding where things were referenced in the PHP files without knowing a lot about PHP.

Since PHP is commonly used in web development (for dynamic and interactive websites) and was used in the LAMP stack assignment we decided to learn more of the scripting language in order to be able to understand what was happening and how we could modify the pre-existing files to fit our needs. Whether we used the LAMP stack assignment or not, PHP would have been very useful because it has built in support for working hand in hand with MySQL. PHP was also our top choice because it has a small learning curve and can be easily extended by other languages.

As for the UI design, we wanted to try and keep it as user friendly, simple to use, and as efficient as possible since this application was proposed to solve a problem that occurs throughout all departments, and not just the tech savvy ones.

Conclusion

We have all learned a lot from this group project despite the fact that we had a tight deadline and not a lot of free time to work on it. We all quickly immersed ourselves in many of the different topics we covered in class to see what would best fit our needs for this assignment. While we did research different ideas such as Node.js, Django, MySQL, and PHP we thought it may be better for productivity if we used the LAMP stack assignment as a stepping stone for what we wanted to do. If we had more time to complete this project we would have definitely liked to try and make this application 'from scratch' rather than adapting the LAMP stack assignment in order to put more of the skills we have been learning to use. On top of what we already have done we would have also liked to create the functionality to login as an Administrator and be able to differentiate between them and a regular user so that users do not have the ability to create, modify, or delete a rubric.

References

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