



CodeGrader Plugin



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Internship/Service Site

My service site is located right here at the University of Maryland, College Park. As a Teaching Assistant (TA) for the Computer Science department, I, along with my peers, noticed a substantial increase in workload when it came to grading the student coding projects. Gregory Kramida, a Graduate TA, decided to create a website plugin that would automatically grade what was once manual for the TAs called the CodeGrader plugin. I decided to join him, along with a few other TAs. The website for this service is www.codegrader.net.

Activities

The workload was spread quite evenly for each member of the CodeGrader team in the beginning of the project back in October 2020. My main task dealt with the Indentation Module, which essentially deals with making sure the whitespace in front of the lines of code is as we expect it. The purpose of this whitespace is to ensure proper organization and readability of the documented code, otherwise it would be hard for a human to interpret what the code is doing. Every weekend, I would work for a few hours developing and testing this module until the problems left in this were less important than in other places. At around January 2021, priorities for each member shifted to work in new areas. For example, I was also editing a video that we would present to several instructors in the Computer Science department. Along with this, I would work in the Testing Module, which determines how well students would test their own code, and the Naming module, which ensures that students are using good, descriptive names for their variables.

Future Work

This project was a very enriching experience for me. Since I had never had any kind of industrial experience in coding before, I am now confident in my ability to work on a team for coding a largescale project. This opportunity could lead me to working for the Computer Science staff at UMD, handling the backend of the servers they use. I may also pursue any kind of project where I work on a team to tackle a large issue. There are also many other careers that may stem from this, as this kind of project is good to put on a resume and discuss for interviews.

Issue Confronting Site

The main goal of the CodeGrader plugin is to get the code up and running for the TAs to use for future semesters. Before this can happen, however, we need to spend much more time on development of the plugin. Along with this, we would need to work on the website and how we present ourselves to potential users. My main task dealt with the development of the coding system for the plugin. My project addresses these issues, along with a few more tasks that I was given. As of now, we are almost ready for the beta release of the plugin.



Sample of what the CodeGrader appears as on the website.
Cr: Matthew Simmons

Impact

I made several substantial contributions to the CodeGrader plugin over the span of this project. My largest contribution was the Indentation Module and its implementation. We are able to correctly determine which lines of code have either more or less whitespace than is expected, as long as the lines are not too crazy. I was also able to edit a video to help persuade the Computer Science department into working with us in terms of how to continue development in the future. I also had several minor contributions in other, smaller areas, particularly in the Testing Module and the Naming Module. We also worked on a testing harness, which allows us to test our code as we are developing it rather than testing of the student code.

This project also impacted me in a positive manner. After working on this project, I have realized how capable I am in a real working environment. Whether it be coding, or improvising with video editing, I was able to complete all tasks asked of me. I have also realized how extensive the debugging process is when it comes to real-world projects. In a course environment, the tasks are relatively simple, so as long as notes are followed it does not take long, but there are no guidelines in the real world apart from the ones written by yourself. This also could lead me to some employment opportunities in the future. My mentor, Gregory Kramida, was offered a position for the Computer Science department for Graduate Studies. It's possible I would be offered a similar position in my future for this work.

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