

Submitty Gradeable API

by
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ABSTRACT

Submitty is a useful tool for automatically grading coding assignments (gradeables). However, the gradeables can be tricky to create for a new instructor, and can become a tedious task if you have multiple gradeables per week. Submitty also required students to visit the website to be able to submit their work, and view grades. The goal of this project was to decrease the amount of time and hassle to create a gradeable, and allow students to be able to submit and view grades for their gradeables without visiting the website.

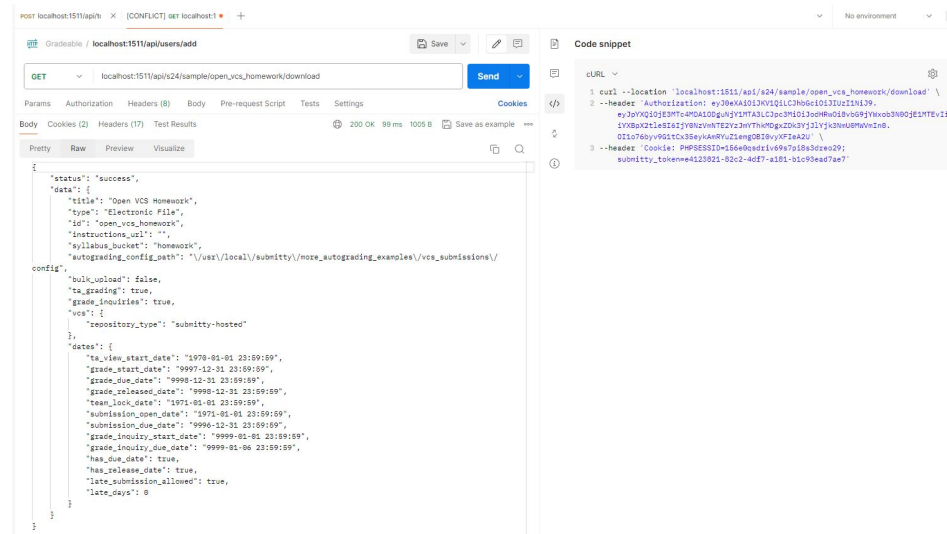
INTRODUCTION

Submitty is an open source course management, assignment submission, exam and grading system from the Rensselaer Center for Open Source Software (RCOS), Department of Computer Science at Rensselaer Polytechnic Institute. The Submitty organization has participated in Google Summer of Code since 2018, with a break in 2021.



GRADEABLE CREATION

Submitty already has a User Interface (UI) where you can manually enter values to create a gradeable. However, after creating around ten gradeables per week for a single class, this process became tedious, and prone to mistakes. In order to reduce mistakes and give instructors another way to create gradeables, I created two different API endpoints along with corresponding UI elements.



```

GET localhost:1511/api/users/add
Body
{
  "status": "success",
  "data": {
    "title": "Open VCS Homework",
    "type": "Electronic File",
    "id": "open_vcs_homework",
    "instructions_url": "",
    "yllabus_bucket": "homework",
    "autograding_config_path": "/usr/local/submitty/moose_autograding_examples/vcs_submissions/"
  }
}
  
```

The first was a download option, which allows an instructor to either click a button, or call the API and receive a JSON file that can be used as a template or directly uploaded to create a new gradeable in a new term.

The second was an upload option, which allows for instructors to upload a JSON file, either through the UI or through the API, to create a gradeable. Instructors can either create the JSON file themselves, following instructions on the Submitty website, or use a previously downloaded JSON as a template. This process is being tested using Github Actions and Cypress, a frontend test automation tool for regression testing of web applications.

STUDENT API

Submitty only had an API that instructors were able to use. The second major part of this project was allowing students to use the API, and creating specific routes they can. To do this, students were given permission to retrieve API keys. Afterwards, all existing 'instructor only' API routes were locked to only instructors. I then created two endpoints that students could use. One gave users the ability to retrieve a student's grade, and the reason why they received that grade. The other gave users the ability to request a version control (VCS) gradeable to be submitted. Students can only access their own gradeables, however instructors can retrieve grades or submit a VCS gradeable for any student they have access to.

SUMMARY

After working with Submitty for a little over a year, I have learned a significant amount about collaboration in programming. I struggled when first learning about APIs, and how to create routes, and transfer files. Working with an outside group also brought challenges, mostly with figuring out a time to have the code reviewed.

REFERENCES

- <https://submitty.org>
- <https://github.com/Submitty/Submitty>
- <https://www.cypress.io>