

Apr 3rd, 11:00 AM - 2:00 PM

Gradel

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Gee, Brennon; Marshall, Malachi; Barlow, Nathan; and Osborne, James, "Gradel" (2019). *The Research and Scholarship Symposium*. 8. https://digitalcommons.cedarville.edu/research_scholarship_symposium/2019/poster_presentations/8

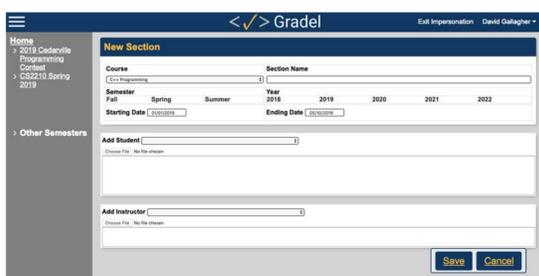
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Professors

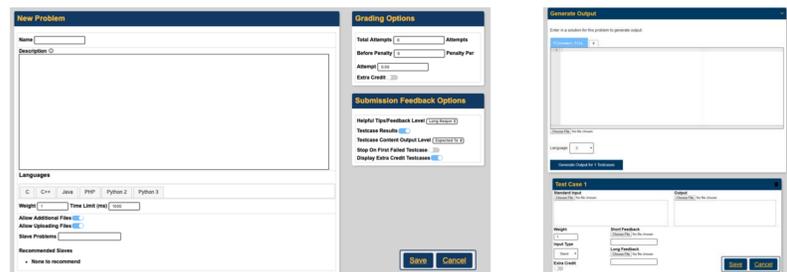
Professor's home page shows any section or contests that they are teaching or judging in the current semester. From the side navigation bar professors can also view previous semesters.



Professors can create new section with the floating controls on bottom right.



After creating the section a professor can create an assignment which is very similar to the creating a section. An assignment can have multiple problems. Professors can create assignments by clicking the create problem button on the floating navigation inside an assignment page.



After the initial set up is done students can participate in the section and their attempts will be recorded. Professors can track their classes progress viewing this screen.



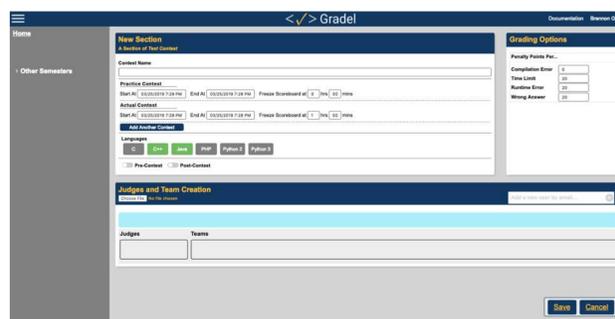
If the class is one that is recurring then a professor can clone a previous section. The cloning will keep all of the assignments and problems that were created.

Abstract

A major problem facing Computer Science faculty members at Cedarville University is grading student assignments. Specifically, grading programming assignments can be a repetitive, time-consuming process which makes it prime for automation. Professors need a web application that takes student code, compiles it, and compares the output to what the professors provides as correct. Gradel, a senior design project, allows students to submit their code online and receive instant feedback based on professor-designed test cases. Furthermore, professors need to be able to keep track of what grades students earn on their projects, which is functionality Gradel provides. In addition to allowing professors to create courses for typical class use, Gradel also allows professors to create contests, such as the annual programming competition that takes place on campus every year. Gradel has been used for several sections of a class and this year's contest, and the results are extremely promising.

Contests

Contests can be created by professors by clicking new section and selecting contest as the class.



The Contests allow Cedarville to host local programming competitions with judges and a live score board that can be displayed.

2019 Cedarville Programming Contest
Post-Contest
3641:16:26 left

2/23 5:00:00 PM 8/22 4:00:00 PM

LEADERBOARD

Rank	Teams	Number Correct	Penalty Time	A	B	C	D	E	F	G	H	I	J
1	Jonathan McClain	9	0	0	0	0	0	0	0	0	0	0	0
2	Daniel Jacobs	7	0	1	1	1	1	1	1	1	1	1	1
2	Ian Steptoe	7	0	1	1	1	1	1	1	1	1	1	1
3	Allison Crouch	6	0	1	1	1	1	2	1	1	1	2	1
3	Daschel Fortner	6	0	0	0	0	0	0	0	0	0	0	0
3	Grant Linville	6	0	4	1	2	1	2	1	1	1	2	1
3	Jackson Bishop	6	0	4	1	2	1	2	1	1	1	2	1
3	Luke Glanvolder	6	0	4	1	2	1	2	1	1	1	2	1
3	Noah Board	6	0	4	1	2	1	2	1	1	1	2	1
3	Noah Duncan	6	0	4	1	2	1	2	1	1	1	2	1

Judging Hub | Edit Contest | Create Problem | Scoreboard View

Students

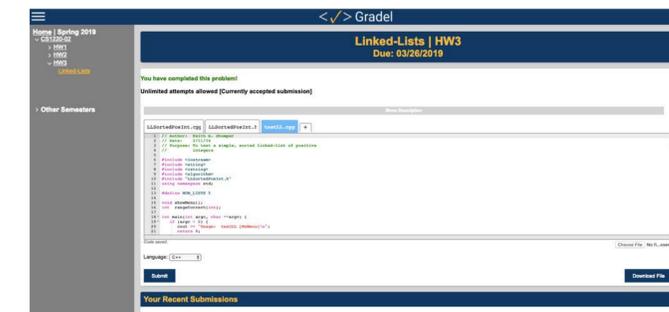
The Student's home page will display and sections that they are a part of as well as the next upcoming assignment in that section.



When A student clicks on the section they are brought to the assignment page where they can see all of the past, current, and upcoming homework for this section.



Students can submit their homework right on the web application via the Ace integrated development environment. The submission is compiled and the output is compared to the professor's solution output.



To ensure that the code that students submit cannot harm the entire web application we use docker to create a sandbox for the code submission. This sandbox can go through the normal process of compiling code using the Ace Editor but the code live in this separate environment. Thus ensuring that our web application will not suffer from and mistakes or possible attacks through the code submission tool.