



Supporting Team Submissions and Peer Grading within Submittity

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Rensselaer Polytechnic Institute



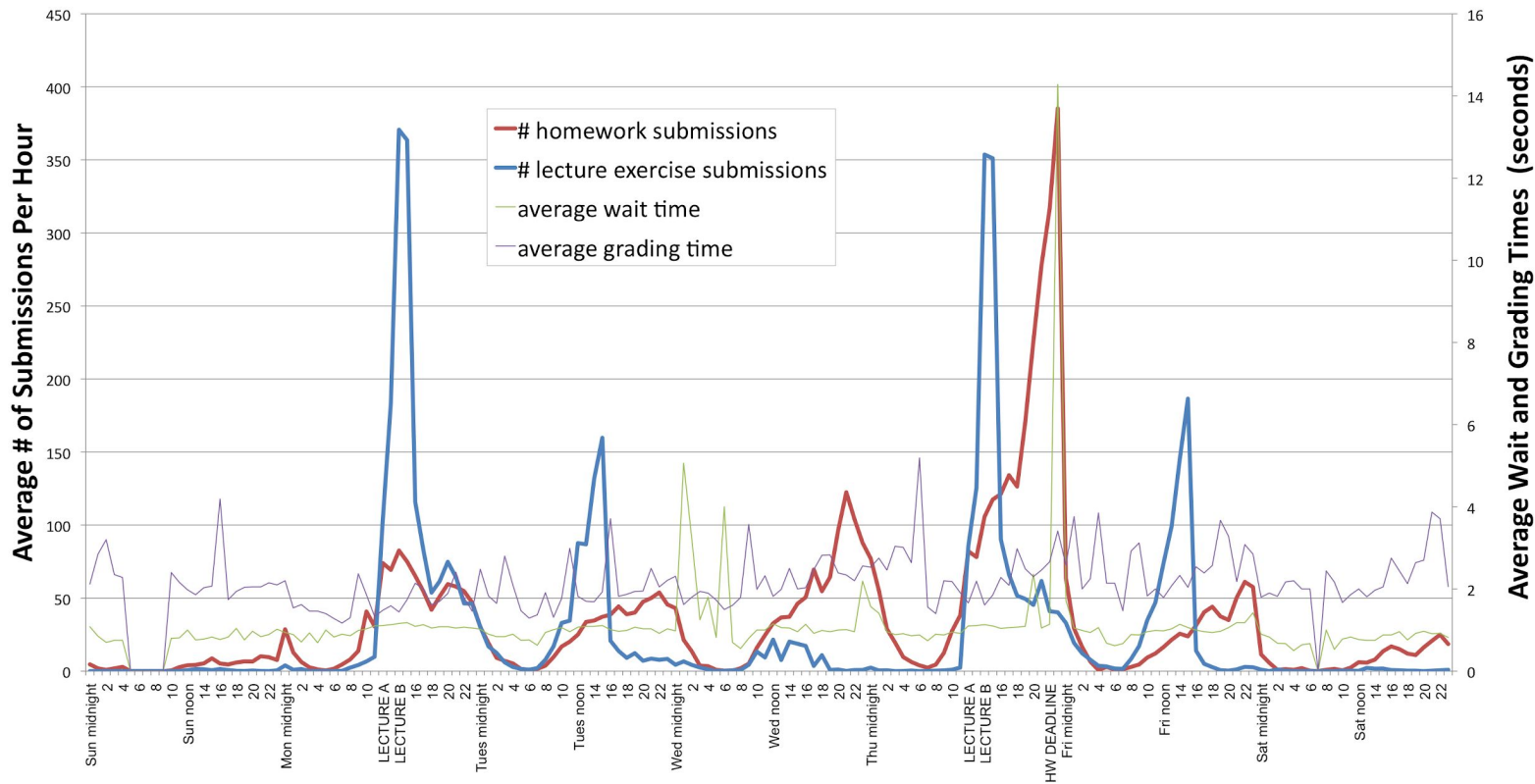
What is Submittity?

- Students upload code (and resubmit) for auto-grading
- TAs review and add additional grading/feedback
- Configurable number of late days per gradeable
- Open-source, free to use
- Installed on your own hardware or VPS
 - Instructors have ssh access to files & logs for debugging
- Support for any language / tool installed on your server
 - We use Python, C, C++, Java, Scheme, Prolog, and SPIM
 - JUnit, Emma code coverage, Dr Memory, static analysis, ...
- Supports dozen of courses with thousands of users at RPI
 - 500-700+ students in Computer Science I and Data Structures

Server Performance



Weekly Average Homework and Lecture Exercise Submissions





More Information

- All material from this demo available at
<https://submittity.org/tutorial>
<https://github.com/Submittity>
- New users are welcome! Ask us questions:
submittity-admin@googlegroups.com
- New developers are welcome:
Rensselaer Center for Open Source Software (RCOS)
Sponsored by RedHat Software
Google Summer of Code 2018
To access our Slack server:
<http://submittity.org/developer/>





Today's Demo

- Support for team assignments *new for Fall 17!*
- Student, grader, and instructor views
- Manual grading interface with common marks *new for Fall 17!*
- Support for Peer Grading *planned for Summer 18!*
- Submittity Discussion Forum *new for Spring 18!*
- Autograding with External Tools
- Static Analysis for Autograding *poster at 2pm!*
- Flexible late day policy, plagiarism, student stress *poster at 2pm!*
- Sandbox/Docker *poster at 2pm!*
- Future Goals

Team Assignments



Instructors specify maximum size and “team lock date”

What is the type of the gradeable?: (Required)

- Electronic File Checkpoints Numeric/Text

Is this a team assignment? *Team assignments are new as of Fall 2017. Email questions/bugs/feedback to: submitty@cs.rpi.edu.*

- Yes No

What is the maximum team size?

What is the **Team Lock Date**? (Instructors can still manually manage teams):

What is the **Submission Open Date**? (submission available to students): *must be >= TA Beta Testing Date*

What is the **Due Date**? *must be >= Submission Open Date*

How many late days may students use on this assignment?

Are students uploading files or submitting to a Version Control System (VCS) repository?

- Upload File(s) Version Control System (VCS) Repository

Full path to the directory containing the autograding config.json file:

See samples here: [Submitty GitHub sample assignment configurations](#)

`/usr/local/submitty/more_autograding_examples/upload_only/config` (an assignment without autograding)

`/var/local/submitty/private_course_repositories/MY_COURSE_NAME/MY_HOMEWORK_NAME/` (for a custom autograded homework)

`/var/local/submitty/courses/s18/sample/config_upload/#` (for an web uploaded configuration)

Should students be able to view submissions?

Create a new team and invite teammates



Hello Dustin ([Logout](#))
[Submittity](#) > [sample](#)

Submittity

Rensselaer Center for Open Source

Manage Team For: Open Team Homework

You are not on a team.

You have not received any invitations.

[Create New Team](#)

Hello Dustin ([Logout](#))
[Submittity](#) > [sample](#)

Created a new team

Submittity

Rensselaer Center for Open Source

Manage Team For: Open Team Homework

Your Team:

Dustin Borer (borerd) - borerd@example.com

Invite new teammates by their user ID:

User ID [Invite](#)

[Leave Team](#)

Or accept an invitation from a classmate

Hello Clementina ([Logout](#))
[Submittity](#) > [sample](#)

Submittity

Rensselaer Center for Open Source

Manage Team For: Open Team Homework

You are not on a team.

Invitations:

borerd: [Accept](#)

[Create New Team](#)

Hello Clementina ([Logout](#))
[Submittity](#) > [sample](#)

Accepted invitation from borerd

Submittity

Rensselaer Center for Open Source

Manage Team For: Open Team Homework

Your Team:

Dustin Borer (borerd) - borerd@example.com
Clementina Durgan (durgac) - durgac@example.com

Invite new teammates by their user ID:

User ID [Invite](#)

[Leave Team](#)

Instructor View of Teams



Instructors monitor team formation, and can create/edit teams

Hello Quinn ([Logout](#))
[Submitty](#) > [sample](#) > [Open Team Homework Grading](#) > [Student Index](#)

Create New Team: bodew

Team Member IDs:
bodew

Registration Section:
Section 2

Add More Users

Grade Details for Open Team Homework

Section	Edit Teams	Team Id	Students	TA Grading	Total	Active Version	Viewed Grade
1	1	00001_borerd	Dustin Borer, Clementina Durgan	5 / 5		2	
2	1	00000_borerd	Joe Student	0 / 5	1 2	6	X
3	1		heanec	No Team			
4	1		hoegea	No Team			
5	1		jacobs	No Team			
6	1		kerluh	No Team			
7	1		mckenh	No Team			
8	1		smithj	No Team			
9	1		spinko	No Team			
10	1		warde	No Team			
11	1		willia	No Team			
Students Enrolled in Registration Section 2							
Graders: manne							
1	2		behta	No Team			



Team Submissions

- Anyone on a team can submit or resubmit
- All team members share one sequence of versions
- TAs add manual grades for teams just like single students

Team: borerd, durgac

Select Submission Version: Version #1 Score: 4 / 10 GRADE THIS VERSION

Note: This version of your assignment will be graded by the instructor/TAs and the score recorded in the gradebook.

Submitted Files

frame_buggy.cpp (0.25kb) submission timestamp: 02/22/2018 01:28:08 AM
days late: 0 (before extensions)
grading time: 9 seconds
queue wait time: 0 seconds

Results

4 / 10	Total	
2 / 2	Test 1 Compilation	
2 / 2	Test 2 Frame Size 1	Details
0 / 2	Test 3 Frame Size 5	Details
0 / 2	Test 4 Frame Size 10	Details
Hidden	Test 5 Frame Size 13	
0 / 2	Test 6 Error Checking: Frame Size 0	Details
Hidden	Test 7 Error Checking: Frame Size Negative	
	Test 8 Error Checking: No Arguments	Details <i>Extra Credit</i>

3/3**Test 5 Imaginary Roots** 1 3 10 1 -3 10 1 -3 -10[Details](#)**2/2****Test 6 Double Root** 1 6 9[Details](#)**Student STDOUT.txt**

```
1 Enter 3 integer coefficients to a quadratic function: a*x*x + b*x + c = 0
2 The roots are: -3 and -3
3
```

Expected STDOUT.txt

```
1 Enter 3 integer coefficients to a quadratic function: a*x*x + b*x + c = 0
2 The roots are: -3 and -3
3
```

2/2**Test 7 Zero Root** 1 4 0[Details](#)**1/3****Test 8 a != 1** 2 7 3[Details](#)**Student STDOUT.txt**

```
1 Enter 3 integer coefficients to a quadratic function: a*x*x + b*x + c = 0
2 The roots are: -2 and -12
3
```

Expected STDOUT.txt

```
1 Enter 3 integer coefficients to a quadratic function: a*x*x + b*x + c = 0
2 The roots are: -0.5 and -3
3
```

Standard Error (STDERR)

WARNING: This file should be empty

```
1 ERROR: -2 is not a root of this formula.
2 ERROR: Unable to verify one or both roots.
3
```



Git Integration

- Can be configured with an internal git server
 - Installed to `/var/local/submittity/vcs`
 - Students get a web path to access

ex: <https://submittity-vcs.cs.rpi.edu/git/>

Version Control System (VCS) Base URL

Base URL if students are submitting via VCS repository.

external ex. `https://github.com/test-course`

internal ex. `ssh+svn://192.168.56.101/test-course`

Version Control System (VCS) Type

Choose the type of VCS if students are submitting via VCS repository.

Git

- Can use external sources as well, such as Github

Instructor Configuration



What is the **Submission Open Date**? (submission available to students): *must be >= TA Beta Testing Date*

What is the **Due Date**? *must be >= Submission Open Date*

How many late days may students use on this assignment?

Are students uploading files or submitting to a Version Control System (VCS) repository?

- Upload File(s) Version Control System (VCS) Repository

Path for the Version Control System (VCS) repository:

VCS base URL: `http://192.168.56.102/git/s18/sample`

The VCS base URL is configured in Course Settings. If there is a base URL, you can define the rest of the path below. If there is no base URL because the entire path changes for each assignment, you can input the full path below. If the entire URL is decided by the student, you can leave this input blank.

You are allowed to use the following string replacement variables in format `${...}`

- `gradeable_id`
- `user_id` OR `team_id` OR `repo_id` (only use one)

EX. `/${gradeable_id}/${user_id}` OR `https://github.com/test-course/${gradeable_id}/${repo_id}`

VCS URL: `http://192.168.56.102/git/s18/sample/${gradeable_id}/${user_id}`

Full path to the directory containing the autograding config.json file:

See samples here: [Submittity GitHub sample assignment configurations](#)

`/usr/local/submittity/more_autograding_examples/upload_only/config` (an assignment without autograding)

`/var/local/submittity/private_course_repositories/MY_COURSE_NAME/MY_HOMEWORK_NAME/` (for a custom autograded homework)

`/var/local/submittity/courses/s18/sample/config_upload/#` (for an web uploaded configuration)

Should students be able to view submissions?

- Yes No (Select 'No' during grading of a bulk upload pdf quiz/exam.)

Git Integration - Submitting



Hello Joe ([Logout](#))

[Submitty](#) > [sample](#) > [Final Project](#)



New submission for: Final Project

Due: 03/02/2018 @ 23:59

No automatic grading for this assignment

To access your Repository:

Note: There may be a delay before your repository is prepared, please refer to assignment instructions.

```
git clone http://192.168.56.102/git/s18/sample/final_project/student SPECIFY_TARGET_DIRECTORY
```

[Grade My Repository](#)

No submissions for this assignment.



- **Components** represent top level rubric items
- “Marks” add and/or subtract points (“count up” or “count down”)
- Instructor can “publish” certain marks (student sees the grading criteria, even if the mark was not selected for them)

Manual/TA/Peer Grading Rubric		Points
<input type="text" value="Read Me"/>		Points: <input type="text" value="2"/>
<input type="text" value="Message to TA/Grader (seen only by TAs/Graders)"/>		Extra Credit: <input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="text" value="Message to Student (seen by both students and graders)"/>		Penalty: <input type="radio"/> Yes <input checked="" type="radio"/> No
		<input type="radio"/> Grade by count up
		<input checked="" type="radio"/> Grade by count down
● <input type="text" value="0"/>	<input type="text" value="Full Credit"/>	
● <input type="text" value="-1"/>	<input type="text" value="Minor errors in Read Me"/>	<input type="checkbox"/> Publish ✕
● <input type="text" value="-2"/>	<input type="text" value="Major errors in Read Me or Read Me missing"/>	<input type="checkbox"/> Publish ✕
<input type="button" value="Add Common Deduction/Addition"/>		
<input type="text" value="Coding Style"/>		Points: <input type="text" value="5"/>
<input type="text" value="Message to TA/Grader (seen only by TAs/Graders)"/>		Extra Credit: <input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="text" value="Message to Student (seen by both students and graders)"/>		Penalty: <input type="radio"/> Yes <input checked="" type="radio"/> No
		<input type="radio"/> Grade by count up
		<input checked="" type="radio"/> Grade by count down
● <input type="text" value="0"/>	<input type="text" value="Full Credit"/>	
● <input type="text" value="-5"/>	<input type="text" value="Code is unreadable"/>	<input type="checkbox"/> Publish ✕
● <input type="text" value="-3"/>	<input type="text" value="Code is very difficult to understand"/>	<input type="checkbox"/> Publish ✕



- **Components** represent top level rubric items
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<input type="text" value="Message to Student (seen by both students and graders)"/>		Penalty: <input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="radio"/> 0 Full Credit		<input type="radio"/> Grade by count up
<input checked="" type="radio"/> -1	Minor errors in Read Me <input type="text"/>	<input checked="" type="radio"/> Grade by count down
<input type="checkbox"/>	Minor errors in Read Me <input type="text"/>	
<input type="checkbox"/>	Major errors in Read Me or Read Me missing <input type="text"/>	
<input type="button" value="Add Common Deduction/Addition"/>		
<input type="text" value="Coding Style"/>		Points: <input type="text" value="5"/>
<input type="text" value="Message to TA/Grader (seen only by TAs/Graders)"/>		Extra Credit: <input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="text" value="Message to Student (seen by both students and graders)"/>		Penalty: <input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="radio"/> 0 Full Credit		<input type="radio"/> Grade by count up
<input checked="" type="radio"/> -5	Code is unreadable <input type="text"/>	<input checked="" type="radio"/> Grade by count down
<input type="checkbox"/>	Code is unreadable <input type="text"/>	
<input checked="" type="radio"/> -3	Code is very difficult to understand <input type="text"/>	
<input type="checkbox"/>	Code is very difficult to understand <input type="text"/>	



- **Components** represent top level rubric items
- “Marks” add and/or subtract points (“count up” or “count down”)
- Instructor can “publish” certain marks (student sees the grading criteria, even if the mark was not selected for them)

Manual/TA/Peer Grading Rubric		Points
<input type="text" value="Read Me"/>		Points: <input type="text" value="2"/>
<input type="text" value="Message to TA/Grader (seen only by TAs/Graders)"/>		Extra Credit: <input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="text" value="Message to Student (seen by both students and graders)"/>		Penalty: <input type="radio"/> Yes <input checked="" type="radio"/> No
		<input type="radio"/> Grade by count up
		<input checked="" type="radio"/> Grade by count down
● <input type="text" value="0"/>	<input type="text" value="Full Credit"/>	
● <input type="text" value="-1"/>	<input type="text" value="Minor errors in Read Me"/>	<input type="checkbox"/> Publish ✕
● <input type="text" value="-2"/>	<input type="text" value="Major errors in Read Me or Read Me missing"/>	<input type="checkbox"/> Publish ✕
<input type="button" value="Add Common Deduction/Addition"/>		
<input type="text" value="Coding Style"/>		Points: <input type="text" value="5"/>
<input type="text" value="Message to TA/Grader (seen only by TAs/Graders)"/>		Extra Credit: <input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="text" value="Message to Student (seen by both students and graders)"/>		Penalty: <input type="radio"/> Yes <input checked="" type="radio"/> No
		<input type="radio"/> Grade by count up
		<input checked="" type="radio"/> Grade by count down
● <input type="text" value="0"/>	<input type="text" value="Full Credit"/>	
● <input type="text" value="-5"/>	<input type="text" value="Code is unreadable"/>	<input type="checkbox"/> Publish ✕
● <input type="text" value="-3"/>	<input type="text" value="Code is very difficult to understand"/>	<input type="checkbox"/> Publish ✕

Auto-Grading Testcases

Expand All Close All

- 12 / 10** Total
- 2 / 2** Test 1 Compilation
- 2 / 2** Test 2 Frame Size 1 [Details](#)
- 2 / 2** Test 3 Frame Size 5 [Details](#)
- 2 / 2** Test 4 Frame Size 10 [Details](#)
- 0 / 2** HIDDEN: Test 5 Frame Size 13 [Details](#)
- 2 / 2** Test 6 Error Checking: Frame Size 0 [Details](#)

Grading Rubric

Auto scroll / Auto open Overwrite Grader

Read Me *Graded by instructor*

2 / 2 (*) lorem ipsum

Coding Style *Graded by instructor*

4 / 5 (*) -1.0 Code is difficult to understand
(*) lorem ipsum

Documentation *Graded by instructor*

4.5 / 5 (*) Full Credit
(*) -3.0 Very little documentation or documentation makes no sense
(*) 2.5 lorem ipsum

Extra Credit *Graded by instructor*

Submissions and Results Browser

Open/Close Submissions

Open/Close Results Download Zip File

- submissions
 - .submit.timestamp
 - frame_hardcoded.cpp

```

1 #include <iostream>
2 #include <cstdlib>
3 #include <string>
4
5 int main(int argc, char* argv[] ) {
6     if (argc == 1) {
7         std::cerr << "ERROR! Wrong number of arguments" <<
8         std::endl;
9         exit(1);
10    }
11    int value = atoi(argv[1]);
12    if (value == 0) {
13        std::cerr << "ERROR! Argument should be >=1" << std::endl;
14        exit(1);
15    }
16    if (value == 1) {

```

Student Information

Toy Mraz (mrazt)

Submission Number: 1 / 1

Submitted: 12/31/1971 23:59:59

Overall Late Day Usage

Version #1 Score: 12 / 10 GRADE THIS VERSION

Cancel Student Submission

	Allowed per term	Allowed per assignment	Submitted days after deadline	Extensions	Status	Late Days Charged	Total Late Days Used	Remaining Days
Closed Homework	3	2	0	0	Good	0	0	3
Grading Homework	3	2	0	0	Good	0	0	3
TA Grade Only Homework	3	2	0	0	Good	0	0	3

Grading With Common Marks



*Customize
panel layout*

*Add/edit marks
during grading*

*Improves
consistency
between
graders*

Hello Jill ([Logout](#))



[Submitty](#) > [sample](#) > [Grading Homework Grading](#) > [Student Index](#)

Submissions and Results Browser

Open/Close Submissions

Open/Close Results

Download Zip File

submissions

submit.timestamp
infinite_loop_time_cutoff.py

```
1 def percent_change(old,new):
2     return int(100*(float(new)-old)/old)
3
4 def print_change(old1, new1, old2, new2):
5     p1 = percent_change(old1,new1)
6     p2 = percent_change(old2,new2)
7     print p1, "vs", p2
8
9 print "#icebucketchallenge vs #alsicebucketchallenge, percentage
10 change"
11 print_change(200,500,100,300)
12 print_change(500,2000,300,1500)
13 print_change(2000,12000,1500,13000)
14 print_change(12000,24000,13000,25000)
15 print_change(24000,65000,25000,105000)
16 print_change(65000,70000,105000,85000)
17
18 i = 0;
19 while 1 != 0:
20     #print "hello", i
21     i+=1
```

results

Grading Rubric

Auto scroll / Auto open

Overwrite Grader

Read Me

Graded by ta!

1 / 2

* (-1) Minor errors in Read Me

Coding Style

Graded by ta!

5 / 5

* Full Credit

2 / 5 Documentation

Ungraded! Done Cancel

0

Full Credit



-5

No documentation



-3

Very little documentation or documentation makes no sense



-1

Way too much documentation and/or documentation makes no



Add New Common Mark

0

Custom: Custom message for student...

Extra Credit

Ungraded!

/ 0

Click me to grade!

We support bulk pdf upload (test/quiz), name matching and manual grading



1	02-22-2018 01:22:08-0500	<p>Dustin Borer borerd HW 2, Writup</p> <p>For this project, I implemented a calculator in python. To do this, I had to use functions and variables. Installing python on my computer was easy because it was already installed. The</p>	<input type="text" value="du"/> Dustin Borer <borerd> Clementina Durgan <durgac>	<input type="button" value="Submit"/>	<input type="button" value="Delete"/>
2	02-22-2018 01:22:08-0500	<p>Otho Spinka Spinko</p> <p>HOMEWORK 2</p> <p>Creating this calculator was an interesting and enriching experience, which I really feel helped</p>	<input type="text"/>	<input type="button" value="Submit"/>	<input type="button" value="Delete"/>
		<p>batch_upload_2.pdf</p>			



Peer Review/Grading

- Instructor configures some components for peer review
- Instructor specifies # of peer review assignments
 - Assigned randomly
 - Or assigned by .csv upload
- Peers use same interface as TAs to review/grade
 - Access restricted to relevant files and dates
 - Student identities are randomized
- Average scores given by multiple peer graders
 - Compute consistency of grades — “grade the grader”



Submittity Forum

- Purpose: For instructor/TA announcements, student question/answers, offline discussion of assigned readings, etc.
- Stay within Submittity environment (same login, moderated by TAs/instructor)
- Threads/posts/replies/hierarchy
- Multiple Image attachments/links/prose vs. code segments
- Current/Future work: search, notifications (incl. email), direct message/regrade requests

Create a New Thread



Create Thread

Title:

Link 

Code 

Homework 1 has been posted on the course website. You can view it [\[url=http://example.com\]](http://example.com)here.[\[/url\]](#)

Hint: In this homework you will have to use a switch statement. I have included an example of one below.

[code]

```
switch ($_REQUEST['page']) {
    case 'create_thread':
        $this->showCreateThread();
        break;
    case 'make_announcement':
        $this->alterAnnouncement(1);
        break;
    case 'view_thread':
    default:
        $this->showThreads\(\);
        break;
```

Announcements, Code Segments, and Links



Hello Alyssa P ([Logout](#))

[Submittly](#) > [sample](#) > [Discussion Forum](#)



Quiz Reminder

In addition to the homework that was just released. Please don't forget that we have a...

02/22/2018 11:44 PM

Hw 1 Released

Homework 1 has been released on the course website. You can view it...

02/22/2018 11:27 AM

getRGB() function...

I think that my switch statement is correct and it seems as if it is getting into the right switch...

02/22/2018 11:42 PM

Hw1 switch statement not working...

I created what I believe is the correct switch statement but it seems to not be working. Can...

02/22/2018 11:33 PM

Hw 1 Released

Homework 1 has been released on the course website. You can view it [here](#).

Reminder: make sure to use a switch statement in your code. I have provided an example below:

```
1 public function run() {
2     switch ($REQUEST['page']) {
3         case 'create_thread':
4             $this->showCreateThread();
5             break;
6         case 'publish_thread':
7             $this->publishThread();
8             break;
9         case 'make_announcement':
10            $this->alterAnnouncement(1);
11            break;
12        case 'publish_post':
13            $this->publishPost();
14            break;
15        case 'delete_post':
16            $this->deletePost();
17            break;
18        case 'remove_announcement':
19            $this->alterAnnouncement(0);
20            break;
21        case 'view_thread':
22            default:
23                $this->showThreads();
24                break;
25    }
26 }
```

Quinn I 02/22/2018 11:27 PM

[Link](#)

[Code](#)

Enter your reply here...



★ Quiz Reminder

In addition to the homework that was just released. Please don't forget that we have a quiz coming up next week. There will be a review session in the Library on Monday at 5:30pm with the quiz being on Thursday.

Jill T 02/22/2018 11:44 PM

Thank you for the reminder!!!

Anonymous 02/22/2018 11:47 PM

What sections are on the quiz again?

Alyssa P H 02/22/2018 11:56 PM

Link

Code

Enter your reply here...

Upload Attachment

Anonymous (to class)?

Reply

Student View

★ Quiz Reminder

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Jill T 02/22/2018 11:44 PM

Thank you for the reminder!!!

Ben Bitdiddle (bitdiddle) 02/22/2018 11:47 PM

What sections are on the quiz again?

Alyssa P H 02/22/2018 11:56 PM

Link

Code

Enter your reply here...

Upload Attachment

Anonymous (to class)?

Reply

TA/Instructor View

Attaching images to posts



Hello Quinn ([Logout](#))

[Submittly](#) > [sample](#) > [Discussion Forum](#)



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I created what I believe is the correct switch statement but it seems to not be working. Can...

02/22/2018 11:33 PM

☆ Hw1 switch statement not working

I created what I believe is the correct switch statement but it seems to not be working. Can someone take a look? I believe that it is in my switch condition.

```
1 switch(color) {...}
```

Anonymous 02/22/2018 11:33 PM

It seems like you are getting an error similar to what I have attached. Make sure to use, assuming that it has been previously instantiated:

```
1 $color
```

switchError.png

Quinn I 02/23/2018 12:27 AM

Link

Code

Enter your reply here...

Upload Attachment

Anonymous (to class)?

Reply

Edit Posts



Hello Quinn ([Logout](#))

[Submittly](#) > [sample](#) > [Discussion Forum](#)



Homework 1 Now Posted

Homework 1 has been posted on the course website. You can access it...
02/23/2018 1:29 AM

Quiz Reminder

In addition to the homework, please don't forget that we have a quiz coming up next.
02/22/2018 11:44 PM

getRGB() function...

I think that my switch statement is correct and it seems as if it is getting into the right switch...
02/22/2018 11:42 PM

Hw1 switch statement not working...

I created what I believe is the correct switch statement but it seems to not be working. Can...
02/22/2018 11:33 PM

Editing a post by: ta on 02/22/2018 11:44 PM

In addition to the homework, please don't forget that we have a quiz coming up next week. There will be a review session in the Library on Monday at 5:30pm with the quiz being on Thursday.

Cancel

Submit



In a
be

e a review session in the Library on Monday at 5:30pm with the quiz

[Jill T](#) 02/22/2018 11:44 PM

Tha

[Anonymous](#) 02/22/2018 11:47 PM

What sections are on the quiz again?

[Alyssa P H](#) 02/22/2018 11:56 PM

Link

Code

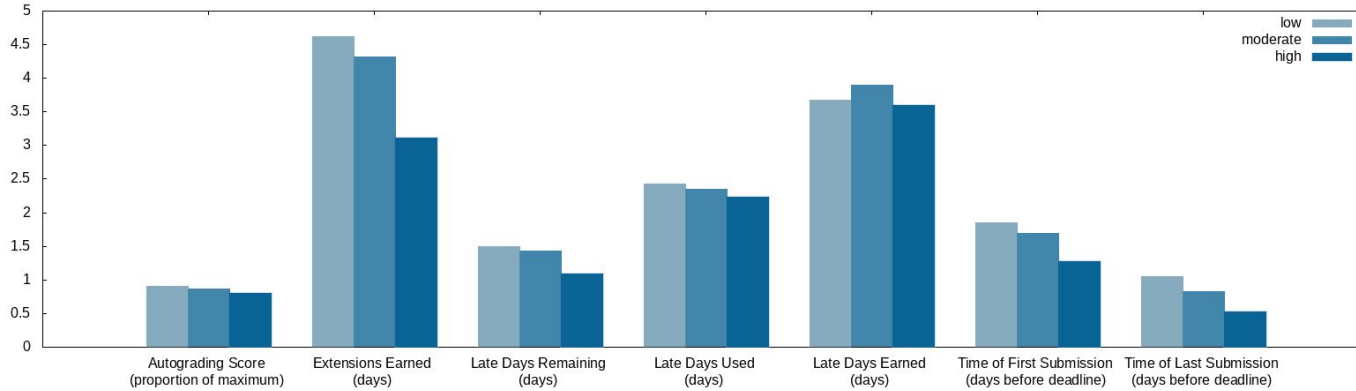
Enter your reply here...

Upload Attachment

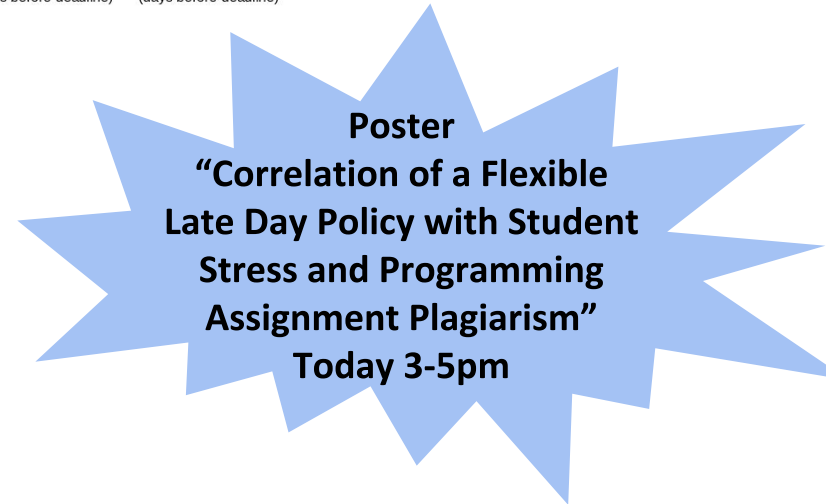
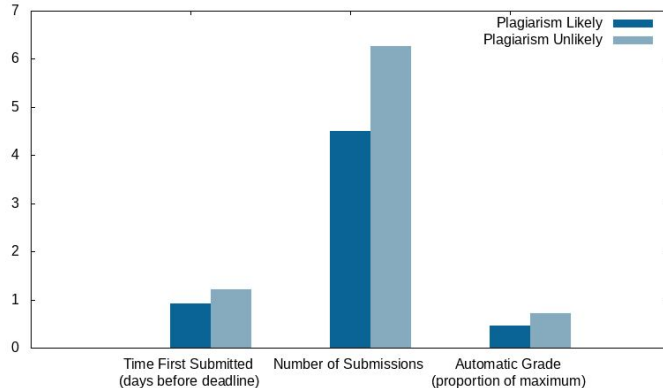
Anonymous (to class)?

Reply

Flexible Late Day Policy -- Reduces Student Stress



Integrated Plagiarism Detection





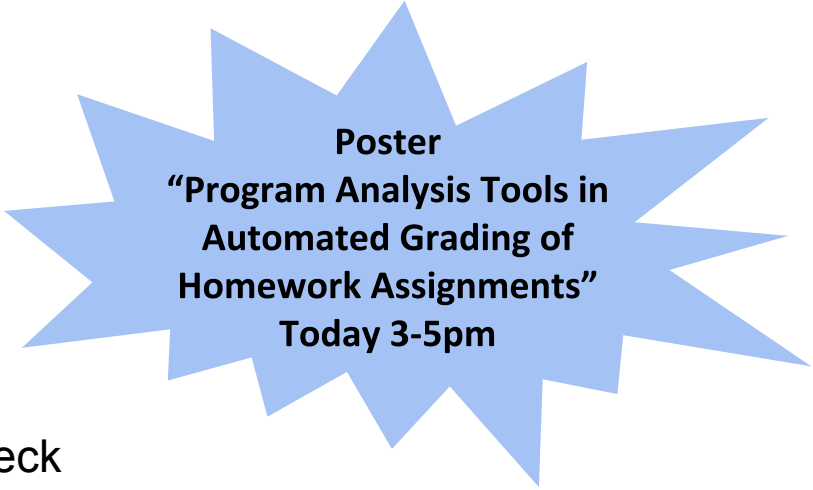
Autograding w/ External Tools

- JUnit, Python unittest
- Memory Debugging (Dr. Memory / Valgrind)
- Code Coverage (EclEmma, JaCoCo)
- Verification-Aware Programming Language (Dafny)
- MPI / OpenMP
- OpenGL/GLFW
- TkInter
- Matlab
- Anything you can install & run on GNU/Linux!



Static Analysis

- In use:
 - Count print / assignments / multiplication
 - Forbid use of goto / auto
 - Verify use of for vs. while
 - Verify use of dictionary
- Current work
 - Loop depth -- naive complexity analysis
 - Function calls itself -- naive recursion check
 - Forbid STL Vector erase
 - Confirm all exceptions are caught
 - Check that all member variables are private
- Future
 - Reverse engineer UML diagram -- design pattern check



Poster
“Program Analysis Tools in
Automated Grading of
Homework Assignments”
Today 3-5pm



Security via Jailed Sandbox

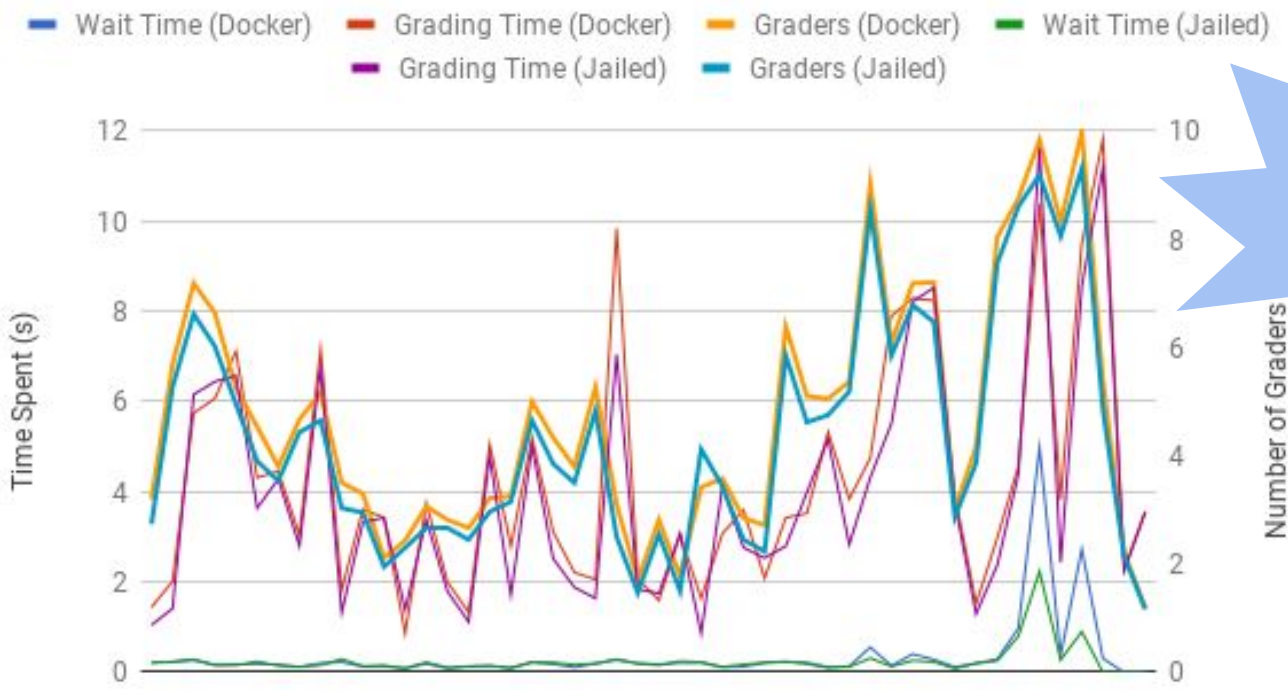
- Database access done through the PHP Data Objects (PDO) library which protects against malicious and malformed inputs
- Instructor configures appropriate resource limits (GNU Linux `rlimit`) to sandbox testing of electronically-submitted student code and prevent issues like infinite loops, runaway output, and excessive use of other system resources
- Before running the student code, we switch from a privileged system user to an untrusted user using GNU Linux `setresuid`
- Careful design of file and directory permissions and database access maintains confidentiality of student work and grades
- Uses secure computing mode (GNU Linux `seccomp`) to prevent use of sockets, fork, and other unnecessary system calls by student code

*Thanks to RPISEC (our undergraduate Computer Security Club)
for helping find & patch vulnerabilities*



Docker for Autograding Isolation

Customize docker images per course, per assignment



Poster
“Analysis of Container Based vs. Jailed Sandbox Autograding Systems”
Today 3-5pm



Future Work

- Make it more mobile friendly
- Expand usage of Submittity beyond RPI
- Support SQL autograding
- PDF/Code annotation for TA grading
- Improved Docker integration/support
- Remote graders for advanced topic classes
 - Graphics
 - Parallel Computing
 - Distributed Systems and Algorithms

Thanks!



- All material from this demo available at

<https://submittity.org/tutorial>

<https://github.com/Submittity>

- New users are welcome! Ask us questions:

submittity-admin@googlegroups.com

- New developers are welcome:

Rensselaer Center for Open Source Software (RCOS)

Sponsored by RedHat Software

Google Summer of Code 2018

To access our Slack server:

<http://submittity.org/developer/>



Google
Summer of Code

examples/01_simple_python



```
{
  "testcases" : [
    {
      // Student-visible testcase name.
      "title" : "Python - Simple Grading",

      // Commands to run (in order). These are not shell commands, although
      // they support some common shell wildcards. This can either be a
      // list or a single string.
      "command" : [ "python *.py" ],

      // Point value of this testcase.
      "points" : 10,

      "validation" : [
        {
          // Grade by "diffing" the student output with an
          // instructor-provided file.
          "method" : "diff",
          // The student's output.
          "actual_file" : "STDOUT.txt",
          // The title seen by students.
          "description" : "Program Output",
          // The instructor-provided file (the correct answer).
          "expected_file" : "output.txt"
        }
      ]
    }
  ]
}
```

examples/02_simple_cpp



```
{
  // For compiled languages, typically two testcases are used to allow points
  // to be assigned independently for compilation and execution.
  "testcases" : [
    {
      // Indicate that this is a compilation step.
      "type" : "Compilation",
      "title" : "C++ - Compilation",
      "command" : "clang++ -Wall -o a.out -- *.cpp",
      // Name of the result of compilation.
      "executable_name" : "a.out",
      // Point value of compilation.
      "points" : 5
    },
    {
      "title" : "C++ - Execution",
      "command" : "./a.out",
      // Point value of correct output.
      "points" : 15,
      "validation" : [
        {
          "method" : "diff",
          "actual_file" : "STDOUT.txt",
          "description" : "Program Output",
          "expected_file" : "test1_output.txt"
        }
      ]
    }
  ]
}
```