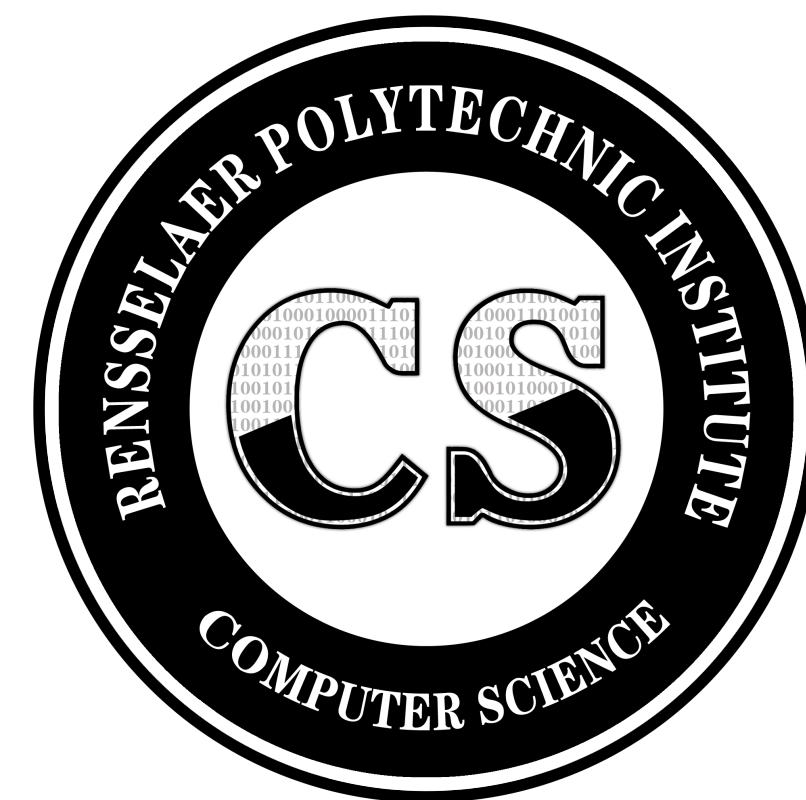


Rensselaer

Facilitating Discussion-Based Grading and Private Channels via an Integrated Forum

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Submittity

Rensselaer Center for Open Source

Abstract

We introduce an integrated discussion forum to Submittity enabling students to communicate with their peers and have a public dialogue with the teaching staff outside of the classroom. Compared to a collection of closed-source external applications, our single-system login for distribution of course materials, assignment submission, and discussion forum participation is more convenient and accessible for students and simplifies course management tasks. Students use the forum to ask questions about course logistics, homework debugging help, exam review problems, and administrative questions. An instructor-moderated forum is especially helpful in larger classes where students can feel it is otherwise difficult to get their questions answered. The forum becomes a curated collection of relevant frequently asked questions, which reduces the number of duplicate questions that must be answered by the staff.

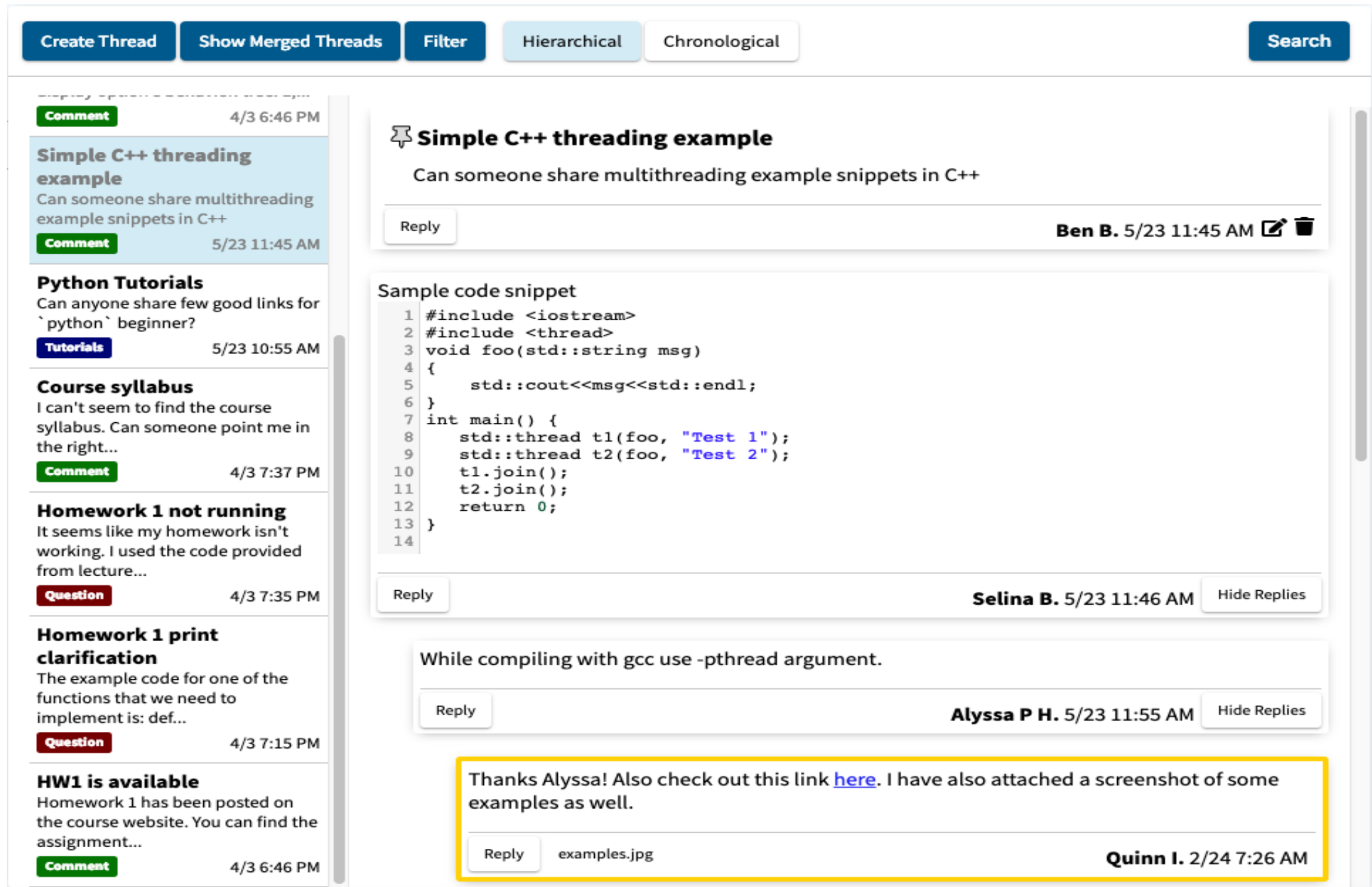
Motivation

- Single system login and website for assignment submission and discussion forum makes it easier for students to access course resources and information.
- Student data is housed on the local Submittity installation server administered by the instructor or university staff. No student data is stored in the cloud or shared with a third-party source.
- Easy work flow for grading discussion-based assignments through encourages instructors to challenge students to explain confusing material to each other and debate topic with their fellow classmates.
- Private discussion channels facilitate team assignments. Instructors can monitor team participation in the channel and assign grades if desired.

Basic Forum Features

- Code segments and hyperlinks
- Multiple image attachments
- Thread and post searching
- Anonymous posting (instructors can always click to view the author's name and contact information if necessary).
- Pinning posts as favorites. This allows the user to save a post and make it easily retrievable to read again later.

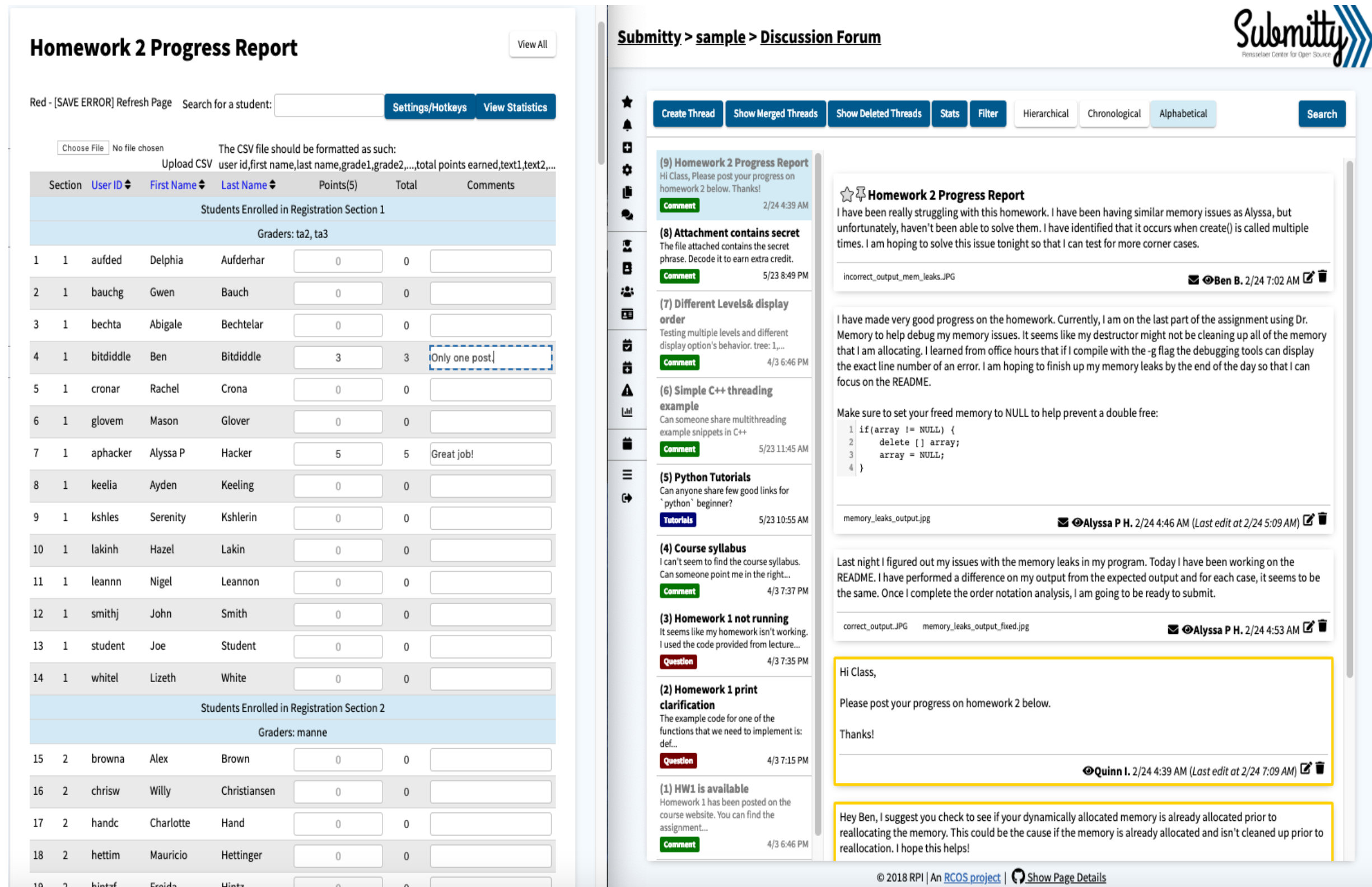
Discussion Forum



New Functionality

- Flexible email and in-system notification system. Users can opt-in/opt-out of different types of messages:
 - New thread
 - New post in a thread you started (e.g., a question you asked)
 - Instructor announcement
 - New post in a thread you've pinned as a favorite
 - TA response to your regrade request
- Instructors customize category tags and colors. Each thread is labeled with one or more category tags.
- Each thread is tagged with the state: comment, unresolved, or resolved.
- Threads can be filtered by tag and/or state.
- Users can edit their posts. Members of the teaching staff can also edit any post and have access to an edit history for each post to ensure there are no violations of course policies.
- If two threads are similar, members of the teaching staff can merge the two threads into one.
- Instructors have access to a forum statistics showing for each user, their total number of posts, total threads, and total deleted posts.

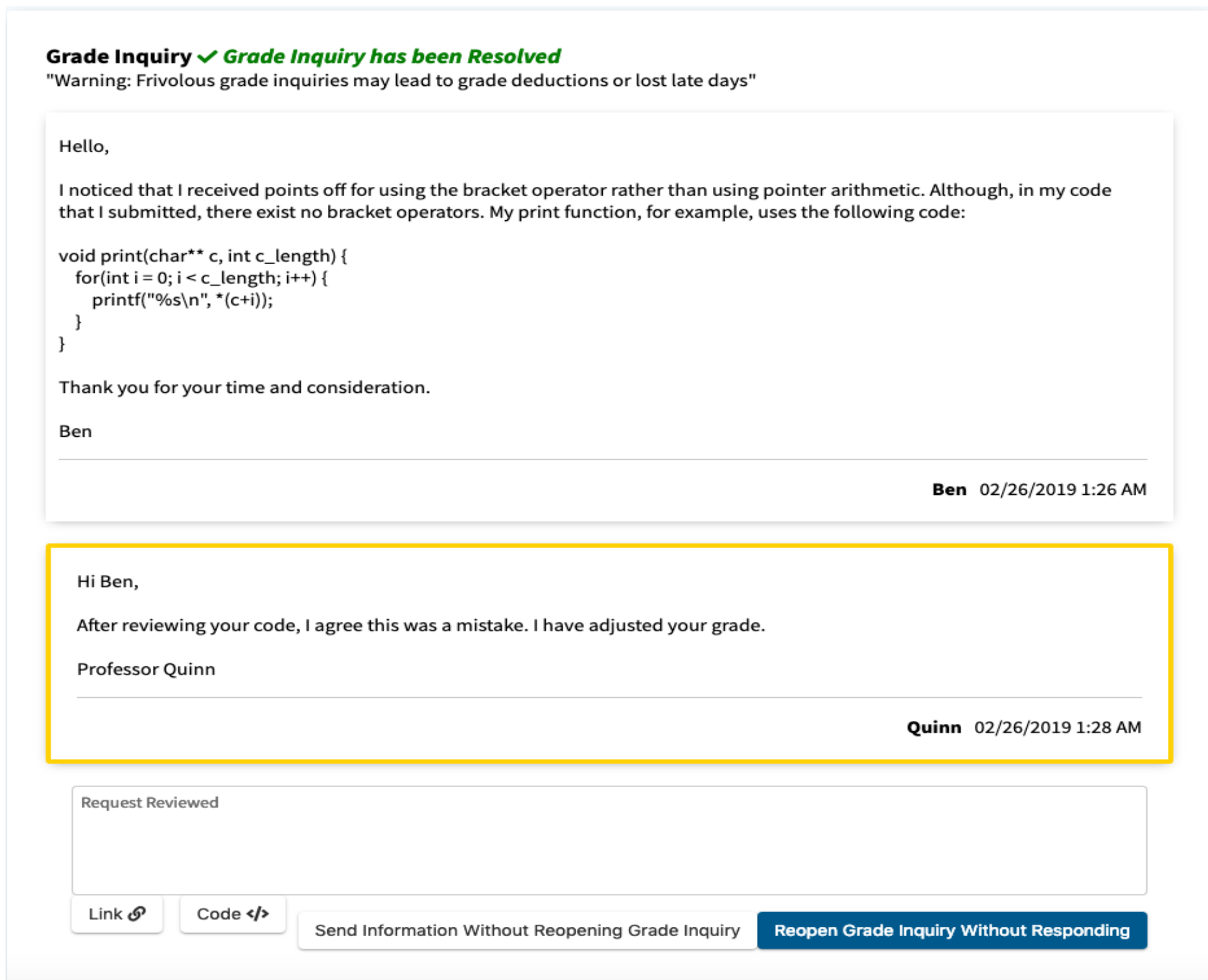
Numerical Text Gradeable



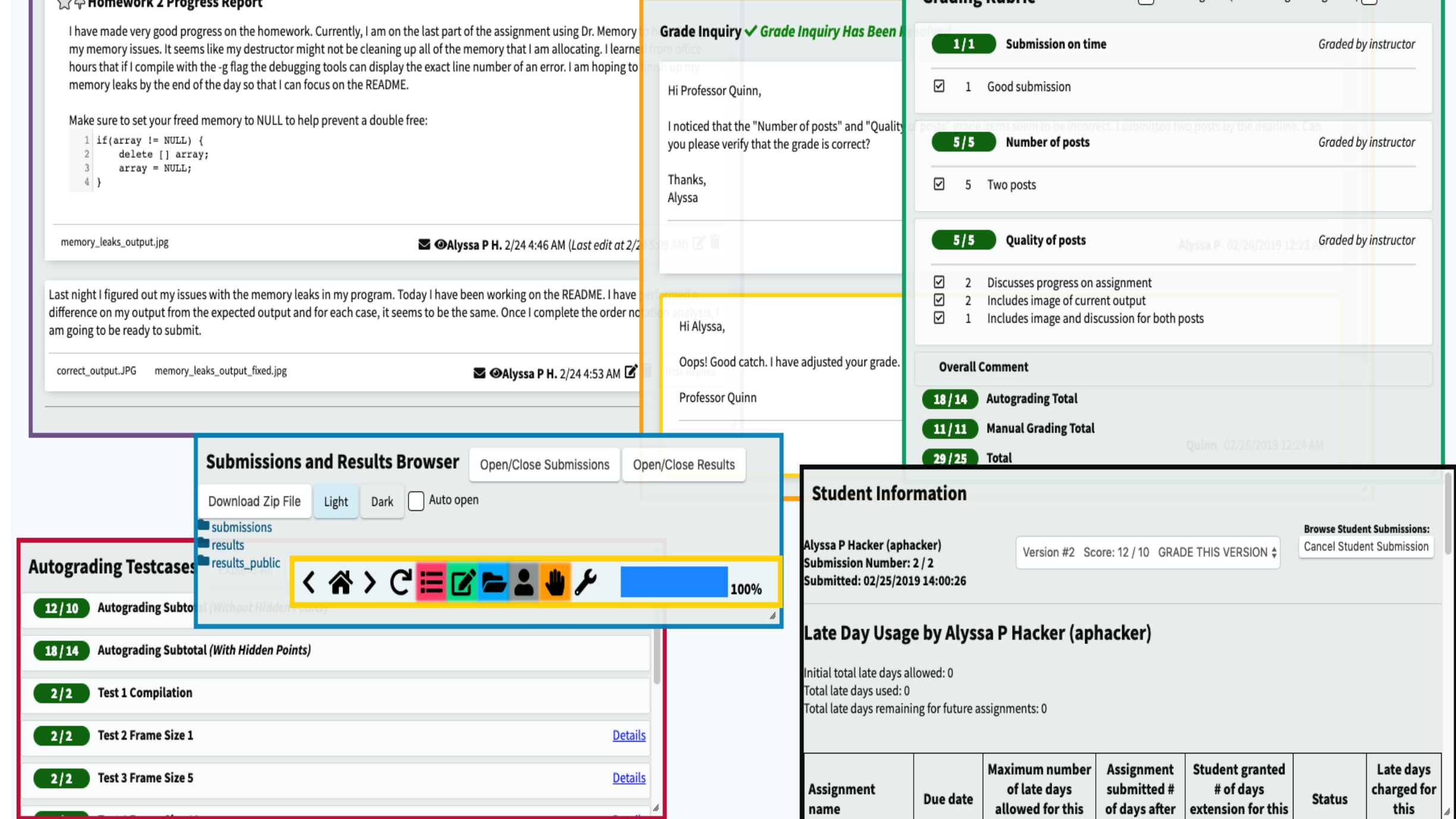
Private Discussion Channel

- Submittity uses private discussion channels to facilitate grade inquiries. This system allows for students to clarify with their graduate teaching assistant or instructor a grade they received.
- Teaching staff can track inquiries through the Grading Details page.
- This integrated system consolidates a traditional grade inquiry into single location that can be viewed at any time, while also creating a log of the discussion.

Grade Inquiry System



Manual Grading Interface



Discussion-Based Grading

- Instructors link a thread id to a gradeable item. This will collect posts for a given student in that provided thread to be view-able in the manual grading portal as shown above.
- This system enables courses to require discussion based assignments and to incentivize collaboration between students.
- This system will only pull discussion posts if the gradeable uses the manual grading interface. Other gradeable types are not currently supported.

Future Work

- Detect related threads prior to students creating a new thread and display this information to the user to prevent duplicate questions from being asked.
- Continue integration of email notifications with the current notification system. Specifically, extend the notification settings panel to encapsulate the newly developed email notifications.
- Display more statistics relating to posts in a thread. We would like to display word count, number of posts per user, and number of posts total in a thread.
- Investigate ranking posts based on the content. Instructors could specify relevant vocabulary that could be included in a discussion forum gradeable which would be used to determine if the student's post is on topic.

Submittity <http://submittity.org>

Submittity is an open source programming assignment submission system from the Rensselaer Center for Open Source Software (RCOS), launched by the Department of Computer Science at Rensselaer Polytechnic Institute.



Related Publications

- *Autograding Distributed Algorithms in Networked Containers*
Evan Maicus, Matthew Peveler, Stacy Patterson, and Barbara Cutler
SIGCSE 2019 Proceedings
- *Comparing Jailed Sandboxes vs Containers Within an Autograding System*
Matthew Peveler, Evan Maicus, and Barbara Cutler
SIGCSE 2019 Proceedings
- *Lichen: Customizable, Open Source Plagiarism Detection in Submittity*
Matthew Peveler, Tushar Gurjar, Evan Maicus, Andrew Aikens, and Barbara Cutler
SIGCSE 2019 Poster

Acknowledgments

