Software Engineering in Practice

Professor Diomidis Spinellis

My first open contribution

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Comprehension & Validation of the OSS

TEAMMATES is an open source software that operates as a feedback management tool for educational purposes, developed by the School of Computing, of the National University of Singapore. It is provided as a cloud-based web application for both educators and students, but the main goal of its development is to be an open source software welcoming to every kind of contribution. Some of its main operations are the anonymous team peer evaluations, the control of the visibility of the given feedback and the extraction of reports and statistics.

The reason I chose to contribute to this project is twofold: First of all, I was attracted by the fact that it is a web application widely used, that provides quality and quantity of its service but, at the same time, it also has room for enhancements. On the other hand, I was intrigued by the fact that I had absolutely no knowledge of the Typescript language in Angular framework, nor of the Snapshot Testing and so on. So, I saw it as a challenge that I would like to take on while also learning along the way.

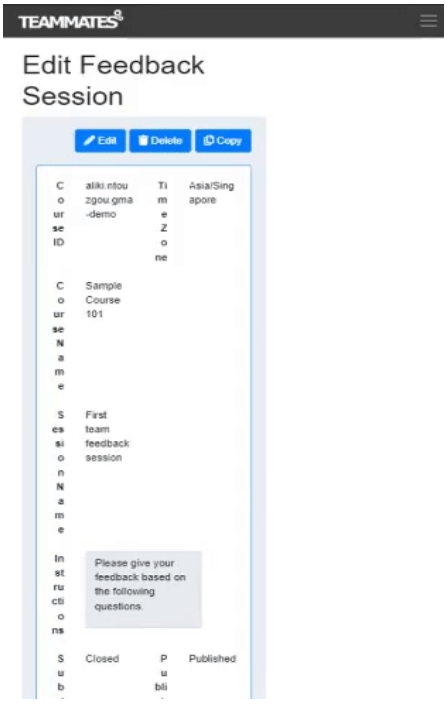
Contribution Breadth

After a lot of ups and downs, I decided to take on two issues, one already existing, where I would participate in it, and one that I would submit as its contributor.

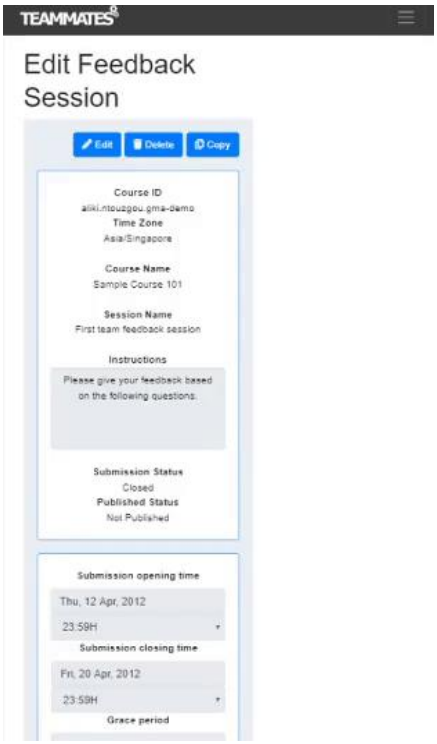
Improve UI for mobile compatibility

The first issue was submitted by one of the authors of TEAMMATES. I was already communicating with him via emails for another issue that I have opened before and he was trying to help me. After I told him that I wasn't familiar with Typescript and that it was my first time contributing, he advised to move on to this issue, because the previous required far more extended knowledge. So, I started working on this one and I, actually, believe that this was the best choice to get practically familiar with contributing.

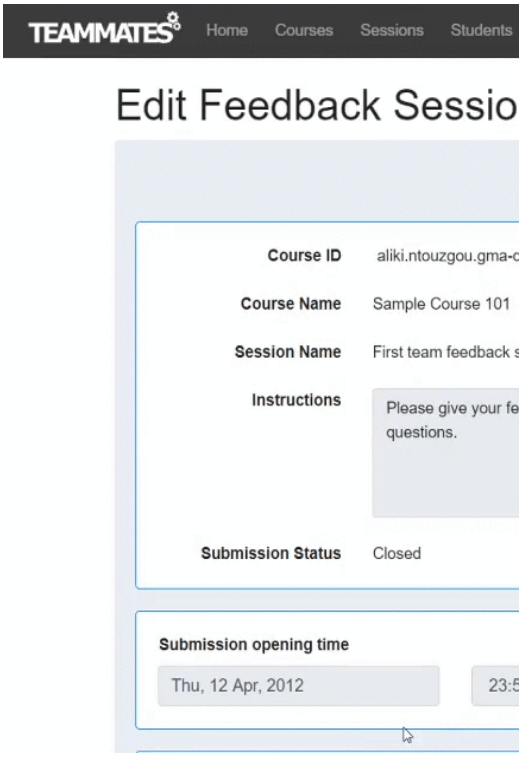
The following gif shows how the page looked before the implementation:



The following gif shows how the page looks after the implementation in a mobile size screen:



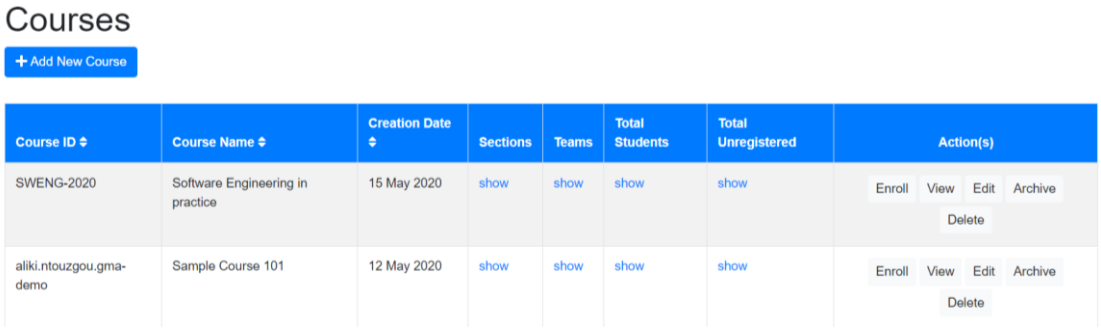
The following gif shows how the page looks while decreasing the size of the laptop screen, showing that it can also be applied in tablets:



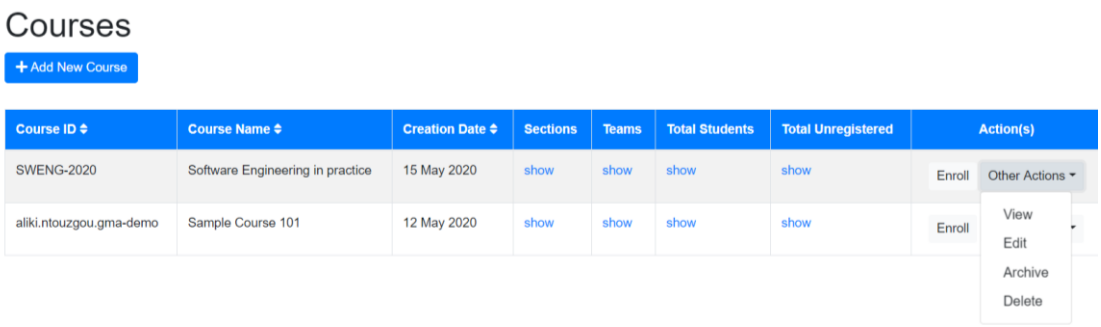
Add a dropdown button for the actions in the Instructor Courses table

Moving on to the second issue, I chose to submit one instead of participating in an already existing one. I chose to look for enhancements from the instructor's point of view, since he/she handles many more operations than the students. Since, I realized, through other courses of this semester, that I was really interested in handling cases that have to do with the overall user experience, I have decided that I wanted to make a change accordingly. I also knew that I wanted to enhance the "Courses" page, since it was a page that an instructor would have to visit more than often to handle the courses and their students. So, I thought about improving the instructor's experience by bringing on the front the main action regarding the courses, which was the "Enroll" button and gathering all the remaining actions under a dropdown menu.

This is how it looked before the implementation:



This is how it looked after the implementation:



Quality of implementation

Although I acknowledge the importance of documentation and comments in the code, when needed, my case didn't require one or another. However, I applied linting checks on both of the issues to verify the quality of my code. As it turned out, it was needed indeed, since there were some mistakes in my implementation for the second issue, not found during compile or run time. I, also, enhanced the quality of my code, that I haven't monitored, after receiving a constructive comment regarding my first issue.

```
C:\Users\aliki\OneDrive\Documents\AlikisGitRepos\teammates>npm run lint

> @ lint C:\Users\aliki\OneDrive\Documents\AlikisGitRepos\teammates
> npm-run-all lint:* -c


> @ lint:ts C:\Users\aliki\OneDrive\Documents\AlikisGitRepos\teammates
> ng lint --tslint-config static-analysis/teammates-tslint.yml

Linting "teammates"...
All files pass linting.

> @ lint:json C:\Users\aliki\OneDrive\Documents\AlikisGitRepos\teammates
> jsonlint-cli src/web/**/*.json src/main/resources/*.json src/test/resources/data/*.json


> @ lint:css C:\Users\aliki\OneDrive\Documents\AlikisGitRepos\teammates
> stylelint "src/web/**/*.scss" --config static-analysis/teammates-stylelint.yml


> @ lint:spaces C:\Users\aliki\OneDrive\Documents\AlikisGitRepos\teammates
> lintspaces -n -t -d spaces -l 1 -. "src/main/**/*.html" "src/web/**/*.html" "src/**/*.xml" "src/**/*.json" "src/**/*.p
```

madanalogy requested changes 20 days ago — View changes

madanalogy left a comment — Member

Your PR seems to be failing the CI linting check, could you try and run the it locally to verify? Thanks

Aliki-Ntouzgou commented 20 days ago — Author — Contributor

> Your PR seems to be failing the CI linting check, could you try and run the it locally to verify? Thanks
> Of course! I will let you know


`Updated css file to pass the lint test` — Verified — `169b254`


Aliki-Ntouzgou requested a review from **madanalogy** 20 days ago

Aliki-Ntouzgou and others added 3 commits 20 days ago


`Updated css to pass the TravisCI check` — Verified — `dfa2443`


`Fixed a spacing error for TravisCI` — Verified — `c71727d`

madanalogy requested changes 29 days ago — View changes

madanalogy left a comment • edited — Member

There is no point having both `xs` and `md` with the same column values, as grid classes for a given screen size apply to that screen size and larger. Some useful links: bootstrap, stackoverflow

Also, can we try having content in the center at smaller screen sizes? You can take reference from #10044 on how this is done.


madanalogy added the `s.Ongoing` label 29 days ago

Aliki-Ntouzgou commented 28 days ago — Author — Contributor

> There is no point having both `xs` and `md` with the same column values, as grid classes for a given screen size apply to that screen size and larger. Some useful links: bootstrap, stackoverflow
>
> Also, can we try having content in the center at smaller screen sizes? You can take reference from #10044 on how this is done.

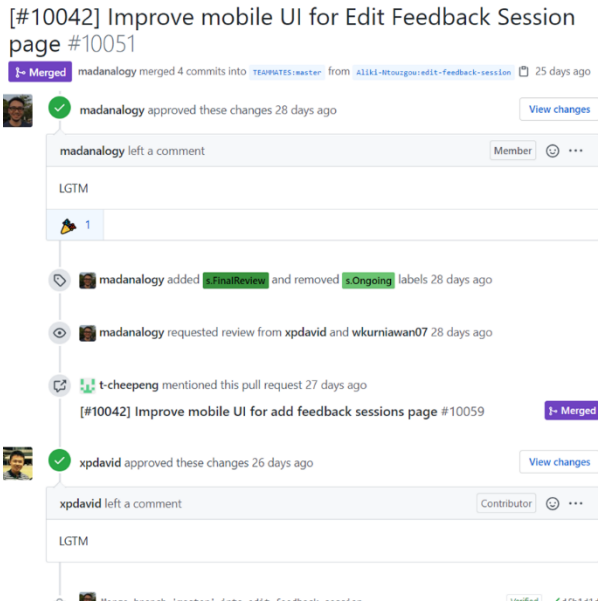
Of course! I will look into it

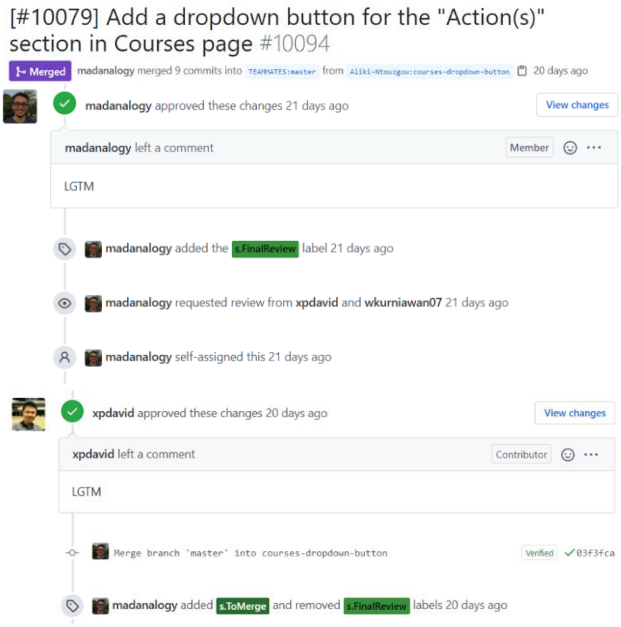

`Add better mobile UI and smaller screen sizes UI` — Verified — `ceb4410`


Aliki-Ntouzgou requested a review from **madanalogy** 28 days ago

Integration

After finally fulfilling all the requirements regarding the code and the pull requests, both of the issues were accepted and merged successfully in the master branch.





However, something that drew my attention and I would like to mention is the way the members of the development team collaborated with each other. As you can see, there was one of the authors (who was the same person that I communicated via emails with) who always evaluated the content of the PRs and suggested all the needed corrections. After he would see that the PR's quality and context seems right and commented every time "LGTM", which is an acronym for "looks good to me", he would assign as reviewer another member of the development team (probably higher hierarchically) and after his approval, the PR would be merged.

Testing

Although the first issue normally requires Jest Snapshot Testing, it was explicitly pointed in the description of the issue to not create snapshot test cases, if the component didn't already have previous ones.

Expectations
Submitted PRs should minimally include a screenshot for manual verification of the fix. Please refer to our development guideline on how to work with your copy of TEAMMATES to achieve this. PRs addressing this epic should not "Resolve" the issue but rather be "Part of" the issue (i.e. do not use GitHub auto-closing keywords with your PR). An example of this is #10052

Please also try to run the component tests locally. If the file you're working on has a snapshot, you will need to update that snapshot to pass the CI check. You can refer to the testing guide here and more information about snapshot testing here. You can refer to #9997 (comment) for a more involved guide if you're still encountering problems, or just put up a draft PR and ask for help :)

Working List
This list tracks the pages or components we are aware of that need mobile UI optimisation. It is not a comprehensive list, and if you find something not on this list, feel free to submit a PR or comment here in this issue for feedback! :)

- [x] Instructor Pages: Edit Feedback Session Page
- [x] Instructor Pages: Add Feedback Session Page
- [x] Instructor Pages: Course Details & Edit Pages

However, for the second issue I ran Jest Snapshot Testing, as normally required. What snapshot testing does, practically, is that it renders a UI component, takes a screenshot of it and then compares this screenshot with every outcome of every different test case. Here you can see some of the test cases that were updated after my implementation:

```
exports[`InstructorCoursesPageComponent should snap with default fields 1`] = `
<tm-instructor-courses-page
  SortBy={[Function Object]}
  SortOrder={[Function Object]}
  activeCourses={[Function Array]}
  archivedCourses={[Function Array]}
  canDeleteAll={[Function Boolean]}
  canRestoreAll={[Function Boolean]}
  courseService={[Function CourseService]}
  courseStats={[Function Object]}
  instructorService={[Function InstructorService]}
  isAddNewCourseFormExpanded="false"
  isRecycleBinExpanded="false"
  modalService={[Function NgbModal]}
  route={[Function ActivatedRoute]}
  softDeletedCourses={[Function Array]}
  statusMessageService={[Function StatusMessageService]}
  studentService={[Function StudentService]}
  tableComparatorService={[Function TableComparatorService]}
  tableSortBy="0"
```

```
exports[`InstructorCoursesPageComponent should snap when it is undeletable and unrestorable 1`]
<tm-instructor-courses-page
  SortBy={[Function Object]}
  SortOrder={[Function Object]}
  activeCourses={[Function Array]}
  archivedCourses={[Function Array]}
  canDeleteAll="false"
  canRestoreAll="false"
  courseService={[Function CourseService]}
  courseStats={[Function Object]}
  instructorService={[Function InstructorService]}
  isAddNewCourseFormExpanded="false"
  isRecycleBinExpanded="false"
  modalService={[Function NgbModal]}
  route={[Function ActivatedRoute]}
  softDeletedCourses={[Function Array]}
  statusMessageService={[Function StatusMessageService]}
  studentService={[Function StudentService]}
  tableComparatorService={[Function TableComparatorService]}
```

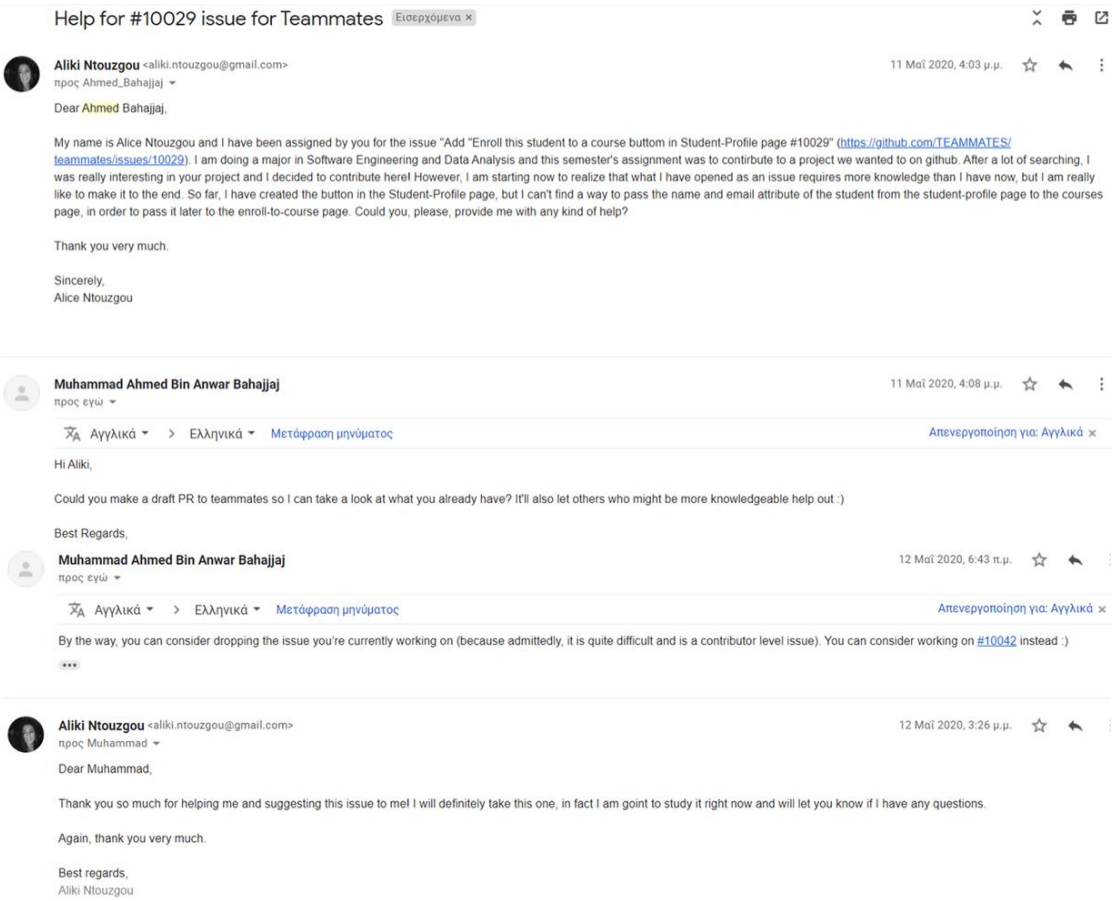
And here is the update and the execution of the snapshot testing:

```
PASS src/web/app/pages-instructor/instructor-courses-page/instructor-courses-page.component.spec.ts
  InstructorCoursesPageComponent
    √ should snap with all courses in course stats (634ms)
    √ should snap when it is undeletable and unrestorable (455ms)
    √ should snap with no courses in course stats (550ms)
    o skipped should create
    o skipped should snap with default fields

 › 3 snapshots updated.
Snapshot Summary
 › 3 snapshots updated from 1 test suite.

Test Suites: 1 passed, 1 total
Tests:       2 skipped, 3 passed, 5 total
Snapshots:   3 updated, 3 total
Time:        1.976s
Ran all test suites.

Watch Usage: Press w to show more.
```

```
Test Suites: 213 passed, 213 total
Tests:       406 passed, 406 total
Snapshots:   65 passed, 65 total
Time:        127.19s
Ran all test suites.

Watch Usage: Press w to show more.
```

Collaboration with the development team

Since I knew how important continuous communication with the development team is, I started immediately communicating with one of the authors via email. First, we discussed about a previous issue that I had opened where he advised me to contribute to the actual first one that I contributed, because what I suggested was a big undertaking for someone not experienced in Typescript. Then he provided me with some guidelines and he encouraged me to move to the next issue.



Help for #10029 issue for Teammates Εισερχόμενα ×

Aliki Ntouzgou <aliki.ntouzgou@gmail.com> 11 Μαΐ 2020, 4:03 μ.μ.
προς Ahmed_Bahajjaj

Dear Ahmed Bahajjaj,

My name is Alice Ntouzgou and I have been assigned by you for the issue "Add "Enroll this student to a course buttom in Student-Profile page #10029" (https://github.com/TEAMMATES/teammates/issues/10029). I am doing a major in Software Engineering and Data Analysis and this semester's assignment was to contirbute to a project we wanted to on github. After a lot of searching, I was really interesting in your project and I decided to contribute here! However, I am starting now to realize that what I have opened as an issue requires more knowledge than I have now, but I am really like to make it to the end. So far, I have created the button in the Student-Profile page, but I can't find a way to pass the name and email attribute of the student from the student-profile page to the courses page, in order to pass it later to the enroll-to-course page. Could you, please, provide me with any kind of help?

Thank you very much.

Sincerely,
Alice Ntouzgou

Muhammad Ahmed Bin Anwar Bahajjaj 11 Μαΐ 2020, 4:08 μ.μ.
προς εγώ

Αγγλικά › Ελληνικά Μετάφραση μηνύματος Απενεργοποίηση για: Αγγλικά ×

Hi Aliki,

Could you make a draft PR to teammates so I can take a look at what you already have? It'll also let others who might be more knowledgeable help out :)

Best Regards,

Muhammad Ahmed Bin Anwar Bahajjaj 12 Μαΐ 2020, 6:43 π.μ.
προς εγώ

Αγγλικά › Ελληνικά Μετάφραση μηνύματος Απενεργοποίηση για: Αγγλικά ×

By the way, you can consider dropping the issue you're currently working on (because admittedly, it is quite difficult and is a contributor level issue). You can consider working on #10042 instead :)

Aliki Ntouzgou <aliki.ntouzgou@gmail.com> 12 Μαΐ 2020, 3:26 μ.μ.
προς Muhammad

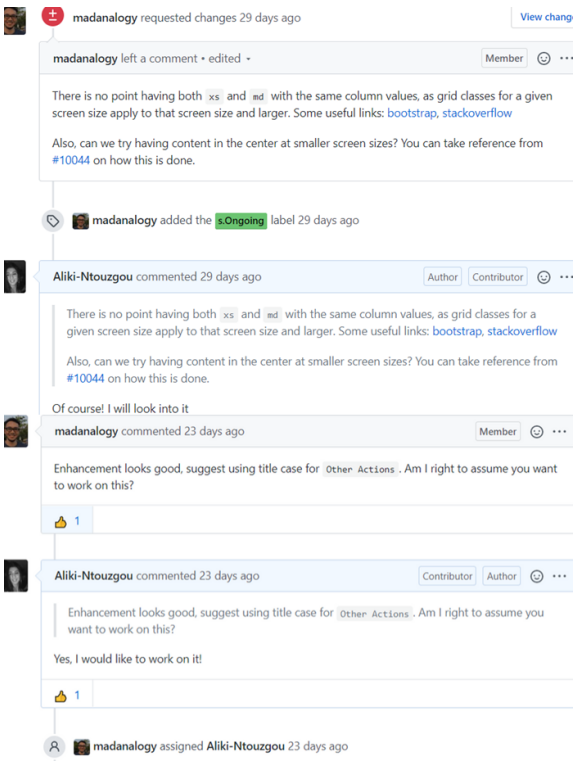
Dear Muhammad,

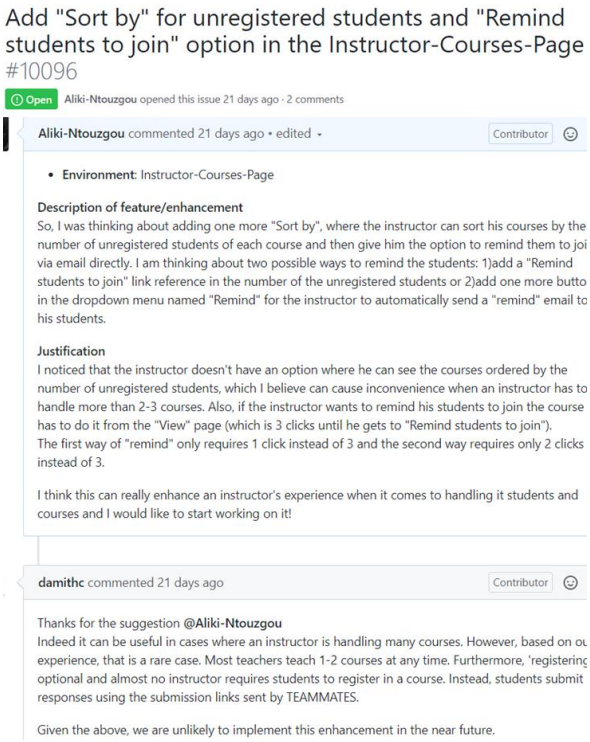
Thank you so much for helping me and suggesting this issue to me! I will definitely take this one, in fact I am goint to study it right now and will let you know if I have any questions.

Again, thank you very much.

Best regards,
Aliki Ntouzgou

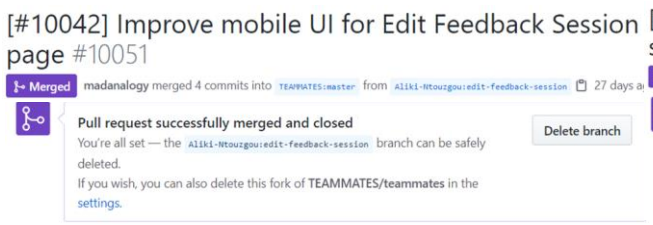
Furthermore, we had a conversation in GitHub regarding my pull requests (left picture) and a third issue that I submitted to work on it, but, unfortunately, turned out that it wasn't what they needed (right picture).

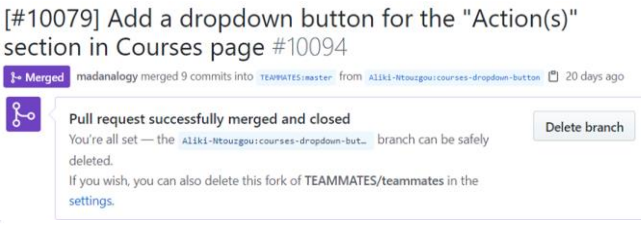




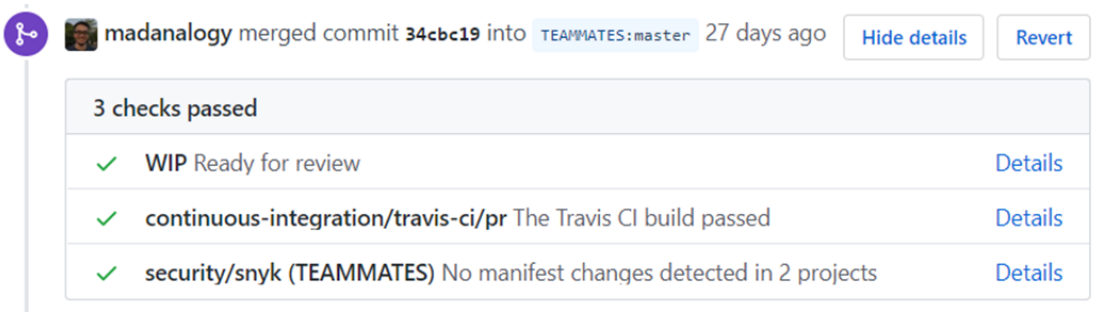
Quality of the deliverables

In order to ensure the quality of my deliverables I went thoroughly through the provided documentation and the developer guidelines. Also, I went through some of the previous successfully merged pull requests in order to locate patterns that qualify for the quality of the code and overall, the deliverable. For example, as pointed in the draft templates for creating a pull request, I created a new branch for every issue, named it correspondingly and worked on it.





Also, in their final form, both of my pull requests passed the checks required by the development team, with the most important being the one of Travis CI, since it include the widest number of checks.

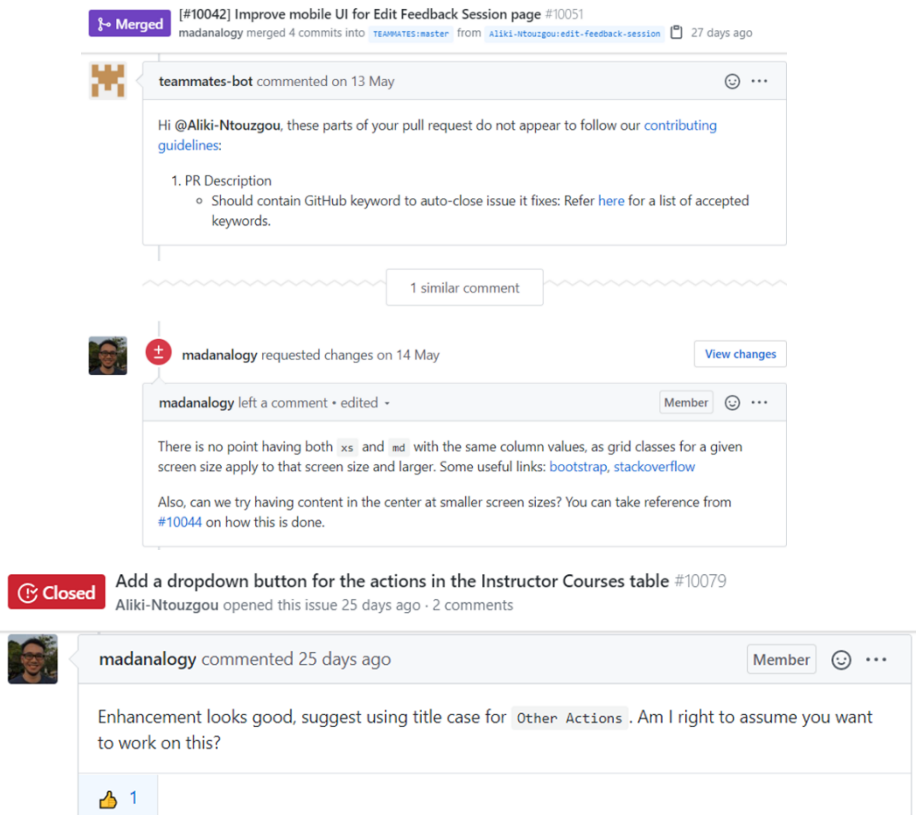


Work in GitHub

As I mentioned above, the TEAMMATES development team provided a total of twenty (20) different documentation and guidelines files, which provided a safe ground and made working in GitHub a pleasant experience. However, after forking and cloning locally the repository, I mostly combined what I learned in the course of SEiP with the given guidelines in order to handle successfully the git bash commands, the commits and their messages, and whether they needed or not auto-closing keywords, the proper submission of the issues and creation of the pull requests. Regarding my workflow, I decided to first participate in an already existing issue in order to gain a hands-on experience of contributing to the specific software and then make my own implementation successfully, knowing that I had contributed, even in a small amount, in such a big, public project.

Code reviews

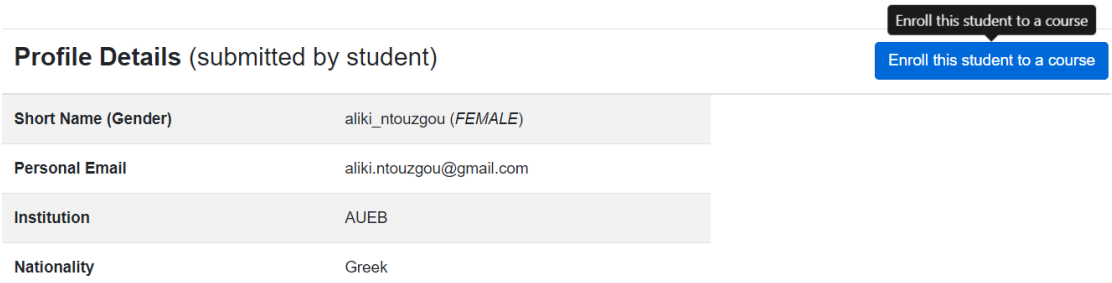
The main author, that I was in touch with, went through my code and commented on some parts that required corrections and changes. Also, the development team has integrated the TEAMMATES bot which automatically monitors some incorrections and comments on them. For instance, as you can see below, the bot commented on my first pull request mentioning that its title didn't contain any auto-closing keyword, as it was required. The reason that I did not change that, is because the corresponding issue required explicitly to not use any such keywords in its pull requests.



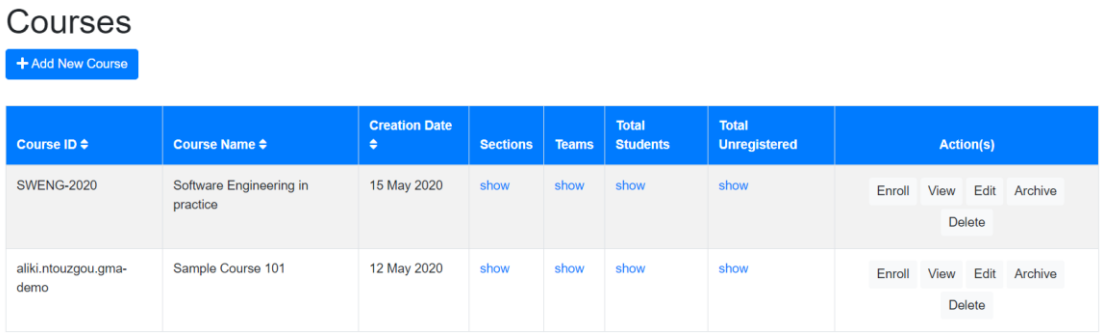
Lessons learned – Conclusion

Contributing for the first time in an open source software without being familiar with the programming language was a big challenge for me with its ups and downs. First of all, I spent a lot of time trying to figure out the initial issue that I had opened, until the author I was in contact with advised me to leave that to a more experienced developer and move on to another one (picture 1,2,3). Moreover, after finishing my two implementations, I thought of another enhancement, and, although I was really motivated and excited about it, the development team didn't think it was something useful for the time being (picture 4). Regardless the ups and downs, I realized in a practical level the importance of documentation, of not always waiting for the change and taking initiatives, of following the rules and constantly communicating your work with the development team and that the phrase "trial & error" applies here as much as in every other aspect of life.

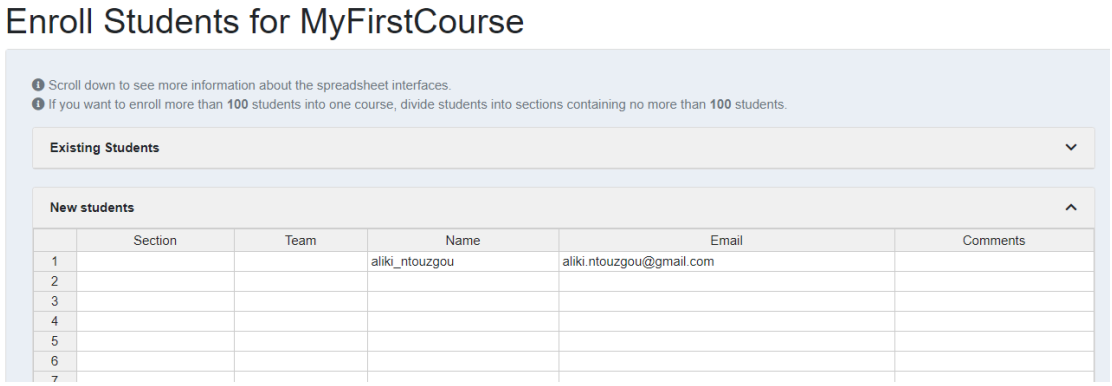
Nevertheless, it was a great achievement for me and a confidence booster to realize that I actually achieved contributing to an open source project, without having to be an experienced software engineer.



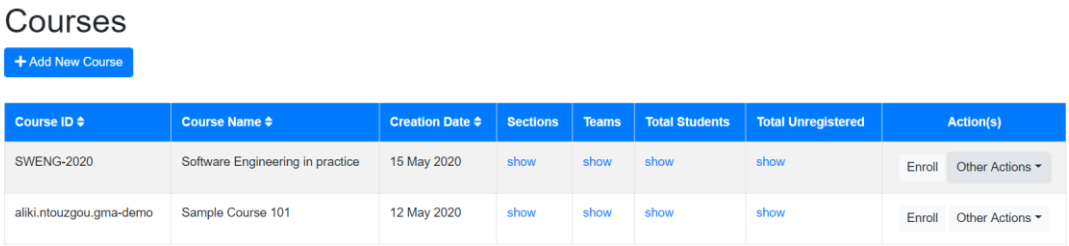
Picture 1 - Addition of the "Enroll this student to a course" button



Picture 2 – Transfer to the Courses page to select a course to enroll to after clicking the button



Picture 3 – Automatically pass the name and email of the student for enrollment



Picture 4 – The idea: **Add "Sort by" for unregistered students and "Remind students to join" option in the Instructor-Courses-Page**