

#### Sprint Retrospective Iteration #4

Issue	Task	Task Assigned to	Estimated Effort per Task	Actual Effort per task	Done	Notes
62	TA average rating	Kiril	2 hours	1 hour	Yes	
	Refactor email sending to a separate class + test its functionality	Kiril	4 hours	4 hours	Yes	
46	communicationService Exception handling	Jeff	0.5 hours	0.5 hours	Yes	Currently uses custom exception, may need to switch to httpException if we decide to standardize to that
64	Further increase course test coverage	Jeff	2 hours	2 hours	Yes	All except for communicationService and strategies tests. They are covered in a separate issue
52	Hire TA also updates Student microservice on role change	Jeff	1 hour	1 hour	Yes	
bug	Changed return types from strings to json objects	Efe	3 hours	3 hours	Yes	
	Refactoring and Testing Authentication	Efe	5 hours	4 hours	Yes	
58						
60						
65	Combining lecturer with authentication	Anna	5 hours	8 hours	yes	
44	Testing Inter-Service Communication	Eames	3	4	yes	With this and finishing testing the strategies, code coverage (line and branch) is at 100%
58	Add logic for applying, by sending request from student to course	Oisín	2 hours	4 hours	Yes	
60	Remove useless subpackages from student microservice	Oisín	10 min	10 min	Yes	
66	Update handling of course codes in Student microservice	Oisín	0.5 hours	10 min	Yes	
57	Test all student functionality	Oisín	n/a	5 hours	No	Everything has been tested, except for classes that require integration testing

#### Main Problems Encountered - Efe

Problem: Testing JWT tokens

Description: JWT tokens are hard to test due to many factors that compose the token

Reaction: Reading articles on medium to see how to do that

#### Adjustments for new sprints - Efe

Try listening to the lectures before you start refactoring

#### Main Problems Encountered - Kiril

Problem: Refactor Email sending to a separate class

Description: In order to test the new class correctly and follow the open-close principle I had to create a dependency injection

Reaction: I made a DI that I introduced in the service and I had to configure the @Bean of the service to be working

#### Adjustments for new sprints - Kiril

Disapprove hour declaration option

#### Main Problems Encountered - Oisín

Problem: No real problems, just a lot of time-consuming testing

Description: A lot of classes still needed testing

Reaction: I tested a lot

#### Adjustments for new sprints - Oisín

Spending more time on manual and integration testing between microservices

#### Main Problems Encountered - Eames

Problem: Testing the CommunicationService.java class

Description: Mocking client requests and response (as well as json parsing) was quite difficult.

Reaction: Some refactoring had to be done. In the case of GSON, mocking was entirely impossible, so other workarounds were necessary where the json itself was mocked.

#### Adjustments for new sprints - Eames

I will try to spend more time actually field testing the application (with postman) and not with just JUnit

#### Main Problems Encountered - Jeff

Problem: No real problems encountered, only minor ones have to deal with aligning and standardization across different microservices

Description: Since all microservices are constantly being updated/refactored etc, some interaction logic may become outdated as was the case this week. Things like endpoint request methods, data transfer and object fields (converted to json) needed to be updated and standardized  
Reaction: Good communication with relevant team members to identify what some outdated logic needed to be converted to.

**Adjustments for new sprints - Jeff**

Microservice is almost finished at this point, remaining requirements are to continue manual testing and testing inter microservice interaction

**Main Problems Encountered - Ana**

Problem: I thought that integration would be easy but many classes were untested and features did not properly work

Description: There were some not working features on different services

Reaction: I asked other teammates to look and test all their features and hopefully soon everything will work

**Adjustments for new sprints - Ana**

Check every MR