

# SEM Assignment 3- Mutation Testing

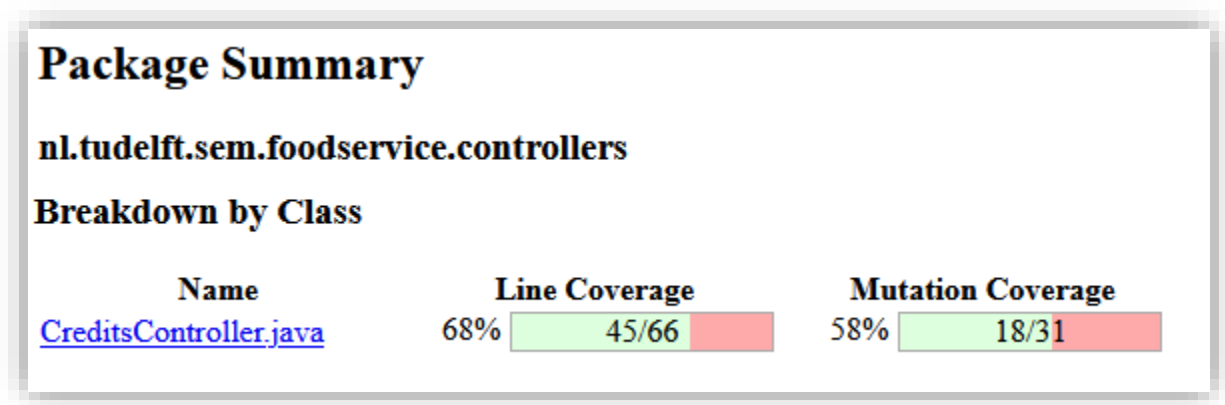
Group 52

For assignment 3, we have used Pit Test in order to improve our mutation coverage. In this report we will show the percentual improvement and discuss how we have achieved this improvement in mutation coverage.

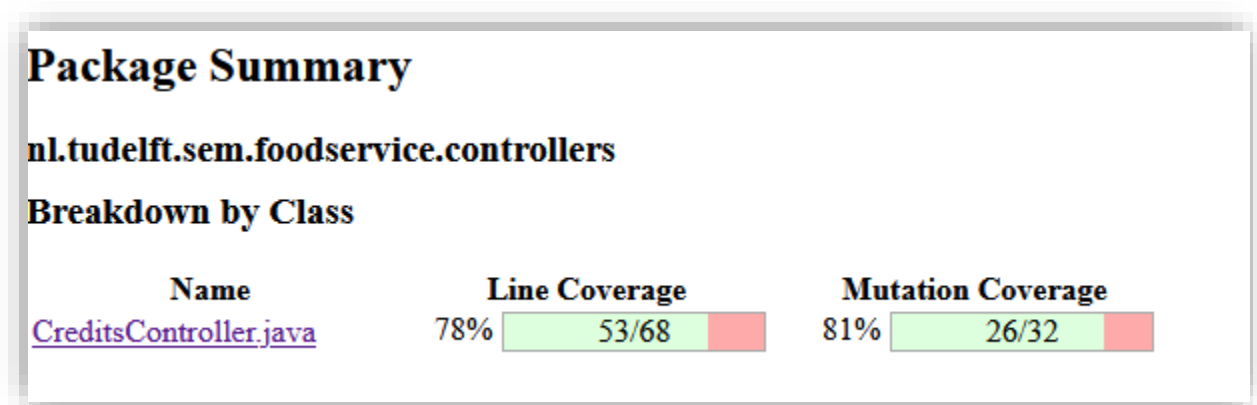
## CreditsController - Food Microservice

To achieve a higher mutation score, we made a lot of minor changes including splitting one of the methods into two separate methods. After that we created two new tests for each newly created method. We also used spies to verify if methods get called specifically for the `splitCreditsSomeHousemates` method and added testing cases for on- and off-points for the `insufficientCredits` method.

Before:



After:

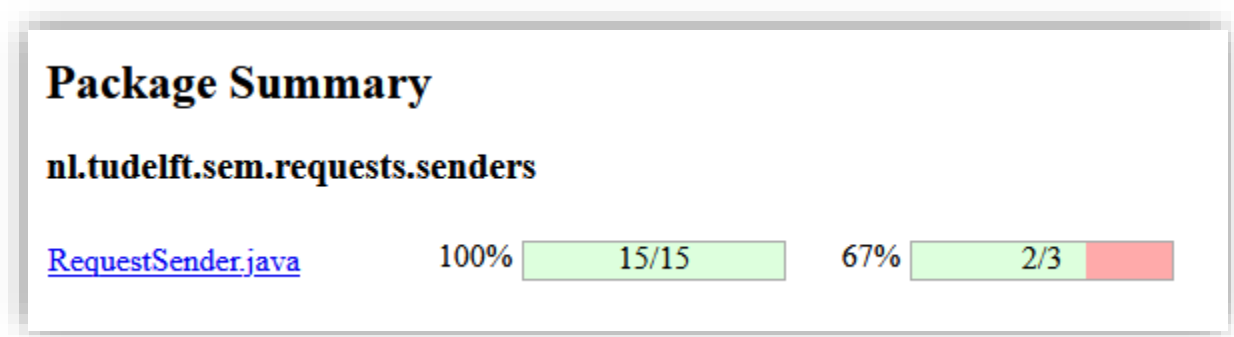


Final commit

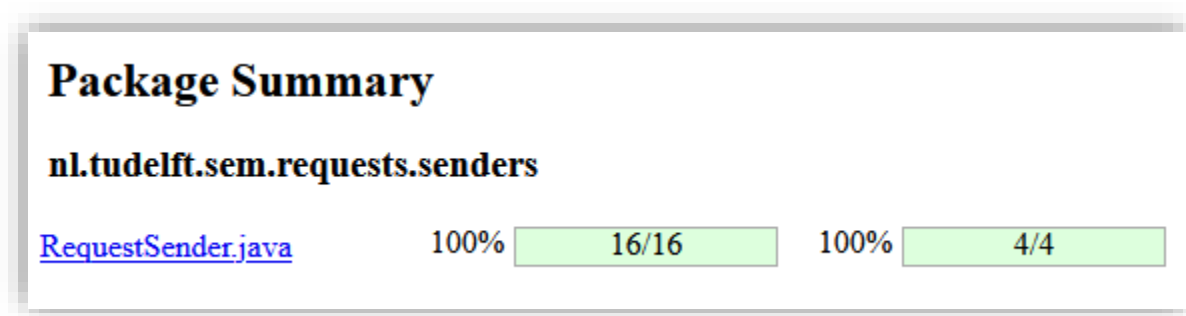
### RequestSender - API Gateway

We created a new method for creating the body parameter, after that we created 3 tests for each possible *BodyExtraction*.

Before:



After:



[Final commit](#)

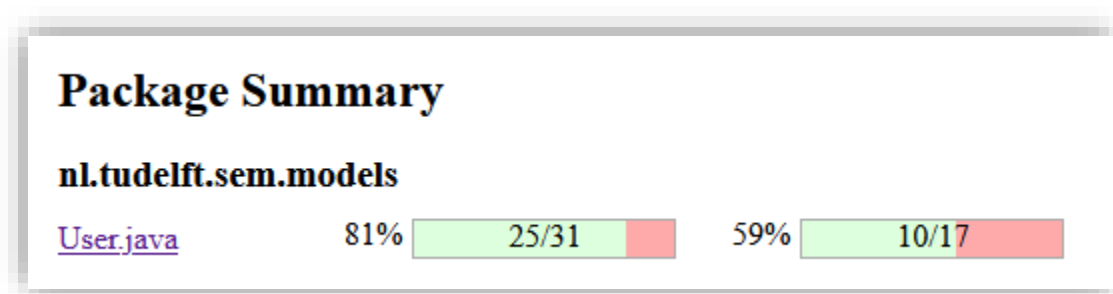
### User - House management

The mutation score of this class was initially 59 percent. A lot of the mutants removed a line and were not killed in this process, whilst we did check if the functionality that line performs was performed. After investigating the methods that were called, there were some duplicated lines: the method in the **User** class performs an action **x** and calls a method from another class, which subsequently also amongst others performs action **x**. This caused the mutant to not be killed when action **x** in the **User** class was removed. We have removed the duplicated lines, and this improved the mutation score quite a bit.

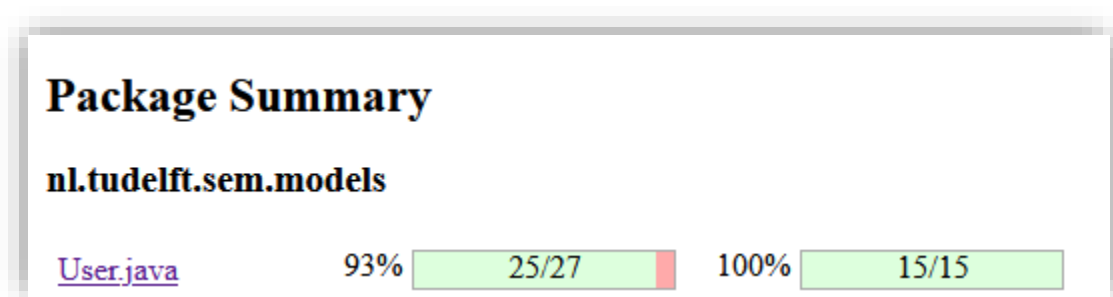
In addition, we found an untested method and therefore created a new test case for this method.

Finally, we found a few methods which missed a couple of asserts, and after adding these no mutants could survive anymore, resulting in a 100% mutation score.

Before:



After:

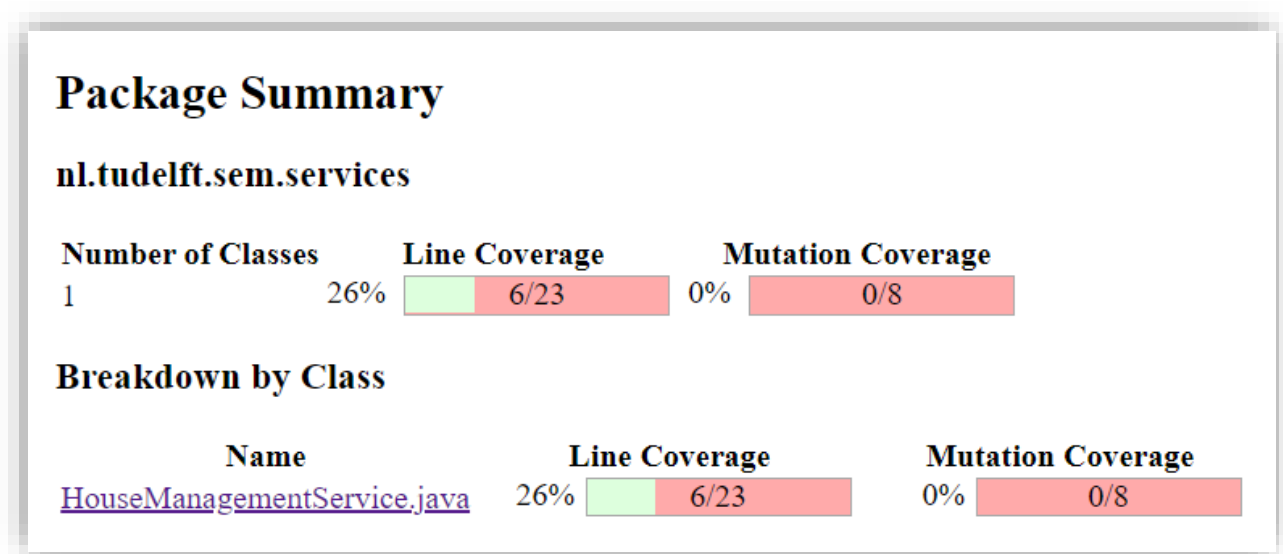


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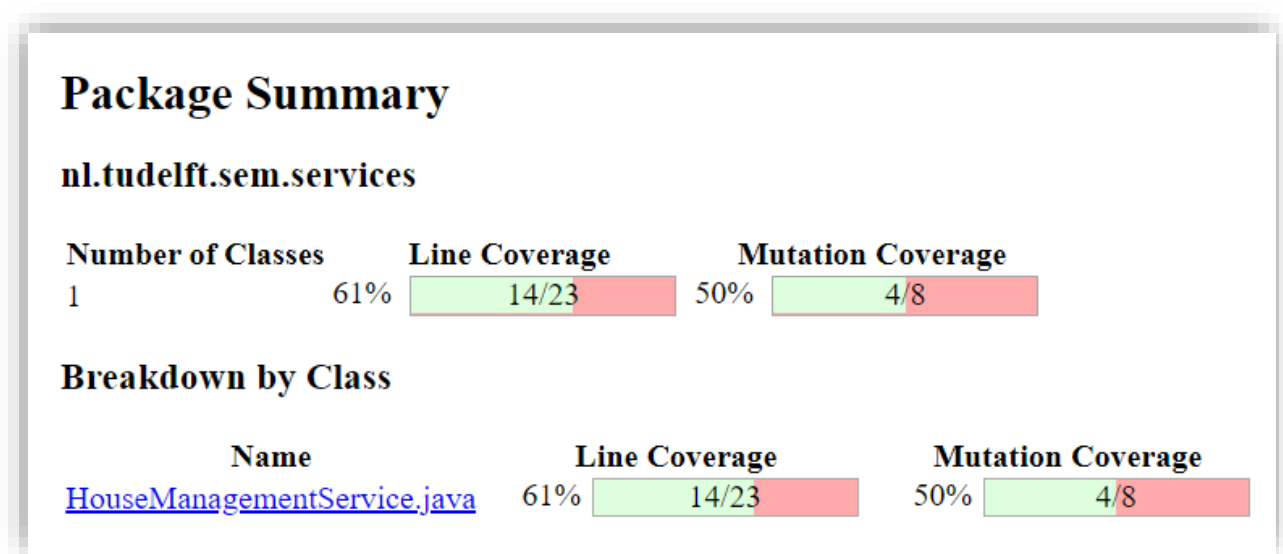
## HouseManagementService - House management

During the refactoring of `StudentHouseController` we moved some repository functionality to `HouseManagementService` and after running pitest we discovered we had not written any tests for those new methods. Hence, by writing some tests to test the functionality of each method, we improved the mutation score.

Before:



After:



[Final commit](#)