In this essay, we will reflect back on our progress during this course. We are going to look at different aspects of our project.

Process
We started out the project really well by starting right away. After a short while, we had code for the bouncing balls and a few days later, this was all implemented in a fully working GUI. Shortly after, a player was added to the game scene so that the game could be played. Our first working version was finished and got rewarded with a 7,7 overall. The only negative we got was on our testing, which got a 4.

In the first iteration, it was our plan to implement a logger. We also wanted to activate a few more tools, add some more tests, make a UML and add some changes to the GUI and the game itself. A few tasks did not succeed this iteration. The tests were supposed to make sure we had 75% line coverage, but we did not get this percentage yet. Also, Cobertura could not be activated yet.
The assignments which were included in the first iteration did not go very well (we only got just over half of the points), but the code got a good review again, except for the testing.

Iteration two was all about implementing power-ups and implementing doors into the levels. Also, there was testing to be done. The power-ups and doors were implemented successfully, but the testing still needed some work after this iteration.
The assignments for the second iteration went a lot better than the assignments of the first iteration. The code got good reviews as well, but again testing got a low grade, as well as tooling.

In the third iteration, there was a lot of testing taking place. Also, a lot of Checkstyle-, PMD- and FindBugs errors were taken care of. Because the third iteration was mainly focused around testing, our testing grade went from a 2 to a 7,5. The assignment got an 8 and the code got an 7,1 overall.

In iteration four, we implemented a multiplayer functionality, as well as a survival game functionality. Also, the level data was going to be moved to other files. Code quality was also going to be improved in other ways. All those tasks were done and the expected grade of this iteration was an 8,5.

Overall, the development process went fairly well. We learned from our mistakes over the course of making this game and we applied that knowledge to our development. For example, we learned that we did too much of the work on Thursday- and Friday nights, what meant that we did not have much time for code review. We changed this by working more earlier in the week, and the quality of our code reviews went up with this change.

Comparison
There are a lot of differences between the first version we delivered and the most recent version. The GUI has changed a lot by adding a lot of new pop ups and screens. The code is better structured as well, and we got a lot more tests too. A lot of features were added during the process. We now have a multiplayer feature and survival game was also added. The levels contain doors now too, which was not available in the first version. The popped

bubbles now also have a chance to drop a pickup, which was not possible in the first version. This pickup can be a coin, which adds points to the total, a life, which of course adds a life, or a power-up. Another difference is the logger, which logs things that happen in game in a log-file.

As we can see, there have been a lot of improvements to the game since the first version and therefore the game has changed drastically.

Testing
The testing in the beginning did not go as planned. We wanted to start testing as soon as we started coding, but this did not happen. We started testing way too late. It did not really impact our code negatively as all the tests we wrote later on succeeded, but it could have helped us during the development if we wrote our tests earlier. In the end, we wrote the tests and our test coverage was pretty high so it turned out all right.

Team
Our team consisted of a diverse group of people, which resulted in the fact that every task was easily picked up by someone. This helped the development of our project, because a lot of times everyone had a task they did not mind doing.

Features
On Tuesdays, we had to come up with new features for our game to be added for the next Friday. This was always hard, but we learned a lot from this because we had to think creatively. Implementing these features usually was done pretty well, because it had a high priority and everyone was helping each other during the week.

SCRUM
Although we did not have daily 'meetings', we had meetings on Tuesday and we usually had daily contact through WhatsApp the rest of the week. This meant that everybody was working on the project daily and everyone was helping each other.

Future
We learned a lot during this project. We were late a few times regarding the deadlines, and during the project we also made progress on this subject. We learned from our mistakes and in the future, we will start earlier in the sprint and this will probably result in less being late.
A lot of people also were late often at the meetings. I think we learned from this and that this will happen less often in the future.

Overall, we learned a lot from this course.