Evaluation & Testing Report

Evaluation and Testing Methods

Overall, the project underwent three stages of testing; unit testing, requirements testing, and play testing. These testing stages were used to ensure that the product met the brief to a reasonable extent and that the code was of good quality. During the course of the Assessment, it was decided that high quality code would maintain a good balance of readability and maintainability, whilst also being efficient. Furthermore, the team tried to use consistent naming practices, comment sections of code where the function was unclear at a glance, and use consistent indentation. This was done because many people were working on the code and helped when moving to a section worked on by another person.

In addition to these factors, the code also needed to be expandable, allowing for expansions of the current program to add more features or to change systems within the project. We ensured this by using good object oriented design, for example, our group made sure that no god classes existed within the project, with the aim of each script only carrying out a single task. A good example where the project is easily expandable is within the punishment card system, because each card is modularised, meaning that new punishment cards can be easily added without affecting the rest of the game.

Our team used the same approach to unit testing and requirements testing as done during Assessment 3. To validate the quality and correctness of the code, the unit tests were used throughout the implementation phase and were linked directly with the requirements they relate to, improving traceability. The unit tests helped ensure that new additions to the code did not interfere with other features and allowed us make sure the code remained functional while improving the quality of the code through refactoring. Also, before the Assessment 4 changes were implemented, unit tests were written for the Assessment 3 features because these were not provided by the previous team. This meant that we could identify problems before making any additions to the project, which saved a lot of time and helped to improve the overall correctness of the code.

In general, the requirements were created from the brief and the Assessment 4 requirements changes document. Therefore, if we could test that the requirements were met, then we could state that the brief was met and the customer's needs fulfilled. During the requirement testing process, a test was generated for each requirement and was placed into a table along with cells for results, evidence and linked unit tests. This method was a form of black-box testing and allowed us to test from a user's perspective. The amount of these tests that passed was a good measure of how well the product met the brief.

Report on Unit and Requirement Tests:

Test Statistics:

Test Type	# Tests	# Tests Passed	% Passed
Unit	95	95	100.0
Requirement	30	27 (2 failed, 1 not testable)	90.0
Total	125	122 (2 failed, 1 not testable)	97.6

Testing Material:

The tests and results can be found in two sets of tables: one for the unit tests and one for the requirement test. The Unit tests are shown in a table with the test ID and test name along with related requirements, expected outcome and result; the proof of these test results can be found below the table. The requirement tests are stored in another table showing the test description, results, explanation for failures and related unit tests. This table also has an Evidence ID column which links to another table below showing the proof for the tests.

To see the tests run during the testing phases and the outcome of each test, please use the following links.

Unit Tests: https://as2378.github.io/unlucky/files/Assessment4/Unit_Tests.pdf

Requirements Testing: https://as2378.github.io/unlucky/files/Assessment4/Requirement_Tests.pdf

Play Testing

The largest modification between the testing cycle in Assessment 3 and Assessment 4 is the addition of play testing. This step was added to the end of all other testing with the aim of evaluating the quality of the game and any additions that may have been desired. We were previously unable to use play testing at earlier stages due to the game not being at a complete stage. For the play testing, users who had never interacted with project before, were instructed to play one match, with access to the user manual, and complete a short questionnaire afterwards. Throughout the match, the group was not allowed to give the users any guidance to how game worked, other than the general goal of game.

Play Testing Questionnaire:

1) Did you enjoy the game?
2) Did you use the user manual?
3) How easy was it to understand the punishment cards?
4) How easy was it to understand the movement of units within the game?
5) How easy was it to understand the combat system?
6) Are there any additional features you would like to see added to the game?

Play Testing Statistics:

Question	Player 1	Player 2	Player 3	Player 4	Player 5	Player 6
Question 1 (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes
Question 2 (Y/N)	No	No	No	No	No	No
Question 3 (1-5)	3	4	3	3	4	3
Question 4 (1-5)	4	4	5	4	5	5
Question 5 (1-5)	5	2	2	2	3	1
Question 6	• Increase the variety of maps • Stats on how a move would affect a player, for example if you hover over the sector you want to attack you can see the outcome of the attack without having to play it. • In-game instructions (either on screen or in-menu) • More interactive or intuitive combat					

The play testing allows us to see how well the game has succeeded in the implementation of the brief, measures the enjoyability of the game and shows us how easy it was to pick up.

As the results show, most users enjoyed playing the game, although it also seems many failed to understand parts of the mechanics, in particular the combat system. We believe this is due to a lack of clarity within the game around the combat system, because in most cases the outcome seems random. Although an explanation of the combat system was provided within the user manual, none of the tester ended up reading the user manual. We feel that combat was hurt the most by this fact because the punishment cards had clear explanation of the purpose on the card, and the movement is extremely intuitive.

Additionally, the group feel like a series of tutorials within the game may help to solve this issue. An optional tutorial at the start of the game could help to explain how the combat system works along with making the information more available to the users. Also, tool tips that explain the outcome and the reason for it within the combat would help explain how the conflict system works.

Comments on Final Requirements

The group tested that the product satisfies the requirements by using requirement tests for each individual requirement. Overall, one requirement could not be tested and two others failed.

C1 states “The game must be completed and delivered by 7th May 2018.” This could not be tested as the tests were carried out before the due date.

N7 states that “Landmarks must correspond with real-life landmarks at the University of York.” The landmarks on the map do not correspond to real landmarks and are instead spread out in the interest of game balance. If the landmarks were clumped together it might lead to a player away from the clump being able to amass resources whilst the other players fought, giving them an advantage. The landmarks were spaced out as evenly as possible to help avoid this.

F3 states that “The game will be launched with 4 human players and the players will cover all unclaimed sectors to check for the PVC. Test is passed if the minigame launches upon capturing a sector containing the PVC.” Instead of launching when the sector is captured the player can use a move to play the minigame once they have captured the appropriate sector. This was a design decision taken by the previous group to work on the project which we decided to keep as the minigame does not guarantee rewards and so it would be inappropriate to only let the player play the minigame when they captured the sector.

All requirements other than these were met and passed their respective requirements tests. With 28 of the 30 requirements met we feel as a group that project has succeeded in meeting its brief. The majority of the requirements were written by the first group, however, new requirements were added to encapsulate the Assessment 4 changes and some of the existing requirements were updated to improve their testability.

The final Requirements can found here:
https://as2378.github.io/unlucky/files/Assessment4/Updated_Requirements.pdf