

# Software Engineering Group Project

## End of Project Report

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## **1 INTRODUCTION**

### **1.1 Purpose of this Document**

The purpose of this document is to provide a summary of the CS22120 Group Project 'JoggleCube', in regards to it's overall performance against the project specifications detailed in SE.QA.CSRS (JoggleCube Game Requirements Specification). It also serves as an evaluation of both the group's output as a whole, as well as the work of each individual team member.

### **1.2 Scope**

This document covers the developmental history of the software, as well as evaluating how well it meets the project requirements. It also includes an overview of the work performed by each member of the group, towards both the final software and related documentation. It should be read in the context of the project requirements (SE.QA.CSRS), specifically in comparison to the requirements specified.

### **1.3 Objectives**

This Document aims to:

- Provide an overview of the development of the software and overall project.
- Evaluate the finished software against the requirements outlined in SE.QA.CSRS.
- Outline and evaluate the performance of each team member.
- Critically analyze the final project and the overall performance of the team.

## **2 Management summary**

This document details the development process behind the Jogglecube project, including both the developmental history of the software and the roles played by each team-member involved in the project. Overall, the final release of this software fulfilled and exceeded it's desired functions (as outlined in the requirements spec, SE.QA.CSRS), while remaining both optimized and maintainable, arguably the best outcome for a project of this scale created by a team of of comparatively novice software developers. Although the nature of the work completed varied between each team member, everyone involved in the project made a notable contribution to both the final software and the related documentation. Some group members also served to fill particular key roles within the team, as detailed below:

- Group Leader: Alex Thumwood (alt38)
- Deputy Group Leader: Samuel Jones (srj12)
- QA Manager: Nathan Williams (naw21)
- Deputy QA Manager: Rhys Evans (rhe24)

### **3 A historical account of the project**

Work on the project first began on the 01/02/2018, with the creation of its git repository. The first bit of code behind the software, a basic build of the UI, was pushed to the git a day later. From this point, work flow was relatively consistent; the code behind the project was tweaked and updated almost daily.

During the project we used trello boards [1] to keep track of who was working on what tasks and reported any bugs on it for the relevant team member to fix. On top of the weekly tutorials we all met as a group on Monday afternoons in the library to do reviews and other general discussions. As deadlines approached we also had Wednesday afternoon session for working and completing the documentation.

The User Manual for the designed system, Use Case Diagrams (included within a presentation), and test specification for the designed system were all completed and submitted for the review deadline on the 22nd February: feedback was provided on the 28th of February and implemented in the subsequent weeks. The design specification for the software was completed and submitted for review on the 22nd March, and feedback was provided on the 3rd April. Again, the changes suggested in this feedback were implemented in subsequent weeks. The software itself, excluding JUnit tests, was completed on 02/05/2018; testing of this code and QA review continued until the 04/05/2018 submission deadline. The documentation, excluding this report, was completed on 07/05/2018, the documentation review process began the same day, prior to submission and demonstration on 09/05/2018.

### **4 Final state of the project**

#### **4.1 Currently Known Bugs and Fixes**

##### **4.1.1 Starting new grid button not working**

If the grid has been started and then quit 3 times, then the game will throw an error out of bounds exception when running the `cube.populateCube()` code in the `Cube.java`. We find that the game will not start, the new grid and will keep throwing exceptions every time we click the button, this has something to do with the `bagOfLetters` Array List in the same file causing the issue, given more time I would like to fix this or at least add a work around to compensate for the error. We would accomplish this by either adding a new Java based error, or checking for the size of the bag of letters and if it is below 0 we should reload the bag of letters to handle the error, it's more of a work around but it should still work. This would have been realised before code submission however the bug was only brought to light on how to reproduce the error post submission.

### **5 Performance of each team member**

#### **5.1 Agata Lefek - agl6**

Agata's main area of focus in this project was testing: she contributed heavily to both the JUnit tests within our software and the related testing documentation. She worked alongside Aleksandra in these tasks, the pair working relatively independently from the rest of the group, up until implementation week. Bar a few issues with her blog post in the first few weeks, her work was completed to a high standard and submitted on time. The timekeeping in regards to meetings requires some improvement, but she attended the majority of meetings and, alongside Aleksandra, kept the rest of the group informed of all her contributions to the project.

## **5.2 Aleksandra Madej - alm82**

Aleksandra worked alongside Agata in implementing the JUnit tests in the code, and writing the testing documentation. Like Agata, she consistently produced work of a high quality in a timely manner; of particular note is her effort during implementation week, in which she worked exceptionally hard to fix bugs in her code quickly and effectively, so as not to disrupt other team members and their own coding work. She was also always in attendance at both timetabled and un-timetabled meetings, and was rarely tardy. Her blog was updated regularly, and while she seemed nervous to speak in front of the group (as some people are) she pushed herself and kept us updated on her weekly progress. She was a good team player, and while she didn't seem as confident in her coding ability as some of the other team members, she worked hard to keep up, asked for help where required, and overall, performed exceptionally well.

## **5.3 Alex Thumwood - alt38**

Alex's main contribution besides the obvious contributions as the group leader include fiercely fighting to get the Help pages done and the initial UI designing. One notable achievement is pioneering a nice piece of feature creep, namely the Colour blind mode. Alex has suffered from numerous health issues during the group work resulting in absences and tardiness to group meetings timetabled or otherwise. However, regardless of this Alex has always endeavored to make sure the group is on track and ready to meet deadlines as well as committing decent effort to documentation, at different periods throughout the project's duration, notably when people were falling behind before a deadline.

## **5.4 Cameron Humphreys - cah27**

Despite a persistent medical issue that effected his ability to attend some meetings, Cameron worked very hard on this project, and I'm pleased with his teamwork and overall contribution. He is responsible for a large part of the Javadoc within the software, a particularly thankless task that he was assigned and undertook without complaint. He also wrote the Timer Class of the software. In instances where his doctors appointments and tests did effect him attending meetings, he always informed the group and updated us on his progress, arguably the best he could do in such an unfortunate situation.

## **5.5 Lampros Petridis - lap12**

At the beginning of this project Lampros, struggled with the work more than other members of the group, although I saw a notable and commendable improvement in his effort and overall work as the project went on. This was, as it turned out, attributable to personal issues that were, understandably, effecting his academic life. Lampros took the time to explain this to me when the issues had subsided to a more manageable level, and he felt able to discuss it. It is also worth noting that he particularly excelled in implementation week: arriving on time, working exceptionally hard all day and, on several occasions, staying late after most the other team members had left. I commend both his handling of external issues, and his mature response to prior criticism, and am impressed with the work he has produced during the project.

## **5.6 Nathan Williams - naw21**

Nathan worked exceptionally hard on this project, contributing extensively to both the code and documentation. Most notably, he is responsible for drafting the framework of most of the documentation (this document included) and setting it up on Overleaf[2], wherein it was easily editable by the entire group. This made dividing up working among group members and keeping everyone informed of changes easy, and streamlined the overall documentation process considerably. The only real area he

seemed to struggle in was communicating changes to the code with the group properly, unintentionally causing confusion and frustration, but this was a comparatively small issue. Nathan also served well as a QA manager, taking detailed minutes every meeting and distributing these among the group in a timely manner, as well as making himself particularly invaluable in troubleshooting other group members issues.

## **5.7 Rhys Evans - rhe24**

Rhys distinguished himself in this project, both as a highly competent coder, and an all round hard worker. He was responsible for building much of project, including framework used by other team members, and a large chunk of both the FMXL and CSS behind the project. Much of the overall aesthetic of the UI can be attributed to his skilled implementation of my Use Case Diagrams, the look of which he tweaked to give the program a more visually pleasing feel. He showcased his dedication to the group in a variety of ways: one such example of this is his successful implementation my proposed colour-blind colour scheme toggle, which he completed in one afternoon/evening, using a far less complicated and far more efficient method than the one initially proposed. I have no doubt in my mind that the software would not have turned out nearly as well as it has were it not for Rhys' contribution, and consider working with him on this project to have been a privilege.

## **5.8 Samuel Jones - srj12**

Much like Rhys, Sam absolutely excelled in this project, and his contribution to the overall software is expansive and highly commendable. Indeed, he is responsible for the vast majority of the code in the back-end implementation of the project. He also contributed heavily to the documentation, especially the design specification, and also provided leadership support to myself as my deputy Group Leader. Sam was often the first to arrive to the weekly timetabled meetings, and was always timely with all group activities. He always completed his weekly tasks, and would happily talk the rest of the group through his work during meetings. Again, much like Rhys, he dedicated himself to the project as much as possible (taking into account the fact he had other assignments and deadlines for other modules), often working odd and inconvenient hours to get bugs and issues addressed as soon as possible. His contribution to the project was invaluable and he was a pleasure to work with.

## **6 Critical evaluation of the team and the project**

Overall, I believe the team performed very well on this project: all members displayed excellent interpersonal skills the vast majority of the time, and the level of synergy between team members working on different areas of the project was exceptional. Deadlines were met, consistently, throughout the process, and the work submitted was always of a high quality: indeed, I believe many of the features of the completed software went above and beyond what was expected, based on the requirements issued when the assignment launched. Although there were some instances of discord between group members, these were infrequent, and were easily resolved.

The rate at which the coding of the project was completed is also worthy of note: this gave the team more time during implementation week to focus on testing and documentation, as well as working on the overall aesthetic of the UI, giving the program a more polished, professional feel.

The software itself, as aforementioned, seems to go above and beyond what was required for the assignment, while still keeping feature creep to a minimum. Moreover, the additional features not specified in the requirements, such as the language options and colorblind toggle, were specifically designed so as not to overlap, inhibit or impede on the function of required components of the software.

## **REFERENCES**

- [1] *Trello* <https://trello.com/>
- [2] *Overleaf* <https://www.overleaf.com/>

## DOCUMENT HISTORY

Version	CCF No.	Date	Changes made to Document	Changed by
0.1	N/A	2018-05-01	Initial creation	NAW21
0.2	N/A	2018-05-02	Introduction and Team-Member Performance added	ALT38
0.3	N/A	2018-05-03	Team-Member Performance edited from feedback	ALT38
0.4	N/A	2018-05-03	Critical Evaluation of Team and Project added	ALT38
0.5	N/A	2018-05-03	Evaluation for Alex Thumwood added	SRJ12
0.6	N/A	2018-05-03	Historical Account added	ALT38
0.7	N/A	2018-05-04	Current Bugs and Fixes added	SRJ12
0.8	N/A	2018-05-08	Management Summary added	ALT38
0.9	N/A	2018-05-09	Updated Bugs and Fixes added	SRJ12
1.0	N/A	2018-05-09	Reviewed and QA'd	NAW21