End of Project Report_GP15

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Config Ref: EOP-Report-GP15
Date: 5th May 2020
Version: 1.0
Status: Release

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1. Introduction

1.1 Purpose of this Document:

The purpose of this document is to give an accurate summary of the management of the project, along with accurate account of the project history, an overview of the final state of the project, performance review of each project member, and a critical evaluation of the team and the project.

1.2 Scope:

This document should be read by every group project member to ensure their performance review accounts for everything they consider important, while also ensuring that the review is accurate to their personal review.
With this document also being read by the client to ensure they agree with the development of the project and understanding where the final state of the project is; however, it is assumed that the client as read all other documents processed by us.

1.3 Objectives:

- Indicate information about the summary of the project management.
- Indicate an accurate account of the project history.
- An overview of the final state of the project.
- Indicate the performance of each project member.
- Indicate the critical evaluation of the team and the project.

2 Management Summary

The Project has gone well generally across the board. There have been some teaming working issues related to communication between members, but these were generally resolved without much hassle or raised voices across the board. The program seems to be fine across the board with most if not the functional requirements outlined by the client, completed and functioning within our program. After reviewing the program, it can read in the JSON dictionary file, and output the context of that file to the dictionary tab on the UI

The documents are generally pretty tidy and completed. Both Sean and Matt C worked together with Shane and Matt L to guarantee that the documents met QA Standards listed to us at the start of the project and have endeavoured to make sure any issues and fixes to these documents are both issued promptly and completed within the required deadline. There has been one or two minor delays and extensions on deadlines due to GitLab Issues on various team member's systems, but these were overcome and solved to prevent further issues.

Apart from the communication issues, we generally worked well as a team. We stuck to deadlines and made efforts to meet them such as splitting off tasks to break up the workload and meet the deadline. Overall, there were not many issues apart from the expected ones including: learning JavaFX and JUnit properly, meeting the requirements for the docs. Lars specifically has experienced some system instability which, as a team, we resolved by guaranteeing regular uploads from him and helping to divide the workload to those who had spare time and were willing to take some of the additional work themselves. This was the worst issue we have had to deal with but hasn't caused significant disruption. The Team has really pulled together over integration week and has put in both time and effort to produce the best work they can. Everyone has naturally taken on different workloads but all the work we have started has so far been complete.

Name	Team	Tasks from Minutes / Project lead	Completed Tasks
Sean C	Project Management (Lead) QA Reviewing	Summarisation of QA 1, 2 and 3 (30.1.20), GitLab Workshop, Project Report Documents, QA Document Reviews, Design Spec Template Production and Section 3, Gantt Chart Construction and continueous updating of the chart, QA Test Spec, Final Report. Project Plan Production.	Summarisation of QA 1, 2 and 3 (30.1.20), GitLab Workshop, Project Report Documents, QA Document Reviews, Design Spec Template Production and Section 3, Gantt Chart Construction and continueous updating of the chart, QA Test Spec, Final Report. Project Plan Production.
Matt C	Project Management (Deputy) Testing (+ Specification) JUnit Implementation Monitoring (+Blogs)	Functional Requirement Research, Test Design, Blog Checking, Test Generation in Junit, Test Specification, Implementing Test Spec Feedback, Design Spec Diagram Construction, GitLab Management, Diagram Research for Design Spec, Back Up Communication System Implementation, White Box Testing	Functional Requirement Research, Test Design, Blog Checking, Test Generation in Junit, Test Specification, Implementing Test Spec Feedback, Design Spec Diagram Construction, GitLab Management, Diagram Research for Design Spec, Back Up Communication System Implementation, White Box Testing
Matt L	Quality Assuarance: (Lead) Maintainance Manual Team	Discord Server Construction, Website Management, Minutes from Role Implementation, Json VS Jackson reasearch, GitLab Workshop, Minutes from 20.2.20 onwards, QA Document Reviews, Test Spec Review + Merge, Config Ref File, QA UI Spec Review, Maintainance Manual Work	Discord Server Construction, Website Management, Minutes from Role Implementation, Json VS Jackson reasearch, GitLab Workshop, Minutes from 20.2.20 onwards, QA Document Reviews, Test Spec Review + Merge, Config Ref File, QA UI Spec Review, Maintainance Manual Work
Shane W	Quality Assurance:(Deputy) Design Specification Team Backend Production Team	Top Level Design and Block Diagrams, JSON Spikework, GitLab Workshop, UI Interactive Presentation (Complete), QA Document Review, Design Spec Work (Significant Proportion), Back-End Merging and Integration, Design Spec Spikework, JavaDoc of Back-End, Design Spec Diagram Updates/Feedback/Maintainance, Design Spec Feedback, Maintainance Manual	Top Level Design and Block Diagrams, JSON Spikework, GitLab Workshop, UI Interactive Presentation (Complete), QA Document Review, Design Spec Work (Significant Proportion), Back-End Merging and Integration, Design Spec Spikework, JavaDoc of Back-End, Design Spec Diagram Updates/Feedback/Maintainance, Design Spec Feedback, Maintainance Manual
Ieuan B	UI Team: (+ Specification) JavaFX Reseach	Minutes for 30.1.20, 6.2.20, 13.2.20, QA 4 reading and Use Case Generation, GitLab Workshop, UI Specification, QA 9 Reading, Design Spec Statechart Constrcution, UI Code Production, In-Program Test Function Design, UI Spec Feedback, Back-End Merging and Integration, In-Program Test Function Design	Minutes for 30.1.20, 6.2.20, 13.2.20, QA 4 reading and Use Case Generation, GitLab Workshop, UI Specification, QA 9 Reading, Design Spec Statechart Constrcution, UI Code Production, In-Program Test Function Design, UI Spec Feedback, Back-End Merging and Integration, In-Program Test Function Design
Jakub	UI Team: (+ Specification) Maintainance Manual JavaFX Research	GUI Research and Design Sketches, QA 4 reading and Use Case Generation, UI Specification, QA 9 Reading, UI Code Production, In-Program Test Function Design, UI Spec Feedback, Maintainance Manual Template + Work	GUI Research and Design Sketches, QA 4 reading and Use Case Generation, UI Specification, QA 9 Reading, UI Code Production, In-Program Test Function Design, UI Spec Feedback, Maintainance Manual Template
Kare B	UI Team: (+ Specification) JavaFX Research	JavaFX Research (30.1.20), QA 4 reading and Use Case Generation, UI Interactive Presentation (Basic), QA 9 Reading, UI Code Production, In-Program Test Function Design, UI Spec Feedback, Maintainance Manual Work	JavaFX Research (30.1.20), QA 4 reading and Use Case Generation, UI Interactive Presentation (Basic), QA 9 Reading, UI Code Production, In-Program Test Function Design, UI Spec Feedback
Lars B	Testing Team: (+ Specification) Junit implementation	Functional Requirement Research, Test Design, Test Generation in JUnit, Test Specification, Implementing Test Spec Feedback	Functional Requirement Research, Test Design, Test Generation in JUnit, Test Specification, Implementing Test Spec Feedback
Binbin D	Testing Team: (+ Specification) Junit Implementation	Functional Requirement Research, Test Design, Test Generation in Junit, Test Specification, Implementing Test Spec Feedback, Test Report Template	Functional Requirement Research, Test Design, Test Generation in Junit, Test Specification, Implementing Test Spec Feedback, Test Report Template
Generic Tasks For All	N/A	Blog Updates, Project Requirement Reading (30.1.20)	Blog Updates, Project Requirement Reading (30.1.20)
Authors	Sean Carpenter [Sec26]Matt Clarke [mac127]		
Date	13th February 2020 - 28th April		
Version	1.1		
Status	In Use Plan - Released		

Above is a summary of what tasks members has had assigned to them over the course of the project. As the plan above shows, throughout the project, I keep a track of what tasks each member of the group was assigned and if the task had been completed or if it was not completed. I had myself and Matt C, the deputy project lead check over the project plan to ensure every assigned task was listed with the right person on the plan, and to check if the tasks I had listed, were in fact complete.

3 Historical Account of the Project

30/01/2020: The first group project meeting of the year:

The first meeting of the project involved us getting to know each other, with us all discussing what strengths we had, and then went into the specification of the project. We covered the functional requirements for what we needed to create, with us dividing them up between Matt C, Lars and Binbin to then create test specifications based on the requirements. After diving the functional requirements, we then tasked Jacob with creating rough designed for the UI for the program, with him also required to read through SE.QA.04 to understand what the UI would need to include.

06/02/2020: Second group project meeting:

This meeting revolved around having everyone present the work they did over the previous week. With Kare and Ieuan presenting their findings on JavaFX and demoing what they created with the software. Jakub presented rough sketches for the UI and GUI designs, with it being agreed we needed a more refined design before we could consider it as final.

Matt C and Binbin presented their tests based on the functional requirements they were assigned from last week. It was again agreed they needed to improve the quality of tests and the number of overall tests we have. Shane created and presented a high-level block diagram, with it including the overall program architecture; however, it lacked detail about certain areas like handling users and JSON processing as we had not yet discussed the implementation of that.

Sean presented the review and shorthand version of the Quality assurance information, with him going into detail about every aspect that the QA manager and deputy QA manger would have to enforce.

13/02/2020: Assignment of Project Roles:

During this meeting, we assigned the project roles to members of the group. Sean was assigned the role of project leader, Matt was assigned Deputy Project Leader, Matt Llewhellin was assigned QA Manager and Shane was assigned Deputy QA Manager.

In addition to this, Shane, Sean and Ieuan attended a gitlab workshop to help set up the Gitlab repository for the project. We configured the gitlab to include 4 folders; Config – where all the minutes from every meeting is stored, dev – where all in development documents and source code are stored, docs – where all completed documents are stored, and src – where all completed source and project code.

25/02/2020: First Out of Tutorial Meeting:

During this meeting, we concluded we needed to hold these meetings at least once a week, with everyone attending to ensure we kept up with everything expected of us. We also covered and reviewed all the spike work we created up until this point, with us providing feedback to the test specification, and the UI PowerPoint created for the meeting before.

27/02/2020: Starting Development of Design Specification:

During the meeting conducted on this date, we started to review what would need to be included in the design specification and then we tasked Sean with creating the document template for the design specification. We also reviewed the final draft for the test specification ready for uploading.

12/03/2020: Testing Feedback:

We spent the meeting today discussing the feedback we received from Chris regarding the test specification. Overall, we had little feedback to implement and after we discussed it, Sean went on to add the feedback as issues on Gitlab. After discussing the feedback, we moved onto where the design specification is and the expected progress of the document, ready for submission.

26/03/2020: UI Specification Feedback:

We spent the meeting today discussing the feedback we received for the UI Specification. As we did with the Design Specification, we covered the feedback and then Sean uploaded the feedback to gitlab issues. After it was uploaded, Sean assigned Ieuan, Kare and Jacob to complete the feedback for the UI.

27/04/2020 – 1/05/2020: Integration week:

This week is the final week for the project. During this week we are now compiling all the spike work we have created for the program together and implementing the final stages of the program architecture in accordance to the Design and UI specification.

The week has been met with slight challenges regarding the creation of Junit tests for us to run the program against to ensure everything works as intended. After Matt C helped Lars to overcome these issues, we once again got back on track and managed to complete the Junit tests for the program. Overall, the second day of the week was spent overcoming these issues and implementing some small back end functionality to ensure the tests work.

4 Final State of the Project

After reviewing the functional requirements from the client, and the acceptance tests also given to us by the client, it can be concluded that our program meets all the requirements set out to us. And the documentation we have submitted follows all the QA requirements, along with the specifications that each document should follow.

Our program meets functional requirement 1 as it successfully load the dictionary, given to us as JSON file, into our program and then displayed the contents of that file on the screen for the user to then manipulate. By default, the dictionary is loaded into our program with the English words being displayed first, but we have included the option to switch them to welsh as specified as stated by functional requirement 2, and we have therefore met this requirement aswell.

Furthermore, our program meets functional requirement 3 and 4 as the user has the option to search for words in both English and welsh and then subsequently add those found words to the practice list, however you do not need to search for words to add them to the practice list, you can also add words from the main dictionary UI. In addition to adding words to the practice list, the user can also add their own words to the program as required in functional requirement 5, with the words being added directly to the practice list as opposed to the main dictionary in order to prevent duplicate instances of words in the practice list.

In addition to the current functional requirements our program has met, we have also met functional requirement 6 and 7 as we display words based on if they are either masculine or feminine respectively, with it also taking into account the type of word it is, things like ‘export’ would be shown as ‘to export’ due to it being a verb. As for functional requirement 7, the user can switch from the dictionary tab of the UI to the practice list UI to see any and all words they have added to the list.

As with functional requirement 7, our program has met functional requirement 8. Our program produces flashcards that when cycled through, they display all the words currently in the practice list, with the language of the flash cards being dependant on the language selected in the practice UI tab. We have also met functional requirement 9 and 10 as our program generates the three required test types, with us potentially making them clear how to select the answers on some of the. However, the tests are randomised, with a running score shown to the user of the answers they have correct or incorrect. All practice words are used in the test, with the tests only generating if there is a sufficient number of practice words in the list. At the end of the tests, the program provides feedback, giving the user the correct number of answers, they got.

With our program completing all the requirements, we then moved on to all the documentation. From reading through each SE.QA document, we can say all our documents meet the requirements outlined.

The UI specification includes the typical users that the program would have, with it explaining three possible users. It also covered the use cases that any user would commit when using the program. This section included cases like looking for a word or adding words to the dictionary. Finally, the UI Specification shows the potential error conditions are program could have while using the program. The Design Specification includes everything outlined in the QA document, with it providing a detailed description and analysis of the design for the program, the document covers the entire program in such detail that anyone without any prior knowledge of then program would have an in-depth understanding of the program after reading through this document. The document includes the decomposition description, the dependency diagram, interface diagram and a detailed account of the design of the program.

The Test Specification follows the specification as it specifies each test that was to be executed on the completed program, with it being in accordance to the test plan we created before the development of the project started. The specification goes through the details of testing that we conducted on the project, with it then including the entire testing table for the testing we did. The testing table shows the tests we conducted, the input and output variables required for the test and the pass criteria in order to have the test completed correctly. The maintenance manual follows the specification as

outlined by the QA document. The document describes the program and what it includes. With the document also including a section that describes the program structure and the algorithms used in making the program. The rest of the document focuses around aspects of the program like the main data areas, the files included with the program and the design of the interface, with sections of the report also discussing improvements we could have made, things to watch out for when making changes and the overall physical limitations of the program.

Overall, I feel that everything we have submitted to our client has been to his required specifications and expectations.

5 Performance of each Project Member

Sean Carpenter (SEC26) – Project Leader:

Sean has been an effective Team Leader overall. During his time in his position, he has taken lead on all the essential sections of the Final Report which he could start earlier than other. He has used his experience of Team Working from being President of a Society to help delegate tasks across the team and help keep on top of the work. He has been a little distracted occasionally during Thursday Meeting (this is likely due to his deputy taking the lead on the meetings) but has been an effective team member and leader across the board.

He has been thorough when QA reviewing documents, producing work to help the team and effective and co-ordinated in the delegation of work across the team. Sean has covered a range of tasks whilst leading the project, such as completing the QA Reviews when the QA Team was engaged in other tasks, managing and allocating jobs effectively across the team to help balance the workload where appropriate and managing deadlines with reasonable timescales for all who need them.

In summation, Sean has been a key member of our team and without his leadership and commitment to the project, I doubt we would have been able to catch up after falling behind on the project.

Matt Clarke (MAC127) - Deputy Project Leader:

Matt has been an extremely effective deputy team leader throughout this project, whether that being his consistent communication or wellbeing messages for the group, or his continuous adherence to the blog posts and management responsibilities. He has overall been the best deputy a project leader would have asked for during this project.

In addition to his project management responsibilities, he also took charge of making the tests for the program based on the functional requirements given to us by the client. From the start of being assigned this task, he jumped into it with full enthusiasm expected of everyone and completed the tasks within three weeks of having it assigned, completing it before most of the other assigned members had completed it. When it came to transfer those tests into Junit tests, he once again had them completed within the Easter break, way before we needed them for integration week.

Overall, Matt has been a valued member of our group, and without him, I feel the project would have been severely delayed before integration week, and possibly not completed to the standard we have completed it to now.

Matt Llewhellin (MAL102) – QA Manager:

Matt has been a valued member of the team, with him showing a huge amount of interest and professional worth ethic throughout the project. Matt jumped headfirst into the role of QA manager, as he has checked every document, and every piece of spike work thoroughly and effectively. Over the course of the project, he has handled any of the admin tasks I have thrown at him easily, with him completing them before required or before the deadline I had set came up. There have been slight issues regarding the uploading / receiving of minutes from him after meetings and his lack of attendance on one of the days during in integration week, but it was all easily resolved, with the issues not affecting the project timeline at all.

Overall, it has been a pleasure to work with matt over the course of this project as his efforts as QA manager has helped keep the team focused on the main tasks as we all knew Matt handled the reviewing and admin of previous completed work well.

Shane Waters (SHW30) – Deputy QA Manager:

Shane has been one of, if not the most effective member of the group, with him not only tackling the deputy QA manager role but also throwing himself headfirst into the design and subsequent programming of the project. He has been a cool and collected member of the project throughout the production of the program and any documents he has handled, with him always available to help other members with any issues they may have with the tasks they have been assigned.

Aside from the programming side of the project, his attitude in meeting, both tutorials based and out of tutorial based has been outstanding. He has always attended every meeting and has always participated to the level expected of him. During integration week, he has made himself constantly contactable by keeping in a discord voice channel, where anyone can drop in and ask him questions or check up on his work.

Overall, I can easily say that without Shane, the project would not be to the standard we have completed it to today. As without his programming expertise, and general attitude towards the project, we would not have had the attention to detail and overall efficiency given to us by him being involved with the project.

Ieuan Boucher (IEB7):

Ieuan has been an effective member of the team, with him stepping up at times throughout the project to help and complete tasks assigned to him and others. At the beginning of the project, he jumped right into researching about javaFX and its suitability for the program's UI. Whether it came to implementing feedback to the UI specification or completing the programming for most of the GUI, he constantly took the work and completed it to the best of his ability.

Outside of work for the project, his constant communication set everyone at ease, as we knew he was always available and ready to assist if necessary. This was more evident during integration week as like Shane, he remained in the discord voice channel, where people could easily drop in and ask for help / get advice from him about their tasks. As the project manager, having him easily accessible has relieved some of the pressure of keeping track of what tasks has been completed and what has left to finished. This is further shown in the blog posts he updated after every important milestone and meeting involved with the project.

Overall, Ieuan has been an extremely effective member of the group, with him easily handling anything tasked to him with complete confidence, His work ethic is something I wish all members of our group could have had during this project. And without him, the project would have been delayed by weeks or incomplete by the time of deadline.

Jakub Tomanik (JAT69):

Jakub has been a great addition to our group and the project. From the beginning of the first meeting, he seemed keen and interested in designing the UI for the program and with the help of Kare and Ieuan researching JavaFX, he produced the first examples of what our UI would eventually come to be, albeit it after a redesign by Shane. Jakub has handled any tasks thrown at him and timely manner, with this including handling the UI Specification and UI spike work during the earlier stages of the project. However, during integration week, members of our group have felt that he has somewhat avoided doing any sufficient work on the maintenance manual, and instead opted to solve some of more the simpler sections of the task than try to understand and complete other sections. While I am inclined to agree, I also feel that assigning the maintenance manual to Jakub wasn't the best idea on my behalf as he wasn't exactly versed in the program and design specification, and therefore couldn't do anything but referencing in the document. Although I feel that he could have asked for assistance regarding filling in parts of the manual as his fellow group members did, as it has resulted in it looking like he hasn't contributed a lot over the course of integration week.

Kare Boyum (KRB21):

Kare has been a great member of our project with him stepping up to any and all tasks assigned to him especially when it came to the UI redesign we had to conduct. He has throughout completed his work to a standard deemed acceptable by the entire group with most of his coding work implemented into the final program during integration week. However, during in integration week, some in our group have felt like he has not actually pulled his weight with tasks such as the maintenance manual and the finalising of the program. While I share the same opinion, I also feel I may have assigned the task of the maintenance manual to the wrong person, as Kare did not fully understand the program, and could therefore not fully fill out section of the report, unlike Shane and Ieuan when they came to work on the manual.

Overall, Kare has worked to the expectations of the what my mind had set out for our group at the start of our program as with Kare, we have managed to complete the project as of the day it was due and submitted a program that we are all proud off.

Lars Sollman Birkeland (LAB54):

Lars has been a great member of our team during the project, with him handling any and all tasks given / assigned to him with relative ease. From the start of the project, he has been focused around the testing of program and the requirements that he will need to test in order to show that our program meets them. During the project, he delivered a great set of theoretical tests based on the functional requirement set out to us by the client; however, during integration week, he had great difficulty in bringing these tests to live in Junit, With him relying on some members of the group to talk him through how to create some of the tests. Despite the issues with his home PC, he managed to successfully program and test the program using his Junit tests and showed that the program aligned with the functional requirements. In addition to the work he did with Junit, he also worked on the test specification with Matt C and Binbin. He again managed to complete this in a timely manner, with it being ready for submission along with the program on Friday.

Overall, Lars has worked to the expectations of what I had in mind for the project when assigning the tasks over integration week. Without his work, we would have had to take more time looking over the functional requirements and subsequently the Junit testing in order to ensure our program met the functional requirements.

Binbin Ding (BID1):

Overall, Binbin has been a relatively decent member of our group, with him completing the work initially set to him during the first few weeks of the project. He had done great work on identifying aspects of the functional requirements that we would need to test for within our program. There are some slight timeline issues with his blog posts, with him saying he has done a set amount of hours work, but then showing us work that realistically would not take the time he has stated it took. However, when it came to integration week, he started to show what his work ethic was really like. The Monday of integration week was meet with him failing to do any substantial work during day 1 of integration week until after the 5pm meeting with Neal, as he was working off a different time zone despite remaining in Aberystwyth, which the team eventually understood as it's a mistake that can be made easily. Throughout the week, he failed to communicate if or when he was doing any of the work assigned to him, with him only appearing in the daily meeting we conducted at the end of the day. The main issue I and the team have with his performance is he Junit testing. Instead of using the program we created, like we specified multiple times, he instead decided to create a program that would complete his tests and show that they have passed. By him doing this, instead of using the program we created, and instructed him to use, we have missed out on 1/3 of the junit tests for the program, and therefore potentially lost marks.

Granted, he cannot be faulted for all of this, as I should have checked over his work to ensure it was correct, despite him saying it was. Apart from integration week, Binbin has been a great member of the team, who has had some slight issues with communication to our group, but still managed to complete the majority of the work set to him.

6 Critical Evaluation of the Team and the Project

6.1 How did the team perform, and how could that have been improved?

Overall, our team has performed well, with all members of our group effectively pulling their weight when asked or when I assigned tasks for them to complete. When we first started the project in January, we all discussed what we all felt comfortable with doing in this project. After understanding each other's strengths and weaknesses, we were left with a sense of what everyone could do, and when I came to assigning tasks to the group, this information was vital as I knew what group members would effectively handle the tasks I assigned.

When it came to work on the program, two members of the group took charge of creating the program as they both worked on the Design Specification, and therefore they understood the program architecture better than the rest of the team. While the two members worked on the program, the rest of the team worked on the completing the documents to the standard that the client requested after the first round of feedback we received.

As I stated above, we all worked well together, with no one from our group missing more than one meeting and keeping in contact with us even if they had missed the meeting. Although sometimes members did fail to communicate in certain situations when we needed them. One of these situations would be where a member of our group failed to mention he was working off of Chinese time, and therefore turned up to day 1 of integration week at 4pm, a hour before we were set to meet with our group manager to show the progress we had made over that day.

6.2 How could the project that was set for you have been improved?

Overall, this project was a great addition to what we were set to learn over the course of second year, with us all finally experiencing what it would like to be to work in an actual software engineering team. However, one aspect I would have improved for this project would have been the possibly of making the task slightly harder in nature. Many of my group and other teams in fact feel that this project could have been completed by 3 if not 4 people alone. As creating the documents was relatively simple after we all understand what needed to be completed, and the program itself only took around 2-3 people to successfully make if divided up correctly. This could have been improved by possibly adding a second program that other members of the group could complete while another portion of the work on that program. It would reduce the pressure of assigning tasks to group members as I found towards the end of the week, only two other members had tasks assigned as those were the only tasks left to complete.

In addition to this, I feel that the project could be improved if the acceptance tests weren't changed after being sent out. Although sometimes this is unavoidable, many of our group felt it was unprofessional that they would change the tests only a day after sending them out to us. By changing the tests a day after realise, it could have potentially caused us to have to change our entire program twice to ensure it met these tests and have it pass the criteria given to us by the client twice.

6.3 What were the most important lessons learned about software projects and about working in teams?

One of the most important lessons I think the whole team has learned during this project would be that version control is not only extremely important when It comes to creating any type of program and document, but It can also be one of the hardest things to keep in order.

When it comes to keeping version control of programs, having the ability to retrieve older versions of the program is undeniably useful as it allowed for immediate recovery in case anything goes wrong with the current build or if we had not implemented something correctly. In addition to this, version control also allowed the developers within our team the ability to create multiple versions of the program that can then be stored in different branches of the repository. This not only allowed the

developers to work on the project at the same time, without needing to be together in person, but it let them develop different aspects of the program which they could then combine at a later stage.

With the document version control, it acts the same way as the program version control, with any member of our team having access to the file, and the ability to change the document when we received feedback. But in addition, it allowed me to check whenever someone edited or changed any of the documents. Which made it incredibly easy for me to keep track of those completed the tasks I assigned and those who did not.

When it came to organise the git that includes all the dev files, the released docs and the source code for the project, for the most part keeping it organised wasn't an issue. However, we would occasionally run into the issue where a member of the project would rename one of the folders before the rest of the group would pull from the git. We would then encounter git complaining about how the file cannot longer be added to the folder as it no longer exists because of the rename.

Another important lesson we all discovered would be how important a constant line of communication is for the project. For our group specifically, we learned the effectiveness of good communication later.

For our group specifically, I think the most important lesson learned through this project was Communication. In the early stages, communication didn't struggle all too much but as the deadline has gotten closer, we have started to struggle more and more. Erratic sleeping patterns had to be addressed and re-informing some people of the expectation that we would be working 9am-5:30pm (this does include our end of day meeting with Neal Snooke). This was put to the test with varying wake up times for certain individuals, but this was eventually resolved. The lack of communication was majorly shown when we started Integration Week and we were unaware that a team member was working on Chinese Time. This was addressed and has been resolved as the week went on as to not become a hinderance. This lack of communication reinforced that we needed to be clear with each other even if we didn't discuss exact specifics. Time management was also a hard lesson learned. We had missed the fact we needed a Gantt Chart to assist with time management and this was not implemented until a fair number of weeks after roles were allocated. We caught up and spent some of our downtime over Easter catching up and trying to identify what needing pushing forward. This set us up well in the end for Integration Week overall, but I think all members have seen the importance of these two lessons.

DOCUMENT REFERENCES:

1. SE.QA.10 – Producing a final report.
2. SE.QA.02 – General Documentation Standards.
3. Des-Spec_GP15
4. Test-Spec_GP15
5. User-Inter_GP15
6. Maint-Man_GP15
7. SRC_GP15

DOCUMENT HISTORY:

Version	*CCF No.*	*Date*	*Changes made to document*	*Changed by*
0.2	N/A	30/03/2020	Initial Template created	SEC26
0.4	N/A	27/04/2020	Updated the scope, purpose and objective.	SEC26
0.6	N/A	27/04/2020	Completed the Historical account to a realisable account.	SEC26
0.6	N/A	28/04/2020	Started work on the management summary and critical evaluation	SEC26, MAC127
0.6	N/A	28/04/2020	Inclusion of project leader review	SEC26, MAC127
0.7	N/A	29/04/2020	Completion of management summary, start of member reviews.	SEC26
0.8	N/A	30/04/2020	Continuation of member reviews, brief update of historical account	SEC26
0.8	N/A	01/05/2020	Member Review Finalisation, Final state section started.	SEC26
0.9	N/A	05/05/2020	Finalisation of document.	SHW30
1.0	N/A	05/05/2020	Slight alterations to format.	MAL102