Software Engineering Group Project

End of Project Report

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# Introduction

## Purpose of this Document

The purpose of this document is to effectively illustrate how much effort has been done in order to accomplish the project in all its stages. This document will also present what has been accomplished in the period of time given during the CS21120 software project in order to provide fully working and robust software to the customer.

## Scope

The scope of this document consists of a management summary, historical account of the project, final state of the project, evaluation of performance of each team member and finally the critical evaluation of the team and the project.

## Objectives

The objectives of this document are to:

* Present the advantages and disadvantages of software engineering group project development.
* Present the storyboard of the actions completed by the group project members. This is given in the form of a chart detailing each action and its description.
* Identify which parts of the project could be considered as successful and which might be taken as not as such.
* Describe the role, evaluate and provide constructive feedback for each individual team member.
* Critically analyse the project and what kind of improvements can be made in the future.

# BODY OF DOCUMENT

## A management summary

The project was completed by all members of our group in the 4 month period. This includes integration week. Most of the work was completed by remotely using a Discord server and the Gitlab Repository. As a result of the COVID-19 outbreak, all meetings and work done had to be done remotely so each member could self-isolate. The software produced seems to achieve the expected level of standards from the Software Engineering module perspective. All documentation is understandable and allows the software to be reproduced in the future by following the documentation.

There were a couple of difficulties that the team encountered during development. One issue was that no members of the group were proficient in using JavaFX. Another issue was a conflict of opinions as to how the User Interface should look. As a result, it took longer than expected to decide on the final design. Lastly, the waterfall project management methodology a new concept to most of the other members of the team and not all of them thus leading them to believe it was not the best approach.

## A historical account of the project

The project was maintained and done within the planned schedule. The Gantt Chart included on the repository is presenting the exact dates and significant events related to the process of creating the documentation.

### First Week – applies to every team

In the first week of the project everyone was assigned to their specified groups and started reading the documentation. After reading the documentation appropriate team members decided to meet over the next couple of weeks and discuss further

### User Interface 31/01- 28/02 (deadline)

The first team, User Interface, (mab152 and tak16) decided to meet and work together over the look of the User Interface. First mock-ups were prepared by using Balsamiq software and Moqups.com and presented to the group couple of weeks before the deadline. Mab152 was responsible for making static views of the initial views, where tak16 was mainly responsible for the use case definitions. At one of the meetings, tak16 decided that there are too many uncertainties concluded in the static mock-up and would rather create a more functional demo of the application. By using JavaFX and including XML views, User Interface team was able to create a demo of the application which could be presented to the Product Owner in a much more approachable way. The presentation made by mab152 consisted of videos of showing the proper use cases which mostly impressed all the group, giving a very good grasp of what the application is capable of. Before final submission of the documentation, soj11 organised Formal Review meeting (24.02.2020) where all the checklist for the proper documentation was checked according to QA.07. After making appropriate changes to the document as suggested by QA Manager, the presentation and documentation was committed to the repository on 27/02 which was on track of the expected schedule. After receiving the feedback about the documentation, the team agreed to apply changes over the time before the Integration Week started, as the changes suggested would not affect the overall workflow of the app.

### Testing Documentation 31/01-6/03(deadline)

Second team, Testing (izk, kab71, mai17), decided to meet and work together to work over the Test Table. One of the members, izk, was preparing to how to do the most accurate test by reading the books related to the Quality Assurance and Testing. While other members tried to work on the proper structure of the documentation, izk tried to work on the test table. Initial table consisted of the 120 positions which was reduced to about 50 over the time of development. The reason for that was that at the early stage of the development of UI, all the other members of the group didn’t know much of how the application may look like. Once the first views were presented, the Testing team tried to narrow the number of tests to the most required ones. Due to the Project Leader suggestion, the Test team members tried to create tests that would help to make or break the application. Once the Test Table was completed and presented izk, the rest of the document was then completed by kab71 and mai17. However, the Documentation wasn’t very consistent and lacked a lot of information (config ref, matching version) so the Formal Review (25/02) was conducted, where soj11, mab152 and tak16 told Testing Team members what was wrong and what had to be changed. After that, the changes have been applied by izk and kab71 and the Testing Documentation was committed to the repository 2 days before the deadline. What is worth mentioning is that mai17 did not contribution to the Testing Documentation whatsoever even after long discussion with management. After receiving the feedback from, the changes were made over the time of the course and the final test table was adjusted during the Integration Week, when the final application architecture was implemented.

### Design Documentation 31/01 – 27/03(deadline)

Third team, Design (dkc2, kmn2, kab71), decided to meet and work over the Design documentation. As the User Interface was already submitted, the design had slight easier work to realise what sort of algorithms and classes had to be used in order to produce the well written and robust design. Dkc2 prepared the sequence Diagram and Dependency Description and kab71 did Composition Diagram and UML diagram. Due to technical difficulties, kmn2 was not able to finish her part of work, which was Interface Description, so kab71 decided to take over that part. Due to the Covid-19 situation, the presenting of the initial version of the Design Documentation has to be done online on Discord server. The documentation was lacking a lot of important information and some of the diagrams were barely readable and could be considered as confusing. While the outbreak situation was developing, the formal meeting was organised by the QA Manager on Discord server where could be pointed out which part of the design documentation could be changed. Finally, more readable and understandable version of Design documentation was committed to the repository of the group project 1 day before the deadline. After receiving the feedback, the issues were created by QA Manager and assigned to appropriate project members. Also, kmn2 was reassigned from Design spec to Test spec, because of mai17 passive approach to the project.

### Weekend before and Integration Week 24.04-1.05.2020

Before the Integration Week, tak16 discussed with mab152 about the possibility of earlier development of classes by the other project members. They both agree that if the classes would be made before the Integration Week, there would be less work regarding code and main focus therefore would be on testing. Dkc2 and tak16 were working on the coding during the weekend before and created all the packages and classes required for the application. Before the Integration Week commenced, mab152 contacted every project member and made sure they are on board and will work on the Project. First day was a summary what has been done so far and what is left to do. The plan went perfect and almost all the coding was done before the end of the first day. Izk, mai17 and kmn2 was assigned to the running Test Table and check if developed software passes the tests. Tak16 was responsible for any changes in the code required once any bugs would be found by testers. Kab71 and dkc2 were assigned to the Design documentation as some of the diagrams were still missing vital information. Soj11 and mab152 made sure that everything that was done by other team members was up to coding and quality assurance standards. At the end of the day mab152 met with Project Manager (bpt) and reported to him what was done. On Tuesday same thing happened – meeting with team members, discussion about ongoing changes, work, meeting with Project Manager. First test results came back very promising as almost every test was passed. On Wednesday team members received mail with Acceptance testing scenario. Mab152 assigned all the testing team members to run those tests and surprisingly all the tests were passed at the first run, which was a very good sign. The process of development ended early on Thursday once the last test was passed. Then the code was committed to the master branch and rest of the team focused on making the documentation (UI, Test, Design) more robust and readable.

## Final state of the project

The project was completed on day 3 of Integration Week. This gave us 6 days to review the remaining documentation and make any final improvements. All documentation was rewritten according to suggestions of the Client provided in their feedback. All documents were reviewed by the Quality Assurance team and the Project Leader. All the changes to the document can be seen on the GitLab repository. The code produced before and during the Integration Week mostly met Coding Standards presented in the QA.09 document. The repository is organised and well-structured as instructed in Configuration Document.

No errors were found during the testing of the software while using the application according to the scenario of Test Table and Acceptance Testing. This software cannot be treated as flawless, as for sure it has errors which were not shown during the testing. Continuous breaking of the application in future may reveal any hidden flaws of the software.

## Performance of each team member

Project could not be made without the effort and contribution of the team members. Below is the list of all the members of the project with an information what sort of responsibility and contribution each individual member did. Although the commitment of all team members was satisfying during the Integration Week, Project Leader decided to divide the group members to three sections.

**Excellent** – From the very start, those team members could be described as a role model of member of the project. In the future they can be treated as a very good asset to the more advanced and complex projects where not only the high technical skills matter, but also flexibility and ability to work in the group.

1. Taavi Karvanen (tak16) – Voted by the group to be Deputy Leader, mostly responsible for creating User Interface mock-up. Firstly, decided that we should make a functional mock-up what he did in the first place and committed to the branch ‘developer’ on the repository. He was also responsible for writing User Interface Documentation and writing almost all of the classes in the final project. Taavi was always helpful when other team members would not understand the overall vision of the project. Taavi was always present during the Formal Review of the Documentation alongside with mab152 and soj11 and giving his thoughts in case other project members missed something.   
   He can be treated as a remarkable engineer and great developer where coding paired with managing becomes to him at ease.   
   During the Integration Week he was responsible for writing and/or refactoring all of the classes to be according to the Coding Standards. There were no issues related to the communication with Taavi and he was always eager to explain complex issues to other team members in a more comprehensible human language which is a very good skill.

Blog: <https://cs22120.freshveggies.eu/>

1. Sophie Jannsens (soj11) – Voted by the group to be Quality Assurance Manager. Sophie was responsible for reading carefully all the documentation included in the Group Project learning materials (from SE.QA.01 to SE.QA.10). Her main responsibility was to take care that all the documentation written by other team members was up to standards presented and expected within all documentation provided. Sophie also conducted the Final Reviews for User Interface, Testing and Design Specifications with appropriate team members before submission. Sophie has a very good attention to detail skill which helped identifying issues regarding aforementioned documents. She was never afraid to say out loud if something was wrong with the document or the approach that the group was going to take during the development. Although sometimes she needed to confirm the answer couple of times before going to action, without a doubt she was the best possible person to be responsible for the validation control of the project.

During the Integration Week she was responsible for checking if the code written was according to the QA.09 (Coding Standards) and also implemented couple of JUnit tests within the software itself. She was also responsible for the one final review of the documentation before releasing it to the Product Owner.

Blog: <https://soj11.blogspot.com/>

1. Mariusz Bialoszewski(mab152)– Voted and to be Project Leader. He was part of User Interface Documentation and Coding Standards. He created first mock-ups of the User Interface which were widely discussed within the group. His other responsibility was rewriting the coding standards. Mariusz was responsible for assigning members to their tasks and creating the workflow of the project. He was also responsible for creating and running every weekly meeting for all project members, where ongoing changes and work was discussed. Mariusz very firmly stands behind his ideals of doing the project perfectly and according to previously set plan. He always tried his best to remind the members about their tasks and monitoring their contribution to the project. Many times, he tried to resolve conflicts by simply discussing and finding the best possible solution. Most of the time he was listened by the other project members as people were following his orders.

During the Integration Week he was responsible for creating action plan for the week, running daily meeting, monitoring the activity of the other team members. Mariusz was working in the meantime on Gantt Chart, action plans and discussing with other project members if there were any issues. He also helped other team members set up the project on their devices through TeamViewer. Last, but not least, he was reporting what was achieved on each day to the Project Manager

Blog: <https://mpbialoszewski.github.io/blog/>

1. Dixon Chu (dkc2)– Dixon was part of the Design Specification team and Coding Standards team. He started from reading the Coding Standards and rewriting the documentation to a more readable approach. In the Design team he was responsible for creating documentation and sequence diagram. Dixon is a very talented developer with a decent knowledge of Java classes and has an excellent attention to detail when it comes in terms of documentation. During the weekly meeting he was not affraid to openly discuss if the team members could be missing some information or were simply wrong. He was always open minded and friendly to the other team members and very helpful regarding the coding.

During the Integration Week Dixon was responsible for creating classes and packages to the application according to the action plan. He was also reworking the Design Specification documentation.

Blog: <https://dixonchu.github.io/CS22120-Blog/>

1. Iza Kuziora (izk) – Iza was a part of the Testing Specification team and could be considered as a team leader. From the very start of her performance it could be understood that Iza wanted those tests to run excellent and be as detailed as possible. She was the main person who was responsible for testing and organised the meeting with other Test Spec members. She was very friendly and dedicated to the team and project members.

During the Integration Week she was responsible for running the tests from the Test Table included in Testing Specification documentation and also running Acceptance Tests provided by the Product Owner. She was also responsible for adjusting the documentation

Blog: <https://izkx.blogspot.com/>

**Average** – those project members did less well than the previously mentioned. The reason for that is average contribution, slightly harder communication, delaying in responses, not great attention to detail and occasional postponing tasks for later. However, those team members could be considered as a very valuable assets in case they would be working on the aforementioned disadvantages. Keep in mind that those members do not deserve to modify their markings as they did the correct contribution during the Integration Week.

1. Kassandra Briola(kab71) – Kassy was a part of Testing Specification and Design Specification team. She was responsible for writing the documentation for both of those teams. Although Kassy can be considered as a very positive person and very eager to work, her actions speak for herself. Many times, the quality of the product provided by Kassy was not up to expected standards. For instance, Testing Spec documentation had many typos, grammar and logic errors which lowered the quality of the document. Same story was with the Design documentation however it can be excused because Kassy may not be recognized as tech-savvy. After quick talk during Formal Reviews she started to increase her contribution to the project and increased her attention to detail. Essentially if Kassy would be working more on self-motivation she would be a very useful asset in the group project.

During the Integration Week she was responsible for resolving issues in the Design documentation.

Blog: <https://cs22120kab71.blogspot.com/>

1. Konstancja Nowocien(kmn2) – Konstancja was a part of Design Specification team. Although she was part of the team, her presence couldn’t be seen during the meetings. She could be considered as a very silent and shy person. Her passive attendance to the meetings resulted to below average contribution to the project. This situation started to worry other group members. All the tasks that were assigned to the Konstancja were not done at all or done only partly. After discussion with the Project Leader, Konstancja started to contribute more to the project and gave out acceptable results and presence during the meetings.

During the Integration Week she was responsible for running the tests from the Test Table included in Testing Specification documentation and also running Acceptance Tests provided by the Product Owner

Blog: <https://projectkmn2.blogspot.com/>

**Below Average** – There was one person who did below the average and even after numerous of times of personal discussion his contribution to the project was on the not acceptable level.

1. Martynas Ivanovas (mai17) – Martynas was a part of the Testing Specification Team. From the very start the vibe that he was giving was “I don’t want to be here” and he tried as much as possible to do minimal contribution to the project. Many signals were sent by the other members of the team that Martynas was avoiding responsibilities and doing his assigned tasks. During the development of Testing Specification documentation, he did not contribute to it at all. Contact with Martynas was limited as he refused to response to messages. Although he always tried to be friendly to other teammates, he could not be considered as a good asset and more like a burden. Therefore, Project Leader thinks that it would be unfair to not modify his markings.

During the Integration Week Martynas was responsible for running the tests from the Test Table included in Testing Specification documentation and also running Acceptance Tests provided by the Product Owner

Blog: <http://martynasiv.com/blog.php>

## Critical evaluation of the team and the project

Overall the project was done according to the schedule that was planned from the very beginning. All the project documentation that was expected to be submitted was done on time and was created as much detailed as possible. Where it could be done, the team members tried to do more than expected from the documentation User Interface consisted of Documentation with Typical User, Use Cases and Error Conditioning while User Interface presentation was made in the interactive way with movies included so the Product Owner could see how the User Interface behaves in certain condition. Testing Table tried to be detailed as possible but also discussing real time situation like repetition of the entries or if there is information about adding removing word. Design Spec had a very detailed sequence diagram. The integration week also went better than expected. At the first day the team was almost done with the coding part because the interactive mock-up created by tak16 had to be only refactorized and then could be release as a final product. First testing went excellent with finding 1 issue after running 150 tests (3 x 50). Project Leader thinks that this is because of the early planning of the project where the team tried to read the documentation as careful as possible and also excellent deduction skills of soj11 as a QA Manager who told us which bits had to be changed. Some of the team members could have slightly better technical knowledge so the level of discussion would be the same.

The project could be improved if the team members would have the same amount of the self-motivation and contribution to the project. This would help to deliver the project with the minimal damage done to the team morals. However, this is not what the university staff has any impact on. The workflow forced by the standards of documentation would not be the best idea. Waterfall design although is a very good approach to software developing, due to lack of experience could cause more damage than good. It is worth mentioning, that the documentation was sometimes lacking information, although, in real life, this is probably the best documentation we will ever get from the Product Owner/ Customer. The documentation many times were misleading (for instance in User Interface was not specifying what is Practice List, Dictionary List and what sort of interaction are expected) and lacking in the essential information that would help in the process of development. Moreover, the product could be made in different technology as the JavaFX, a bit outdated Java Platform, would only narrow the number of users to the Desktop one. If the application would like to be used by wider audience, there should be also thought on that if the product should be for instance released on mobile devices (therefore Kotlin for Android, Swift for iOS or Cross-Platform Solutions like Xamarin, React Native, NativeScript – so the application can become Progressive Web Application or Single Page Application and so on). However, as it is understandable that main language used across the process of learning coding is Java, some newer technologies could be introduced to this module. Apart from that, the project was well run by the university staff, the Project Managers were mostly helpful and Product Owner (cjp) was always responding in the professional manner and tried to help as much as possible, which is mostly appreciated.

The most important lesson learned in the software project was that depending on the others might be misleading and as a project leader you always need to keep your eyes open and watch the other actions done. People have different standards of the “task done” and it is up to management members to verify whether or not those standards are met. The other lesson learnt is that attention to detail and looking forward is a key to success – in software engineering process in many situations there has to be foresight in case the user would like to do something more and break the software. That has to be taken in the consideration during not only the testing of the software but also during the design.

Last but not least, version control is the key to success – however all the team members agreed that in normal situation documentation would be put in the Readme.md instead of using docx as this is not really visible in the Activity window of the project. Therefore, comparing those changes is much harder because of the constant need to pull requests of the changes instead of just seeing them on the website.

REFERENCES

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