# Software Engineering Group Project
# End-of-Project Report AUM Group

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# Contents

# 1. INTRODUCTION

## 1.1 Purpose of this Document

The purpose of this document is to enable the markers to evaluate how well we have done in our project.

## 1.2 Scope

This document should be read together with the individual report of each team member and the test report.

## 1.3 Objectives

The aim of this document is to:

- Explain how the project was managed
- Outline the main events of the project lifetime
- Explain the final state of the project
- Provide a critical evaluation of the team and the project

# 2. PROJECT SUMMARY

## 2.1 Management Summary

The program does not work well for the keyboard input part and it does not allow the player to change the view. The keyboard functionality does not work in all circumstances specially when there are multiple occurrences of the same letter and the player selects a letter adjacent to it. However, the program works perfectly when selection is made using a mouse. The program implements the functional requirement one to six and 9 defined the Requirements Specification document. The documents that could have been improved is the Test Specification document, the Design Specification document and the Maintenance Manual. In the Test Specification document, many more tests should have been added, but unfortunately due to a lack of time we have not been able to do so.

The main difficulty was that we did not have enough guidance from our project manager. Sometimes during the tutorials, he was not present. It happened that he even skipped them. That's why we were late in the preparation of our design specification document. We knew what we have to do but we did not know when it was supposed to be done and if we were on the right track. We had to manage by ourselves. At some point we have even felt overwhelmed with all that we had to do. Afterwards we were given new project managers who tried to guide us as much as they could.

We also had a lack of time. We had our first tutorial in the second week that is on the 15$^{th}$ of February. If we were to finish on the 4$^{th}$ of May, we would have not been able to submit a working program with most of the functional requirements. As from the 7$^{th}$ of may till the 11$^{th}$, we were working full time on the coding and on the documentations. Adding to that we did not have a good planning so, in the last week we had to do as much as we could to submit a working software and proper documents.

We were only five students in our team and in the first few weeks it was like we were only four. Therefore, the workload of each team member was more. It happened that a team member was assigned more than one tasks.

One of the mistakes that we did is that we have chosen to develop our interface using swing instead of JavaFX without proper research. It's the reason why we have not been able to add the change view option where the player is able to see the cube as if it is viewed from any of its faces.

Another issue we have is that the test report is not in a good state. It still needs some touch ups to make sure that it is fully complete. A thorough testing hasn't been able to be done neither, but testing according to the requirements provided has been done.

Overall, we could say that the team did well, everybody was doing their assigned tasks and whenever they were having difficulties they were asking the other team members for help. We were doing frequent meetings to be able to track our progress.

## 2.2 Historical Account of the project

We had our first tutorial on the 15th of February 2018. During this meeting Naailah Hajaree was elected as project manager. The tasks assigned during this meeting were mainly on the user interface and the test requirements documents. Theophilus Elechi was tasked to design an outline of the interface.

During the next meeting we had, Naailah Hajaree reported on the main architecture of the software and the possible objects that would be needed for the game to work. Theophilus Elechi also showed the group what he came up with for the design of the user interface. He mentioned the possibilities of using JavaFX for the user interface. The group discussed both these matters and gave their respective opinions.

The tutorial on the 22nd of February was the first time that all the group members were present. During this meeting the group proceeded to elect the remaining roles that were needed for the project. Jason Yip King Chueng was elected Quality Assurance Manager, Afzal Ismail was made Deputy Quality Assurance Manager and Danshil Mungur was made Deputy Project Leader. Moreover, during this meeting Theophilus Elechi mentioned that using JavaFX to code for the user interface will be quite difficult. As he is the most experienced project member regarding user interfaces, he proposed that a better solution would be to use SceneBuilder.

On the meeting of the 1st March, the group came to an agreement on the layout of the user interface and the different positions the user can view the game. Theophilus Elechi was then tasked to represent the UI using Google Slides, so as to show the interactions of the different functions of the game. The group also reviewed a first draft of the Test Specification document, done by Afzal Ismail according to the template done by QA Manger Jason Yip King Chueng.

The meetings on the 5th and 7th concerned mainly the UI presentation, design specification and test requirements documents. The group were working to complete these documents for the next tutorial as they have to be submitted for review.

After having given in the documents for review, the group started to work on the software part of the game. Jason Yip King Chueng was tasked to start working the code for the UI and Naailah Hajaree was tasked to work on the architectural level design for the program. Afzal Ismail was given the task to code for a dictionary, so that words entered by the user in the game can be determined if they are legal or not.

During the next week, Jason Yip King Chueng and Theophilus Elechi worked together on the user interface. However Theophilus mentioned that the functions of JavaFX are quite restricted and proposed that using NetBeans IDE would be a better alternative. He says that there are more tutorials and resources on the use of NetBeans IDE and that its wider range of functions might be better for the game.

During the same week, Naailah Hajaree and Danshil Mungur started working on the implementation of the game. Naailah would be implementing the classes related to the player and Danshil would be working on the classes related to the game grids and also come up with an algorithm to detect adjacency of the letters in the grids.

After the Easter break the group recap what they have been able to achieve during their time off. Naailah and Danshil had finalized the structure of the software and an algorithm was made to determine the adjacency of the letters in the grids. The main outline of the user interface was done using NetBeans. Jason and Theophilus would start working on the interface specification part of the Design Specification document, according to the template done by Afzal.

During the next two weeks the group worked to finalize the game and bring the different components together. We still had to finish our design specification document, everybody was working on a part of it. In the meantime, Danshil was still implementing the game logic and once he it was working, Naailah was able to integrate the methods that she has been working on with it. Afterwards we had to do testing and we came across

some serious errors. For example, the program was checking the number of time a letter was allowed only in a grid and not the whole board. We have also realised that the software must allow keyboard input. Danshil was assigned to do this. The software was working, Theophilus was able to finalize the code for the time. He took time to do it as he was having some issues with the threading. Naailah was assigned to implement the change view option. Since she was not able to do she asked Theophilus to help her. The feasible test for the change view was done with JavaFX in the IntelliJ IDE, when we have decided to use NetBeans we have not test if it was as easy as with IntelliJ.

In the final week of the project, Naailah started producing the Final Reports. She delegated to the other members the task to write some of the parts which were most appropriate for them. Afzal was responsible to write the historical account in the End-of-Project report. Danshil and Naailah were assigned to produce the maintenance manuel as they were the one who did the coding. On Thursday the 10th of May the whole group meeting to finalise the documents and do the final testing. Unfortunately, we were still having some issue with the code. However, we were able to finalise how the change view will look like and the colours to be used for the selection of the letters on the board. On the next day, Jason and Naailah came to the campus to update the required documents for the final submission while Danshil was fixing the code.

## 2.3 Final state of the project

At the end of the allocated time for the project is almost complete. The coding part of the project has been done, except for one requirement that has not been fulfilled. All the documents making up the documentation are complete.

## 2.4 Performance of each team member

### 2.4.1 Elechi Theophilus (the12)

Elechi Theophilus was responsible of everything that wat related to the design of the interface. He was the one who made the User Interface Hand-in and the JFrames Design for the final project with the help of Jason Yip King Cheung. Since he was the one who had more experience with the NetBeans IDE, he was responsible of helping anyone having problem using it. He was also assigned the task to do the countdown timer.

Overall, he made a significant contribution to the group project and he tried to complete his assigned task in the time frame allocated, whenever he was not able to, he informed the team and we assisted him to be able to respect the deadline.

An agreement was reached between Theophilus and the project leader on the above statement.

### 2.4.2 Hajaree Naailah (nah37)

Naailah was the project leader. She was responsible of the everyday running of the project and assigning tasks to the group members. Apart from that, she had to do part of the coding and writing parts of documentations.

Overall, her performance was good as she was doing as much as she could to finish in time. She was assigning a task to a team member based on their competence or whether he was willing to do it.

### 2.4.3 Ismail Afzal (mai15)

Afzal was the Deputy Quality Assurance Manager and he was responsible for taking minutes of the meetings. He was given the task to write the Test specification document, draw the sequence diagrams to be included in the design specification document, find a dictionary for the word checking and writing the method that searches for a word in it.

Afzal's performance was very good, he was present for all meetings, he tried to help where he could. If he was not assigned any task, he would ask what he could do to help.

An agreement was reached between Afzal and the project leader on the above statement.

### 2.4.4 Mungur Kokil Danshil (dkm4)

Danshil was responsible of implementing the game logic and packaging the software. He was the one who has been able to come up with an algorithm for checking the adjacency of the letters in the grid. Danshil was also responsible of maintaining and creating the GitHub repository.

In the first few weeks, his performance was not very good as he was not attending group meetings. However, afterwards he managed to catch-up. It could be said that he made a significant contribution to the group project with his extensive programming experience.

An agreement was reached between Danshil and the project leader on the above statement.

### 2.4.5 Yip King Cheung Jason Tione Wang (jty)

Jason was the Quality Assurance Manager. He was responsible of reviewing all documentations, he had to complete part of the User Interface documentation, the Design specification, the User Interface Hand-in and implementing the interface with the help of Theophilus.

Jason's performance was good overall. He was present for all meetings and he always did his assigned task.

An agreement was reached between Jason and the project leader on the above statement.

# 3. CRITICAL EVALUATION OF THE TEAM AND THE PROJECT

## 3.1 Performance of the team

Most of the team members performed well. Their performance could have been improved if each of them were given deadline for their assigned tasks. There are team members who were skilled for their assigned task, but they were not reliable.

## 3.2 Project Improvements

The only improvement that the team was able to come up with is in the first tutorial itself, the AUM group should have had a Skype meeting with Prof. Chris Price who would have explained what the project is about and what are the different steps. We should have been given the dates for the deliverables that were appropriate for us.

## 3.3 Lessons learned

The most important lesson that we have learned about software projects is that a proper planning is very important. It is the most effective way to be able to respect deadlines. In order to make things go faster, the project leader has to know the strength of each of the members so that no one is assigned a task that they do not have the skill for or they would be able to do it, but they would need lots of time. In software projects we cannot afford to waste time.

Software projects are not just about coding, there are principles that need to be followed and documentations that have to be prepared. You cannot just start coding like that, you need to make the design first, check if the difficult parts are feasible. Sometimes what appears to be easy is the part that becomes more problematic.

In a team, collaboration, respect and communication is the key.

# REFERENCES

[1] Software Engineering Group Projects: General Documentation Standards. C. J. Price, N. W. Hardy, B.P. Tiddeman. SE.QA.03. 1.8 Release

# DOCUMENT HISTORY

| *Version* | *CCF No.* | *Date* | *Changes made to document* | *Changed by* |
|---|---|---|---|---|
| 1.0 | N/A | 4/05/2018 | Outline, Team Members performance | Nah37 |
| 1.5 | N/A | 4/05/2018 | Added historical account | Mai15 |
| 2.0 | N/A | 10/05/2018 | Management summary | Nah37 |
| 2.5 | N/A | 11/05/2018 | Critical Evaluation of the team and the project | Nah37 |