

Software Engineering Group 09 Project End-of-Project Report

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1. INTRODUCTION

1.1 Purpose of this Document

This document to report and evaluate clearly on how much of the requirements we were able to do, the evolution of it, and what we could have done to improve it. This document will also evaluate the group as a whole and each individual on their performance and their contribution to the group. This document is following the setup of SE.QA.10 [6], section 2.1 *The End-of-Project Report*.

1.2 Scope

The document describes the process of working in this group, where we could improve for future, and how we could solve the problems that came up during the time we had to work on this project. It will describe what we have done and what we were not able to deliver on.

1.3 Objectives

The objective of this document is to evaluate the delivered project, the group; and the everyone in the group as fair and correct as possible.

2. MANAGEMENT SUMMARY

2.1 What the project has achieved

The project has been able to touch on all the requirements and is in a functional state. Even where we lack in all the functionalities in the requirement, we at least have some way of solving this. E.g. for running a random pub tour on the phone; did not have the chance to implement so that the user could select the number of random pubs to be in the random tour, but to at least have a similar feature in our app, we added so that the program will randomly select the number of pubs for you.

Even though we didn't start on the main mobile application until start of integration week, we still manage to make a functional app that fulfilled all the requirements in one way or another.

2.2 What the project has not achieved

As said above, we did not achieve to fulfil all the requirements fully. The specific requirements that was not fully fulfilled was: FRD5 (did not have all of characteristics needed), FRM2 (did not display all the information on the screen, e.g. picture of the pub), FRM4 (the user can't select how many random pubs they want form the list, it is random), FRM5 (the user can't select different times for how long they are staying for each pub).

2.3 Documentations states

All the document is up to date except the desktop side of the project maintenance manual has not been added by the time of writing this report. The rest of the documents have had its final review on 07/05/19 to find the last changes needed to be done and check if the feedback we got had been improved on.

2.4 Difficulties during the project

The project originally made for an 8-person group, but we were reduced down to 5 people, this has resulted on each member having to do more work than expected and not getting time to get everything up to the standards we wanted, e.g. commenting the code.

Some of the people leaving had important roles and tasks, QA and then the deputy QA. E.g. out repositories and documents weren't up to standards from the start. When roles were switch up, we had to spend time improve our standards, and up to that point it had gathered more issues that needed more work to fix.

Git was one of the struggles during the project. Most of the group members hadn't ever used git in the past, and we needed to help each other when unknown warnings showed up or strange behaviour occurred. E.g. is when someone accidentally pushed over the whole of the repository.

2.5 The team's performance

The performance of the team started off slow. Most of the members didn't focus on the project until they had a deadline coming up, so researching and other work went slow in the beginning. But as integration week started to get closer, some people started to do more to get the project ready, but not the whole team. Maybe if the whole team had started working on the project a bit earlier, then we might have fully fulfilled more of the requirements of the project.

3. HISTORICAL ACCOUNT OF THE PROJECT

3.1 Pre-Integration Week

The project started by everyone getting to know how the requirements for the project and the process and roles of working together as a team to be able to produce a project in a constrained lifetime. Also, in the beginning we had to fill the roles of Project Leader, Quality Assurance, and their deputies. The project leader was assigned to Runar R. (rur7), deputy Ben W. (bew46), Quality Assurance Brandon W. (brw20), and QA deputy Fred Z. (ffz). We also assigned people to what they were going to focus on: architecture, user interface, testing, android development, etc.

During the next few weeks the group worked on researching what to use in to fulfil the requirements, e.g. what system we should use to communicate between the desktop and the android application, or how the user interface was going to look.

The first documentation that needed to be made was the user interface document [2]. Ben J. and Ben W. were tasked with focussing on that document. The feedback wasn't great. A lot of the document was incomplete and needed more information and fleshing out. Also, the mobile UI design slides did not showcase how the properly application would end up looking. But from this feedback we started working over the next couple of weeks on improving the quality of the document and focusing on the feedback.

Then came test specification document [3]. Fred Z. and Sid L. were tasked with focusing on this document and they did a good job on this. There were of course some improvements to be made, e.g. removing some redundant tests and be more specific on what the tester needs to do. Same as the UI, we started improving this document over the next couple of weeks.

About this time our QA, Brandon W., resigned from the university after being absent from the group for over a month. Thereby, Fred Z. got assigned to be the groups QA, and Rupert took the place of the deputy. Due to Brandon was absent from this time, Fred had to do a lot of work to get the repository up to a better standard.

Then the last documentation had to be delivered, the design specification [4]. Runar R. were assigned to this document. Brandon W. was supposed to be work together with Runar because they were the ones with the most knowledge on the architecture and how the program was going to work, but due to Brandon's reassignment, Runar R. had to mostly do this document on his own. The feedback that came back was mostly fixing up parts that was vague, needed more details, or not completely understood. As with the other documents, these issues were fixed or improved over the next couple of weeks.

Then the news came that Rupert was resigning after being absent from the group for couple of weeks. This resulted in that we needed to assign a new deputy QA which Sid.

Up to this point the group mostly focused on researching and there only had been made small progress of making of the applications. Rupert S. had made the unconnected user interfaces for each screen on the desktop, Sid L. had made some tests and learnt how to use them, and Runar R. had set up the database and how to connect it through a java application.

Over Easter Runar worked on getting the desktop side up and running on a functional level, so a user could use the application to add, view, and delete pubs.

3.2 Integration Week

At the beginning of the week we hadn't started on the mobile application and the desktop application had some features we needed to add or improved. It started with getting everyone up to speed on what state we were in and what we needed to do to be able on producing something that can be delivered that follows at least some of the requirements of the customer. Sid L. and Ben W. focused on getting a skeleton for the app up and running, Runar R. focused on updating the desktop application. The rest of the group mainly focused on documentation, tidying up the repository, and some more spike work. By the end of the day the group knew what they needed to focus on to make the end result as good as possible.

For the second day we got a skeleton version of the mobile application and we could then start adding the basic functionalities. The day heavily relied making everything more robust, adding more scenes to the skeleton, and commenting to improve the readability of the code, mostly on the desktop side.

The third day saw improvements on the android app. At this point we got the app to talk to our database and receive information from it. This was harder than was thought of, due to differences between java and android programming and how they talk to can talk to a database but were able to adapt the code. The desktop was at this point basically done and could be tested for the last bugs before we stopped developing on it.

The fourth day was mainly focused on the android app, except for fixing some bug fixes that the tester found on the desktop. Early in the day we could display all the towns and their pubs, and as the day progressed we got more and more features implemented. At the end of the day it was a basic pub tour application that could take the user on a simple tour of selected pubs.

The fifth, last, day of the project a lot was finished up adding the last features. We were able to make the pub tour display more information. The user can after this day pick the start time and set the time they want to be in the pub. Filtering based on characteristic was also added and was easier than expected. In the last couple of hours, we were able to add the last main feature of letting the application creating a random number of pubs in a list pub from a filtered or the full pub list. Sadly, we didn't have time to add so the user could select the number of pubs to have in the list, so the program will pick a random number for them.

The delivered program did not fulfil all the requirements correctly. There are some places under the design of the project was misunderstood, e.g. that the user of the desktop application would only use address instead of coordinates, and some features we didn't have time to implement, e.g. fully implement images for the pub, our solution with the user giving it a URL link to the image isn't really user friendly.

4. FINAL STATE OF THE PROJECT

4.1 Desktop Application

We managed to create a desktop application that could connect to a remote database and be able to create a new list of pubs and load previously created list (*FRD1*). When the user wants to create a new list, they will be taken to a screen where the user can start to add pubs (*FRD2*). If the user decides to open an already created pub list, the application will take the user to a screen that displays all the pubs in that list (*FRD3*). If the user wants to delete pubs from that list it will they can do that by selecting the pub and they want to delete and delete it (*FRD4*).

For the adding new pubs (*FRD5*) it does not fully fulfil the requirement. It does only accept an address and a post code that will be converted to GPS coordinates, instead of allowing the user to insert the raw GPS coordinates, which was one of the requirements. Photos are not fully implemented, as of now the user must put the image on the internet and give the application the URL to that image. Also, the description box has a bug in it that result in the text not going to new line when it passes the borders of the text box. But the rest of the requirements works fine: entering name, description, characteristics.

When the user is done creating a pub, then they can save it to the list, or go back, discarding the information made in that pub (*FRD6*). When the user has saved a pub to a list, then it will be exported to that list so that a mobile user can view that pub in that list (*FRD7*). And if there are any changes on a pub, then the user can select a pub and edit every characteristics of that pub that is listed in the in *FRD5*, except for the issues addressed in that section (*FRD8*).

4.2 Android Application

When the user starts up the android application, they will be greeted with the list of town that they can select to be taken to the pubs of that list. Only problem is that the order of the town and pubs are ordered as they are in the database and is not logical for the user (*FRM1*).

The user can decide to filter the list of pubs with the filters, either setting the filters to “no preference”, “no”, or “yes”. But when the user goes back to the filtering, then all of the filters resets back to the default setting, “no preference” (*FRM2*).

The user can also click on each pub to display more information. On this screen it will display a default image, due to not being able to fully integrate images on our application. Also, there isn't a link to a map view of the pub on this page, but there is an address to the it. But other than that, it displays all the necessary information (*FRM3*).

The random pub tour (*FRM4*) in the app doesn't ask the user about how many pubs they want in the pub tour but takes a random value up to the number of pubs in the current list, there is a bug in this that allows it to create a random list of 0 pubs. The list can be either filtered or the whole list. There is a bug that results in always getting the same numbers of pubs if you go back and forth between the button for random pub tour. Then the user will be taken to a new screen with the list of the randomized pubs and they can select the start time and how long they want to be at each pub (this will be the same for each pub), the default will be the current time and 30 minuets at each pub. As well as change the order of the pubs, if wanted. After this has been set the user can start the pub tour and will be shown a screen with the basic information about the pub, like *FRM3*, except without characteristics and description, but it has a google maps URL link to show where the pub is. There are also two sections displaying when they should arrive and departure, and it will display the correspondent time. Instead of a check back to signify that the user has visited the pub, there is a button taking the user to the next pub. At the end of the tour the user will be congratulated with a congratulatory screen.

The user can also select the pubs they want to visit on their planned tour (*FRM5*), they can either select from a filtered list or the full list of pubs. The selected pubs will be put into the same screen as above, where the user can select the start time, interval time in each pub, and order of pubs. After the starting the tour it will act the same as the random pub tour with the same information and functionality. Same as the random tour, when it's done with the tour it will display a congratulatory screen.

The system has been delivered with 15 pubs in Aberystwyth (*FRM6*)

5. PERFORMANCE OF EACH TEAM MEMBER

All the evaluation of their performance has been arranged with each current member of the group and been agreed upon. Fred Z. has agreed with what I've written, but want to elaborate on some of the parts I weren't able to expand upon

5.1 Ben Weatherly (bew46)

Ben W. has been good at working when there is a deadline coming up. His work will be done with good and professional quality. But when there isn't a deadline close, then he lacks the motivation on working regularly and taking the initiative to ask to help with the project. He was the spearheaded for the UI document [2] and focusing on the desktop part. When he heard about the feedback he immediately started fixing the problems of the document and helped motivating Ben J. who was worked with him on the document to improve the document together. He also helped with the design document, create some of the diagrams of the document and fleshing out some of its vague parts.

He was the deputy group leader, for this role he lacked the drive to lead the group in the absent of the main group leader. But that might be because he only had to use his title once, so might be because he didn't get the chance of familiarizing with being the tasks.

During integration week Ben was our main android developer, this wasn't the original planed, but fur to lack of people required that he had to adapt, so he only focused on programming the app. He worked independently and were able to figure out what he needed to do to solve a problem. Due to him not originally being the main android developer meant that he didn't do enough research on android programming before integration week and had to learn as he went and thereby implemented some a bad practice, like opening activities instead of using popups to open new windows. This was noticed to late into programming and didn't have time to convert it into the right way to do it, luckily our app isn't that big and did not suffer any noticeable reduction in speed performance.

Since he was the main android programmer it only fitted naturally that he would write the maintenance document for the android side. He has done an attempt on the document and helping with the maintenance for the desktop.

Ben was always on time and often spent longer hours than was asked of him to complete what he was doing. He was good at communicating where he was at all time, and I never had to worry about him. I believe that if we didn't have him we wouldn't have come so far as we have in the project with the android app.

5.2 Sid Limbu (sil19)

Sid L. has done a little bit of everything, documentation, helping out with programming both the android and the desktop application, but his main role was that he was our main person for testing. Throughout the project he used both Junit and physical tests to test the applications made. He found and could explain or recreate the bugs for the programmer to fix and sometimes being able to fix the bug himself. He also wrote the desktop side of test specification document [3]

He started out being unsure on himself, rarely spoke up, and feeling uncomfortable. Then he started to learn different skills needed, and when it got to the integration week he suddenly he had to force himself out of his comfort zone to tell other people what he had done and needed to teach the other group members, e.g. talking about how Junit works.

His strongest quality is his ability to always keeping everyone's morals up. He could make people feel special for doing their tasks, tell a joke when someone needs a break, or by just sitting there with his light-hearted personality. Even when he gets tasked to do something he didn't understands, he still spreading his energy to other group members.

But he takes his time with doing some tasks. He often struggles with getting his head around totally new subjects and environments, e.g. git and its error messages (But most people struggle with this when they're first introduced to it). But when it comes to something that is more similar to what he already knows, e.g. Junit, then he is more comfortable and quicker to pick it up

He was normally on time, except for having one day at home, which was arranged with the group leader, because of personal reasons. He still did contributions to the project and gave somewhat regular updates on what

he was doing. But he understood why it was better to be together while working, in case he needed to get help and texting isn't as quick and easy as talking, and after that day he always came together with the group.

5.3 Ben James (bej31)

Ben J. has been helping in most of the areas of the project. He helped with the UI document [2] and focussed on the mobile side of the document. The feedback from his part of the document wasn't the best, but with a lot of help and motivation from Ben W. they were able to reform the document and make something with quality that could properly be represented. He was also our main document person, reading almost every version of each document and giving feedback on grammatically errors or pointing out sections that did not make sense.

During integration week he was mainly focussing with documents, finding out what needed to be done and create some quick little summaries and making a framework so the person that knew more about the content that should be in the document could easily open it and start writing quickly. He also looked over the feedback from the past delivered documents, checking if the change had already been done and locating where to change if needed, so that the person who knew more about the document didn't have to spend that much time rereading and finding what the feedback was referring too. He did some simple work with the android app too, like putting together a few of the scenes, and modifying some of the other to make them look more professional.

Where Ben lack the most is his motivation, and I believe that if he were able to motivate himself a lot more, then he could have performed a lot more than he did. When it came to do difficult tasks he often didn't spend that long until he felt like he couldn't do it and gave up on the task or left it until it was too late to learn it and make something with a good quality. This was the main reason why he worked a lot with documentation, because he wasn't able to spend some time learning what was needed for the main system.

Ben didn't always show up on time as planned and didn't always communicating fully with the group leader all the time. But he always showed up.

5.4 Fred Ziegler (ffz)

Fred Z. was fitted for his role as QA, his attention to detail is tremendous and it seems like he enjoys focussing on the small details that most people overlook. He was originally the deputy QA, but he read up on all of the responsibilities that being a QA brought. But by only being the deputy he didn't want to start conflict with the original QA, so he didn't speak up that often for to tell what needed to be done.

When the QA, he resigned a lot of his work incomplete and Fred Z. had to spend most of his time getting everything up to standards, fixing the repository, rewriting minutes to be more up to standard, and steering the project to follow more of the standards set up in the QA documents. It didn't help that the role of deputy QA wasn't constant, and he had to take responsibility of the deputy as well.

He was heavily involved in the test specification document [3] and on the mobile tests. He managed this well, compared to the incomplete state of the UI document he had to base his tests on. He also was responsible on merging the two different test documents together.

In result of sudden family illness and personal problems, his attendance was poor, and didn't always show up reliably to unofficial meetings and during integration week. This wasn't properly addressed until late in project and could have been communicated better within the group and brought to attention of the department staff earlier, so everyone could understand and adapt better to his state.

During integration week his duties was fitting for his role as the QA. He focussed on reformatting the code and adding some comments to better fit the standards that the programmer didn't have time to put in. If he didn't know what to comment about, then he added "TODOs" for the programmer to comment when/if he got the time. He focused a lot on fixing issues on GitLab, closing the ones that's already been done and opening new ones as time went on. He also finalised the data for Aberystwyth, writing some of the descriptions and collecting the pictures of the pubs.

Due to the problems addressed above, Fred rarely showed up before the afternoon and wasn't good at communicating with the group when or if he was coming in that day or not. But the time he spent with the group was always productive and he were able to contribute even with the lack of hours.

5.5 Runar Reve (rur7)

I was the group leader and became the main desktop programmer of the group. I did the design document [4] mainly by myself. This happened because I was the only member left who had the overarching grasp of the design and architecture after resignation of some members. The document got okay feedback, with lacking in information in some areas. The document would be improved over the next coming weeks. It wasn't planned that I would work with the whole of desktop application, but I had to be flexible.

As a group leader, I believe I did my best with the circumstances. I was almost always able to put together the group for a meeting at least once a week and tried to do my best to incorporate the whole team into the meetings and discussions of different topics. I feel like my hesitation with delegating tasks to the other members was a weaker aspect of my leadership. Thus, I often allocated tasks to myself when it was easiest for me to do, than letting someone else do it.

I believe this was largely my fault due to my "just get it done" attitude. This resulted in when it came to integration week I ended up doing much of the developing because I was the one with the most experience with what I focussed on; the desktop and JavaFX, instead of focussing on allocating tasks or starting on documents. I tried my best to allocate tasks to the others, but I needed to focus more on developing the apps, so I felt like I failed in that sector.

Over the Easter break I merged some premade scenes together and make a functional app, fulfilling most of the main requirements of the desktop app and setting it up so it can easily be improved to add the last features and fix bugs. I had to take a few liberties while creating the app and change some of the planned interfaces to better fit with the code.

I was almost always working during the integration week. I had to switch between developing on both apps, allocating tasks, and helping with problems that popped up during all the week. I did mostly all the desktop application by myself, with some contributions from other members. And on the android app I mainly focussed on the back end of it, e.g. implementing connection with the database, a filtering algorithm, and other miscellaneous functionalities.

I tried to lead with example, always being first in and the last to leave for the day. This meant I spent more hours during integration week than the rest. But this normally resulted in solving some difficult problem and being able to move onwards to the next part of the project.

5.6 Rupert Storer (rfs11)

Rupert S. never wanted to disappoint the group and always trying his best, he made mostly all the scenes individually. He also was the deputy QA for a few weeks. But due to personal issues, resigned from the university in the middle of the term.

5.7 Brandon Watkinson (brw20)

Brandon W. was our QA in the beginning. But due to personal issues, resigned from the university in the middle of the term.

5.8 Peter Licinski (pil9)

Was signed up to our group, for unknown reasons did never turn up.

6. CRITICAL EVALUATION OF THE TEAM AND PROJECT

6.1 Team perform as a whole

The team began slow. Most of the team weren't focusing on this project to do their best that they could, since the project was so far away and wasn't urgent. It didn't help that this was an unfamiliar method of working for the group and all of us had never had a collaborative programming project. There was still progress being done with the project, but not consistently. There should have been a lot more spike work across the members so that when it got to integration week we had more people who knew about the different tools and could help with the

more parts. In the end it was mainly 2/5 who did the majority of developing. The rest helped around, found and fixed bugs, but did not do anything crucial changes to the main program.

It would be best if we at least had built the main skeleton for both application before the beginning of integration week, so we could have more time with the main functionality of the program and more separate parts to work on from the beginning of the week, instead of starting on the user interface for the android app. This could have meant that more people could with different parts of the code.

Also, would have been better if the last documents were properly started in integration week so everything would have been written down closer to when it was made. But due to lack of people who knew about how the system worked meant that they needed to focus on developing the app instead of writing documentation.

6.2 How to improve the project

The best method on improving the ease of this project would be to teach git to everyone better. If everyone had an understanding on how Git worked, how to solve the common errors would help everyone to have a better time. Maybe having 2-3 mandatory practicals on the subject.

Android development seemed like the right tool to use to complete this project, but it would be nice to have at least one practical on Android Studio where we could have learnt the basic of it, how to set it up, and how it worked. This would increase the likelihood of people picking it up earlier and not being intimidated by this whole new environment.

Having more time on the documentation would have been nice. At least for my group who didn't get time to start the main documentation after the delivery of the project. Most people, including myself, needed the weekend as a break before starting on the project.

6.3 Important lessons from the project

The most important lesson we have learnt from this project is to communicate and be being able to speak up when you notice something is not done correctly, instead of keeping silent. And the importance to inform the other group members if an individual has problem in their personal life, so that the group won't keep assigning work to the individual, and instead take some of the workload of the person. An example of this is before one of our resigning members left, they said that they would still do some work, even though they had personal issues, until when they dropped the news that they were resigning, and rest of the group has the recreate what they've done.

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DOCUMENT HISTORY

Version	CCF No.	Date	Changes made to document	Changed by
1.0	N/A	08/05/19	Original version	RUR7