

# **Individual Report**

# Hamzah Malik, Project Manager and Designer from Digital Inspirations – Team 17.

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# Preface & Purpose and scope of the document

This is an individual report by Hamzah Malik of Digital Inspirations, covering the experiences faced during the Team Project. This document is here to explain what I have done throughout the period of the team project, how I felt the project went, how my team worked and the synergy between team members, the lessons learnt for the future and things I would change looking back at the team project.

# Intended audience

The intended audience of this document is my consultant.

# History of the document

|  |  |  |
| --- | --- | --- |
| Version Number | Date | Description |
| V1.0 | 12th April | This is a new document |
| V1.1 | 14TH April | Updated document with a table of contents, a cover page, and included a preface about the document. |
| V1.2 | 16th April | Added an introduction and started Question 1. |
| V1.3 | 20th April | Updated Question 1 and completed Question 2. |
| V1.4 | 23st April | Finished Question 3 and updated it. |
| V.15 | 26th April | Completed Question 4 and 5 and formatted the document to meet guidelines. |

# Introduction

Bloomsbury’s Image Processing Laboratory, or BIPL, is a laboratory that handles the work of photographers who commission work to be processed at the lab. This is mainly attributed with the printing of photographs provided by customers. BAPERS prides itself the hope of producing perfect results every time, whilst working within tight deadlines without sacrificing any quality.

With a system that was previously a paper-based, Mr. Lancaster, our client needed a solution that would be accurate, high quality and efficient.

Our task was to work in a team to establish a prototype system that matches our client’s requirements and to document our progression throughout this period. Over the span of several weeks, we made UML models highlighting the systems complex functionality, GUI display frames to show how the system would appear and ultimately created the requested system. Extensive testing methods were used and documented for out consultant to see progress and below are the results from my own personal experience during the Team Project, whilst working with the other members of Digital Inspirations.

# **Question 1. Own Contribution**

During out Team Project, my own contribution has been consistently important within the team. From the feedback gained from the first deliverable, the contribution I had made (Use case diagram/spec/priority list/SRD) all had relatively high marks due to my persistence in getting feedback from the module leader and consultant. However, this did not mean there were not discrepancies during the project.

I often spent time underestimating just how time consuming some of the tasks really were and so I have constructed a table, showing every task I have completed during the project, with the time taken to complete each task and any discrepancies or important notes about the task labelled. This is an effective way to see a pin-point measurement of my progression as Project Manager and member of Digital Inspirations (Team 17). As this section is all about **my** contribution however, I have left out notes about how I managed the team information about our meetings. I have however labelled what I completed during meetings, and the work I presented to my team. In my personal diary, I have extensive documentation of each meeting and what I expected of my team during these meetings, to show their progression. Everything listed below was also added to the shared OneDrive or WhatsApp group-chat. I have also created a key to show whether a task was completed on time or not:

|  |  |
| --- | --- |
| Keys | Description of Key |
| Green | Task completed on time and as expected. |
| Yellow | Task completed slightly later than expected (same day but more than an hour difference) |
| Orange | Task completed a lot later than expected (different day) |
| Red | Task could not be completed. |

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| --- | --- | --- | --- |
| Date  And  Time | Expected/Actual  time to complete | Description of task | Discrepancies/Notes |
| 30/01/2018  2:50pm | Expected:10 mins  Actual: 10 mins | Created a WhatsApp group chat for the team to update each other with future work.  Decided also on what days to meet up with team based on their availability. | No discrepancies.  Note: Tuesdays and Thursdays were discussed to be dates we meet up. |
| 01/02/2018  12:00pm | Expected:30 mins  Actual: 30 mins. | Created a final logo for the team based on the suggested team names/logos.  Created a OneDrive shared space as I thought it would be useful for updated version control for our work, for everyone to see. | Creating the logo took as much time as expected but I am not familiar with photoshop so generating a final team logo took slightly longer.  Decided on the name ‘Digital Inspirations’ which the team agreed with and created a final logo which was accepted by everyone present at meeting. |
| 03/02/2018  3:00pm | Expected: 1 Hour  Actual: 3 Hours | Created the software requirements document(SRD) in the requirements stage of the team project. Formatted the document into subsections and added a contents page, page number, an introduction to the document and a description of the current system.  This can be found in the ‘Version Control’ section of the SRD, labelled ‘Version 1.0’. | This took much longer than expected as I had to think about how to describe the current system and the scope, alongside the purpose of our system. I didn’t it expect it to take so long so I had to put much more effort in than I expected, spending time to go over the requirements specification once more to get an understanding of what is required in the document itself. |
| 04/02/2018  11:45am | Expected: 30mins  Actual:45mins | Created the Project Binder to keep a weekly schedule of consultant meetings, team meetings and version control of documents. | This took as long as I expected. The only discrepancy would have been remembering what happened in the meeting, but I remembered regardless. |
| 04/02/2018  3pm. | Expected: 1-hour. Actual: 2 hours and 30 mins | Created a first draft list of use cases based on the requirements set by Mr. Lancaster. This can be found under the ‘Version Control’ section of the project binder about the use case diagram, V1.0. | Coming up with appropriate use cases took much longer than I predicted, as I had to consider how they would cover the whole of the system.  Another discrepancy I faced was what the relevant actors to the system would be, and whether time was a primary or secondary actor. |
| 06/02/2018  2pm | Expected: 1 hour  Actual: 2 hours 45 mins. | Constructed the first version of the use case diagram with Anthony. This can be found in the Project Binder on page 14. Spent the time figuring out actor generalisation based on user access within the system.  Also assisted Devina/Sharmistha with design class diagram ideas, using the notes from the OOAD module. | Once again, the discrepancy of actor generalisation was apparent, and I did not get to finish the proposed plan of getting the actor generalisations finished. This was because some other members had to go home, so I completed the rest at university. The issue of ‘Time’ being a primary/secondary actor was still there, but I left it as a secondary actor. I also created generalised actors of ‘FrontStaff’ and ‘ProgressionStaff’. |
| 07/02/2018 | Expected:30 mins  Actual: 30mins | Acted as the primary interface between Mr.Lancaster and our group during the interviews held during the team project. I had devised several questions to ask and was the main person communicating and asking questions. A list of some of the questions formulated by me can be found on the project binder.  After the interview I held a meeting with the team to discuss what we raised in the interview and updated the GUI/Design class team on what was needed to be done. | The interview took as long as long as expected without many discrepancies. I asked many questions about the requirements to help formulate the Use Case diagram and asked questions to aid my team which I had split into groups. This included questions that would help formulate the GUI’s such as what he wanted for the system design and what was not necessary. |
| 08/02/2018  12:00 | Expected:2 hours  Actual: 2 hours 20 mins. | Improved upon V1.0 of the use case diagram by refining on what we previously had, adding in relevant use cases and refining on a final actor generalisation. The relevant changes can be found under V1.2 on page 15. | A few discrepancies occurred as I had to visit during Vlad’s office hours in A304 to discuss whether time should be a primary or secondary actor and refined on the actor inheritance. I also asked more about the current system to improve my SRD. This took slightly longer than expected. |
| 09/02/2018  14:00 | Expected:45 mins  Actual: 1 hour. | Finished the description of the system in SRD and updated the scope. | No discrepancies. |
| 10/02/2018  To  12/02/2018  (times unknown) | Expected: 2 hours  Actual: 5 hours | Completed the priority list for use cases, and began considering the ten most important ones for the use case spec. Also fixed the previous Use Case diagram as mentioned in my personal diary. | This took longer than expected as I was very unwell, so the task was split over two days. I also had to consider what made specific use cases more important than others which took a lot of effort and had to make relevant changes to the use case diagram, as shown in the project binder. |
| 14/02/2018  13:00pm | Expected: 1 hour  Actual:3 hours | Updated project binder during emergency team meeting. Overlooked everyone’s progression and presented diagram I had completed whilst ill. | The discrepancy mainly was caused by me being unwell, so I held an emergency meeting to see everyone’s progression. The meeting took longer than expected because I wanted a clear understanding of everyone’s progression. A detailed summary can be found in my personal diary on page 6. |
| 15/02/2018  12:00pm | Expected: 2 hours  Actual: 2 hours | Completed a ‘final’ use case diagram, which can be found on page 14 of the project binder.  Made labelled notes justifying actor names and relevant choices. Also set deadlines for the Design Class diagram and GUI completion. | Took roughly around the same amount of time as expected as I had made final touches to my diagram and already had a priority list completed. |
| 17/02/2018  To  18/02/2018 | Expected: 3 hours  Actual: 3 hours 30 mins. | Finished adding notes about the packages used in my use case diagram and justification of actors.  Completed seven use case specifications from the priority list I had also completed, leaving the last three use case specifications to Anthony. The completed list and specifications can be found on the SRD under the version control.  Also overlooked the package diagram and class diagram over WhatsApp. | One of the discrepancies was helping Anthony figure out how to create a use case specification as he was unsure. This took slightly longer than expected and I had to carefully consider how to create the alternative flows. To speed this up, I showed Anthony ‘Tutorial 1’ of the OOAD module to boost his confidence and give him a guideline of how to get started. I had to also think about if I was missing anything that would negatively impact the system, if not added to the use case diagram/specifications. |
| 20/02/2018  (time not recorded). | Expected: 2 hours  Actual: 3 hours | Showed team my final UC diagram and all agreed it was correct. Showed the final 10 UC specifications, and priority list during meeting which was agreed on to be correct. | The main discrepancy here was I just wasn’t happy with the UC diagram, despite my effort I felt I needed to add packages into the diagram so during our meeting I went to add these in. This naturally made the actual time to complete the task much longer. I also had to look over everyone else’s work to see if they were on track. |
| 22/02/2018  12:00pm | Expected: 2 hours  Actual: 2 hours | During team meeting, looked over the final versions of the GUI made by Mariia + the Design Class diagram. Also reviewed the ER and Package diagram. | This meeting took as long as I had planned as although Mariia had finished GUI designs, I noticed her navigability wasn’t very clear, so we spent the time talking about how she would show this. |
| 27/02/2018  12:00pm | Expected: 1 hour  Actual: 1hour 15 mins | Looked over what everyone else had to complete still, as I had finished the majority of what I needed to do. Looked over the SQL Statements, the GUI mapping and navigation and presented my final UC diagram with notes. We all agreed they looked fine. I also presented the SRD with a clear layout and updated project binder. | During the span of 22nd to 27th, I was slowly progressing on work, the workload got slightly slower due to other assessments approaching too. I was also focused on ensuring everyone else was regularly updating me with their work to meet the deadline, as I had already finished the UC Specification, priority list, and the SRD. |
| 02/03/2018 | Expected:2 hours  Actual: 2 hours | Finalised on the SRD by adding everyone’s contribution into the document, where I made notes about everyone’s diagrams. I also updated the version control for the project binder which you can see, includes a list of updated versions. It also shows updates of all the diagrams that I added. | This took as long as expected but there were still slight discrepancies. One for example, was because I had to manually keep going back to the OneDrive, downloading the images and manually add them into the SRD. Sharmistha and Devina added their own contribution in but I added everyone else’s. As shown in the binder, I only added version control for our diagrams as the other sections did not really have a version control system. |

# Implementation Stage

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| --- | --- | --- | --- |
| Date  And  Time | Expected/Actual  time to complete | Description of task | Discrepancies/Notes |
| 01/03/2018 | Expected: 15 mins  Actual: 35 mins | Created a discord server to act as a primary place for voice calls when team members are unavailable for group meetings. Also added channels for ‘Implementation Report’, ‘Implementation’, ‘Presentation’ and ‘Main Chat’ | This took slightly longer than expected as I did not know how to add private channels for members, so I had to research on how to add them. I also had to make a pinned message for each channel, so everyone knew what the channel was used for. |
| 01/03/2018 | Expected 1 hour  Actual 1 hour | During a group meeting I confirmed with everyone what they needed to do, dedicating the presentation and component diagram to Sharmistha and Devina respectively. I assigned Martin this role of also coding to confirm, and myself and Anthony would be testing the system and creating the implementation report. | Mariia was not in the country at this time so discussion about the system’s implementation itself was limited.  I at first suggested Java but could not confirm anything until Mariia was back. |
| From 02/03/2018  04/03/2018 | Expected: 1 hour  Actual: 3 hours | Started creating the Implementation report with subsections of ‘Run time components’, ‘Compilation of source code’ and ‘Testing’. This could be found under the version control of the project binder, where the document is labelled ‘Implementation Report V1.0’ | This took much longer than expected as I did not know what ‘Run time components’ were, so researched online. I also had to take time to think of how I would make my ‘Test cases’ for testing based on the lecture slides. I added in a clear layout to the document also and so this took slightly longer than expected overall. |
| 06/03/2018 | Expected: 1 hour  Actual: 1 hour | During a team meeting, discussed the programming language to be used for the implementation. Martin was not available but Mariia suggested using a web-based project. We all agreed, and I set her the role of ‘Primary Coder’. Also uploaded my Implementation Report draft onto OneDrive for Anthony to see, and requested he started on the test cases. | No major discrepancies apart from Martin not being available so could not finalise on a programming language with the whole team. |
| 07/03/2018  08/03/2018 | Expected: 2 hours  Actual: 2 hours | Created a brief NFR using a Volere template, using last year’s Software Engineering module as guidance.  During team meeting the next day, showed team which agreed upon, but I felt as thought needed more depth. Anthony showed me a test case he had created showing ‘Expected Outcomes’ and ‘Setup’, which I overlooked and helped him change. Anthony used my template to do this. | Coming up with a non-functional requirement relevant to BAPERS was a lot more difficult than I had expected and so required much more thought. Another discrepancy was I could not think of a second NFR and so the meeting on the 8th was very helpful to get ideas from other people in the group, who suggested their own ideas. |
| 11/03/2018 | Expected: 30 mins  Actual: 2 hours | Received a list of five test cases from Anthony which I looked over and fixed. This was given on the 11th because I set a deadline for him and he managed to deliver on time. | This took considerably longer than I thought as the test cases given were lacking in quantitative data and were very limited. I spent time going over each test case and establishing more depth into the five given to me. |
| 12/03/2018 | Expected: 1 hour  Actual: 2 hours | Wrote a description of how the code compiles based on the programming language decided between Martin and Mariia (Node.js). Used help from google to find out how the compilation of code works. | This took longer than expected as Node.js does not compile as OO languages do, so I had to do extensive research to give justification and reasoning behind this. And also explained how the process works in detail. |
| 16/03/2018 | Expected: 1 hour  Actual: 1 hour | Went over Anthony’s listed test cases, all 10, and added in the Alternative flows myself. Fixed any spelling mistakes or detail he forgot to add.  The updated version of the report can be found under the version control of the project binder, listed as V1.2 | No discrepancies. Took as long as expected as Anthony had learnt from his mistake and made test cases that were logical. |
| 20/03/2018 | Expected 1 hour  Actual: 2 hours 30 mins | Showed consultant updated work that has been completed. Updated my two NFR’s (Security and performance) onto the implementation report. During meeting, got to work on the run time components. | Stayed behind at university after the meeting was over as I could not understand what the run time components needed, as I was not familiar with Node.js |
| 25/03/2018 | Expected: 30 mins  Actual: 30 mins | Updated and looked over the Run Time components and Compilation of source code given by Mariia and added them into the Implementation Report. This is listed on the project binder as V1.3 and uploaded onto OneDrive | No discrepancies, the sections given by Mariia made sense and were descriptive, so I updated the implementation report with these subsections and added more detail to one of my NFR’S (Security) |
| 02/04/2018      09/04/2018 | Expected: A Week  Actual: A week | With aid from Anthony, tested the current system given by Mariia against the test cases and recorded the result. | Took around the amount of time as expected. As Mariia added new changes, we tested them against the system until they worked. |
| 13/04/2018      16/04/2018 | Expected: 3 days  Actual: 3 days | Rehearsed for the Team Presentation by creating a script and memorising it, also rehearsed on body language. Improved on the presentation to produce the final version of it, which can be found on the project binder. | Took as long as expected, as I had to rehearse and remember what I would say. I also had to space myself out and ensure I didn’t rush or go too slowly and stayed within the ten-minute mark. |
| 17/04/2018 | Expected: 15 mins  Actual: 15 mins | Took part in presentation and answered questions given by Vlad. | None, spaced my time perfectly and finished at exactly 10 minutes. |
| 17/04/2018      18/04/2018 | Expected: 2 hours  Actual: 2 hours | Finalised on some tests that were not running before on Mariia’s system, running a check on every part of the system to see if any tests still fail/pass before the SW Demonstration demo. | The key ‘discrepancy’ here would be that the system was not finished, so some of the tests had to be left without a functional test. For these, I added in a description of what the system was expected to do and that it had not been implemented completely. Although this problem occurred, the amount of effort and time taken was still as I expected, so this is therefore green. |

# **Question 2. Description of how the project went**

Overall, I don’t consider our project to either be a success nor a failure based on our final product. Whilst *most of us* had a good work ethic, we ultimately struggled in certain parts of the project. One example of this was simply getting everyone to attend all our proposed meetings. Martin, for example, had to attend work most days so was typically unavailable. In a real-world scenario this problem wouldn’t really be face as everybody would be working under one company.

Another problem faced was the division of work within the group. As project manager, I proposed we split the work up based on what everybody was most capable in doing. Although this theoretically is an agile approach to working and should work, I felt it did not work in our group as certain members took much longer to complete work than others. Certain members just were more capable too, and this was something I believe I didn’t take into consideration enough. In the future, having everyone work on each part of the three stages in the project would allow consistent work to be completed and everyone could have an input into the final idea of each proposed diagram. This would also remove any problems of ‘contribution’ within the team as everyone would be equally contributing to the final product.

A minor but unavoidable problem was that our consultant was not available for some of the weeks during the project. This did have a large impact as I could not update her on everyone’s progression and tell her about some of the worries I had in person. The mistake we made was to discuss these problems faced during the following meeting, when we could have instead sent her an e-mail, describing everyone’s progress and their own contributions.

A larger, but once again unavoidable problem was the ‘City Union’ strikes that occurred for several weeks. Not having access to oral lectures meant that many of us felt as though we couldn’t truly get the full experience of a ‘Team Project’ because some of the lectures weren’t available. This also led to a problem of attendance once again, as I had to try and motivate my team to attend meetings despite not having any lectures for the day. Although disheartening, this problem could have been prevented through meetings organised someplace else, rescheduling the meeting, or having a Skype group call as a replacement meeting. The only problem with rescheduling was that we were unsure of when the strikes would end.

A clear issue we faced was member contribution. As the project manager, I had to decide on what to do with the people who did not contribute as much. The necessity of our consultant once again is highlighted here, as Abigail was our primary source to handle problems. The lack of member contribution for the first deliverable led to another issue, working under high pressure due to limited time. As I noticed that some people were willing to do less, I tried my best to motivate them and encourage them to work, even contacting Vlad about the issue. However, this did not really help as they continued to not work as hard as I expected and needed. This led to a huge shift in work load to those who did do the work, as they now had to complete their own work and the work of those who did not complete their own. This is evidenced clearly, when I had to complete all the use case related work (Diagram, priority list, and most of the specification), as well as the ‘Software Requirements Document’ and keep an up to date project binder. Inevitably, this also led to us not finishing the completion of the system in its entirety and overall, a lower grade. In the future, this could be solved by ensuring everyone is clear about what is expected, and getting Vlad involved earlier, as I left it too late in the hopes that members would complete their work eventually. This also ties into the issue of trust. I wanted to simulate a real-world scenario by placing trust into my team mates which is why I did not immediately approach members of staff about the lack of contribution. Looking back however, the most sensible choice would have been to seek help.

# **Question 3. Description of how the team worked together**

During the entirety of the Team Project, there were numerous platforms we used to work together. I set up a WhatsApp group-chat for everyone to communicate ideas into and a OneDrive account for version control of documents and diagrams. GitHub was also used to show the progression of the system and I set up a discord server, which was used for any form of VoIP calls we would incorporate during meetings. We also had team meetings which were held every Tuesday and Thursday based on the feedback I received from my team at the start of the project, regarding availability. Whilst we incorporated all these platforms to communicate, there was clear differences in the idea of ‘teamwork’ amongst certain members, who did not seem to try as hard.

**Martin- 0/5**- When looking at how to score a team member as the project manager, I must consider the effort they made, and quality of work given. Unfortunately, Martin is a prime example of someone who did neither. He often told us he would complete work but would avoid meetings frequently due to ‘work’, fail to stick to any deadlines and lie directly to our faces about completing the work. During the first stage of the project, he proposed to help with GUI designs and did not, and was meant to be the secondary coder, also failing to do this and leaving Mariia to do it all herself, as it was too late for anyone else to help her by learning a new programming language. The evidence speaks for itself, as there is not one mention of Martin’s contribution that can be found in the project binder, as he did not do anything. I feel as though Martin jeopardised the opportunity for everyone to do well, by lying to our faces instead of being honest and saying he will not help us.

**Anthony- 3.5/5.** Anthony’s contribution during the team project was a mixed experience for me personally, as he had a rocky start during the design and requirements specifications stages but improved in the implementation phase. As shown in the project binder, Anthony’s contribution involved making the ‘base’ Use Case diagram on page 13, from the use cases I had given him on page 12. Anthony also contributed to three of the ten use case specifications despite agreeing on five each, but he felt unconfident, so I only gave him three. However, Anthony managed to stick to deadlines and attended all meetings. Although he was not the most capable member of the team, he did show the effort in trying to learn what to do and contribute as much as he could. In the implementation stage, Anthony managed to make up for his lacklustre performance in the first deliverable by contributing a lot to the system’s testing and ensuring that the system ran as expected.

**Sharmistha- 4/5.** Sharmistha’s contribution was very impressive during the team project. She contributed to the completion of the Design Class diagram, ER diagram and package diagram with help from Devina. Although we did not get the best of grades (due to a submission problem of a blurry diagram), Sharmistha put a lot of effort into her work, as seen in the Project Binder’s version control of the diagrams. A lot of these updates for the relevant diagrams were made by Sharmistha and she also largely contributed into the design of the presentation.

**Devina- 3/5**. Devina’s contribution was also slightly underwhelming. Whilst she attended most meetings, there were some meeting where she just didn’t attend despite being available. Her contributions were also rather poor, contributing to the SQL statements which got marked quite poorly, scoring 0/4 for the reports generation, as shown on our feedback. On the other hand, she did have good intentions and did seem to want to contribute and tried helping Sharmistha with her diagrams for the first deliverable and the presentation. Despite this however, her component diagram was largely assisted by Mariia, and she only gave me the diagram a few hours before the implementation report’s deadline. Overall, her performance wasn’t the worst, but she could have tried to put more effort in and not leave work so last minute.

**Mariia- 5/5.** Although sometimes leaving work to the last minute, the quality and quantity of Mariia’s work was impressive. She managed to complete what I expected of her given the situation of lack of member contribution from Martin, and designed all the GUI’s herself, with detailed explanations behind each design, as seen in the SRD, she also made a log of all updates that can be found on pages 61/62. She also was the only person to contribute to the creation of the system, as Martin gave up. Although she did not finish the system, the effort she put in and countless hours of work made her a valuable member to our team and deserves 5/5 for her effort and quality of work. She also helped a lot with the implementation report when necessary help was needed.

# **Question 4. Lessons learnt**

I believe the Team Project module is a very useful experience that has given me a lot of experience looking forward, where I will inevitably be working in a team in the future. One technical skill I have really improved upon is my ability to work with UML based projects. As a ‘Designer’ in the project, a lot of my time revolved around working with documentation and diagrams and so my understanding of UML has improved.

A lot of my time spent as Project Manager taught me about psychological problems. One of these was how people react to criticism. When dealing with five other people with different natures and personalities, I had to consider how they would react to feedback and ensure I was always constructive and didn’t make my team mates feel as though I was not being helpful. It also boosted my confidence as a Project Manager and really opened my eyes to a possible career in Project Management. Being able to have people work together and form a solution really appeals to me, so this project helped exemplify such an idea.

Working under strict timed conditions also vastly improved my time management skills, as I was constantly ensuring I completed work on time in case my team didn’t. It gave me a stronger mindset to not rely entirely on team mates, in case complications occur and I can help solve any issues, as my workload would be less due to finishing work earlier.

What I also noticed from the team project that personally affected me is the fact that multi-tasking kills productivity. Having to do multiple things at once instead of focusing on one thing at a time often left me scrambling to try and complete certain things so I could move onto another. This ties into the idea of having everyone work on the same thing, so that contribution is shared across the team and everything can be completed to a high calibre.

A very important lesson I learnt was to consider the worst-case scenario, and plan accordingly to stop that from happening. Although simple, this lesson will be very useful looking forward. I placed a lot of trust into team mates without thinking about any issues that could arise such as contribution. The delegation of responsibilities ties into this subject, as I felt I gave responsibilities to team members that could not manage to keep up. This was apparent in our implementation stage, where our second coder no longer wanted to contribute to the system. That left us in a problem as only those two members knew the coding language. Looking forward, I could focus on using a programming language most team members are familiar with, so if a member drops out or does not contribute, it does not hurt the product as much as it did with our project.

As mentioned before, my communication skills have vastly improved too. I took the role of Project Manager in the hope I can improve upon my ability to confidently communicate with others and lead a team and I feel this project has really helped me achieve this. Most of the team were people I hadn’t communicated with prior to the project and this gave me the opportunity to work with a team that I could learn more about.

On top of this, this project is a clear example of how communication creates more effective work. A lack of communication in the team really tarnished our marks in this project and its clear that in the future, communicating every idea, problem and solution is essential to ensuring a team project goes as planned.

One of the main lessons I have taken from is to always plan. Planning can turn a bad situation into a positive one and if we planned every stage more carefully and focused exactly on how each member of the group would contribute to the project; I could have stopped any problems that may have risen from occurring in the first place.

I also learnt the significance of websites such as OneDrive and GitHub for improved work-space organisation, and it is something I will be incorporating into future group-based projects.

# **Question 5. Statement of what I would do differently in future.**

If given the opportunity to start the project again, there are a few fundamental things I’d have changed to ensure we secured better marks. One of these changes was to get all members working on every stage of the project together. This would resolve the issue of member contribution as everyone would inevitably have to contribute to the same diagram as the team progressed. This also meant I could get more feedback if everyone was working on the same thing instead of worrying about losing marks on other diagrams that were not completed to a high standard.

Another thing I would change realising the importance of interviews with the client, as our team missed out a lot of important things we could have implemented from the interview with Mr. Lancaster. The direct interaction with a client can often get a team detailed information that would have been extremely useful during the implementation stage.

Using a widely-supported programming language was another thing I would have implemented into the team project if given the chance. When deciding a programming language, it was decided to use Node.js instead of a different coding language as Martin claimed to be familiar with it and Mariia was willing to adjust to the language (as she has had experience with other web-based languages). Unfortunately, due to member contribution, we were left with only one-person coding and this subsequently had a huge effect on our system. If we had used a programming language such as Java, everyone in the team could have contributed to ensure the system was completed on time and to a high level. Overall, the module was a good experience for me. Although our team did not do particularly well, the skills gained from the module will be invaluable in the future.

Another thing I would do differently if given the chance to do the team project again is to get my consultant and Vlad involved earlier, so they could see that certain members were not pulling their weight within the team. This way, the relevant action could have been taken earlier and we could have perhaps switched to a different programming language. Moving forwards, I have learnt to consider what to do in a difficult scenario such as this.

One recommendation I would make is to have notes for other languages other than Java in the lecture slides, for any teams that wanted to stray from the norm. As this was something we did, it was slightly frustrating not having any actual support for an external language.

Another recommendation would be to handle the overall grading system for a student differently. What this means is that 60% of the module’s marks should be allocated to the final grade achieved in the team project and the other 40% is based on the student’s contribution, effort, and the quality of the work the student has provided for their team. This way, a student can still get a good grade overall even if his/her team lets them down, due to the quality of their individual work and how much effort they have made to ensure the work is completed.

Having a quantitative value, such as 40%, for how much a student’s effort is worth would also encourage students to work harder instead of relying on their team to do all the work. I feel having this change would also give students a fairer chance to get a good grade even if their team is not the best but also can bring to light the people who did not put any effort in, which could cause those students to get a much lower mark than the students who tried their best always.