

**Department of Computing**

**Software Projects**

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**Name: A. N. Other**

**Student ID: 232208**

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# Reflective Assessment of Software Quality

# For stage 1 we were asked to produce a prototype from a variety of options including a recipe viewer, an inventory management system, a membership and loyalty system and a minimal social network. After researching and reviewing the aforementioned options I decided to produce a desktop application prototype for the inventory management system. To produce this prototype, I used a program called ‘Mockplus’, this allowed me to design the applications various pages; adding tables, colour schemes, dropdown boxes, search bars, and more. As a prototype I believe the system was generally fit for purpose as an inventory management system (IMS). One of the main requirements of an IMS is tracking purchases, this was met in the prototype as it simulated what viewing purchase history and viewing sale trends was like and strongly reflected what a full production quality system would feel like for a user. Furthermore, other vital components for an inventory management system are, the tracking, changing, and controlling access of inventory. These requirements were also met to a large extent as the prototype showed a user in a company would be able to block access to specific inventory for some branches and how the inventory levels would be removed from that branches database. The prototype also allowed the user to view and add stock to show the user how they would change the inventory levels (if a new order of stock had been delivered) accordingly on the full system. The user stories produced in stage 1 largely contributed as a way of testing the prototype could effectively represent what the production-quality system would be like for a user. The proposed user stories and acceptance tests were met, however if more user stories were obtained and they were produced by talking to people who use these kinds of systems on a day-to-day basis, this could have been a more sufficient way of executing the prototype in making sure that all avenues of a user’s experience were considered and tested. In doing this, the prototype will have become more refined to what the user’s in the market would want to experience from a product like this and would have increased the overall chances of success in developing it to production-quality system.

In stage 2, we were put into groups and asked to elevate our inventory management system prototypes to a production-quality level. This involved producing further requirements, designs and much more testing. As a group we explored different ways of designing our system using the use case diagram as a base to build our designs up from. We produced an architectural design, an entity relationship diagram, and a class diagram. When developing our system, we largely based our system’s design around the class diagram because of it’s detail and we felt it clearly outlined how the system should be put together. However, had further work gone into adding detail into the entity relationship diagram and improving its accuracy I believe t would have contributed much more to helping layout the design and how the entities in our system connected with each other. This is because some issues we had were in a lack of fluidity between different databases these issues may have been avoided had more gone into the process of producing an effective entity relationship diagram. Overall, the validation could have been improved by talking to more people who use the type of system we were designing day-to-day and thus making sure the product we were producing was creating an experience that the user’s in the market we were targeting would have wanted. This could have been done by collaborating with stakeholders, people who have experience using these systems and potential future customers. As previously mentioned, the verification would have been improved by extra detail and accuracy in the design process, in doing so we would have produced a product higher in software quality and usability.

For stage 3 as a group, we were tasked with producing a prototype for a client of our choosing. The project our group decided to take on was set by the British University Egypt, where our client – Benedict Connell - asked us to make an attendance system prototype to replace the outdated attendance system the university were using at the time. Benedict outlined the requirements that he wished the prototype to meet in order to improve upon the previous system. The first requirement he outlined was that it was mobile phone compatible, this requirement we did meet as the way to log attendance was through scanning a QR code on a mobile device which was directed to a website where a user would login. However, for students to check their attendance and for lecturers to check their class’s attendance they would have to access the desktop application for this, producing a mobile version would be something we could have explored more in making the deliverable more fit for purpose. The other ideal requirements set by the client (specific ID numbers, guard against ghosting, produce reports, time stamping function) were all largely met by the prototype and thus largely fit for purpose in this respect. More emphasis on what type of data the user would see could have been made, some of the tables where data would lie were empty, by entering fake data that would simulate real data it may have given the user a more realistic experience to what a production-quality system would feel like as when using it for real it would be filled with data. Overall validation was good, in meeting the majority of the client’s requirements though phone compatibility could be improved upon and the verification was adequately met though more static testing would have helped produce a more immersive prototype in filling empty tables with data.

# Reflective Account of Personal Development

Throughout all of the software projects process I have used a range of skills gained from the core modules during the first semester. My knowledge gained in database and systems modelling went a long way in helping me to produce the various designs these include producing the use case diagram, the architectural design, the entity relationship diagram, and the class diagram. These skills helped me to effectively present ideas to team members and come up with new ways to build our program as well as helping me to produce my own diagrams and programs. The programming skills I gained from semester 1 were pivotal in me producing the programs for both stage 2 and 3 and they provided a great base for me to improve and expand upon my knowledge in building computer software. Skills I had picked up from web development in the first semester also helped use and connect databases locally as well as for web-based application used in stage 3.

During this whole process in semester 2 I have learned a huge amount about the steps and processes involved in producing a full piece of software. It has opened my mind to the huge considerations that have to be made about stakeholders requirements, system functionality, compatibility, inclusivity, and the legal social ethical and professional issues involved with producing successful software. On the programming side I have expanded my own personal knowledge extensively, much of which is around databases and how vital and useful they are in producing any kind of application. I have learnt how to open and close connections between an application and a database, how to retrieve data from a database and then to use it for the application and also how to add data to a database via an application. I will likely build upon all of these areas in the future, and I am excited to test myself with the help of the new knowledge I have gained throughout the semester.

I have learned a huge amount about myself during this semester, I have learnt that I am able to build relationships with people even without meeting them and how important that is when it comes to working as a team and motivating each other to do the best. Another thing this these projects have shown that when working in a team I find myself organising and helping others almost as a sort of a leader, this I think this has helped me experience what being a leader and a good team member is and has provided me with a base that I can build upon in the future.

Looking back across the module there are a few things I would have done differently. In general terms I would have set more short-term goals for myself within each of the projects so I can know better myself what I want to achieve by the end of the week for example. I would have spent more time on designing the systems before beginning the production so that I could more clearly set out what I needed to produce for each part of the system, this way I could use my time spent programming and working more efficiently to produce higher quality work. I believe I made those incorrect decisions because I had little experience on working on a project that requires that much foresight and collaboration because of this much of it felt unorganised and often left people in the group not knowing what to do. Having identified this, it we be something I build upon in future endeavours.

# Suggestions for Future Work

I think my foresight and planning will be what I am going to build up a lot for future work, this I will try to do by setting clear more short-term goals within a project and work with team members to set what they should be in keeping a whole team included and up to date with the process. For future projects I am going to continue to develop my programming skills, specifically in learning which errors mean what and becoming more familiar with common mistakes so that when I come across problems, I am more suited for tackling them with a calm systematic approach and being less reliant on finding answers online. I will do this by continuing to write code and learn new skills involved with program and this will help speed up and improve the quality of my future work or projects for myself and others around me.

Furthermore, when doing future projects as mentioned before I will manage my time more effectively, in doing this I will try to make sure that I have met all the goals for the previous week that I have set for the project. Because I will have completed the previous week’s work, if I then run into any problems, I will have the ability to ask my lecturer about any problems I encountered in the previous week and get it fixed then, rather than having it done a week later where it becomes easier to lag behind as you cannot move past a problem from the previous week. Moreover, by doing this I will give myself more room to challenge myself when it gets closer to the end of the project where I can ultimately learn more and try to push myself to the best of my ability.