**City University of Hong Kong**

CS3343 Software Engineering Practice

Self-Reflection Report

Project Title: Chinese Chess Training Software

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**Table of Contents**

[1. Yiwei Zhao 3](#_Toc467219678)

[2. Jingxian Yang 3](#_Toc467219679)

[3. Yian Wang 3](#_Toc467219680)

[4. Xiangyu Li 4](#_Toc467219681)

[5. Chenchen Wang 4](#_Toc467219682)

[6. Yifei Xie 4](#_Toc467219683)

# Yiwei Zhao

The most wonderful experience in this world is to see a meaningful idea turn into a product in reality through a group’s hard work. To grow this giant plant from scratch, hard-working, collaboration and communication are all necessary nourishment. During this semester, professional knowledge about systematic debugging is the most valuable thing I have obtained.

Thanks to this 3343 group project, we finally managed to apply the knowledge we have acquired in company practice to computer science learning. The so-called waterfall prototype is what we adopted during this project task. We improved our product at each iteration. The junit test cases are most important components to make our “flight ticket system” function well and smoothly.

My mission in this project, specifically arranged by our team manager, was to design an algorithm which will make our ticket system run smoothly using what I have learned. This is a fun part. However, it also required a lot of effort and time to fulfill all the requirements. At first, I didn’t know how to do, so I turn to online resources for help. Luckily, after a week’s learning, I worked out a O(nlogn) running time method. At the beginning, I came up with a greedy algorithm called “Dijkstra algorithm”, it is perfect under some circumstance of finding a specific way. Unfortunately, it is not suitable for our “flight ticket system” because sometimes it can produce a way with too many transfer station. In order to keep the transfer station below two, I take the “BFS algorithm” to search a way then use merge sort to sort these ways by time or cost.

When I finished my part of algorithm design, I helped write some test cases. Firstly I wrote algorithm (which is my own part) test cases. Moreover, I helped write front end junit test cases. It really took some time for me to realize that most part of front end Jframe couldn’t be tested at all considering that it is made up of color and borders which is not within the scope of this course. But I really enjoy the time spending on checking others’ code, it seemed that this process can develop an attitude to propose solution for problems through independent investigation. Moreover, each time I found a bug of our system, I would report it to the “ CS3343 bugzilla system”. I created the template of bug report and registered our Group 5 on the “ CS3343 bugzilla system”.

As you know, finding a bug is easy. However, it really took a great effort to deal with and solve it. As a member of assignees of our group, every time a bug is reported, I would repeat the steps descripted carefully to reproduce it. Then, I would try every method I know to resolve it. Sometimes it was caused by carelessness of some team members, sometimes it happened just because some functions were wrongly used. After doing these works, I wrote a bug report to show the details of the process I described above.

# Jingxian Yang

# This group project gave me an opportunity to experience working in a real work environment. It showed me a product’s achievement really needs complex work arrangements and cooperation. As a tester in the group, I was responsible for writing tests for the program, and I realized that it is very important to do testing for a program, because only with many test cases can we really find out whether our program is complete and find the operational bugs. In the process of testing, I also realized that how to arrange your testing strategy and methods is also very important, because only by choosing a correct test structure can you make your tests hierarchical, readable and easy to debug. With these theories in mind, I followed the test strategy and worked hard to achieve nearly 100% coverage of our program, making it almost bug-free. This was a great exercise for my ability and mindset, and it allowed me to become more proficient in the use of Junit testing, which was very rewarding!

In this project, I have learnt how the development methodology affects the design of the software. Under the methodology, Model-View-Controller (MVC) design pattern is applied. MVC help separate Model and View which means we can develop logic and user interface separately. Due to the limitation of the test-driven development, the user interface is very hard to test. With the separation of UI, the testing team can easily test the logic of the program. Thus, the percentage of test coverage regarding critical function can be improved. Therefore, the project gives me a chance to gain a better understanding of design pattern and design principle.

# Yian Wang

In this project, we faced a lot of challenges and difficulties which I did not think of at the very beginning. However, thanks to the efforts of every group member and the skills taught in the lectures, we eventually completed the project. This experience benefits me in many aspects.

It turns out that building a complete project within about 3 months will lead to a quite tight schedule, especially when everybody needs to work during work days. Due to the lack of time, we were forced to enhance our efficiency when discussing and pressing ahead with the project, which was not easy. For example, it took us a long time to finally decide our topic, because everyone had different opinions, and it is crucial to listen to others’ perspectives.

I mainly worked on the backend design and implementation when building the project. I firstly thought that I could gradually decide the structure of the backend codes during implementation, but it turned out that this is not the case. The structure is very important in creating a backend service, especially in object-oriented programming. If I did not think over the structure at the beginning, it would be very difficult and troublesome to change the code later as well as add new functions. A messy structure will also make the codes hard to test. As a result, I stopped coding and drew the class diagram draft. This not only gave me a clear mind when building the service, but also improved the speed when coding.

Moreover, I also worked with the frontend developer and the tester when connecting the frontend interface and testing respectively, which gave me much experience on how to cooperate with people and how to make backend easy to use for the frontend and testing.

During the development, we also got some experience on how to manage a small team and plan the schedule. Overall, this experience taught me a lot not only on coding but also management and cooperation.

# Xiangyu Li

Through this course and project, despite experiencing a complete life cycle of a project, the most significant thing that I have learned is how to work as a team systematically and methodically.

As efficiency determines success, we spent lots of time communicating, with a regular meeting every week and some daily talks between teammates whose work is closely related. For instance, I am responsible for use case diagram and background research. So, in addition to reporting my progress and the discussing plan for the following week, I also checked the consistency with another teammate who was responsible for reading in data every few days. Therefore, we were able to do work with sequence concurrently without error.

Before taking this course, I thought the focus would be algorithms, which I believe is an opinion for lots of people towards IT projects. However, now I understand that although algorithms are vital, the thing that can largely determine the success or failure of a project is project management. And what I have mentioned above is also a part of it. The communication and planning we do and the documents we write matter.

Moreover, during this project developing we still meet a lot of problem in team working. Although we have instituted the regular meeting every week to talk about the rate of progress, there are still many communication problems between our teammates. For example, someone wants to finish own part quickly to do further work such as testing part or help others’ work, but the other teammates would like to complete task step by step and follow the whole team progress. Everyone has their own way to finish their own part and we have to learn to adapt the pace of others. In team working, we cannot

always stick to our own opinion and refuse to accept others, instead, we should think more, ask more and agree more. Team work needs everyone’s participation and contribution. What’s more, communication is very important. Luckily, our team did a good job in this part with good coordination of our team leader.

Our team performed pretty well in project management. We have a detailed project plan, reasonable personnel allocation and everyone’s strictly complying to the deadline in every phase. What I have learned in this project is priceless. I believe that I can be more competitive in real project development.

# Chenchen Wang

The aircraft ticketing system of this time was different from any other work in the past. It was the first time I had participated in the whole development process, from project topic selection to requirement analysis to the actual coding and the subsequent testing and refactoring. All the work was completed by our team independently. So, we had some difficulties in the process, but eventually, we solved them.

I was involved in many aspects of this project, such as the initial project planning. This required us to have a more detailed outline of the development process, divide it roughly into stages, and arrange them in a time sequence. But in practice, many problems which are not considered were discovered step by step as we worked on the project. That is why it is unable for us to get things done punctually. In the end, we drew up a new plan, which allows the sufficient fluctuation time for the task. With this schedule change, people only have to think about the task at hand each week rather than still clean up the mess left behind.

In addition to management, I was also taken part in data collection. Dynamic data is not convenient for later testing. In contrast, a ticketing system requires a large amount of data to enable users to select cities or dates freely. And it allows the system to provide one-way or transfer information. Collecting manually was not practical, so we chose HK.TRIP website and crawled its information, eventually processing it into a CSV table for easy access to the database.

In the code section, I gained a deeper understanding of what I had learned in class. The practical work gave me a clearer idea of what to use in each area and why. I also learned to use GitHub to build code with my teammates simultaneously and merge afterward, that makes development much more efficient.

Finally, I learned a lot in this group work, both in terms of code and project planning, which will become a valuable experience for me. In addition, I would like to thank all the members of Group 6. Each of them has made great efforts in this project so that we can finally present this software.

# Yifei Xie

We work as a team like working in a company to develop an application in this project. It is great that I can have a chance to help manage a project, from planning, system analysis and design, implementation, testing and debugging. I have to work with the developers and testers in the team. We can apply what we have learnt in our course, such as choosing a proper testing approach and how to create test cases to achieve comprehensive testing. Also, we tried to manage the project using tools like Bitbucket for the version control and JIRA to manage the bug reports, to make our management work easily.