**Final Project Report**

**Name:** George-Kirollos Saad

**Date:** August 21, 2018

**Project Name:** 2048 Final Project

**Description**

The final project game program that I created is a 2048 game. It includes a start screen, main game screen, and game over screen. The game works by moving tiles around based on arrow key clicks. The user should try to combine tiles to create tiles with large values. After the game board is full, the game over screen appears. At this screen, players can save their score and see other users’ scores and the highest scoring players through the leaderboard.

**Testing Results**

Date: August 21, 2018

Tester: Alex Xue, student at St. Francis Xavier SS

Features Tested:

The tester tested the start screen, the actual game play, and all the features of the game over screen, including the leaderboard, score save button, score list button, and restart game button.

All of the features of the program worked as they were supposed to. The tester used the program easily and he did not find any aspect difficult to use. The program is useful to the target audience as the game operates as it should and includes all the required features, so it suits the target audience of children aged 8 and above. The tester would use this game if he wanted to play 2048 as it contains all the necessary features of the game and other added ones too. The tester made a few recommendations to improve this game. One of which was to make the text smaller as the number got bigger as this would improve the look. Another recommendation was to add animations for moving the tiles so that they gradually move to their new positions as this would improve the graphics of the game. The tester also recommended to make the initial spawning tile get coloured when it spawns, which could be considered when updating the game. All of these recommendations will be considered and some, such as the animations, would be prioritized to be added in the next update. No parts of the program require reworking or upgrading as they all run well, however features such as those mentioned previously could be added in the future. The main requirement that I would need to make a better second version of the application would be time. I think my programming expertise is sufficient enough to create the second version, but of course more experience and expertise would speed up the process. However, using my current level of expertise, give more time, I could improve the game and add some features such as those mentioned previously.

**Review of Management**

The main features of the game that I outlined in the project plan are the same features included in the final program. The start screen and main game screens were very similar in both the plan and final program. Some changes were made to the game over screen in order to ensure the leaderboard is easily accessible to the user. The completed software application met all of the user requirements. Overall, the software application was successful. The successes included creating tiles that changed colour, getting the tiles to move using an arrow key press, creating a leaderboard saved to a file, and all of the planned program features as they all turned out successful. As with most software projects, difficulties arise. I solved all the difficulties by checking the Java docs, such as the sections for JFrame, FileReader, and key release events. One of the difficulties was also getting the tiles to move. However, as I had already planned it in my Feasibility Study, it was easy to get solved and working. After debugging my code when errors arose, checking the Java docs, planning the program, and commenting throughout my program, I was able to solve all the problems and difficulties that arose. There are 2 recommendations that I feel would be great improvements to the program. One of which is tile movement animations as this would give a nice boost to the graphics. Another recommendation is to add a timer as I feel that would make the game more interesting as the user could then try to achieve the same score but in a shorter time if they cannot get a higher score. Overall, I think this final project was successful and I think that, given more time, I could make an even better version 2.