Testing

To test, after each addition or alteration to the code, I had an emulator running out of Android Studio and if I pressed ‘run’ again, the emulator would reinstall using the new code so I could re-test all functionality. I would launch the app, test the game launcher, the keypad and its ability to enter numbers, and any toasts (Pop-up messages we used to signify commands the game could not complete, for example placing duplicate numbers). If any function did not work, I would revert the changes and try again. Every once in a while, to continue testing, We would construct an APK after testing on the emulator, and send it to Charles’ email, so he could open it on his phone and test using the handset. I took a rather rigorous testing course for the application, in that I often tested things that were very unlikely to have changed with the work I had been doing, but I do not regret that approach, seeing as we rarely returned the app to a nonfunctioning state.

-- Zack G.

To test the verity of the boards being produced by the Sudoku puzzle randomizer, I initially commented out the section of code which “dug holes” in the already completed board. Then I added in a piece of code which would display the board at the end of the Board constructor method. Finally, I wrote a small program which initialized 100 Boards of varying difficulty (30 easy, 30 medium, 30 hard, 10 Random). I manually checked over each puzzle, confirming that each one was unique and valid. This done, I put back in the section of code which “dug holes” in the already completed board and ran the program again. I selected several puzzles at random and gave them to several people who then tried to solve them. In each case, they were solvable. This confirmed the research I had done, which showed that any puzzle with at least 17 valid givens will have a unique solution which can be reached via logical methods.

-- Jeff V. K.

I also wrote a small program to test the solver's performance and quality against a collection of 1843 Sudokus.

-- Charles L.