The purpose of this program is to make a basic spreadsheet program using two dimensional arrays. This program also used functions in order to do the math that was required. The program asks the user to input a number between 0 and 9, with 0 being the key that kills the program and numbers 1 through 9 doing anything from storing values in the arrays to doing the standard deviation of the numbers in whatever cells you choose. The program outputs the minimum value, the maximum value, the sum, the product, the average, and the standard deviation of all the values you choose in the array. No error checking was used.

The way the program was designed was all the math is done within the functions and the functions are called in the main function in a series of if statements. All the functions use the same nested for loops with the only difference being what is done in the for loop. One thing that is different in this design of the program versus the way the program was originally designed is the original design had all the functions as void functions and the user input was handled within each function whereas the current design of the program has all the functions as float functions where they return their values the function is trying to achieve. The way the program is currently designed is way better than it was before simply because it gives more hands-on experience with how functions should be designed.

Each function in the program was put in a series of if statements in the main program so one function is called depending on which key the user inputs. Sample code was given at the beginning that just set up how the menu should look and called the menu in the main function. Not including that menu function, nine functions were developed and called in the main function by hand with each function taking in array, the values for row 1 and 2, the values of columns 1 and 2, the functions that store the values that the user inputs or randomly generates taking in an additional value and the function that randomly generates values taking in yet another additional value so the function can generate values within a range of values. Development time took the full two weeks but most of it was complete by the midway point.

Testing was done by setting the array equal to zero so that even if the user doesn’t input values the program can still print something on the screen. A couple of problems that crept up were getting the letters that tell you which row is which to line up properly and even though the array was set equal to zero the program would still print some random values other than zero. The first issue was resolved by putting a space before the for loop while the second issue was because a lowercase letter was being inputted into the program and since uppercase and lowercase letters have different values in ASCII code that value had to be forced to an uppercase letter. Once those issues were resolved some special cases that were tested were if the user didn’t put a space between the letter and the number when the program asks which rows and columns to use which does not break the program.

Having already taken this class before and having never worked with two dimensional arrays before, this was the first assignment to where I had no idea what I was doing or how to do it. Overall though I would say that this assignment was a success and I wouldn’t change anything in this program if I had to do it over again except maybe to add some error checking.