**Project 1 Essay**

**Nicholas Wilkinson**

The project overall was fairly simple. Nothing took me a great deal of time to complete. I am glad that this project was assigned. When I started making the programs, I realized I had gotten very sloppy with my coding. I was shoving a lot into one method, and I wasn’t using any comments. After I started working on the fish market program, I went back to my other programs and cleaned them up so they’re easier to understand and modify.

The Monte Carlo simulation did not take long at all. I finished it in one sitting. The birthday program took me a while only because I was confused on exactly what we had to do. At first, I thought the program was supposed to keep count of how many birthdays were shared among all classes, instead of just seeing if a population has at least one shared birthday. After finally understanding the requirements, I completed it with ease. The fish market was also quick and easy, though not as much as the other two programs. Oddly enough, the main issue I faced was finding the .csv file. Once I found the .csv file, the rest of the program was a breeze.

Though it may seem strange, the Excel histograms took a while for a few reasons. First, I had to regain the problems we were assigned, as I hadn’t done them in class and did not know we would need them. Second, I rarely, if ever, use Microsoft Excel, so I was a bit lost. The homework histograms, which should have only taken a few minutes, took me about half an hour. However, after doing the histogram homework, I was easily able to convert the .csv file for the fish market program into a histogram. Hopefully I’ll remember how to make histograms for future projects.

The plotter, salter, and graph smoother programs (which I made as a single class) was easy to design. The main problem I ran into was the classes I was using to read the files (FileReader) wasn't reading the data properly. After switching to Scanner, I then had the issue of experimenting with different writers to see which combination worked for me. I ended up using FileWriter and PrintWriter. Once that was set up, the program worked perfectly. I did, however, have to change how I was smoothing the graph, as I was not smoothing it with the newly smoothed values.

The programs for the equations did not take a long time to create, and it was made even easier after I moved them all to a single class. A good amount of the equations used other equations, so I was able to use those and cut my programming time down. The only equation I struggled with for a while was the Poisson Distribution. I even designed some of the methods to accept different inputs, or to differentiate between the different equation variations (see Poisson Distribution). This was mainly because I designed it as a recursive method, which I had not made in a while.

Overall, I’m proud of my work. There were definitely a few programs that I should have been able to do in a few minutes that took me much longer, as well as a few programs that I finished faster than I thought (ie the graph programs). My main concern is that I missed a few equations and theorems that we used in class, but I know I at least covered 95% of them.