Problem four

In this problem, I was asked to use C (using only the standard C libraries) to read in three parts of a data set from a text file; time, FoF2 and FmF2. Then sort it by time, and smooth the FoF2 and FmF2 data sets with a median filter.

I read in the data using standard C functions and converted it into a simple representation of the number of seconds. Then I ordered it using qsort. I created a median filter of sample size three, that took the data adjacent to each point and at the edges of the data left them unchanged, and used a quick bubble sort to calculate the median of the three points for each data point.

In this problem I learned a lot about having to use read in functions. To start with I attempted to read letter by letter, using the data formatting to find the start of each data column. However after getting that working, I found later data points did not start at the same column in the document. I then noticed one constant, which was the number of spaces in the data structure. I then read in each line, and parsed it based on the groupings of spaces. This proved to be a far more robust method.