**Report**

My approach to this problem was very simple.

I used fgets() to store the header line of the file in array and move the pointer to the actual data. Then while the end of file was not reached I got the whole line till \n to store the full information of a person including his last name, first and middle name, and age in one line i.e. stored as a string in the 2d array in the corresponding (line number – 1) as the index. After I extracted all the information from the file I traversed through each line to split the information I got in three arrays last name, first name and age by using the fact that all of them were separated by \t.

if first \t is encountered store the string before that as the last name in that row number.

if second \t is encountered store the string between first and second \t as the first and middle name of the person.

And then of course the age but I first stored the age in the temporary character array as digits and then I converted each of them into an integer based on the number of digits stored for that person number.

if there is just one digit its a single digit number.

if there are two digits, its a two-digit number multiply first digit with 10 and add the second digit to it to get the number.

Then I called the calculate mean function(divided sum of ages/number of people and it calculate the mean for the age data.

Same way I did call the age group assign function and the calculate standard deviation function (used its formula which is sqrt of (sum of (mean-age(for each age))^2/number of people) in the function)

Then I sorted the last name array using quick sort(divide and conquer using the pivot to divide and then again apply quicksort into the sublist on the either side of the pivot and combine it again) comparing the strings using string compare arranged them alphabetically and as I swapped the last name string elements I swapped the age and first name array using the same indexes which I swapped for last name.

Then I wrote the whole thing into the file using fprintf .

Closed the files.

I also terminated all strings properly all the time in the whole program.

FLOWCHART BELOW

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