Assignment 12
Due: 11:59PM 12/11/23

Purpose: The purpose of this assignment is to gain experience with C++ arrays and file I/O.

Your goal: Write a C++ program that fits a line to a set (of arbitrary size) of data points. You may assume that the data consists of real numbers stored in an ASCII file in two-column form (each line contains an x-coordinate followed by a y-coordinate). The code should output the slope or the line, the intercept of the line, and the value of chi-squared for the fit to STDOUT and it should write the data out to a new file in an order sorted by increasing x-coordinate in order to facilitate plotting of the data. You may use any sorting algorithm that you wish to sort the data. **Your code should prompt the user to enter the names of both the input and output files.** The output file should be in three-column format where the third column contains the y(x) value of the line for the x-value listed in the first column (this facilitates plotting of the line). Make sure to test your code!

Hint: A good test file would have a perfectly linear set of data in unsorted order. The code should produce a linear fit with chi-squared of approximately zero and the output file should have the data point pairs sorted by increasing x-value.

Note: Make sure that your submission conforms to the **Instructions for Source Code Submission** instructions and that you have followed all of the **Good Programming Tips** in the notes!
Note that for C++ source code files the file name should be in the form of <*yourname*>_<*hw#*>.cpp (Do not put the # sign in the file name!), for example: **`jane_doe_hw_12.cpp`**