# Exam 1

Skills Required

* Exception Handling, Read and write Files, Work with arrays and vectors, Create Functions, Include Headers and other files, Loops (while, for), Conditional (if, switch), Datatypes, assignment, etc.

**Assignment**

1. You are given an input file called Lab7\_input.txt. Each line has a category; DVD, MUSIC, or TV and an amount for the item. First you will want to read through the file and place the amounts in a vector for each. Choose the appropriate datatype.
2. You will want to calculate a total, mean and median for each category.
   1. The functions for mean, median, and total should be in a separate CPP called Lab07Utility.cpp file that has a header. Make sure you include the header in the main program.

Note: You should include <vector> and use standard namespace in the .h and .cpp file.

* 1. The median function will need to sort the vector. You may include any sorting algorithm you’ve had this semester. The median value is the middle value from a sorted collection. If there are an odd number of values, then the median value is the value in the middle. If there are 5 items, then the median value is at index 2 of the sorted vectors. If the count is even, then there are 2 indexes that straddle the middle. Take the average of those 2 for the median.

If there are no items in the vector the function should throw an error that will be caught in your main program. If an error is thrown then the median value is “nan”

* 1. The sort algorithm you use should be turned into an independent function
  2. If there are no items in the vector for the mean then it should throw an error

1. Once you’ve calculated the result, write them out separated by tabs to the file output.txt Each category will be on a separate line.

This is example output from input1.txt

Total Median Mean

DVD 70.12 10.99 14.024

TV 33.2 4.5 8.3

MUSIC 0 nan nan

1. Remember to close the output file when you are done.

**Submit your assignment**

1. Update your files on GitHub, commit and push your files, and submit the GitHub link as your submission; OR, delete the contents of the Debug directory, zip up your project folder, and upload the zipfile to Canvas.