**Sorting Challenge**

**Specifications:**

* Virtual Machine
  + 2 Cores
  + 1 GB of RAM on the VM
  + ~25 GB disk space (not all usable)
* Input
  + 32-bit unsigned integers
  + ~4GB of binary (non-ASCII/UTF8) data
* Output
  + Sorted in Ascending Order (small to large)
  + Binary (non-ASCII/UTF8) data

**Program usage:**

To run your code, you should invoke the compiled binary in the following way:

./bvSort fileToSort.data targetOutputFile.data

Note that it takes two parameters:

* fileToSort.data: This argument represents the file that you intend to sort.
* targetOutputFile.data: This represents the file that you will write the sorted data to.

Example invocations:

./bvSort input.data output.data

./bvSort input2.data output2.data

./bvSort bigBunchOfUnsortedNumbers.data sortedNumbers.data

**Submitting your code:**

Your code should be submitted to exactly the following location:

[\\cs-data\Students\your\_username\cmsc432\final\_sort](file:///\\cs-data\Students\your_username\cmsc432\final_sort)

Inside the folder you MUST have a file named “bvSort.c” that contains your main method.  Also, you may certainly have additional header files in this directory that are included and used from your “bvSort.c” file but this file is the only code file that is absolutely required.  I will fetch your final\_sort folder and run the following command to compile your program:

gcc bvSort.c -lpthread

**Commenting your code:**

All code should be submitted as specified above.  Your code should be efficient, clear, and **well commented**.  This will be taken into account when grading.  Please make your code readable and easy to follow.

**Write-Ups**

**Plan-of-Attack Write-up**

The first write-up is due no later than Wednesday, December 8th. In it you should expound on your problem-solving plan for tackling this sorting challenge. This document should address the following 3 areas outlined in the rubric that you can find on CS-Data in the final folder.

1. Identify Problem
2. Identify Strategies
3. Evaluate Solutions

This will be worth 30% of your grade. Please make sure that you format your paper by labeling each section prior to writing your response. That is, I want 3 sections (each labeled as identified above) and your answers to each written within those sections. Save this file to your final\_sort folder with the name “plan\_of\_attack” with an appropriate file extension.

I want you to complete this plan-of-attack writeup \*before\* you start writing your code. This is very important. The intention of this document is to show your analytical process as it relates to problem solving before you dive in. If you intend to start coding soon, just write and submit this paper to CS-Data first!

**Evaluation Write-up**

The final write-up is due on the day of the final as class begins. It should address the following area outlined in the rubric

* Evaluate Outcomes

This will be worth 10% of your final grade. Save this file to your final\_sort folder with the name “evaluation” with an appropriate file extension.