**Homework 14 + 15**

**Due: Sundays (see Syllabus)**

**Part 1 Points: 20**

**Part 2 Points: 60**

**Instructions**

This is part 1 of a 2-part assignment to create an external merge sort program in Perl. The details are:

* Part 1 – Write a Perl program (***CreateBigData.pl***) that creates a file containing a specified number of random integers.
* Part 2 – Write a Perl program (***ExternalSort.pl***) that sorts a file containing random integers.

**NOTE**

You will need to complete Part 1 before Part 2 because you’ll need to use **CreateBigData.pl** to create the data files needed by **ExternalSort.pl**.

**PART 1 - DETAILS: CreateBigData.pl**

The **CreateBigData.pl** program should be a “console program” which is run from the command line. The usage is:

**perl** **CreateBigData.pl fileName count**

where:

**filename** is the name of the output file to be generated containing random ints.

**count** is the number of random ints to be written into the file.

If **CreateBigData.pl** is run without 2 arguments, a Usage Message should be displayed, and the program should terminate.

If the program cannot create file **fileName**, an appropriate message should be displayed, and the program should terminate.

If **count** is outside the range 0-100 million, an appropriate message should be displayed, and the program should terminate.

Your program should create **count** random **ints** (use the built-in rand() function if you wish) and write them to the specified file. Your random ints should have values between 1 and 1,000,000,000 (1 billion).

Your program must time its activity reporting how much time it took to create the random number output file. See **ElapsedTime.pl** (attached) for an example of how to time your program’s calculations.

See the Sample Output below for what messages your program should display and in what form they should be presented. Note that large numbers should be displayed with commas to set off thousands. For example, 12,345,678.

Run your program several times using different inputs – sufficient to demonstrate that your program meets all the assignment requirements. For your graded submission, you should use the **RunEx14.bat shell** script file to create your submission data files. Note that you will need the 5 data files created by the shell script (data5K.txt, data40K.txt, data300K.txt, data2M.txt, data10M.txt) for Exercise 15 (Part 2). Capture a screen shot of each run and paste them into an MS Word document. Place a caption above each image.

**Submit the Perl .pl file (lastname\_hw14.pl) containing your program and the MS Word document** **to your instructor using the appropriate Assignment Submissions link.**

Attached: ***ElapsedTime.pl***

***RunEx14.bat***

**Sample Output (CreateBigData.pl creating 2K random ints):**

Text

Description automatically generated

**Sample Output (RunEx14.bat):**

Text, letter

Description automatically generated