Capstone Project Week 11 Status Report for

“Comparative Analysis of Multi-Threaded and Non-Threaded Implementations

of the Merge Sort Algorithm”

**Date:** 06-November-2016

**Accomplishments**

**Data Sets I will be using for testing the performance of my project**

* Random
* Function to return Integers in a range
* Bernoulli function to return 0 or 1
* Geometric function
* Pascal function
* Binomial function
* Zero function
* Unbalanced function

Activity 1: Hardware Procurement – complete

Activity 2: Software Installation – complete

Activity 3: VM installation and testing – complete

Activity 4: Uses Cases – in progress

Activity 5: Large Data Set creation – in progress

Activity 6: Non-threaded Merge Sort – in progress

Activity 7: Multi-threaded Merge sort – in progress

Activity 8: Performance Testing – in progress

Activity 9: Data Analysis – in progress

Activity 10: Write report – in progress

**Current Activities (23-Oct-2016 – 06-Nov-2016)**

Activity 4: Uses Cases – in progress

* I have a model for a Use case on paper. My laptop with Visio is at another location. Plan to complete on software this week.

Activity 5: Large Data Set creation – in progress

* Testing existing code for large data set creation
* Coding to create additional data sets based on research results

Activity 6: Non-threaded Merge Sort – in progress

* Testing some existing code
* Researching other merge sort code

Activity 7: Multi-threaded Merge sort – in progress

* Testing some existing code
* Researching other merge sort code

Activity 8: Performance Testing – in progress

Activity 9: Data Analysis – in progress

Activity 10: Write report – in progress

**Challenges**

The challenges are:

1. I am currently testing on my Windows OS on my laptop. I need to Finalizing the code for the data set creation and merge sort algorithm then move to virtual machines and test on the Windows VM and Linux VM.

The challenges listed above can be resolved and do not place the project at risk.

**Work to be Completed by Nov. 20, 2016**

Activity 5: Large Data Set creation – in progress

Activity 6: Non-threaded Merge Sort – in progress

Activity 7: Multi-threaded Merge sort – in progress

Activity 8: Performance Testing – in progress

Activity 9: Data Analysis – in progress

Activity 10: Write report – in progress

Every project must consist of as a minimum a) an accepted proposal, b) some software component or software system, and c) a report

* It is expected that the student will do a certain amount of research to do this project. The level of research expected is nowhere near what is expected for a graduate level thesis, but since none of us live and think in a vacuum, it is always a good idea to support the ideas you propose and implement with texts and papers. The Florida Tech LINK is key here to providing tools for doing online research.
* Be careful with web based resources! Anybody can set up a web page and the contents of web pages usually aren’t put under the same scrutiny as published texts and papers. Understand this and make sure your Bibliographies contain more than just web page/URL references.
* **Part 8. Other issues.**
* • All projects (i.e. proposals, reports, and presentations) must include a *List of References* or *Bibliography*.
* • All code should have in it, as a comment, the author. All code "borrowed" from the net/web should be referenced in the *List of References*. If I get code which looks borrowed, but you don't mention it, I will search the web myself. If I find it, then this will be cited as plagiarism. See the policies handout and the FIT student handbook to see how plagiarism will be handled.
* • Material borrowed from a source in the report and proposal should reference the *List of References* and can either be superscripted like this1, or referenced like this [1].
* • Use double quotes (“ “) when you take material directly from a reference. If you rearrange and mix ideas or add your own, then you needn’t use quotes. In either case, reference it. For appropriate formats for listing your references in the "List of References”, see the reference librarian. There are several textual (and online) references that will tell you how to list references appropriately.
* The software component/system must be written by one individual, can be a hybrid of reusable components in different languages or using different tools (SQL, .NET, Thread Libraries, Java Libraries, scripts, etc.), must be implemented within a virtual machine (e.g., Oracle VirtualBox). In some cases the building of a larger system composed mainly of reusable software components would be appropriate. The following are acceptable software technologies.
  + Operating Systems - Windows or Linux
  + Database - SQL Server, MySQL, JavaDB
  + Programming Languages - C++, Java, C#, PHP, JavaScript
  + Development Environments - Visual Studio 2008/2010, Eclipse, NetBeans

**Phase II.** Design and Implementation Phase (Deliverable: Design and Code, Screen Capture Video with sound [in zipped format], Virtual Machine appliance [i.e., export of applications entire environment in an open format, \*.ova file] )

* Once the course instructor approves the proposal submitted by the student, the student researches, designs, and implements the project. The code that will be delivered, as part of this phase, will be tested by the instructor. If a Web application is submitted, the student must provide access to the completed application by providing the instructor with the URL for the hosted Web application. During this phase Progress Reports (4) are handed in outlining progress. Changes to the proposal during this phase should be documented and run by the instructor also. In addition to the submitted code, a video (5 - 10 min max.) of the running application must be provided. Freely available tools such as CamStudio, http://camstudio.org/ can be used to make video screen captures.

**Phase III.** Report Writing (Deliverable: Final *Report [NOTE: This Report merges with PhaseI, and documentation from the Design and Code Deliverable of Phase II.]*)

* Students generate a report on the project including what was done, how it was done, lessons learned, etc. A List of References or Bibliography should accompany the paper.

VMs

Screen Capture