**Department of Electrical Engineering**

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| **Faculty Member:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Dated: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
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| **Course/Section:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Semester: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
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**Computer Organization and**

**Achitecture (EE321)**

**Lab # Benchmarking System performance**

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You are to read the Benchmarks (Page: 52-55) section of Chapter-2 William Stallings book (9th Edition). This will give you an idea as to why exactly are benchmarks used. You may also go to the SPEC website to learn more about SPEC benchmarks.

Primate Labs offers a benchmark that can run on Android, iOS, Linux, OSX, and Windows.

See <http://www.primatelabs.com/geekbench/>.

The benchmark runs a number of micro benchmarks (codes) and combines the timings into a composite score for single core performance and another composite score for multi-core performance.

For a description of the micro-benchmarks, see

<http://support.primatelabs.com/kb/geekbench/geekbench-3-benchmarks>

The web site includes a page on "Interpreting Geekbench 3 Scores",

<http://support.primatelabs.com/kb/geekbench/interpreting-geekbench-3-scores>,

and describes the scores as follows: "Geekbench 3 scores are calibrated using a Mac mini (Mid 2011) with an Intel Core i5-2520M @ 2.50 GHzprocessor as a baseline with a score of 2,500 points. Higher scores are better, with double the score indicating double the performance."

The support forum includes a discussion of how the composite scores are obtained, highlighting a change from v2 scoring using a weighted arithmetic mean to v2 scoring using a two-step process of calculating geometric means followed by a weighted arithmetic mean of the geometric means. See "Scores'Averaged': How? Geometrically or Arithmetically??,"

<http://support.primatelabs.com/discussions/geekbench/1297-scores-averaged-how-geometrically-or-atithmetically>

**Lab task**

1. Each member of your lab group should install the Geekbench 3 (Trial Version) on your Laptop/Lab systems.
2. All the codes/micro-benchmarks (AES, Twofish, SHA1) that Geekbenchmark 3 runs on your system are listed at: <http://support.primatelabs.com/kb/geekbench/geekbench-3-benchmarks>. Each of your group member need to go through the description of these benchmarks and each of you shall report as to which benchmark is more important for him/her. And should also provide as the reason as to why based upon his/her common PC usage that particular benchmark is important.
3. Each one of you shall run the tests and compare the results of laptops/PCs of all your group members to that of Lab System. Report your comparative results as a Table/Graph in a Word File.
4. Geekbenchmark generates the result and shows in your web browser. When you will see the report in the browser you will find a number of interesting fields under the **System Information**heading. Such as: Processor Type, Caches, e.t.c. You need to compare the Caches of all your personal systems to that of the Lab system. Again you can show this as a table or as a graph.
5. Also install Novabench (another benchmark suite): <https://novabench.com/> and Windows Experience Index (Windows Benchmark suite). Do you think that the performance ranking for Integer benchmarks is consistent across Geekbench, WEI and Novabench for the systems of your Group Members?
6. Why Geekbenchmark 3 does not simply use the Arithmetic Mean to average the timings of each micro-benchmark (each constituent code)?