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Senior Project

Requirements

Definitions:

Sequential computing: running a program on 1 computer and not explicitly trying to use threads.

Parallel computing: running a program on 1 computer and explicitly use threads to break up the computation among multiple processors.

Cluster computing: like parallel computing but splitting the process between multiple computers as well as processors.

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| ID | Functional Requirement | Demonstration | Success |
| 1 | The system shall display the speed difference between Cluster Computing, Parallel Computing, and sequential computing | Completion of all sub shall requirements. | Completion of all sub shall requirements |
| 1.1 | The system shall show the time it takes do render an image. | The system displays the time it takes to render an image. | The system displays the time it takes to render an image. |
| 1.2 | The system shall show the number of threads being used. | The system displays the number of threads being used | The system displays the number of threads being used |
| 1.3 | The system shall show the number of computers being used. | The system displays the number of computers beings used. | The system displays the number of computers being used. |
| 1.4 | The system shall show that for images that take longer than 1 minute to render sequentially run in less time for Cluster computing | Show the difference between the sequential time and cluster computing. (Sequential – cluster) | The difference in time for images that take longer than a minute to render sequentially is negative |
| 1.5 | The system shall show that for images that take longer than 1 minute to render sequentially run in less time for Parallel computing | Show the difference between the sequential time and parallel computing. (Sequential – parallel) | The difference in time for images that take longer than a minute to render sequentially is negative |
| 1.6 | The system shall show that for images that take longer than 1 minute to render sequentially run in less time for cluster computing than Parallel computing | Show the difference between the sequential time and parallel computing. (parallel – cluster) | The difference in time for images that take longer than a minute to render sequentially is negative |
| 2 | Ray Tracing Engine – The system shall be able to produce an image and fulfill all sub shall requirements | The system produces an image and completion of all 2.x sub shall requirements | The system produces an image and completion of all 2.x sub shall requirements |
| 2.1 | The system shall be able to display spheres | They system produces an image that contains 2 or more spheres | The image contains 2 or more sphere |
| 2.2 | The system shall be able to display boxes in images | The system produces an image that contains 2 or more boxes | The image contains 2 or more boxes |