Distributive Computation on Mandelbrot Fractals with PVM

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***Abstract*— PVM (Parallel Virtual Machine) is a basic message passing system for heterogenous collections of networked computers. Because heterogenous, network-based, concurrent computing is an evolving method of computing, this project chose to test the value of PVM by adapting an algorithm for Mandelbrot fractal generation to run concurrently on two or more machines. Given a predetermined display window geometry, the computation for a complete line of pixel color values was the division for a single unit of work. Using only two machines, a divide and conquer algorithm was used where initialization, calculation, and display was performed by one machine and only pixel color calculation was performed by the second machine. A master - slave algorithm was chosed for three or more machines. Initialization, task coordination, and display was performed by the master machine and all calculations were performed by slave machines. Using either method, total run times for the generations was markedly reduced.**