

COMPARISON OF MULTI-CORE PARALLEL PROGRAMMING MODELS FOR DIVIDE AND CONQUER ALGORITHMS

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Abstract:

A wide range of parallel programming models exist which are used for expressing parallelism, while the influence of these models on performance and usability remains largely unclear. Furthermore, dividing a computational problem into sub-problems in order to explore parallelism offered by multi-core processors is not an easy task. In this article, four parallel programming models are compared for implementing parallel quick sort program in C/C++ on multi-core systems. The models under consideration are Intel's Cilk Plus, Intel's threading building blocks (TBB), OpenMP and Pthreads. Sequential quick sort program is converted into parallel program in chosen models and speedup achieved in each model over the single-core program is discussed and reported. The main focus of the presented study is on comprehensive comparative analysis of chosen models on the basis of performance, speedup achieved in each parallel model and effort required in conversion of sequential program into parallel program in respective models. Results show that for parallel quick sort algorithm, Cilk Plus performs better compared to other models.

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